# Appendix I

788 San Antonio Road Traffic Impact Study

Traffic Impact Study Report

# 788 San Antonio Road
# Mixed Use Development

Palo Alto, CA

July 30, 2020

TJKM

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# 1.0 EXECUTIVE SUMMARY

This report describes the results of the Traffic Impact Analysis (TIA) for a proposed mixed use residential/commercial development ('the project") at 788 San Antonio Road in the City of Palo Alto.

## 1.1 Proposed Project

The project site is located at the northeast corner of the intersection of San Antonio Road and Leghorn Street as illustrated in **Figure 1**. The project proposes to replace 17,833 square feet of existing commercial/light-industrial uses with a four-story mixed use building to provide 102 multi-family dwelling units, a 1,803-square foot ground-floor retail space, and a two-level subterranean parking garage that would accommodate 126 motor vehicles. The project will also provide 102 long-term bicycle parking spaces via two storage rooms in the project lobby, and 12 short-term bicycle parking spaces. The first floor would include the proposed retail space at the southwestern corner of the site and common areas along San Antonio Road, including a main entrance and lobby, mail room, two bicycle parking rooms, and a bicycle repair room. The remainder of the first floor would be occupied by dwelling units arranged around the north, east, and south portions of the site.

The ground-floor site plan of the project is illustrated in **Figure 2A** and the basement site plan for the proposed garage is shown on **Figure 2B and 2C**.

## 1.2 Summary of Findings

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, the study intersections were evaluated in accordance with the standards set forth by the level of service (LOS) policies of City of Palo Alto and Santa Clara Valley Transportation Authority (VTA).

The proposed project is expected to generate 1,166 net daily vehicle trips, including 131 net vehicle trips during the a.m. peak hour and 50 net vehicle trips during the p.m. peak hour. Roadway system operations were evaluated under the following scenarios:

**Traffic Impacts**

Existing plus Project Conditions; Under existing conditions based on data collected in October 2019, all study intersections operate within applicable jurisdictional standards of LOS D/E (City of Palo Alto and VTA CMP) or better during both the a.m. and p.m. peak hours. With the addition of traffic generated by the project: all study intersections would continue to operate at an acceptable LOS during both the a.m. and p.m. peak hours under Existing plus Project conditions. Traffic impacts resulting from the project would therefore be considered **less than significant** under Existing plus Project conditions.

*Background plus Project Conditions:* All study intersections would operate at an acceptable LOS during both the a.m. and p.m. peak hours under Background plus Project conditions. Traffic impacts resulting from the project would therefore be considered **less than significant** under Background plus Project conditions.

*Cumulative plus Project Conditions:* All study intersections would operate at an acceptable LOS during both the a.m. and p.m. peak hours under Cumulative plus Project conditions. Traffic impacts resulting from the project would therefore be considered **less than significant** under Cumulative plus Project conditions.

*Vehicle Miles Traveled:* "Vehicle miles traveled" refers to the amount and distance of automobile travel "attributable to a project". VMT re-routed from other origins or destinations as the result of a project would not be attributable to a project except to the extent that the re-routing results in a net increase in VMT. The proposed project is not anticipated to result in significant VMT impacts because:

- The proposed project will provide housing in a segment of the County that has a surplus of jobs relative to the supply of housing. The large supply of jobs in Palo Alto, Mountain View and other neighboring cities results in relatively long commute lengths for many employees, particularly those commuting from homes in the East Bay and San Francisco. By contrast: the provision of housing in Palo Alto will help to reduce VMT by providing homes closer to job locations.
- The commercial portion of the development will consist of relatively small-scale ground-floor retail space that will likely serve local customers as well as pass-by trips on San Antonio Road. Pass-by trips would not generate additional VMT, while local customers will have relatively short trip lengths. The provision of small-scale local-serving retail, is not anticipated to result in significant net VMT.

VMT standards for the City of Palo Alto were adopted in a Resolution by the Palo Alto City Council on June 15, 2020. Projects may be screened from requiring a VMT analysis based on location, or other characteristics anticipated to result in low rates of VMT, under State CEQA Guidelines section 15064.3.

- Local-serving retail projects of 10,000 square feet or less would be unlikely to result in significant VMT impacts based on the City's Screening Criteria. The proposed project would provide 1,803-square foot ground-floor retail space., Therefore, ***VMT impacts attributable to the retail portion of the project*** are anticipated to be ***less than significant.***
- The residential portion of the proposed project was determined to not meet the eligibility for screening as defined by the City's screening criteria. Therefore, an assessment of VMT impacts associated with the residential portion of the project was conducted to identify potentially significant impacts based on the City's VMT thresholds of significance.

Based on the adopted City of Palo Alto VMT thresholds, where a proposed project replaces VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project impact may be considered less than significant. However, if the redevelopment project leads to a net overall increase in VMT, the project impact may be considered less than significant only if the proposed new land uses would individually fall below their respective thresholds. .

The existing commercial and light industrial land uses on the site would be replaced by the proposed project, which would provide 102 multi-residential units anticipated to be occupied by approximately 235 residents and a small ground-floor retail space. Although the ground-floor retail space has been considered to cause less than significant impacts, the residential portion would generate a greater

number of daily trips then the existing. Therefore the residential portion of the proposed project would not replace existing VMT-generating land uses and is not anticipated to result in a net overall decrease in VMT. Based on the anticipated rate of home-based VMT generated by the project (11 miles per resident, as described further below): the 235 new residents would thus generate up to 2,600 daily home-based miles. Taking into account the likely reduction in commute distances to work for new residents that would otherwise have commuted from other parts of the region: the net increase in home-based VMT is estimated to be approximately 2,000 daily home-based miles.

Since the residential portion of the proposed project leads to a net overall increase in VMT, City of Palo Alto standards specify that the project impact would be considered potentially significant if the proposed residential development exceeds the VMT threshold for residential land uses. VMT impacts attributable to residential projects would be considered significant if a project exceeds a level of 15% below existing (baseline) County home-based VMT per resident. Therefore, VMT impacts from the residential portion of the proposed project would be considered significant if daily home-based VMT per resident exceeds 11.33 miles per resident (equivalent to 85% of the County home-based VMT average of 13.33 miles per resident).

Daily home-based VMT per resident for the proposed residential development is anticipated to be similar to existing residential areas bordering San Antonio Road. The average daily home-based VMT per resident for areas near the project site with residences directly bordering San Antonio Road is 11.19 miles per resident, below the threshold of significance. Proposed project's VMT is anticipated to be most similar to the west side of San Antonio Road, which has existing multi-family dwellings directly across from the project site at Leghorn Avenue and an average home-based VMT per Resident of 11.02 miles per resident, also below the threshold of significance. Therefore, the proposed project is anticipated to generate VMT at a rate below the City's threshold of significance for residential projects. Therefore, ***VMT impacts attributable to the residential portion of the project are anticipated to be less than significant***.

**Pedestrian Impacts**

Site access for pedestrians is currently provided by existing sidewalks on both sides of San Antonio Road and Leghorn Street. The sidewalks are continuous with curb ramps at driveways and intersections, and are five feet in width. The project will provide an accessible path of travel connecting the existing sidewalks on San Antonio Road and Leghorn Street to the project site. Project impacts to current and future pedestrian facilities are anticipated to be ***less-than-significant***.

As described further in the site access findings below: pedestrian access to the proposed retail use could be enhanced by providing a corner bulb-out to reduce pedestrian crossing distances across San Antonio Road at the northeast corner of San Antonio Road and Leghorn Street.

**Bicycle Impacts**

San Antonio Road is designated as a Class III bicycle route with shared motor vehicle/bicycle travel lanes on San Antonio Road. The Class III route is included in the City of Palo Alto 2030 Comprehensive Plan (2017) and Bicycle + Pedestrian Transportation Plan (2012) and would remain in its current configuration. The project would not conflict with the existing or planned bicycle facilities; therefore, project impacts to bicycle facilities are anticipated to be ***less-than-significant***.

**Transit Impacts**

The project is not anticipated to create demand for public transit services above the capacity which is provided, or planned. VTA routes 21 and 140 pass through study intersection #4, Middlefield Road and San Antonio Road. In addition, VTA express route 140 also passes through intersection #3, Charleston Road and San Antonio Road when traveling outbound towards US 101. Both intersections operate acceptably during both peak periods, both with and without the proposed project. Therefore the project is not anticipated to result in added significant added delay to transit services. The project is not anticipated to disrupt existing transit services or facilities or impacts to transit stops/shelters; or impacts to transit operations from traffic improvements proposed or resulting from a project. The project is not anticipated to conflict with transit policies adopted by the City of Palo Alto, Santa Clara County, VTA, or Caltrans for their respective facilities in the study area. The project driveway would not impact transit service or transit stops/shelters. The project does not propose traffic improvements that would impact transit. Impacts to transit would be considered ***less-than-significant***.

**Site Access**

The project proposes a continuous sidewalk with landscaping and curb ramps along the project frontage to provide pedestrian access to the project site. Four pedestrian pathways are proposed to lead to and from the project entrance, of which two will provide stairs and two will be accessible ramps. Bicyclists access the project site via a network of existing bicycle facilities on San Antonio Road and surrounding streets. The project proposes to provide direct site access via one, bi-directional driveway on Leghorn Street. The driveway on Leghorn Street would lead into an underground garage facility with 126 automobile parking spaces.

Multi-modal access to the site is anticipated to be **adequate**. Pedestrian access to the proposed retail use could be enhanced by providing a corner bulb-out to reduce pedestrian crossing distances across San Antonio Road at the northeast corner of San Antonio Road and Leghorn Street.

**Motor Vehicle Parking**

The project proposes to provide 126 off-street automobile parking spaces in a two-level subterranean parking garage, including five spaces that will be ADA accessible (three standard accessible, two van-accessible). 106 spaces will be provided for the residential units and 20 spaces will reserved for the retail land use. Eight existing short-term on-street parking along the project frontage on San Antonio Road will remain, and will be accessible to retail users and short-term guest parking. The two existing driveways on San Antonio Road would be removed as part of the project.

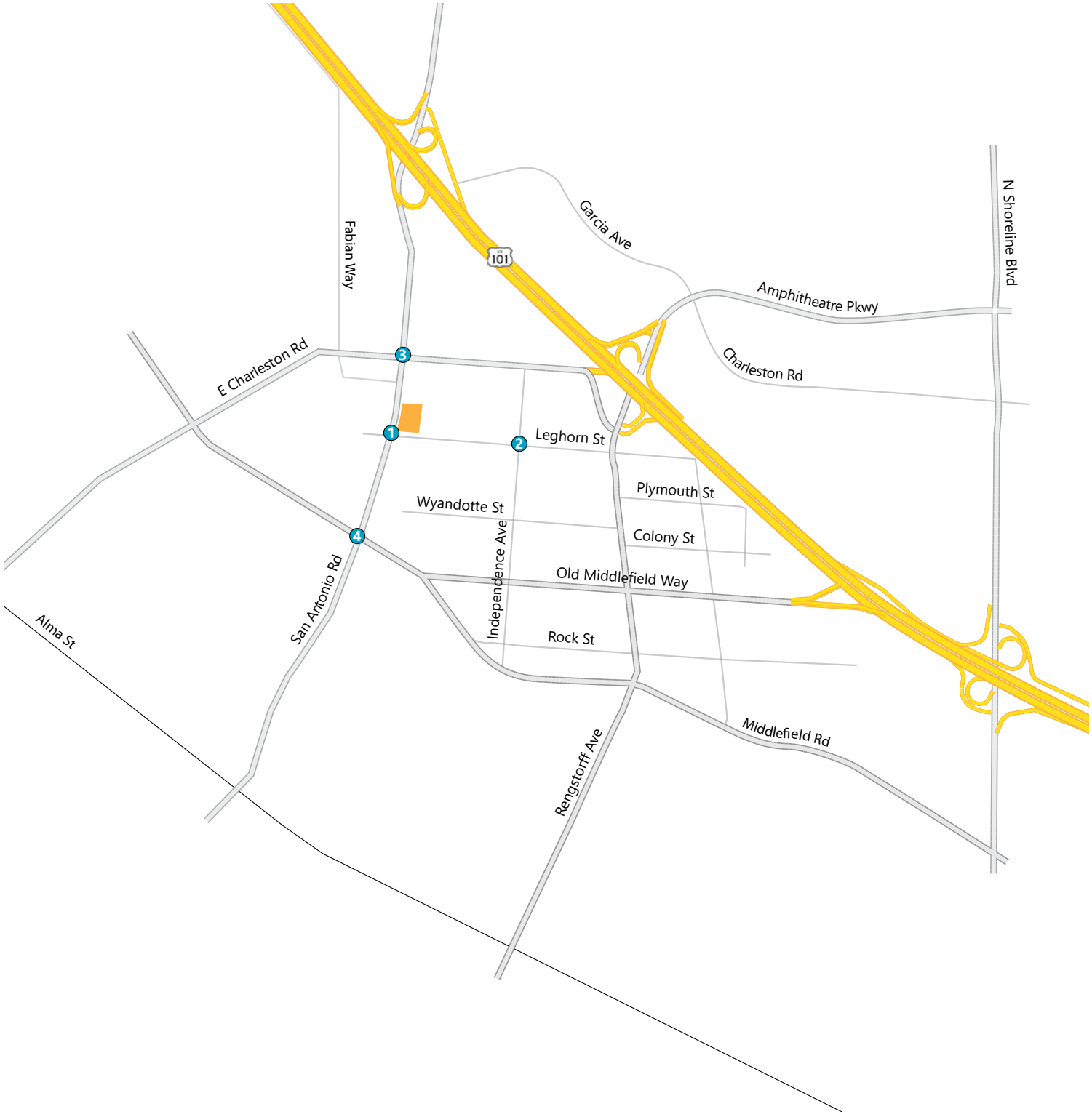
Based on rates defined in the City of Palo Alto Municipal Code (Code), Section 18.52.040 Off-Street Parking, Loading and Bicycle Facility Requirements, the residential portion of the project would typically require 109 automobile parking spaces to satisfy City standards without reductions unless a reduction is granted. The City Code allows a parking reduction of up to 20% of total spaces required for housing developments near transit facilities and with approval of a TDM program. With this reduction, the residential portion of the proposed project requires 87 automobile parking spaces, including four accessible parking spaces, to meet City requirements. At least one of the accessible parking spaces must be van-accessible. The retail portion of the project site requires one parking space per 350 s.f. of gross

floor area. Assuming all 1,803 s.f. of the proposed retail space is gross floor area, an additional six off-street, retail parking spaces are required to meet City standards. The proposed provision of 126 spaces (106 spaces for the residential units and 20 spaces for the retail use) would exceed the code requirement.

**Bicycle Parking**

Two bicycle rooms in the first floor lobby will provide 102 long term bicycle parking spaces. Additionally, 12 at-grade bicycle parking spaces will provide short-term bicycle parking and an ebike/scooter corral in the development courtyard will provide residents with access to active transportation options. City Code requires the project provide one long-term bicycle space per residential unit for a total of 102 required, long-term bicycle parking spaces. The bicycle parking must be in the form of bicycle lockers, restricted-access bicycle enclosures, multifamily dwelling unit storage lockers or school bicycle enclosures. The proposed provision of bicycle parking is consistent with city requirements.

## Figure 1: Vicinity Map



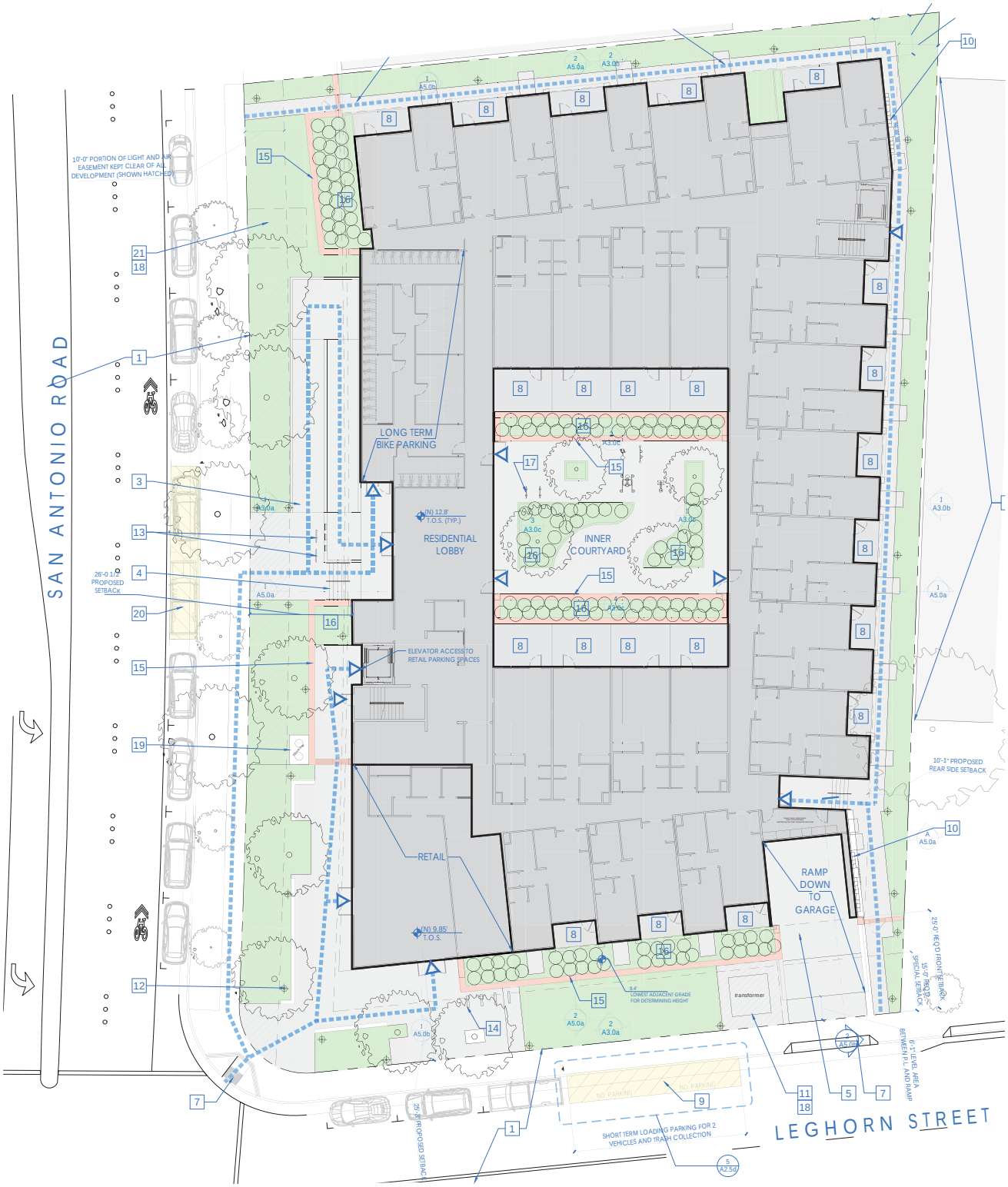

LEGEND

- Project Site
- Study Intersection

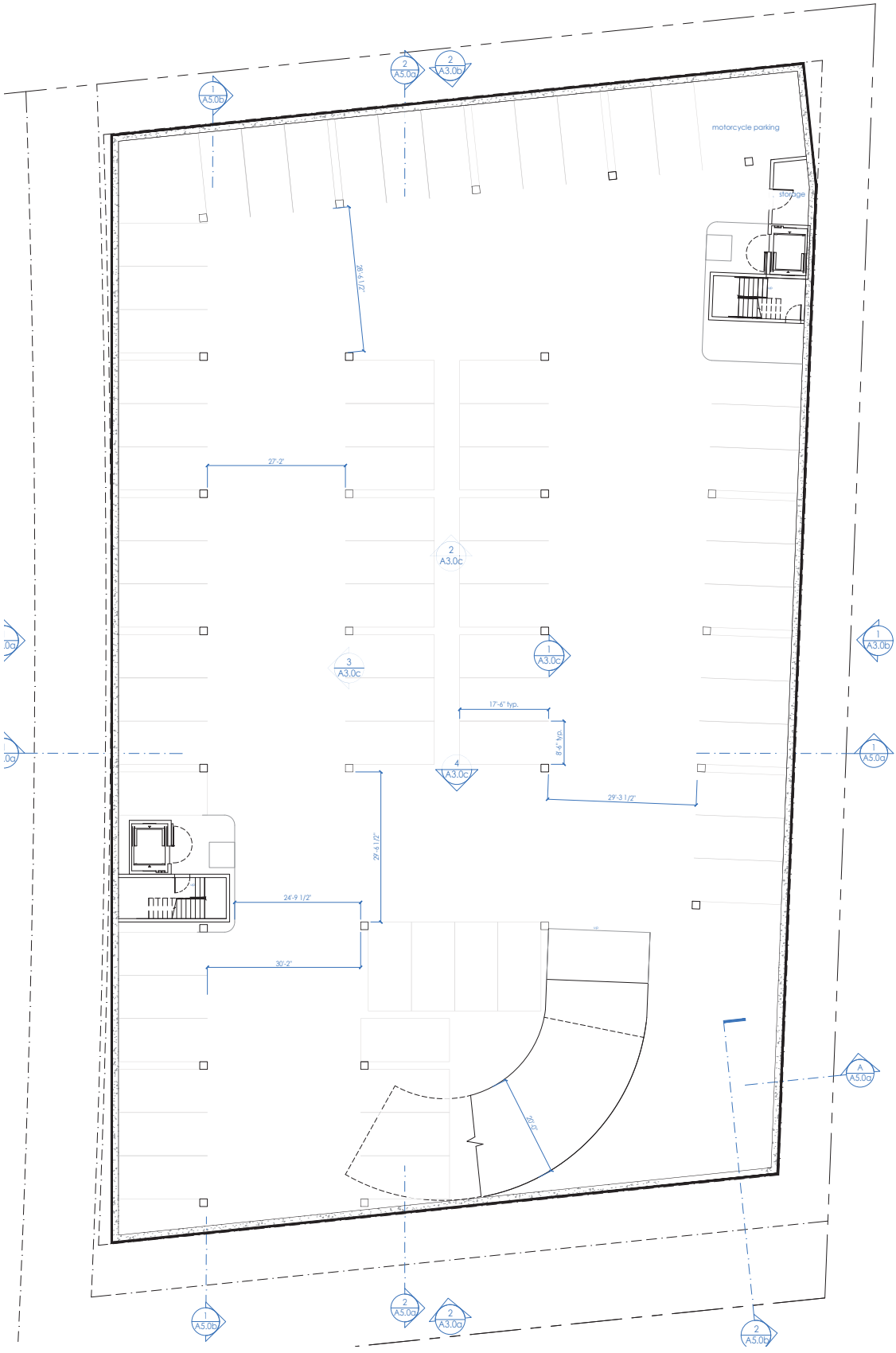
042-061

Figure 1

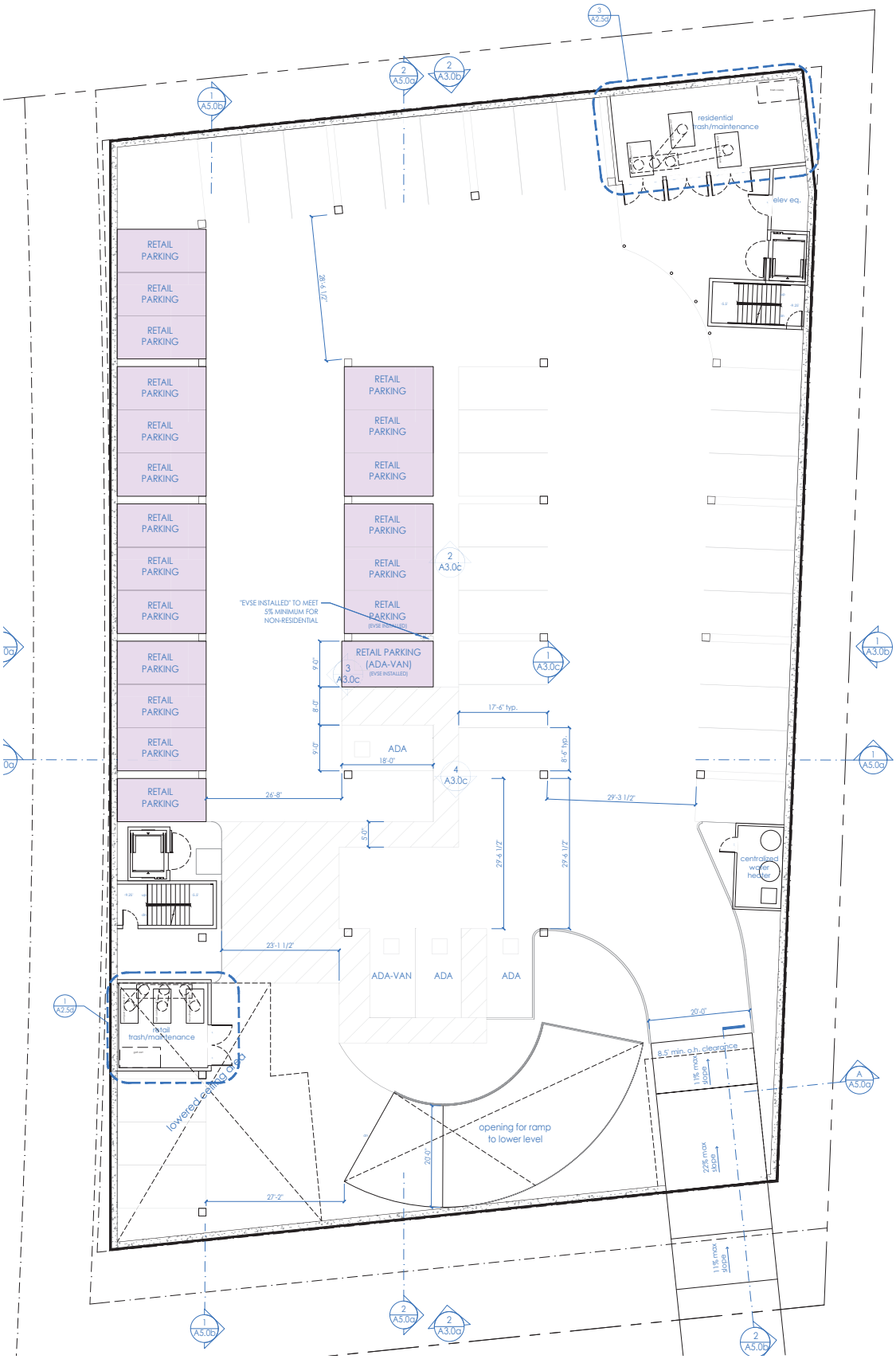
# Figure 2a: Site Plan



## Figure 2b: Garage Plan (Level 1)



# Figure 2c: Garage Plan (Level 2)



# 2.0 STUDY METHODOLOGY

The purpose of this Traffic Impact Analysis is to evaluate the potential traffic impacts, identify short-term and long-term roadway circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. The scope of work was prepared in consultation with the City of Palo Alto staff.

## 2.1 Study Intersections and Scenarios

TJKM evaluated traffic conditions at the study intersections during a.m. and p.m. peak hours for a typical weekday. The study intersections were selected in consultation with the City staff. The peak periods were observed between 7:00 a.m. - 9:00 a.m. and 4:00 p.m. - 6:00 p.m. The study intersections and the associated traffic controls are as follows:

1. San Antonio Road & Leghorn Street (Signal)
2. Independence Avenue & Leghorn Street (All-Way Stop)
3. San Antonio Road & Charleston Road (Signal)
4. San Antonio Road & Middlefield Road (Signal)

**Figure 1** illustrates the study intersections and the vicinity map of the proposed project. **Figure 2** shows the proposed project site plan. The traffic analysis addresses the following six scenarios:

- **Existing Conditions** – This scenario evaluates the study intersections based on existing traffic volumes, lane geometry, and traffic controls.
- **Existing plus Project Conditions** – This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project.
- **Background Conditions** – This scenario is based on traffic growth resulting from other developments within the vicinity of the proposed project. The forecast of background volumes was derived from the *744 & 748 San Antonio Road Hotel Development* Traffic Impact Analysis (Hexagon Associates, June 7, 2016). The forecasted Background Volumes (without the proposed project) were found to represent a 14 to 25 percent increase from existing volumes during the a.m. peak hour (varying by study intersection), and a 10 to 38 percent increase from existing volumes during the p.m. peak hour.
- **Background plus Project Conditions** – This scenario is identical to Background Conditions, but with the addition of traffic from the proposed project.
- **Cumulative Conditions** –Cumulative Conditions reflects anticipated traffic volumes with regional traffic growth as well as other developments in Palo Alto and Mountain View. The forecast of cumulative volumes was derived from the *744 & 748 San Antonio Road Hotel Development* Traffic Impact Analysis (Hexagon Associates, June 7, 2016). The forecasted Cumulative Volumes (without the proposed project) were found to represent an 18 to 30 percent increase from existing volumes during the a.m. peak hour (varying by study intersection), and a 15 to 43 percent increase from existing volumes during the p.m. peak hour.

- **Cumulative plus Project Conditions** – This scenario is identical to Cumulative Conditions, but with the addition of traffic from the proposed project.

## 2.2 Level of Service Analysis Methodology

LOS is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets.

**Signalized Intersections**

The study intersections under traffic signal control were analyzed using Traffix software that utilizes the 2000 Highway Capacity Manual (HCM) Operations Methodology for signalized intersections described in Chapter 16 (HCM 2000). This methodology determines LOS based on average control delay per vehicle for the overall intersection during peak-hour intersection operating conditions. The LOS methodology is approved by VTA and adopted by the City. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections was calculated using TRAFFIX 8.0 analysis software and was correlated to a LOS designation as shown in **Table 1**. The LOS methodology is described for signalized intersections in detail in **Appendix A**.

**Unsignalized Intersections**

The study intersections under stop control (Unsignalized) were analyzed using Traffix software that utilizes the 2000 HCM Operations Methodology for unsignalized intersections described in Chapter 17 (HCM 2000). LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At side street-controlled intersections or two-way stop sign intersections, the control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The weighted average delay for the entire intersection is presented for the all-way stop controlled intersection. The average control delay for unsignalized intersections was calculated using TRAFFIX 8.0 analysis software and was correlated to a LOS designation as shown in **Table 2**. The LOS methodology is described for unsignalized intersections in detail in **Appendix A**.

**Table 1: Level of Service Definitions for Signalized Intersections**

| Level of Service | Description |
|---|---|
| A | Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values. |
| B | Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay. |
| C | Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping. |
| D | Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestions becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. |
| E | Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent. |
| F | Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay. |

Source: Highway Capacity Manual 2000

**Table 2: Level of Service Definitions for Stop-Controlled Intersections**

| Level of Service | Description |
|---|---|
| A | Very low control delay less than 10 seconds per vehicle for each movement subject to delay. |
| B | Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay. |
| C | Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay. |
| D | Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay. |
| E | Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay. |
| F | Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay. |

Source: Highway Capacity Manual 2000

## 2.3 Significant Impact Criteria/Level of Service Standards

**Vehicle Miles Traveled (VMT) Impact Criteria**

VMT impacts resulting from residential projects in Palo Alto may be considered significant if the home-based VMT per resident exceeds a level of 15% below existing (baseline) County home-based VMT per resident. Based on this threshold, VMT impacts from the proposed residential development may be considered significant if daily home-based VMT per resident exceeds 11.33 miles per resident (equivalent to 85% of the County home-based VMT average of 13.33 miles per resident).

Where a proposed project replaces VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project impact may be considered less than significant. If the redevelopment project leads to a net overall increase in VMT, the project impact may be considered significant if proposed new residential, office or retail uses would individually exceed their respective thresholds.

Certain project types may be presumed to have a less than significant VMT impact. The following types of projects are eligible for screening as defined by the City of Palo Alto Screening Criteria:

- Small developments that generate fewer than 110 trips per day
- Projects in low-VMT areas that have similar features as existing developments in that area
- Projects in proximity to major transit stops
- Affordable housing projects that provide 100% affordable housing in infill locations
- Local-serving retail projects of 10,000 square feet or less
- Transportation projects that do not lead to a measurable increase in vehicle travel

**Level of Service (LOS) Standards**

In general, the LOS standard (minimum acceptable operations) for signalized intersections in the City of Palo Alto is LOS D or better. The City has also adopted LOS E as the minimum overall performance measure for Congestion Management Program (CMP) monitored roadways), consistent with VTA guidelines. According to the City of Palo Alto, a projected-generated increase in traffic is considered to have a significant impact at a signalized intersection if it meets any of the following criteria:

- If intersection operations degrade from an acceptable level (LOS D or better) to an unacceptable level (LOS E or F); *or*
- If the critical delay increases by four seconds or more, or the volume-to-capacity (V/C) ratio increases by more than 0.01 or more at intersections with unacceptable operations (LOS E or F).

The City of Palo Alto considers a significant impact to be satisfactorily mitigated when the measure implemented would restore LOS to baseline conditions or better.

LOS D is used as the minimum acceptable operating level at unsignalized intersections. A project-generated increase in traffic is considered to have a significant impact if intersection operations degrade from acceptable conditions to LOS E or LOS F *and* the intersection satisfies the peak hour signal warrants from the California Manual of Uniform Traffic Control Devices (MUTCD). The City considers a significant impact to be satisfactorily mitigated when the measure implemented would restore LOS to Background Conditions or better. All proposed mitigation must also include a feasibility analysis, which includes an aerial photograph showing all buildings and right-of-way lines overlaid with the proposed mitigation.

**VTA CMP Intersections**

The LOS standard for CMP intersections is LOS E. The projected-generated increase in traffic is considered to have a significant impact at a CMP intersection if it meets any of the following criteria:

- If intersection operations degrade from an acceptable level (LOS E or better) to an unacceptable level (LOS F).
- If the critical delay increases by more than four seconds *and* the V/C ratio increases by 0.01 or more at intersections with unacceptable operations (LOS F).
- If the critical delay decreases (i.e. negative change in critical delay) *and* the V/C ratio increases by 0.01 or more at intersections with unacceptable operations (LOS F). This can occur if the critical movements change.

The intersections of San Antonio Road/Charleston Road and San Antonio Road/Middlefield Road are designated CMP intersections.

**Pedestrian and Bicycle Impact Criteria**

The City of Palo Alto *Comprehensive Plan* describes related policies necessary to ensure that pedestrian and bicycle facilities are safe and effective for City residents. Based on the *Comprehensive Plan* as a guide, significant impacts to these facilities would occur when a project or an element of a project:

- Creates a hazardous condition that currently does not exist for pedestrians and bicyclists, or otherwise interferes with pedestrian or bicycle accessibility to the site and adjoining areas; or
- Conflicts with an existing or planned pedestrian or bicycle facility; or
- Conflicts with policies related to bicycle and pedestrian activity adopted by the City of Palo Alto, Santa Clara County, VTA, or Caltrans for their respective facilities in the study area.

**Transit Impact Criteria**

Significant impacts to transit service would occur if the project or any part of the project:

- Creates demand for public transit services above the capacity which is provided, or planned;
- Disrupts existing transit services or facilities including disruptions caused by proposed project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project.
- Conflicts with an existing or planned transit facility; or
- Conflicts with transit policies adopted by the City of Palo Alto, Santa Clara County, VTA, or Caltrans for their respective facilities in the study area.

# 3.0 EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersection, including the results of LOS calculations.

## 3.1 Existing Setting and Roadway System

The project site and surrounding study area are illustrated in **Figure 1**. Important roadways within the vicinity of the project site are discussed below.

***US-101*** is a ten-lane freeway with an east-west orientation in the vicinity of the project site. The US-101 runs through the states of California, Oregon, and Washington providing north-south connections to the West Coast of the United States. Near the project site, the freeway provides two High Occupancy Vehicle (HOV) lanes and three mixed-traffic lanes in each direction. US-101 provides a partial-cloverleaf and diamond interchange at San Antonio Road, north of the project site. Within the City of Palo Alto, US-101 has a posted speed limit of 65 miles per hour (mph).

***San Antonio Road*** is a north-south, four-lane divided arterial that provides access to US-101 to the north, and El Camino Real (State Route 82) and Foothill Expressway to the south. The project site lies in the northwest corner of the San Antonio Road and Leghorn Street intersection. San Antonio Road mainly provides access to residential and commercial land uses, with some institutional and office land uses. The posted speed limit on San Antonio Road near the project site is 35 mph.

***East Charleston Road*** is a three- to four-lane arterial east of Fabian Way, providing access to US-101 to the east, and is a two-lane residential arterial west of Fabian Way, providing access to Alma Street to the south. East Charleston Road mainly serves residential and commercial land uses. The posted speed limit on this roadway ranges between 25 and 35 mph.

***Middlefield Road*** is a residential arterial to the west of San Antonio Road, and an arterial to the east of San Antonio Road. The roadway provides four-lanes and runs in the east-west directions near the project site. The roadway extends between the cities of Redwood City to the north and Mountain View to the south, serving a wide variety of land uses. The arterial and residential arterial sections of Middlefield Road have posted speed limits of 35 and 25 mph, respectively.

***Leghorn Street*** is an east-west, two-lane local roadway that extends between San Antonio Road in the west and Sierra Vista Avenue to the east. This roadway mainly provides access to industrial and commercial land uses, and has a posted speed limit of 25 mph.

***Independence Avenue*** is a north-south, two-lane local roadway that extends between East Charleston Road in the north and Middlefield Road in the south. The roadway provides access to industrial, commercial and residential land uses. The speed limit along Independence Avenue is 25 mph.

## 3.2 Existing Peak Hour Traffic Volumes

TJKM collected turning movement counts during the a.m. and p.m. peak periods on October 17, 2019. Existing peak hour traffic counts are provided in **Appendix B.**

## 3.3 Existing Pedestrian Facilities

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal "walkable" community includes wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, and easy access to transit facilities and services. Pedestrian facilities are comprised of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access destinations such as institutions, businesses, public transportation, and recreation facilities.

This project site lies on the northwest corner of the intersection of San Antonio Road and Leghorn Street. Crosswalks and pedestrian signals are provided on all legs for the signalized study intersections of San Antonio Road and Leghorn Street, San Antonio Road and Charleston Street, and San Antonio Road and Middlefield Road. Pedestrian refuge islands are provided for crossing San Antonio Road on all signalized study intersections. Crosswalks are also provided on all legs of the stop controlled intersection of Leghorn Street and Independence Avenue. A continuous sidewalk network is provided in the vicinity of the project area connecting to all nearby institutional, commercial and retail facilities.

**Figure 3** illustrates the existing pedestrian facilities in the study area.

## 3.4 Existing Bicycle Facilities

The *City of Palo Alto Bicycle & Pedestrian Transportation Plan (July 2012)* provides a list of existing and proposed bicycle facilities in the City of Palo Alto. It also contains the policy vision, design guidance, and specific recommendations to guide the development of pedestrian and bicycle facilities. Bicycle facilities include the following:

The Plan describes the four bikeway classifications in the City of Palo Alto, which all meet the design guidelines of the VTA Bicycle Technical Guidelines for bicycle facilities, and the Caltrans Highway Design Manual (HDM), Chapter 1000: Bikeway Planning and Design for multi-use trails. These bicycle facility types are described below.

- **Bike Paths (Class I)**: Class I bikeways are also referred to as multi-use or shared-use paths. They are physically separated from a roadway by either at least five feet of landscape or an impact barrier. Class I facilities are for exclusive use of non-motorized transportation modes and must have a minimum paved width of eight feet as well as two-foot wide graded shoulders.
- **Bike Lanes (Class II)**: Class II bikeways are striped lanes on roadways for one-way bicycle travel. Class II bike lanes on street segments without parking must be at least four feet wide including any concrete gutter, with at least three feet of asphalt. Bike lanes on streets with parallel parking must be at least five-feet wide.

- **Bike Routes (Class III)**: Class III bikeways are signed bike routes where bicyclists share a travel lane with motorists. Typical applications for Class III bike routes include roadways with bicycle demand but without adequate space for Class II bike lanes, low-volume streets with slow travel speeds, especially those on which volume is low enough that passing maneuvers can use the full street width, and as "gap fillers" for breaks in Class II lanes.
- **Bicycle Boulevards**: Bicycle boulevards, a subset of Class III facilities, are signed, shared roadways with especially low motor vehicle volume, such that motorists passing bicyclists can use the full width of the roadway. In addition, all the unwarranted "stop" signs are removed from the boulevard and placed on cross streets, improving bicyclists' average speed by minimizing unneeded stops.

Class III bike route is directly accessible from the project site on San Antonio Road, extending between Charleston Road and Middlefield Road. The closest Class II bike lane begins at the intersection of Fabian Way and Charleston Road, about 0.3 miles from the project site. Class II bikeway is proposed on Charleston Road as per the City of Palo Alto 2030 Comprehensive Plan, to connect the Class III bike route on San Antonio Road to the existing Class II bike lane on Charleston and Fabian Way. The Class II bike lane on Fabian Way provides direct connection to the Class I multi-use path in the Baylands Preserve area. **Figure 4** illustrates the existing bicycle facilities in the study area.

## 3.5 Existing Transit Facilities

Valley Transportation Authority (VTA) operates bus service in Palo Alto. Commuter rail service (Caltrain) is provided from San Francisco to Gilroy by the Peninsula Joint Powers Board. The project site is served by VTA local, express and rapid transit routes, and Caltrain commuter rail service in vicinity. **Table 3 and 4** describe the existing transit services during the week by active bus routes in the vicinity of the project area.

The VTA bus route 21 and 40 can be accessed from the project site. Bus stops for route 21 are located about 0.25 miles away at the intersection of San Antonio Road and Middlefield Road. The bus stop for route 40 is located about 0.5 miles away at the intersection of Leghorn Street and Rengstorff Avenue. The closest Caltrain station is located about a mile away on San Antonio Road south of the project site. **Figure 5** illustrates the existing transit facilities in the study area.

**Table 3: Existing Transit Services**

| Route | From | To | Weekdays | | Weekends | | Study Intersections Affected |
|---|---|---|---|---|---|---|---|
| | | | Operating Hours | Headway (minutes) | Operating Hours | Headway (minutes) | |
| 21 | Downtown Mountain View | Stanford Shopping Center | 5:30 AM – 10:00 PM | 30 | 8:00 AM – 8:00 PM | 45-60 | 4 |
| 40 | La Avenida & Inigo | Foothill College | 6:12 AM – 10:44 PM | 30-40 | 8:11 AM – 6:48 PM | 45-80 | - |

Source: VTA website

**Table 4: Existing Services Provided by Caltrain**

| Route | From | To | Weekdays | | Weekends | |
|---|---|---|---|---|---|---|
| | | | Operating Hours | Headway (minutes) | Operating Hours | Headway (minutes) |
| Caltrain San Antonio Station | San Francisco | Gilroy | 4:30 AM – 1:32 AM | 20 - 60 | 7:30 AM – 1:40 AM | 60 |

Source: Caltrain Website

## 3.6 Intersection Level of Service Analysis – Existing Conditions

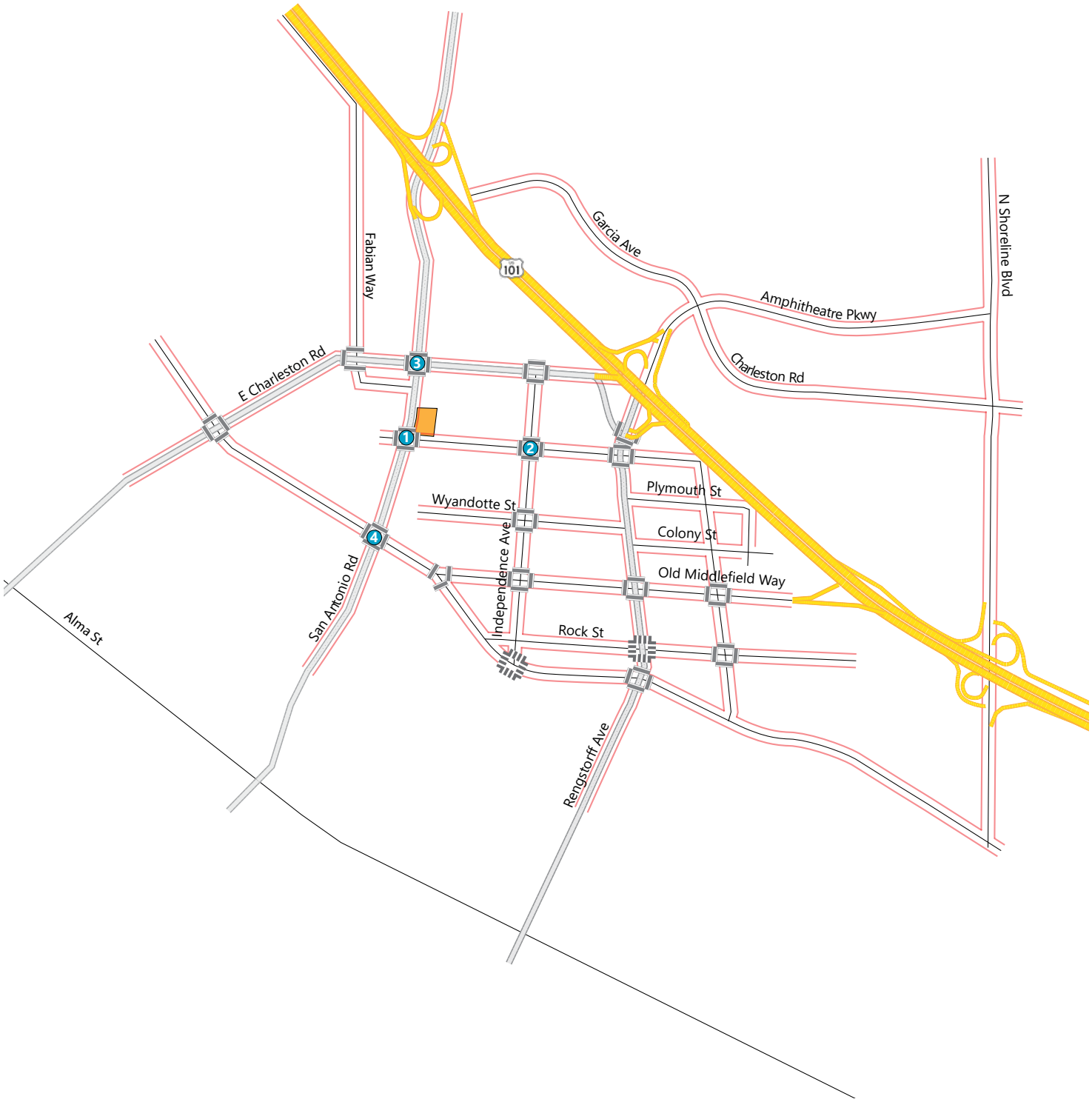
Intersection level of service (LOS) analysis was conducted using the TRAFFIX software program for Existing Conditions. Field verification of existing intersection lane configurations and traffic controls were also conducted and provided the basis for the LOS analysis for Existing Conditions. **Appendix B** contains all data sheets for the collected vehicle, bicycle, and pedestrian counts. **Table 5** summarizes the intersection level of service analysis results for the Existing Conditions scenario. **Appendix C** contains detailed LOS calculation sheets for the Existing Conditions scenario. Under Existing Conditions, all intersections are expected to operate within applicable jurisdictional standards or LOS D and E (City of Palo Alto and VTA CMP) or better during both a.m. and p.m. peak hours. **Figure 6** illustrates the existing lane geometry and traffic controls at the study intersections. **Figure 7** illustrates the existing vehicle turning movement volumes at the study intersections.

**Table 5: Intersection Level of Service Analysis – Existing Conditions**

| ID | Intersections | Control[1] | Peak Hour[2] | Existing Conditions | | | |
|---|---|---|---|---|---|---|---|
| | | | | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] |
| 1 | San Antonio Road/Leghorn Street | Signal | AM | 0.374 | 15.0 | 15.5 | B |
| | | | PM | 0.581 | 19.1 | 19.5 | B |
| 2 | Independence Avenue/Leghorn Street | AWSC | AM | 0.371 | 10.1 | 10.1 | B |
| | | | PM | 0.701 | 17.9 | 17.9 | C |
| 3 | San Antonio Road/Charleston Road* | Signal | AM | 0.639 | 42.4 | 45.9 | D |
| | | | PM | 0.775 | 35.5 | 43.2 | D |
| 4 | San Antonio Road/Middlefield Road* | Signal | AM | 0.716 | 45.9 | 43.5 | D |
| | | | PM | 0.850 | 55.0 | 63.7 | E |

**Notes:**
**Bold** indicates an unacceptable Level of Service
* indicates CMP intersections with LOS E threshold
[1]AWSC – All-Way Stop Controlled intersection
[2]AM – morning peak hour, PM – evening peak hour
[3]V/C – Critical volume-to-capacity ratio
[4]Delay – Whole intersection weighted average control delay expressed in seconds per vehicle
[5]Critical movement delay expressed in seconds per vehicle
[6]LOS – Level of Service

## Figure 3: Pedestrian Facilities




LEGEND

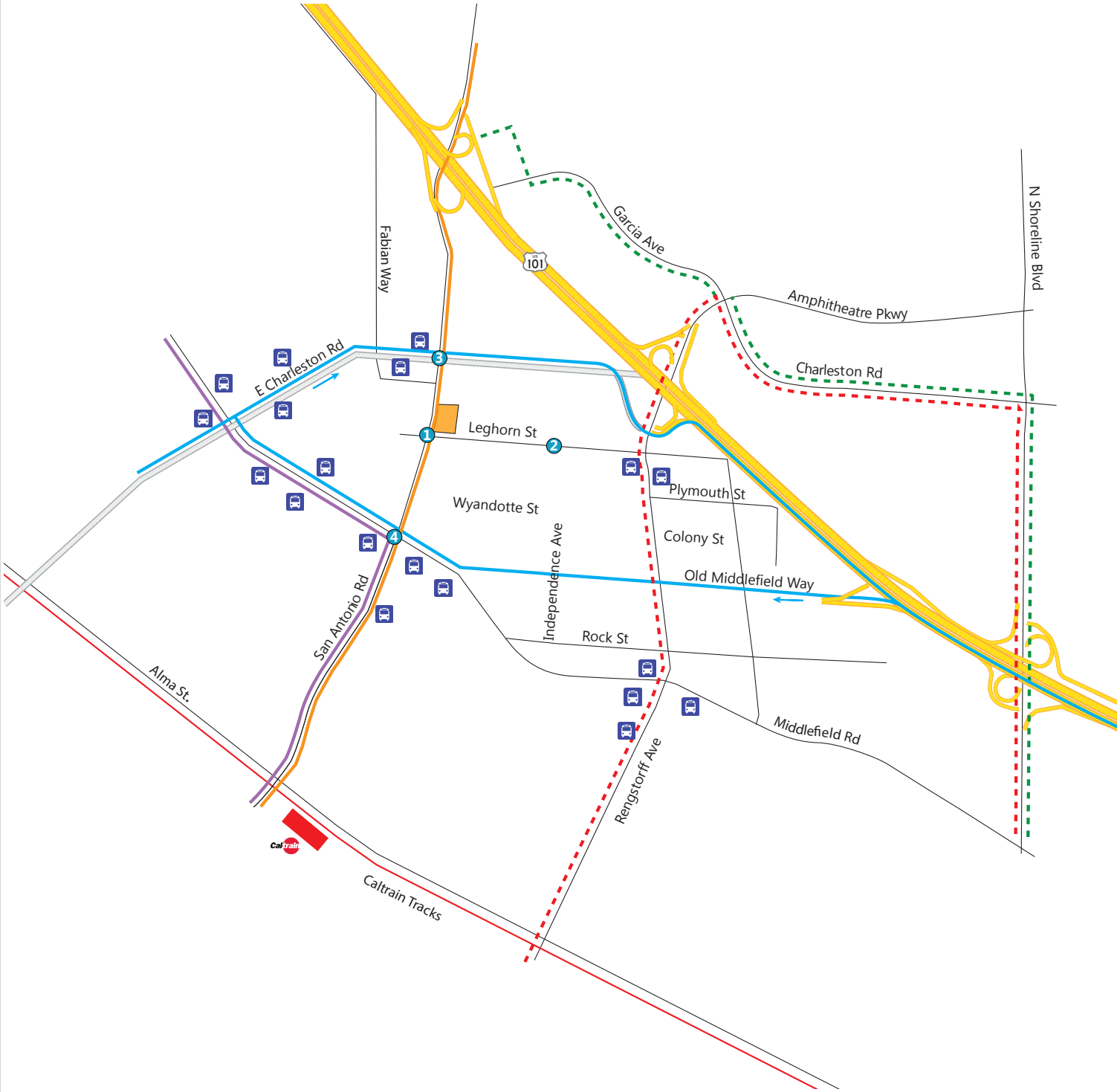
- Project Site
- Study Intersection
- Sidewalks
- High Visibility Crosswalks
- Marked Crosswalks

## Figure 4: Bicycle Facilities


LEGEND

- Project Site
- Study Intersection
- Bike Path (Class I)
- Bike Lane (Class II)
- Bike Route (Class III)

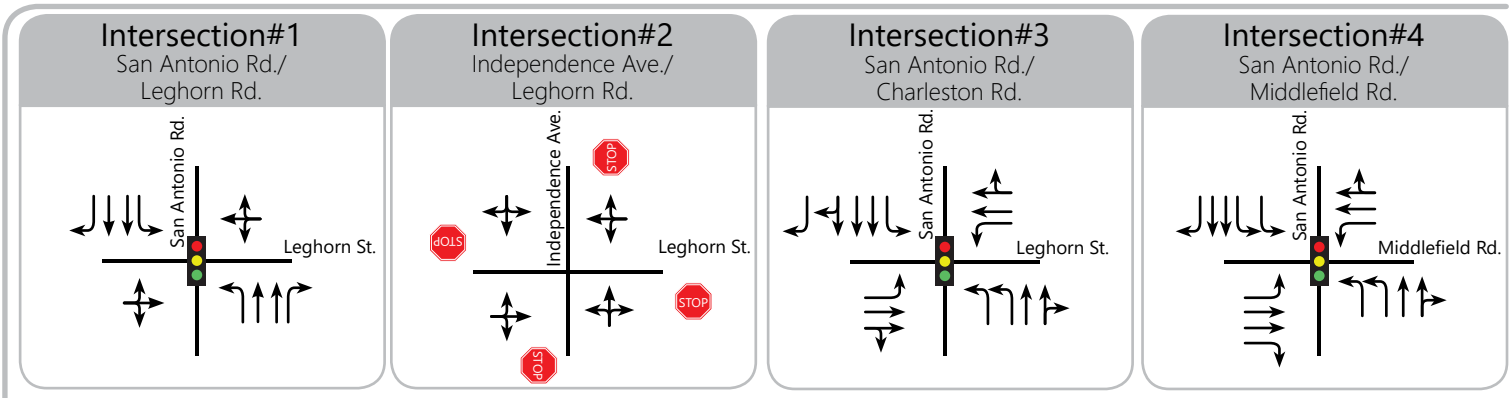
## Figure 5: Transit Facilities




LEGEND

- Project Site
- Study Intersection
- Route 21
- Route 104
- Route 40
- Route 185
- MVgo Shuttle Route

## Figure 6: Existing Lane Geometry





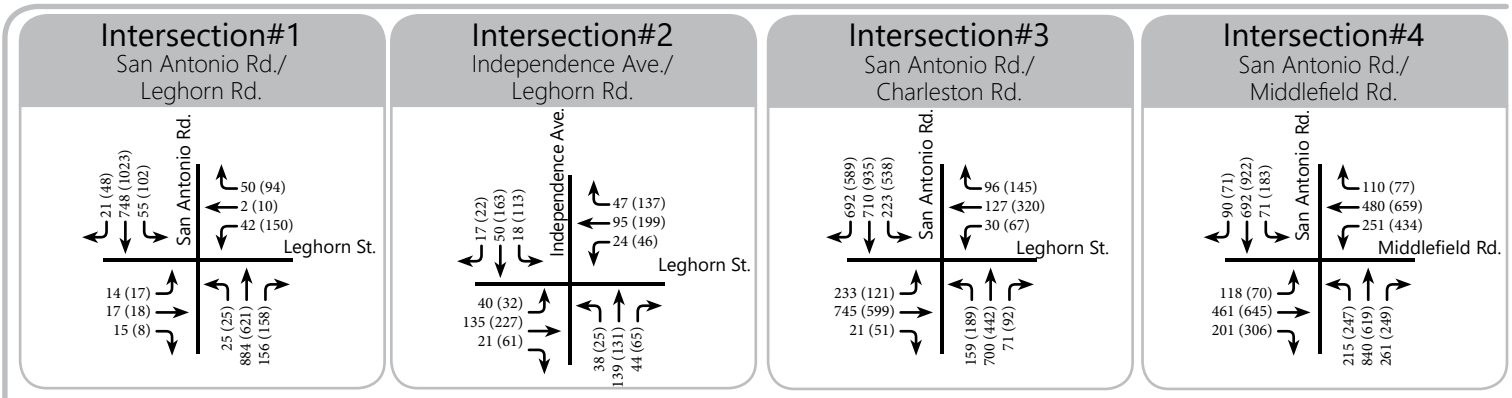
LEGEND

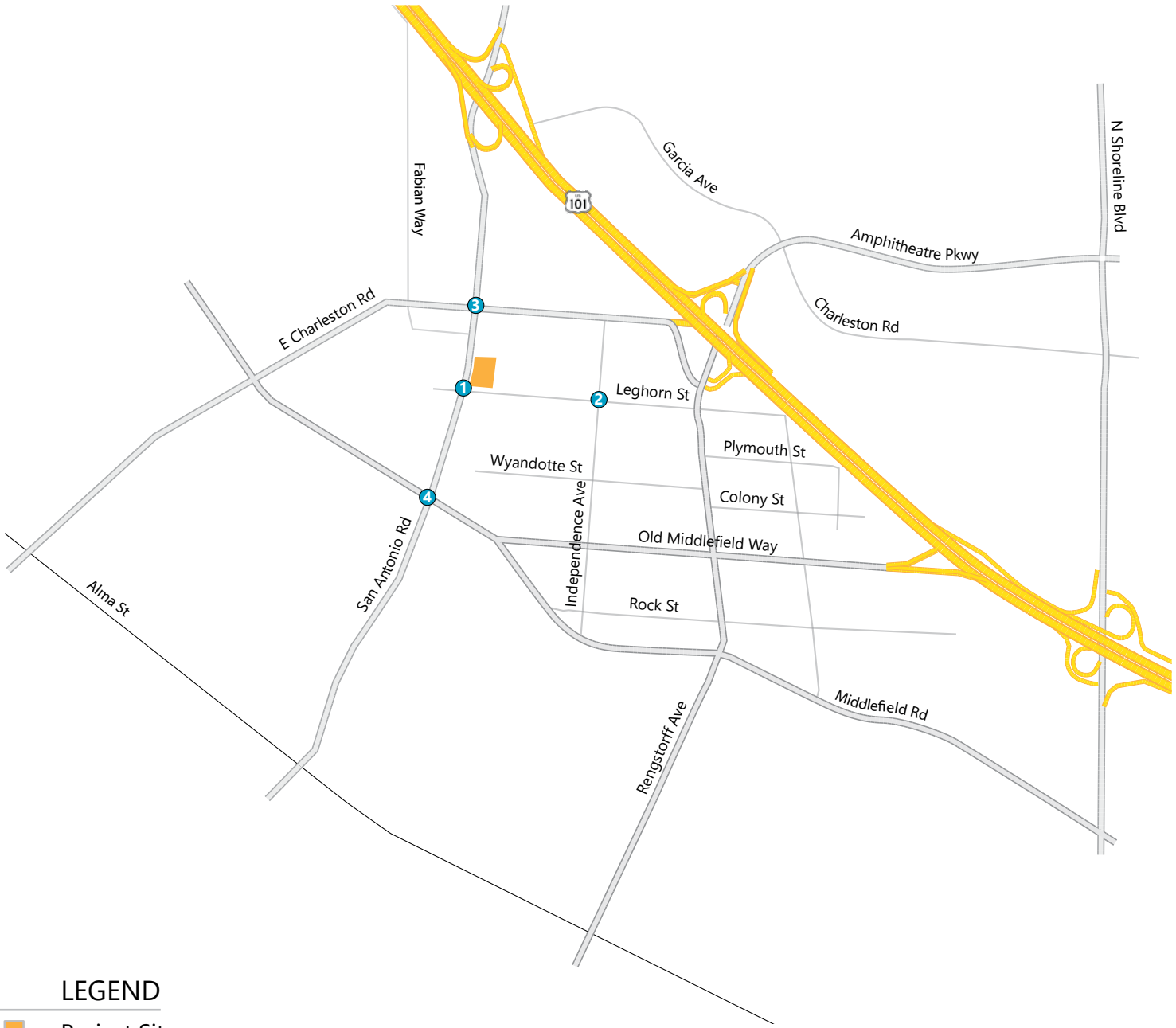
- Project Site
- Study Intersection
- Signal
- Stop Sign

042-061

Figure 6

## Figure 7: Existing Project Peak Hour Traffic Volumes




LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Volumes
- (XX) PM Peak Hour Project Volumes

# 4.0 EXISTING PLUS PROJECT CONDITIONS

This analysis scenario presents the impacts of the proposed project at the study intersections and surrounding roadway system. This scenario is similar to Existing Conditions, but with the addition of traffic from the proposed project.

## 4.1 Project Trip Generation

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the ITE publication *Trip Generation (10th Edition, 2017)*. The project proposes construction of a mixed-use building with one 1,803 square-foot retail tenant space and (102 dwelling units. The trip generation forecast was developed using average rates for "Multifamily Housing Mid-Rise" (ITE Land Use 221), and "Coffee/Donut Shop without Drive-Through Window" (ITE Land Use 936).

The trip generation credit for the existing commercial/light industrial land uses was provided by Hexagon Transportation Consultants (June 26, 2018). The peak-hour trip generation was determined by driveway counts. The daily trip generation was estimated by Hexagon Consultants by applying the ration of daily to peak-hour trips for "General Light Industrial Uses" (ITE land use code 110).

The proposed project is expected to generate 1,166 net daily trips, including 131 net new trips during the a.m. peak hour and 50 net new trips during the p.m. peak hour. The project trip generation forecast is shown in **Table 6**.

## 4.2 Project Trip Distribution and Assignment

Trip distribution is a process that determines what proportion of vehicles would be expected to travel between a project site and various destinations outside the project study area. The process of trip assignment determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution. Trip distribution assumptions for the proposed project were developed based on existing travel patterns, anticipated peak-hour origin and destination patterns relevant to the project and knowledge of the study area. **Figure 8** illustrates the trip distribution percentages and the trip assignment of project volumes developed for the proposed project. Separate trip distributions were assumed for residential and commercial/retail land uses. The assigned project trips were then added to adjusted traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

**Table 6: Project Trip Generation**

| *788 San Antonio Street, Palo Alto, CA* | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Land Use*** | ***ITE Code*** | ***Size*** | ***Weekday*** | | ***AM Peak Hour*** | | | | | ***PM Peak Hour*** | | | | |
| | | | ***Rate*** | ***Trips*** | ***Rate*** | ***In %*** | ***In*** | ***Out*** | ***Total*** | ***Rate*** | ***In %*** | ***In*** | ***Out*** | ***Total*** |
| **Existing Land Use** | | | | | | | | | | | | | | |
| Commercial/Light Industrial[1] | N/A[1] | *18* Ksq. Ft. GFA | | **175** | | | 17 | 4 | **21** | | | 15 | 11 | **26** |
| ***Existing Vehicle Trips*** | | | | **175** | | | 17 | 4 | **21** | | | 15 | 11 | **26** |
| **Proposed Land Uses** | | | | | | | | | | | | | | |
| Multifamily Housing[2] | 221 | *102* dwelling units | *5.44* | 555 | *0.36* | *26* | 10 | 27 | **37** | *0.44* | *61* | 27 | 18 | **45** |
| *Internal Trip Reduction*[4] | | *15%* | | *-83* | | | *-3* | *-3* | *-6* | | | *-4* | *-3* | *-7* |
| **Subtotal: Residential Trips** | | | | **472** | | | **7** | **24** | **31** | | | **23** | **15** | **38** |
| Coffee Shop[3] | 936 | *1.8030* Ksq. Ft. GFA | *754.55* | 1,360 | *101.14* | *50* | 91 | 91 | **182** | *36.31* | *50* | 33 | 32 | **65** |
| *Pass-By Trip Reduction*[5] | | *30%* | | -408 | | | -28 | -27 | -55 | | | -10 | -10 | -20 |
| *Internal Trip Reduction*[4] | | | | *-83* | | | -3 | -3 | -6 | | | -3 | -4 | -7 |
| **Subtotal: Retail Trips** | | | | **869** | | | 60 | 61 | **121** | | | 20 | 18 | **38** |
| ***Vehicle Trips with Proposed Land Uses*** | | | | **1,341** | | | 67 | 85 | **152** | | | 43 | 33 | **76** |
| **Net Trip Generation** | | | | | | | | | | | | | | |
| Vehicle Trips with Proposed Land Uses | | | | **1,341** | | | 67 | 85 | **152** | | | 43 | 33 | **76** |
| Existing Vehicle Trips | | | | **-175** | | | -17 | -4 | **-21** | | | -15 | -11 | **-26** |
| ***Net Vehicle Trips*** | | | | **1,166** | | | *50* | *81* | **131** | | | *28* | *22* | **50** |

Source - Institute of Transportation Engineers (ITE) *Trip Generation*, 10th Edition, 2017. Notes:

1. Trip generation for the existing land use was determined by peak period driveway counts, provided by Hexagon Transportation Consultants (report dated June 26, 2018). Daily trip generation was estimated by Hexagon by applying the ration of daily to peak-hour trips for General Light Industrial Uses (ITE land use code 110) from the ITE 10th Edition.

2. Land Use Code 221 (Multifamily Housing Mid-Rise) data from ITE *Trip Generation* 10th Edition, 2017.

3. Land Use Code 936 (Coffee/Donut Shop without Drive-Through Window) data from ITE Trip Generation 10th Edition, 2017.

4. Internal Trip Reduction of up to 15% of the lower trip generator (applied to both uses) is allowed by VTA TIA guidelines to reflect internal trips between the housing and on-site retail. 15% is the standard reduction for housing/retail mixed-use projects as specified by the VTA TIA Guidelines.

5. Maximum pass-by trip reduction of 30% is allowed by VTA TIA guidelines. ITE data on pass-by rates for coffee shops indicate actual pass-by rates exceed 70% for coffee shops with drive-through windows (but no available data for coffee shops without drive-through windows). Pass-by rates for other types of local-serving commercial uses include 51% (convenience markets); 49% (fast-food restaurant); 53% (pharmacies); and 36% (supermarkets).

## 4.3 Traffic Impacts

**Table 7** summarizes the intersection LOS analysis results for Existing plus Project Conditions. The results for Existing Conditions are included for comparison purposes, along with the expected change in delay. **Appendix D** contains detailed calculation sheets for Existing plus Project Conditions.

Under Existing plus Project Conditions, all intersections are expected to continue operating within applicable jurisdictional standards LOS D and E or better during both a.m. and p.m. peak hours. Based on the City of Palo Alto and VTA's impact criteria the project is expected to have a **less-than-significant impact** at all the study intersections evaluated in this TIA. **Figure 10** shows projected turning movement volumes at all of the study intersections for Existing plus Project Conditions.

## 4.4 Pedestrian Impacts

The project site is located a 1.1-mile walking distance from the San Antonio Caltrain Station via San Antonio Road, San Antonio Avenue and Central Expressway. Residents of the project may walk or use the ebikes/scooters provided in the courtyard to reach the station. VTA bus route 32 serves the San Antonio Caltrain station and has a stop at the intersection Middlefield Road and San Antonio Road, a 0.3-mile walking distance (6-minute walk) from the project site. Currently, all signalized intersections near the project site have striped crosswalks with pedestrian signal heads across all four approach legs. The intersections provide ADA-compliant curb ramps and pedestrian push buttons (PPBs) at all signalized crossings. Crossings on San Antonio Road provide additional PPBs at the medians in the case a pedestrian needs additional time to make it across.

Site access for pedestrians is currently provided by existing sidewalks on both sides of San Antonio Road and Leghorn Street. The sidewalks are continuous with curb ramps at driveways and intersections, and are five feet in width. The project will provide an accessible path of travel connecting the existing sidewalks on San Antonio Road and Leghorn Street to the project site, as shown on **Figure 2**. Project impacts to current and future pedestrian facilities are anticipated to be ***less-than-significant***.

## 4.5 Bicycle Impacts

The project site borders an existing Class III bicycle route with shared motor vehicle/bicycle travel lanes on San Antonio Road. The project will provide 11 short-term bicycle parking spaces along with access to ebike/scooter rentals and 104 long-term bicycle parking spaces.

The Class III route is included in the City of Palo Alto 2030 Comprehensive Plan (2017) and Bicycle + Pedestrian Transportation Plan (2012) and would remain in its current configuration. The project would not conflict with the existing or planned bicycle facilities; therefore, project impacts to bicycle facilities are anticipated to be ***less-than-significant***.

**Table 7: Intersection Level of Service Analysis – Existing plus Project Conditions**

| ID | Intersection | Control[1] | Peak Hour[2] | Existing Conditions | | | | Existing plus Project Conditions | | | | Change in Critical Delay (s) | Change in V/C ratio | Significant (Y/N?) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] | | | |
| 1 | San Antonio Road/ Leghorn Street | Signal | AM | 0.374 | 15.0 | 15.5 | B | 0.424 | 19.4 | 20.6 | B | 4.4 | .050 | N |
| | | | PM | 0.581 | 19.1 | 19.5 | B | 0.595 | 20.5 | 20.2 | C | 0.7 | .014 | N |
| 2 | Independence Avenue/ Leghorn Street | AWSC | AM | 0.371 | 10.1 | 10.1 | B | 0.393 | 10.5 | 10.5 | B | 0.4 | .022 | N |
| | | | PM | 0.701 | 17.9 | 17.9 | C | 0.723 | 18.6 | 18.6 | C | 0.7 | .022 | N |
| 3 | San Antonio Road/ Charleston Road* | Signal | AM | 0.639 | 42.1 | 45.9 | D | 0.641 | 42.3 | 46.0 | D | 0.1 | .002 | N |
| | | | PM | 0.775 | 35.5 | 43.2 | D | 0.776 | 35.5 | 43.3 | D | 0.1 | .001 | N |
| 4 | San Antonio Road/ Middlefield Road* | Signal | AM | 0.716 | 45.9 | 43.5 | D | 0.734 | 46.7 | 44.9 | D | 1.4 | .018 | N |
| | | | PM | 0.850 | 55.0 | 63.7 | E | 0.851 | 55.3 | 63.8 | E | 0.1 | .001 | N |

**Notes:**

**Bold** indicates an unacceptable Level of Service

* indicates CMP intersections with LOS E threshold

[1]AWSC – All-Way Stop Controlled intersection

[2]AM – morning peak hour, PM – evening peak hour

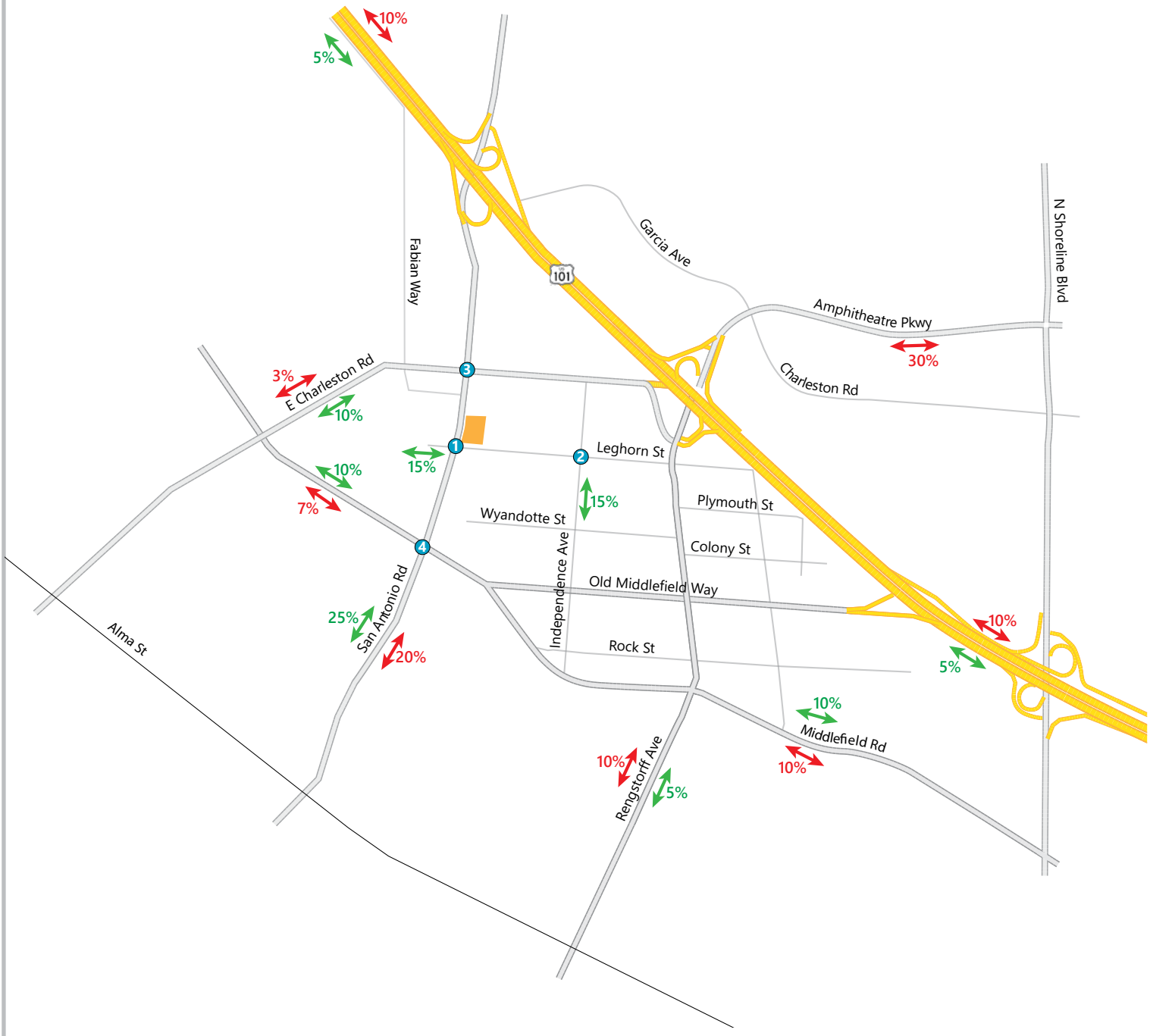
[3]V/C – Critical volume-to-capacity ratio

[4]Delay – Whole intersection weighted average control delay expressed in seconds per vehicle

[5]Critical Delay expressed in seconds per vehicle

[6]LOS – Level of Service

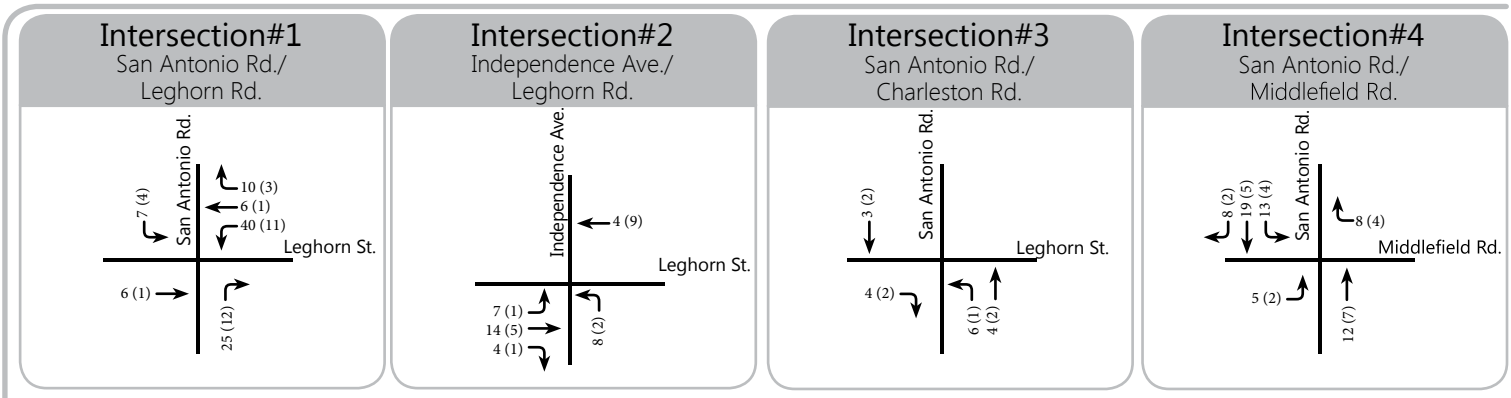
## Figure 8: Trip Distribution




LEGEND

- Project Site
- Study Intersection
- Trip Distribution for Residential Use
- Trip Distribution for Commercial Use

## Figure 9: Trip Assignment

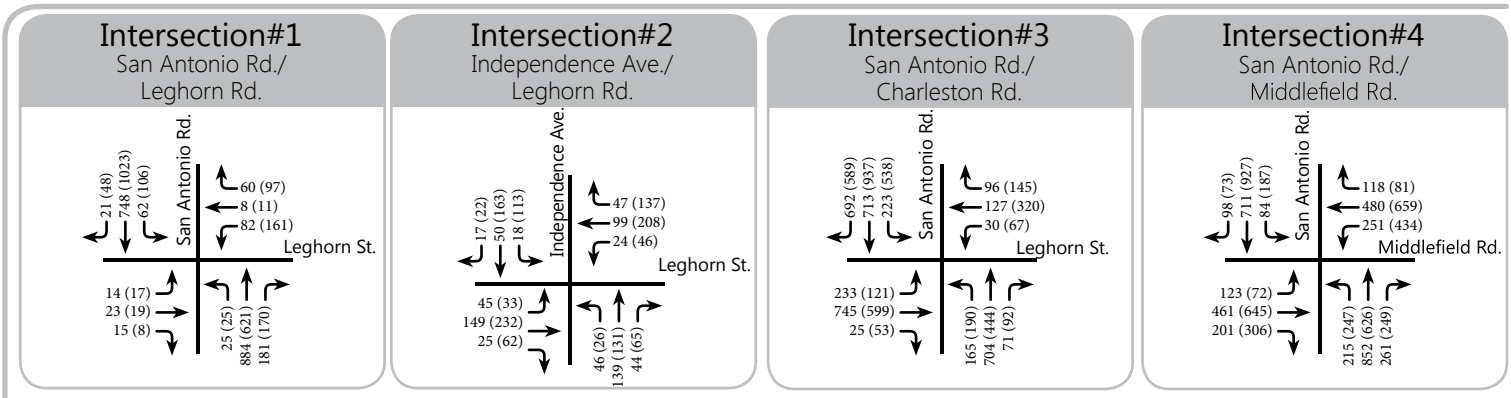




LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Trips
- (XX) PM Peak Hour Project Trips
- Trip Distribution for Residential Use
- Trip Distribution for Commercial Use

## Figure 10: Existing Plus Project Conditions Peak Hour Traffic Volumes





LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Volumes
- (XX) PM Peak Hour Project Volumes

## 4.6 TRANSIT IMPACTS

The proposed project will add trips to the existing transit services, which can be accommodated by the existing transit capacity. The project is not anticipated to create demand for public transit services above the capacity which is provided, or planned.

**Table 3** and **Figure 5** describe existing transit services in the study area. **Table 8** identifies which study intersections are used by each bus line. . VTA routes 21 passes through study intersection #4, Middlefield Road and San Antonio Road. Both intersections operate acceptably during both peak periods, both with and without the proposed project. Therefore the project is not anticipated to result in added significant added delay to transit services. The project is not anticipated to disrupt existing transit services or facilities or impacts to transit stops/shelters; or impacts to transit operations from traffic improvements proposed or resulting from a project. The project is not anticipated to conflict with transit policies adopted by the City of Palo Alto, Santa Clara County, VTA, or Caltrans for their respective facilities in the study area. The project driveway would not impact transit service or transit stops/shelters. The project does not propose traffic improvements that would impact transit. Impacts to transit would be considered ***less-than-significant***.

**Table 8: Transit Routes at Study Intersections**

| VTA Route | From | To | Study Intersections Operated through |
|---|---|---|---|
| 21 | Downtown Mountain View | Stanford Shopping Center | 4 |
| 104 (Express) | Penitencia Creek Station | Stanford Research Park | 3 (EB), 4 (WB) |
| 40 | La Avenida & Inigo | Foothill College | None |

Source: VTA Website

# 5.0 BACKGROUND CONDITIONS

This scenario is based on traffic growth resulting from other developments within the vicinity of the proposed project. The forecast of background volumes was derived from the *744 & 748 San Antonio Road Hotel Development* Traffic Impact Analysis (Hexagon Associates, June 7, 2016). The forecasted Background Volumes (without the proposed project) were found to represent a 14 to 25 percent increase from existing volumes during the a.m. peak hour (varying by study intersection), and a 10 to 38 percent increase from existing volumes during the p.m. peak hour. Background Conditions reflects anticipated increases in traffic volumes resulting from other developments in Palo Alto and Mountain View.

**Figure 11** shows the projected peak hour traffic volumes at all of the study intersections under Background Conditions (without the proposed project).

## 5.1 Intersection Level of Service Analysis – Background Conditions

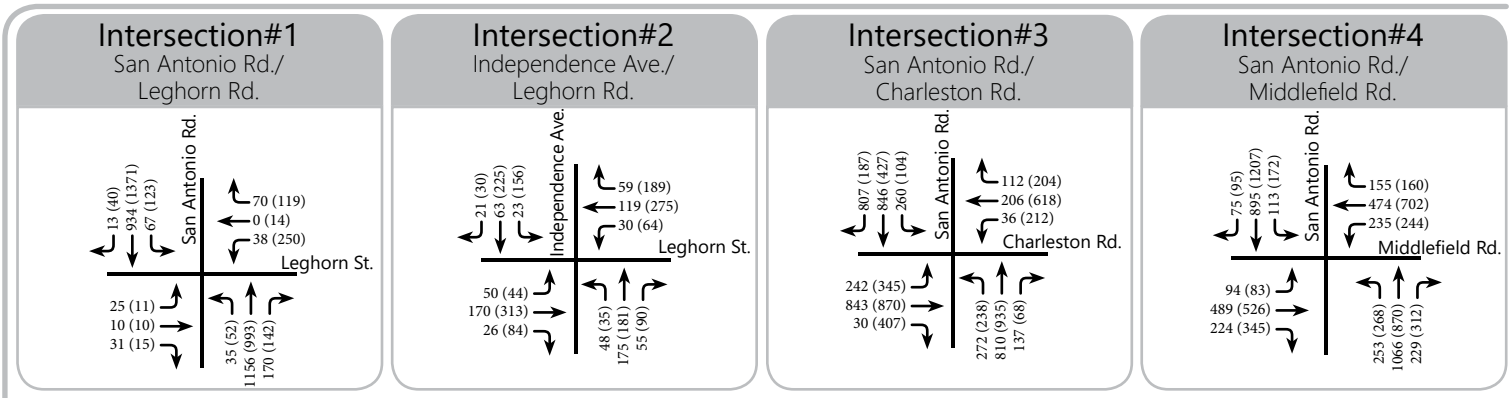
**Table 9** summarizes the intersection LOS analysis results for Background Conditions. **Appendix E** contains detailed intersection LOS calculation sheets for Background Conditions. Under this scenario, all study intersections operate acceptably at LOS D/E or better.

**Table 9: Intersection Level of Service Analysis – Background Conditions**

| ID | Intersections | Control[1] | Peak Hour[2] | Background Conditions (without Project) | | | |
|---|---|---|---|---|---|---|---|
| | | | | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] |
| 1 | San Antonio Road/Leghorn Street | Signal | AM | 0.474 | 14.4 | 15.1 | B |
| | | | PM | 0.833 | 27.2 | 30.4 | C |
| 2 | Independence Avenue/Leghorn Street | AWSC | AM | 0.440 | 11.1 | 11.1 | B |
| | | | PM | 0.776 | 21.5 | 21.5 | C |
| 3 | San Antonio Road/Charleston Road* | Signal | AM | 0.757 | 46.7 | 50.3 | D |
| | | | PM | 0.958 | 51.5 | 57.8 | D |
| 4 | San Antonio Road/Middlefield Road* | Signal | AM | 0.799 | 47.6 | 47.2 | D |
| | | | PM | 0.856 | 51.9 | 59.5 | D |

**Notes:**
**Bold** indicates an unacceptable Level of Service
* indicates CMP intersections with LOS E threshold
[1]AWSC – All-Way Stop Controlled intersection
[2]AM – morning peak hour, PM – evening peak hour
[3]V/C – Critical volume-to-capacity ratio
[4]Delay – Whole intersection weighted average control delay expressed in seconds per vehicle
[5]Critical movement delay expressed in seconds per vehicle
[6]LOS – Level of Service

## Figure 11: Background Conditions Peak Hour Traffic Volumes





LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Volumes
- (XX) PM Peak Hour Project Volumes

# 6.0 BACKGROUND PLUS PROJECT CONDITIONS

This scenario is identical to Background Conditions, but with the addition of projected traffic from the proposed project. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Conditions.

**Figure 12** shows the projected peak hour traffic volumes at all of the study intersections under Background plus Project Conditions.

## 6.1 Intersection Level of Service Analysis – Background plus Project Conditions

**Table 10** summarizes the intersection LOS analysis results for Background plus Project Conditions. The results for Background (without Project) Conditions are included for comparison purposes, along with the projected increases in critical delay and critical V/C ratios. **Appendix F** contains detailed intersection LOS calculation sheets for Background plus Project Conditions. Under this scenario, all study intersections operate within applicable jurisdictional standards. Therefore the project impact is considered ***less than significant*** based on the applicable criteria for unsignalized intersections and therefore no mitigation would be required.

**Table 10: Intersection Level of Service Analysis – Background plus Project Conditions**

| ID | Intersection | Control[1] | Peak Hour[2] | Background Conditions | | | | Background plus Project Conditions | | | | Change in Critical Delay (s) | Change in V/C ratio | Significant (Y/N?) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] | | | |
| 1 | San Antonio Road/ Leghorn Street | Signal | AM | 0.474 | 14.4 | 15.1 | B | 0.508 | 18.3 | 19.6 | B | 3.9 | 0.034 | N |
| | | | PM | 0.833 | 27.2 | 30.4 | C | 0.846 | 28.3 | 32.0 | C | 1.6 | 0.013 | N |
| 2 | Independence Avenue/ Leghorn Street | AWSC | AM | 0.440 | 11.1 | 11.1 | B | 0.465 | 11.6 | 11.6 | B | 0.5 | 0.025 | N |
| | | | PM | 0.776 | 21.5 | 21.5 | C | 0.800 | 22.7 | 22.7 | C | 1.2 | 0.024 | N |
| 3 | San Antonio Road/ Charleston Road* | Signal | AM | 0.757 | 46.7 | 50.3 | D | 0.760 | 46.9 | 50.5 | D | 0.2 | 0.003 | N |
| | | | PM | 0.958 | 51.5 | 57.8 | D | 0.960 | 51.6 | 58.0 | D | 0.5 | 0.002 | N |
| 4 | San Antonio Road/ Middlefield Road* | Signal | AM | 0.799 | 47.6 | 47.2 | D | 0.818 | 48.6 | 48.9 | D | 1.3 | 0.019 | N |
| | | | PM | 0.856 | 51.9 | 59.5 | D | 0.857 | 52.3 | 59.6 | D | 0.1 | 0.001 | N |

**Notes:**

**Bold** indicates an unacceptable Level of Service

* indicates CMP intersections with LOS E threshold

[1]AWSC – All-Way Stop Controlled intersection

[2]AM – morning peak hour, PM – evening peak hour

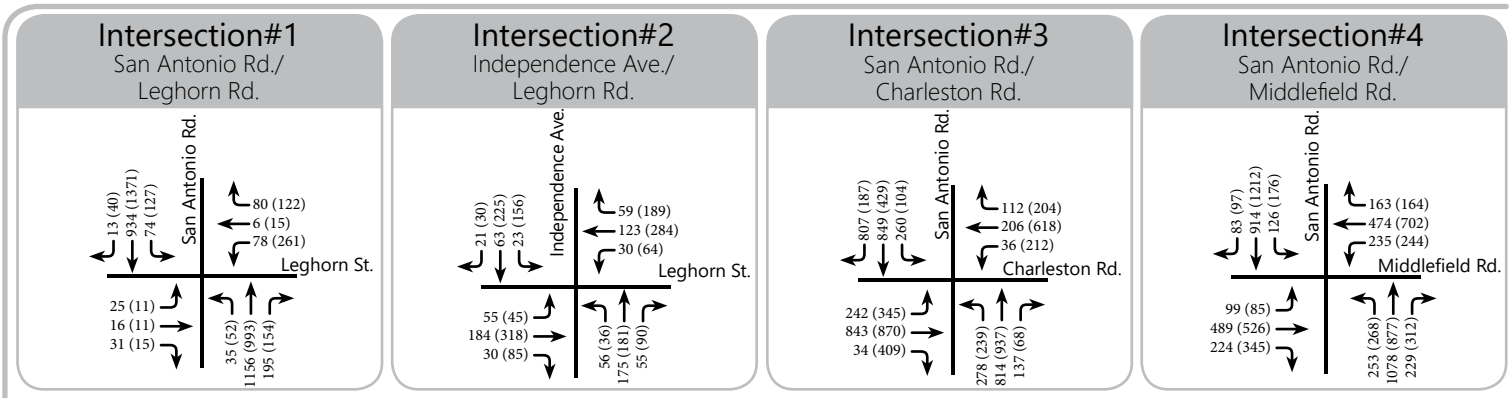
[3]V/C – Critical volume-to-capacity ratio

[4]Delay – Whole intersection weighted average control delay expressed in seconds per vehicle

[5]Critical movement delay expressed in seconds per vehicle

[6]LOS – Level of Service

## Figure 12: Background Plus Project Conditions Peak Hour Traffic Volumes





LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Volumes
- (XX) PM Peak Hour Project Volumes

# 7.0 CUMULATIVE CONDITIONS

Cumulative Conditions reflects anticipated traffic volumes with regional traffic growth as well as other developments in Palo Alto and Mountain View. The forecast of cumulative volumes was derived from the *744 & 748 San Antonio Road Hotel Development* Traffic Impact Analysis (Hexagon Associates, June 7, 2016). The forecasted Cumulative Volumes (without the proposed project) were found to represent an 18 to 30 percent increase from existing volumes during the a.m. peak hour (varying by study intersection), and a 15 to 43 percent increase from existing volumes during the p.m. peak hour.

**Figure 13** shows projected turning movement volumes at all of the study intersections for Cumulative Conditions.

## 7.1 Intersection Level of Service Analysis – Cumulative Conditions

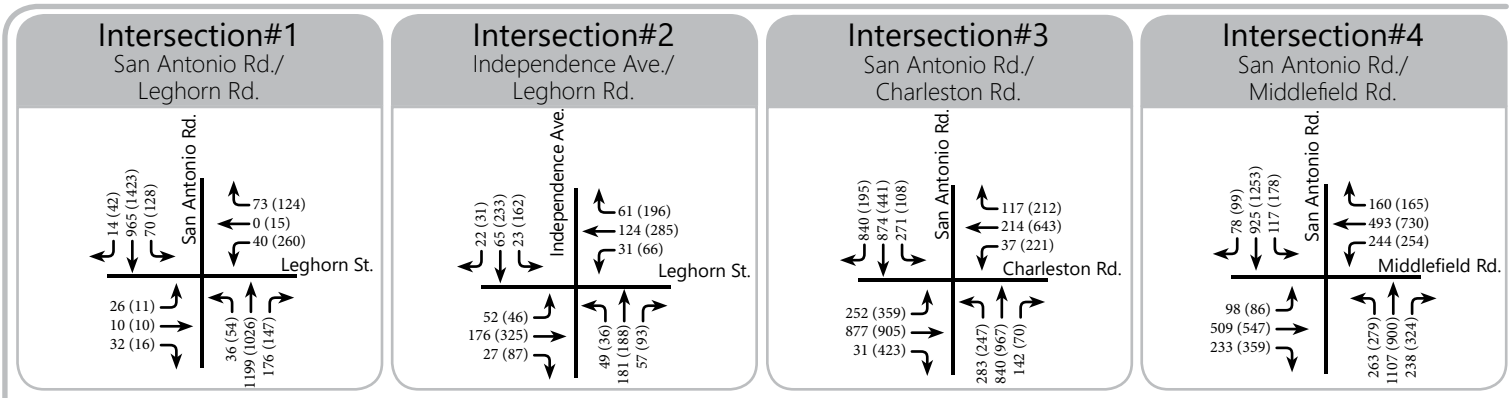
**Table 11** summarizes the intersection LOS analysis results for Cumulative (without Project) Conditions. **Appendix G** contains detailed intersection LOS calculation sheets for Cumulative Conditions. Under this scenario, all study intersections operate acceptably at LOS D/E.

**Table 11: Intersection Level of Service Analysis – Cumulative Conditions**

| ID | Intersections | Control[1] | Peak Hour[2] | Cumulative Conditions | | | |
|---|---|---|---|---|---|---|---|
| | | | | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] |
| 1 | San Antonio Road/Leghorn Street | Signal | AM | 0.493 | 14.6 | 15.4 | B |
| | | | PM | 0.866 | 29.3 | 33.7 | C |
| 2 | Independence Avenue/Leghorn Street | AWSC | AM | 0.464 | 11.4 | 11.4 | B |
| | | | PM | 0.831 | 25.0 | 25.0 | C |
| 3 | San Antonio Road/Charleston Road* | Signal | AM | 0.786 | 47.9 | 52.0 | D |
| | | | PM | 0.995 | 57.2 | 66.6 | E |
| 4 | San Antonio Road/Middlefield Road* | Signal | AM | 0.830 | 49.1 | 49.6 | D |
| | | | PM | 0.889 | 54.3 | 63.5 | D |

**Notes:**
**Bold** indicates an unacceptable Level of Service
* indicates CMP intersections with LOS E threshold
[1]AWSC – All-Way Stop Controlled intersection
[2]AM – morning peak hour, PM – evening peak hour
[3]V/C – Critical volume-to-capacity ratio
[4]Delay – Whole intersection weighted average control delay expressed in seconds per vehicle
[5]Critical movement delay expressed in seconds per vehicle
[6]LOS – Level of Service

## Figure 13: Cumulative Conditions Peak Hour Traffic Volumes





LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Volumes
- (XX) PM Peak Hour Project Volumes

# 8.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is similar to the Cumulative Conditions, with the addition of projected traffic from the proposed project. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Conditions.

**Figure 14** shows projected turning movement volumes at all the study intersections for Cumulative plus Project Conditions.

## 8.1 Intersection Level of Service Analysis – Cumulative plus Project Conditions

**Table 12** summarizes the intersection LOS analysis results for Cumulative plus Project Conditions. The results for Cumulative (without project) Conditions are included for comparison purposes, along with the projected increases in critical delay and critical V/C ratios. **Appendix H** contains detailed intersection LOS calculation sheets for Cumulative plus Project Conditions.

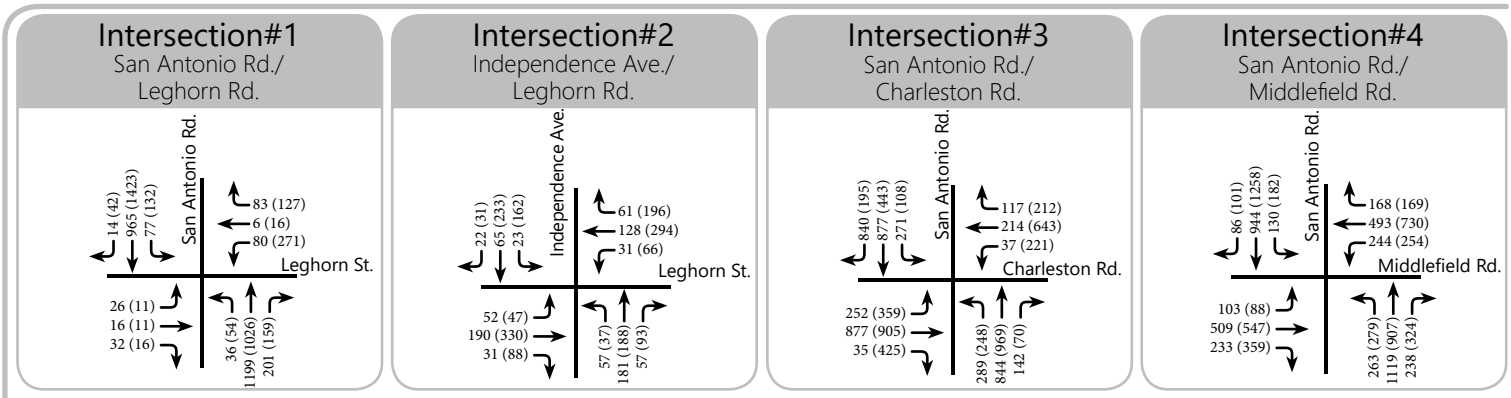
Under this scenario, all study intersections operate within applicable jurisdictional. Therefore project impacts under Cumulative Plus Project conditions are considered ***less than significant*** based on the applicable criteria and therefore no mitigation would be required.

**Table 12: Intersection Level of Service Analysis – Cumulative plus Project Conditions**

| ID | Intersection | Control[1] | Peak Hour[2] | Cumulative Conditions | | | | Cumulative plus Project Conditions | | | | Change in Critical Delay (s) | Change in V/C ratio | Significant (Y/N?) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] | V/C[3] | Delay[4] | Critical Delay[5] | LOS[6] | | | |
| 1 | San Antonio Road/ Leghorn Street | Signal | AM | 0.493 | 14.6 | 15.4 | B | 0.544 | 18.2 | 20.2 | B | 4.8 | 0.051 | N |
| | | | PM | 0.866 | 29.3 | 33.7 | C | 0.879 | 30.8 | 35.8 | C | 2.3 | 0.013 | N |
| 2 | Independence Avenue/ Leghorn Street | AWSC | AM | 0.464 | 11.4 | 11.4 | B | 0.488 | 12.0 | 12.0 | B | 0.6 | 0.024 | N |
| | | | PM | 0.831 | 25.0 | 25.0 | C | 0.855 | 26.6 | 26.6 | D | 1.6 | 0.024 | N |
| 3 | San Antonio Road/ Charleston Road* | Signal | AM | 0.786 | 47.9 | 52.0 | D | 0.789 | 48.1 | 52.1 | D | 0.1 | 0.003 | N |
| | | | PM | 0.995 | 57.2 | 66.6 | E | 0.996 | 57.4 | 67.0 | E | 0.4 | 0.001 | N |
| 4 | San Antonio Road/ Middlefield Road* | Signal | AM | 0.830 | 49.1 | 49.6 | D | 0.849 | 50.2 | 51.5 | D | 1.9 | 0.019 | N |
| | | | PM | 0.889 | 54.3 | 63.5 | D | 0.891 | 54.7 | 63.6 | D | 0.1 | 0.002 | N |

**Notes:**
**Bold** indicates an unacceptable Level of Service. * indicates CMP intersections with LOS E threshold
[1]AWSC – All-Way Stop Controlled intersection
[2]AM – morning peak hour, PM – evening peak hour
[3]V/C – Critical volume-to-capacity ratio
[4]Delay – Whole intersection weighted average control delay expressed in seconds per vehicle
[5]Critical movement delay expressed in seconds per vehicle
[6]LOS – Level of Service

## Figure 14: Cumulative Plus Project Conditions Peak Hour Traffic Volumes





LEGEND

- Project Site
- X Study Intersection
- XX AM Peak Hour Project Volumes
- (XX) PM Peak Hour Project Volumes

# 9.0 SITE PLAN REVIEW & VEHICLE MILES TRAVELED

## 9.1 Site Access and On-Site Circulation

This section analyzes site access for vehicles, pedestrians, and bicycles, based on the site plan.

The project proposes a continuous sidewalk with landscaping and curb ramps along the project frontage to provide pedestrian access to the project site. Four pedestrian pathways are proposed to lead to and from the project entrance, of which two will provide stairs and two will be accessible ramps. Bicyclists access the project site via a network of existing bicycle facilities on San Antonio Road and surrounding streets. The residential trash enclosure is located in the northeast corner of the parking garage and will be accessible from the garbage pick-up and loading area on Leghorn Street. An additional trash enclosure for the retail portion of the project would located in the southwest corner of the first floor, and would also be accessible by garbage trucks via the garbage pick-up area on Leghorn Street.

The project proposes to provide direct site access via one, bi-directional driveway on Leghorn Street. The driveway on Leghorn Street would lead into an underground garage facility with 99 automobile parking spaces. The drive aisles in the parking garage range from 25 to 35.2 feet wide and provide sufficient space for two-way circulation. The project proposes to provide a five foot, striped pedestrian pathway through the center-aisle surface parking spaces and leading to the elevator and stairway for access to the project site. Emergency vehicles have ample space to access to the project site frontage along San Antonia Road and Leghorn Street.

Multi-modal access to the site is anticipated to be **adequate**. Pedestrian access to the proposed retail use could be enhanced by providing a corner bulb-out to reduce pedestrian crossing distances across San Antonio Road at the northeast corner of San Antonio Road and Leghorn Street.

## 9. 2 Motor Vehicle Parking

This section discusses vehicle parking for the proposed project and includes an assessment of whether the proposed parking supply is adequate based on the proposed project size and zoning regulations. The project proposes to provide 126 off-street automobile parking spaces, including five spaces that will be ADA accessible (three standard accessible, two van-accessible). 106 paces will be provided for the residential units and 20 spaces will reserved for the retail land use.

The existing short-term on-street parking along the project frontage on San Antonio Road will remain, and will be accessible to retail users and short-term guest parking, and will accommodate eight vehicles.

Based on rates defined in the City of Palo Alto Municipal Code (Code), Section 18.52.040 Off-Street Parking, Loading and Bicycle Facility Requirements, the residential portion of the project would typically require 109 automobile parking spaces to satisfy City standards without reductions unless a reduction is granted. The City Code allows a parking reduction of up to 20% of total spaces required for housing developments near transit facilities and with approval of a TDM program. With this reduction, the residential portion of the proposed project requires 87 automobile parking spaces, including four accessible parking spaces, to meet City requirements. At least one of the accessible parking spaces must

be van-accessible. The retail portion of the project site requires one parking space per 350 s.f. of gross floor area. Assuming all 1,803 s.f. of the proposed retail space is gross floor area, an additional six off-street, retail parking spaces are required to meet City standards. The proposed provision of 126 spaces (106 spaces for the residential units and 20 spaces for the retail use) would exceed the code requirement).

## 9.3 Bicycle Parking

Two bicycle rooms in the first floor lobby will provide 104 long term bicycle parking spaces. Additionally, 11 at-grade bicycle parking spaces will provide short-term bicycle parking and an ebike/scooter corral in the development courtyard will provide residents with access to active transportation options. City Code requires the project provide one long-term bicycle space per residential unit for a total of 102 required, long-term bicycle parking spaces. The bicycle parking must be in the form of bicycle lockers, restricted-access bicycle enclosures, multifamily dwelling unit storage lockers or school bicycle enclosures. The proposed provision of bicycle parking is consistent with city requirements.

## 9.3 Vehicle Miles Traveled

"Vehicle miles traveled" refers to the amount and distance of automobile travel "attributable to a project". VMT re-routed from other origins or destinations as the result of a project would not be attributable to a project except to the extent that the re-routing results in a net increase in VMT. The proposed project is not anticipated to result in significant VMT impacts because:

- The proposed project will provide housing in a segment of the Bay Area that has a surplus of jobs relative to the supply of housing. The large supply of jobs in Palo Alto, Mountain View and other neighboring cities results in relatively long commute lengths for many employees, particularly those commuting from homes in the East Bay and San Francisco. By contrast: the provision of housing in Palo Alto will help to reduce net VMT at a regional level, by providing homes closer to job locations.
- The commercial portion of the development will consist of relatively small-scale ground-floor retail space that will most serve local customers as well as pass-by trips on San Antonio Road. Pass-by trips would not generate additional VMT, while local customers will have relatively short trip lengths. The provision of small-scale neighborhood serving retail, particularly as part of a mixed-use development, is not anticipated to result in significant net VMT.

VMT standards for the City of Palo Alto were adopted in a Resolution by the Palo Alto City Council on June 15, 2020. Projects may be screened from requiring a VMT analysis based on location, or other characteristics anticipated to result in low rates of VMT.

- Local-serving retail projects of 10,000 square feet or less would be unlikely to result in significant VMT impacts based on the City's screening criteria. The proposed project would provide 1,803-square foot ground-floor retail space. Therefore, VMT impacts attributable to the retail portion of the project are anticipated to be less than significant.
- The residential portion of the proposed project was determined to not meet the eligibility for screening as defined by the City of Palo Alto. Therefore, an assessment of VMT impacts associated

with the residential portion of the project was conducted to identify potentially significant impacts based on the City's VMT thresholds of significance.

Based on the adopted City of Palo Alto VMT thresholds, where a proposed project replaces VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project impact may be considered less than significant. However, if the redevelopment project leads to a net overall increase in VMT, the project impact may be considered less than significant only if the proposed new land uses would individually fall below their respective thresholds. .

The existing commercial and light industrial land uses on the site would be replaced by the proposed project, which would provide 102 multi-residential units anticipated to be occupied by approximately 235 residents and a small ground-floor retail space. Although the ground-floor retail space has been considered to cause less than significant impacts, the residential portion would generate a greater number of daily trips then the existing. Therefore the residential portion of the proposed project would not replace existing VMT-generating land uses and is not anticipated to result in a net overall decrease in VMT. Based on the anticipated rate of home-based VMT generated by the project (11 miles per resident, as described further below): the 235 new residents would thus generate up to 2,600 daily home-based miles. Taking into account the likely reduction in commute distances to work for new residents that would otherwise have commuted from other parts of the region: the net increase in home-based VMT is estimated to be approximately 2,000 daily home-based miles.

Since the residential portion of the proposed project leads to a net overall increase in VMT, City of Palo Alto standards specify that the project impact would be considered potentially significant if the proposed residential development exceeds the VMT threshold for residential land uses. VMT impacts attributable to residential projects would be considered significant if a project exceeds a level of 15% below existing (baseline) County home-based VMT per resident. Therefore, VMT impacts from residential portion of the proposed project would be considered significant if daily home-based VMT per Resident exceeds 11.33 miles per resident (equivalent to 85 percent of the County home-based VMT average of 13.33 miles per resident).

Daily home-based VMT per resident for the proposed residential development is anticipated to be similar to existing residential areas bordering San Antonio Road. The existing rates of VMT per resident for residential developments bordering San Antonio Road were estimated based on the VTA VMT Estimation Tool provided by VTA for use in this analysis. Outputs from the tool are shown in **Appendix I**. The project site is located within traffic analysis zone (TAZ) 456 that is primarily developed with industrial, some commercial , and a small amount of residential land uses near Rengstorff Avenue. There are no residences along San Antonio Road within TAZ 456. Therefore, to provide a more accurate estimate of residential VMT per resident along San Antonio Road that would be applicable to the proposed project, the average VMT of zones with residences near San Antonio Road was calculated, as described below.

Based on a review of VMT per resident data for zones (TAZ) bordering San Antonio Road as shown on **Table 13**: the average daily home-based VMT per resident bordering San Antonio Road is 11.19 per miles per resident, below the threshold of significance. TAZ 456 has no residences along San Antonio Road. Instead, residences are only located near Rengstorff Avenue. Therefore, the average daily home-based VMT per resident within TAZ 456 is only applicable to residential land uses near Rengstorff Avenue, but is

not reasonably relevant for predicting VMT attributable to the project. Proposed project's VMT is anticipated to be most similar to the west side of San Antonio Road (TAZ 482) which has existing multi-family dwellings directly across from the project site at Leghorn Avenue and an average home-based VMT per resident of 11.02 miles per resident, also below the threshold of significance. As such,, the proposed project is anticipated to generate VMT at a rate below the City's threshold of significance for residential projects. Therefore, VMT impacts attributable to the residential portion of the project are anticipated to be less than significant.

**Table 13: Average Home-Based VMT per Resident Bordering San Antonio Road**

| TAZ[1] | Location | Home-Based VMT per Resident |
|---|---|---|
| 524 | North of Charleston Ave (west side of San Antonio Rd) | 11.93 |
| 477 | North of Charleston Ave (east side of San Antonio Rd) | N/A[2] |
| 482 | South of Charleston Ave & north of Middlefield Rd (west side of San Antonio Rd) | 11.01 |
| 456 | South of Charleston Ave & north of Middlefield Rd (east side of San Antonio Rd) | 14.01[3] |
| 529 | South of Middlefield Rd & north of Caltrain (west side of San Antonio Rd) | 8.27 |
| 409 | South of Middlefield Rd & north of Caltrain (east side of San Antonio Rd) | 10.72 |
| **Average for zones bordering San Antonio Road:** | | **11.19** |

Source: VMT Estimation Tool (provided by City of Palo Alto to TJKM). Notes:

[1]TAZ – Traffic Analysis Zone

[2]No residences are located on the east side of San Antonio Rd (north of Charleston Ave)

[3]No residences are located on the east side of San Antonio Road (south of Charleston Avenue & north of Middlefield). The average for TAZ 456 is based on residences near Rengstorff Avenue. VMT attributable to the project is anticipated to be most similar to TAZ 482 on the west side of San Antonio Road.

# Appendix A – Level of Service Methodology

# LEVEL OF SERVICE METHODOLOGY

# LEVEL OF SERVICE

The description and procedures for calculating capacity and level of service are found in Transportation Research Board, *Highway Capacity Manual 2000*. *Highway Capacity Manual 2000* represents the latest research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst. Each level of service represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish service levels.

A general description of service levels for various types of facilities is shown in Table A-I.

**Table A-I**

**Level of Service Description**

| **Facility Type** | **Uninterrupted Flow** | **Interrupted Flow** |
|---|---|---|
| | Freeways<br>Multi-lane Highways<br>Two-lane Highways<br>Urban Streets | Signalized Intersections<br>Unsignalized Intersections<br>Two-way Stop Control<br>All-way Stop Control |
| **LOS** | | |
| A | Free-flow | Very low delay. |
| B | Stable flow. Presence of other users noticeable. | Low delay. |
| C | Stable flow. Comfort and convenience starts to decline. | Acceptable delay. |
| D | High density stable flow. | Tolerable delay. |
| E | Unstable flow. | Limit of acceptable delay. |
| F | Forced or breakdown flow. | Unacceptable delay |

Source: *Highway Capacity Manual 2000*

**Urban Streets**

The term "urban streets" refers to urban arterials and collectors, including those in downtown areas.

Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials.

Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals.

Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control. As a result, these factors also affect quality of service.

The street environment includes the geometric characteristics of the facility, the character of roadside activity and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway density, spacing between signalized intersections, existence of parking, level of pedestrian activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses, and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic control (including signals and signs) forces a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds, however, such controls are needed to establish right-of-way.

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service. The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections.

Level-of-service A describes primarily free-flow operations. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal.

Level-of-service B describes reasonably unimpeded operations. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant.

Level-of-service C describes stable operations, however, ability to maneuver and change lanes in midblock location may be more restricted than at level-of-service B. Longer queues, adverse signal coordination, or both may contribute to lower travel speeds.

Level-of-service D borders on a range in which in which small increases in flow may cause substantial increases in delay and decreases in travel speed. Level-of-service D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors.

Level-of-service E is characterized by significant delays and lower travel speeds. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level-of-service F is characterized by urban street flow at extremely low speeds. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing.

The methodology to determine level of service stratifies urban streets into four classifications. The classifications are complex, and are related to functional and design categories. Table A-II describes the functional and design categories, while Table A-III relates these to the urban street classification.

Once classified, the urban street is divided into segments for analysis. An urban street segment is a one-way section of street encompassing a series of blocks or links terminating at a signalized intersection. Adjacent segments of urban streets may be combined to form larger street sections, provided that the segments have similar demand flows and characteristics.

Levels of service are related to the average travel speed of vehicles along the urban street segment or section.

Travel times for existing conditions are obtained by field measurements. The maximum-car technique is used. The vehicle is driven at the posted speed limit unless impeded by actual traffic conditions. In the maximum-car technique, a safe level of vehicular operation is maintained by observing proper following distances and by changing speeds at reasonable rates of acceleration and deceleration. The maximum-car technique provides the best base for measuring traffic performance.

An observer records the travel time and locations and duration of delay. The beginning and ending points are the centers of intersections. Delays include times waiting in queues at signalized intersections. The travel speed is determined by dividing the length of the segment by the travel time. Once the travel speed on the arterial is determined, the level of service is found by comparing the speed to the criteria in Table A-IV. Level-of-service criteria vary for the different classifications of urban street, reflecting differences in driver expectations.

**Table A-II**

**Functional and Design Categories for Urban Streets**

| Criterion | Functional Category | |
|---|---|---|
| | **Principal Arterial** | **Minor Arterial** |
| Mobility function | Very important | Important |
| Access function | Very minor | Substantial |
| Points connected | Freeways, important activity centers, major traffic generators | Principal arterials |
| Predominant trips served | Relatively long trips between major points and through trips entering, leaving, and passing through city | Trips of moderate length within relatively small geographical areas |

| Criterion | Design Category | | | |
|---|---|---|---|---|
| | **High-Speed** | **Suburban** | **Intermediate** | **Urban** |
| Driveway access density | Very low density | Low density | Moderate density | High density |
| Arterial type | Multilane divided; undivided or two-lane with shoulders | Multilane divided: undivided or two-lane with shoulders | Multilane divided or undivided; one way, two lane | Undivided one way; two way, two or more lanes |
| Parking | No | No | Some | Usually |
| Separate left-turn lanes | Yes | Yes | Usually | Some |
| Signals per mile | 0.5 to 2 | 1 to 5 | 4 to 10 | 6 to 12 |
| Speed limits | 45 to 55 mph | 40 to 45 mph | 30 to 40 mph | 25 to 35 mph |
| Pedestrian activity | Very little | Little | Some | Usually |
| Roadside development | Low density | Low to medium density | Medium to moderate density | High density |

Source: *Highway Capacity Manual 2000*

**Table A-III**

**Urban Street Class based on Function and Design Categories**

| Design Category | Functional Category | |
|---|---|---|
| | **Principal Arterial** | **Minor Arterial** |
| High-Speed | I | Not applicable |
| Suburban | II | II |
| Intermediate | II | III or IV |
| Urban | III or IV | IV |

Source: *Highway Capacity Manual 2000*

**Table A-IV**

**Urban Street Levels of Service by Class**

| Urban Street Class | I | II | III | IV |
|---|---|---|---|---|
| Range of Free Flow Speeds (mph) | 45 to 55 | 35 to 45 | 30 to 35 | 25 to 35 |
| Typical Free Flow Speed (mph) | 50 | 40 | 33 | 30 |
| **Level of Service** | **Average Travel Speed (mph)** | | | |
| A | >42 | >35 | >30 | >25 |
| B | >34 | >28 | >24 | >19 |
| C | >27 | >22 | >18 | >13 |
| D | >21 | >17 | >14 | >9 |
| E | >16 | >13 | >10 | >7 |
| F | ≤16 | ≤13 | ≤10 | ≤7 |

Source: *Highway Capacity Manual 2000*

**Interrupted Flow**

One of the more important elements limiting, and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop and yield signs. These all operate quite differently and have differing impacts on overall flow.

**Signalized Intersections**

The capacity of a highway is related primarily to the geometric characteristics of the facility, as well as to the composition of the traffic stream on the facility. Geometrics are a fixed, or non-varying, characteristic of a facility.

At the signalized intersection, an additional element is introduced into the concept of capacity: time allocation. A traffic signal essentially allocates time among conflicting traffic movements seeking use of the same physical space. The way in which time is allocated has a significant impact on the operation of the intersection and on the capacity of the intersection and its approaches.

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, 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, *i. e.,* in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, level of service criteria for traffic signals are stated in terms of average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the ratio of green time to cycle length and the volume to capacity ratio for the lane group.

For each intersection analyzed the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A level of service designation is given to the control delay to better describe the level of operation. A

description of levels of service for signalized intersections can be found in Table A-V.

**Table A-V**

**Description of Level of Service for Signalized Intersections**

| Level of Service | Description |
|---|---|
| A | Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values. |
| B | Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay. |
| C | Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase doe not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping. |
| D | Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestions becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. |
| E | Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent. |
| F | Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay. |

Source: *Highway Capacity Manual 2000*

The use of control delay, which may also be referred to as signal delay, was introduced in the 1997 update to the *Highway Capacity Manual*, and represents a departure from previous updates. In the third edition, published in 1985 and the 1994 update to the third edition, delay only included stopped delay. Thus, the level of service criteria listed in Table A-V differs from earlier criteria.

**Unsignalized Intersections**

The current procedures on unsignalized intersections were first introduced in the 1997 update to the *Highway Capacity Manual* and represent a revision of the methodology published in the 1994 update to the 1985 *Highway Capacity Manual*. The revised procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, 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, *i. e.,* in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

**Two-Way Stop Controlled Intersections**

Two-way stop controlled intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At two-way stop-controlled intersections the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A level of service designation is given to the expected control delay for each minor movement. Level of service is not defined for the intersection as a whole. Control delay is the increased time of travel for a vehicle approaching and passing through a stop-controlled intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection. A description of levels of service for two-way stop-controlled intersections is found in Table A-VI.

**Table A-VI**

**Description of Level of Service for Two-Way Stop Controlled Intersections**

| Level of Service | Description |
|---|---|
| A | Very low control delay less than 10 seconds per vehicle for each movement subject to delay. |
| B | Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay. |
| C | Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay. |
| D | Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay. |
| E | Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay. |
| F | Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay. |

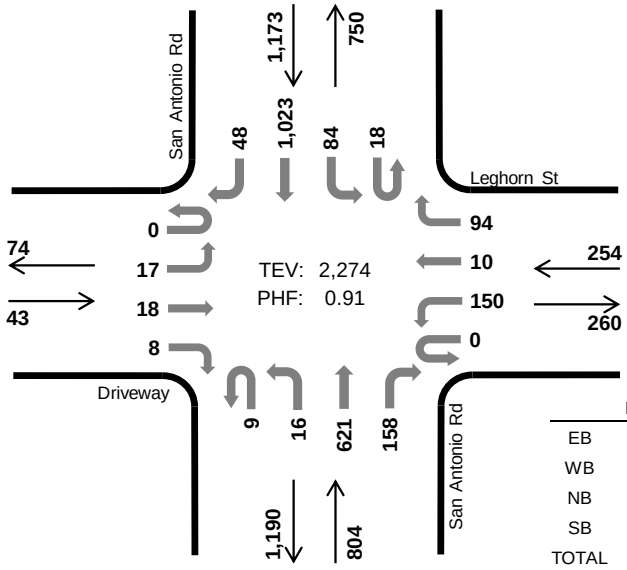
Source: *Highway Capacity Manual 2000*

# Appendix B – Existing Traffic Counts

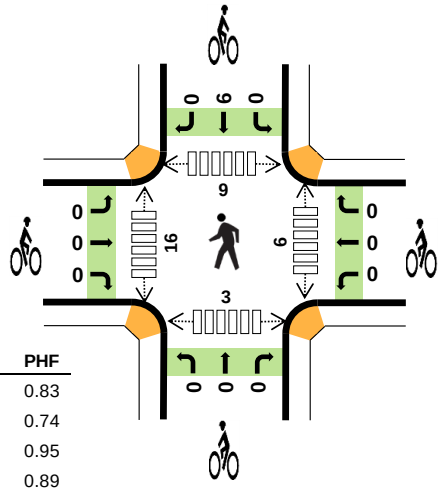
# San Antonio Rd
# Leghorn St

**Date: 10-17-2019**
**Count Period: 4:00 PM to 6:00 PM**
**Peak Hour: 4:45 PM to 5:45 PM**

Peak Hour




| | HV %: | PHF |
|---|---|---|
| EB | 0.0% | 0.83 |
| WB | 0.4% | 0.74 |
| NB | 2.0% | 0.95 |
| SB | 1.6% | 0.89 |
| TOTAL | 1.6% | 0.91 |




## Two-Hour Count Summaries

| Interval Start | | Driveway Eastbound | | | | Leghorn St Westbound | | | | San Antonio Rd Northbound | | | | San Antonio Rd Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | | 0 | 3 | 4 | 1 | 0 | 37 | 1 | 26 | 4 | 2 | 192 | 50 | 8 | 9 | 259 | 11 | 607 | 0 |
| 4:15 PM | | 0 | 1 | 5 | 2 | 0 | 35 | 3 | 15 | 0 | 5 | 162 | 48 | 2 | 28 | 240 | 7 | 553 | 0 |
| 4:30 PM | | 0 | 5 | 3 | 2 | 0 | 34 | 5 | 23 | 7 | 5 | 140 | 40 | 5 | 24 | 228 | 10 | 531 | 0 |
| **4:45 PM** | | **0** | **2** | **7** | **3** | **0** | **38** | **2** | **11** | **3** | **3** | **136** | **41** | **6** | **14** | **233** | **9** | **508** | 2,199 |
| **5:00 PM** | | **0** | **4** | **4** | **1** | **0** | **42** | **2** | **42** | **2** | **3** | **150** | **47** | **3** | **22** | **291** | **15** | **628** | 2,220 |
| **5:15 PM** | | **0** | **4** | **3** | **2** | **0** | **26** | **4** | **22** | **1** | **6** | **161** | **40** | **4** | **25** | **254** | **11** | **563** | 2,230 |
| **5:30 PM** | | **0** | **7** | **4** | **2** | **0** | **44** | **2** | **19** | **3** | **4** | **174** | **30** | **5** | **23** | **245** | **13** | **575** | **2,274** |
| 5:45 PM | | 0 | 1 | 6 | 3 | 0 | 36 | 2 | 24 | 0 | 5 | 129 | 28 | 4 | 14 | 229 | 12 | 493 | 2,259 |
| Count Total | | 0 | 27 | 36 | 16 | 0 | 292 | 21 | 182 | 20 | 33 | 1,244 | 324 | 37 | 159 | 1,979 | 88 | 4,458 | 0 |
| **Peak Hour** | **All** | **0** | **17** | **18** | **8** | **0** | **150** | **10** | **94** | **9** | **16** | **621** | **158** | **18** | **84** | **1,023** | **48** | **2,274** | **0** |
| | **HV** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **15** | **1** | **0** | **1** | **18** | **0** | **36** | **0** |
| | **HV%** | **-** | **0%** | **0%** | **0%** | **-** | **0%** | **0%** | **1%** | **0%** | **0%** | **2%** | **1%** | **0%** | **1%** | **2%** | **0%** | **2%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:00 PM | 0 | 1 | 12 | 5 | *18* | 0 | 0 | 0 | 0 | *0* | 1 | 5 | 2 | 1 | *9* |
| 4:15 PM | 0 | 0 | 7 | 4 | *11* | 0 | 0 | 0 | 1 | *1* | 1 | 0 | 2 | 1 | *4* |
| 4:30 PM | 0 | 0 | 4 | 4 | *8* | 0 | 0 | 0 | 1 | *1* | 0 | 1 | 0 | 0 | *1* |
| **4:45 PM** | **0** | **1** | **4** | **7** | ***12*** | **0** | **0** | **0** | **1** | ***1*** | **3** | **5** | **2** | **1** | *11* |
| **5:00 PM** | **0** | **0** | **4** | **6** | ***10*** | **0** | **0** | **0** | **3** | ***3*** | **2** | **5** | **3** | **1** | *11* |
| **5:15 PM** | **0** | **0** | **3** | **4** | ***7*** | **0** | **0** | **0** | **1** | ***1*** | **0** | **4** | **2** | **0** | *6* |
| **5:30 PM** | **0** | **0** | **5** | **2** | ***7*** | **0** | **0** | **0** | **1** | ***1*** | **1** | **2** | **2** | **1** | ***6*** |
| 5:45 PM | 0 | 0 | 3 | 1 | *4* | 0 | 0 | 1 | 1 | *2* | 0 | 0 | 1 | 1 | *2* |
| Count Total | 0 | 2 | 42 | 33 | *77* | 0 | 0 | 1 | 9 | *10* | 8 | 22 | 14 | 6 | *50* |
| **Peak Hour** | **0** | **1** | **16** | **19** | ***36*** | **0** | **0** | **0** | **6** | ***6*** | **6** | **16** | **9** | **3** | ***34*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Driveway | | | | Leghorn St | | | | San Antonio Rd | | | | San Antonio Rd | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 10 | 2 | 0 | 0 | 5 | 0 | 18 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 4 | 0 | 11 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 3 | 0 | 8 | 0 |
| **4:45 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **4** | **0** | **0** | **0** | **7** | **0** | **12** | 49 |
| **5:00 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **4** | **0** | **0** | **0** | **6** | **0** | **10** | 41 |
| **5:15 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **1** | **3** | **0** | **7** | 37 |
| **5:30 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **4** | **1** | **0** | **0** | **2** | **0** | **7** | **36** |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 4 | 28 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 39 | 3 | 0 | 2 | 31 | 0 | 77 | 0 |
| **Peak Hour** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **15** | **1** | **0** | **1** | **18** | **0** | **36** | **0** |

## Two-Hour Count Summaries - Bikes

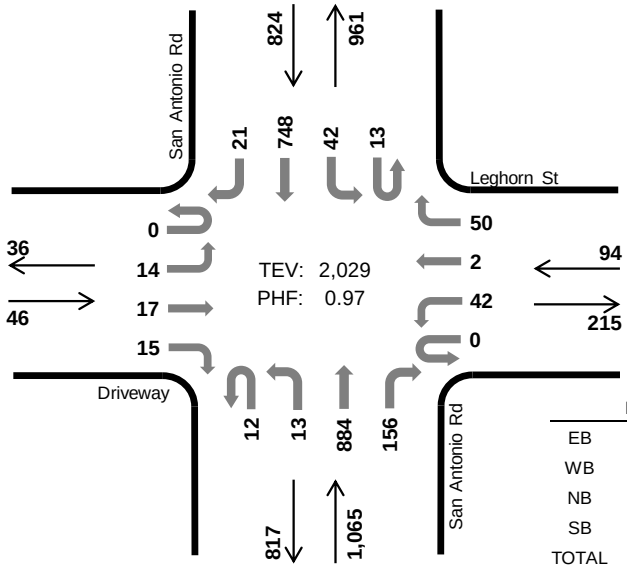
| Interval Start | Driveway | | | Leghorn St | | | San Antonio Rd | | | San Antonio Rd | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| **4:45 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | 3 |
| **5:00 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **3** | 6 |
| **5:15 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | 6 |
| **5:30 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | **6** |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 7 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 10 | 0 |
| **Peak Hour** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6** | **0** | **6** | **0** |

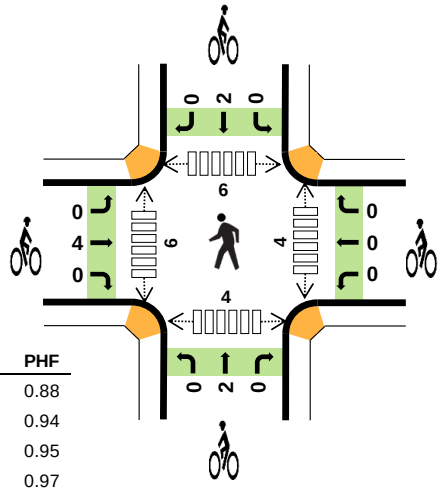
*Note: U-Turn volumes for bikes are included in Left-Turn, if any.*

# San Antonio Rd
# Leghorn St

**Date: 10-17-2019**
**Count Period: 7:00 AM to 9:00 AM**
**Peak Hour: 8:00 AM to 9:00 AM**

Peak Hour




| | HV %: | PHF |
|---|---|---|
| EB | 0.0% | 0.88 |
| WB | 8.5% | 0.94 |
| NB | 3.0% | 0.95 |
| SB | 4.7% | 0.97 |
| TOTAL | 3.9% | 0.97 |

## Two-Hour Count Summaries

| Interval Start | | Driveway Eastbound | | | | Leghorn St Westbound | | | | San Antonio Rd Northbound | | | | San Antonio Rd Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | | 0 | 3 | 1 | 2 | 0 | 8 | 0 | 14 | 1 | 1 | 97 | 15 | 1 | 9 | 137 | 0 | 289 | 0 |
| 7:15 AM | | 0 | 5 | 0 | 2 | 0 | 11 | 0 | 6 | 0 | 1 | 152 | 22 | 0 | 8 | 145 | 1 | 353 | 0 |
| 7:30 AM | | 0 | 4 | 5 | 5 | 0 | 20 | 0 | 10 | 3 | 0 | 182 | 14 | 3 | 11 | 174 | 1 | 432 | 0 |
| 7:45 AM | | 0 | 6 | 3 | 8 | 0 | 10 | 0 | 4 | 3 | 0 | 206 | 17 | 1 | 3 | 180 | 0 | 441 | 1,515 |
| **8:00 AM** | | **0** | **4** | **3** | **5** | **0** | **9** | **0** | **16** | **7** | **2** | **227** | **28** | **4** | **14** | **180** | **5** | **504** | 1,730 |
| **8:15 AM** | | **0** | **1** | **3** | **5** | **0** | **9** | **0** | **15** | **4** | **2** | **236** | **33** | **4** | **9** | **195** | **4** | **520** | 1,897 |
| **8:30 AM** | | **0** | **3** | **5** | **5** | **0** | **11** | **0** | **10** | **1** | **5** | **189** | **50** | **2** | **7** | **187** | **5** | **480** | 1,945 |
| **8:45 AM** | | **0** | **6** | **6** | **0** | **0** | **13** | **2** | **9** | **0** | **4** | **232** | **45** | **3** | **12** | **186** | **7** | **525** | **2,029** |
| Count Total | | 0 | 32 | 26 | 32 | 0 | 91 | 2 | 84 | 19 | 15 | 1,521 | 224 | 18 | 73 | 1,384 | 23 | 3,544 | 0 |
| **Peak Hour** | **All** | **0** | **14** | **17** | **15** | **0** | **42** | **2** | **50** | **12** | **13** | **884** | **156** | **13** | **42** | **748** | **21** | **2,029** | **0** |
| | **HV** | **0** | **0** | **0** | **0** | **0** | **6** | **0** | **2** | **0** | **1** | **30** | **1** | **0** | **2** | **37** | **0** | **79** | **0** |
| | **HV%** | **-** | **0%** | **0%** | **0%** | **-** | **14%** | **0%** | **4%** | **0%** | **8%** | **3%** | **1%** | **0%** | **5%** | **5%** | **0%** | **4%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 7:00 AM | 0 | 3 | 4 | 14 | *21* | 0 | 0 | 2 | 0 | *2* | 1 | 1 | 0 | 1 | *3* |
| 7:15 AM | 0 | 3 | 8 | 9 | *20* | 0 | 0 | 1 | 0 | *1* | 0 | 1 | 1 | 1 | *3* |
| 7:30 AM | 0 | 5 | 6 | 5 | *16* | 0 | 0 | 0 | 0 | *0* | 1 | 1 | 0 | 0 | *2* |
| 7:45 AM | 0 | 1 | 3 | 11 | *15* | 0 | 1 | 1 | 1 | *3* | 0 | 1 | 1 | 1 | *3* |
| **8:00 AM** | **0** | **1** | **8** | **10** | ***19*** | **0** | **0** | **0** | **0** | ***0*** | **3** | **1** | **3** | **1** | *8* |
| **8:15 AM** | **0** | **2** | **6** | **12** | ***20*** | **1** | **0** | **0** | **1** | ***2*** | **1** | **1** | **2** | **1** | *5* |
| **8:30 AM** | **0** | **2** | **13** | **8** | ***23*** | **2** | **0** | **2** | **1** | ***5*** | **0** | **1** | **0** | **0** | *1* |
| **8:45 AM** | **0** | **3** | **5** | **9** | ***17*** | **1** | **0** | **0** | **0** | ***1*** | **0** | **3** | **1** | **2** | ***6*** |
| Count Total | 0 | 20 | 53 | 78 | *151* | 4 | 1 | 6 | 3 | *14* | 6 | 10 | 8 | 7 | *31* |
| **Peak Hour** | **0** | **8** | **32** | **39** | ***79*** | **4** | **0** | **2** | **2** | ***8*** | **4** | **6** | **6** | **4** | ***20*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Driveway | | | | Leghorn St | | | | San Antonio Rd | | | | San Antonio Rd | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 14 | 0 | 21 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 9 | 0 | 20 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 5 | 0 | 16 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 11 | 0 | 15 | 72 |
| **8:00 AM** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **8** | **0** | **0** | **0** | **10** | **0** | **19** | 70 |
| **8:15 AM** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | **0** | **1** | **5** | **0** | **0** | **0** | **12** | **0** | **20** | 70 |
| **8:30 AM** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **12** | **1** | **0** | **1** | **7** | **0** | **23** | 77 |
| **8:45 AM** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **1** | **0** | **0** | **5** | **0** | **0** | **1** | **8** | **0** | **17** | **79** |
| Count Total | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 4 | 0 | 1 | 49 | 3 | 0 | 2 | 76 | 0 | 151 | 0 |
| **Peak Hour** | **0** | **0** | **0** | **0** | **0** | **6** | **0** | **2** | **0** | **1** | **30** | **1** | **0** | **2** | **37** | **0** | **79** | **0** |

## Two-Hour Count Summaries - Bikes

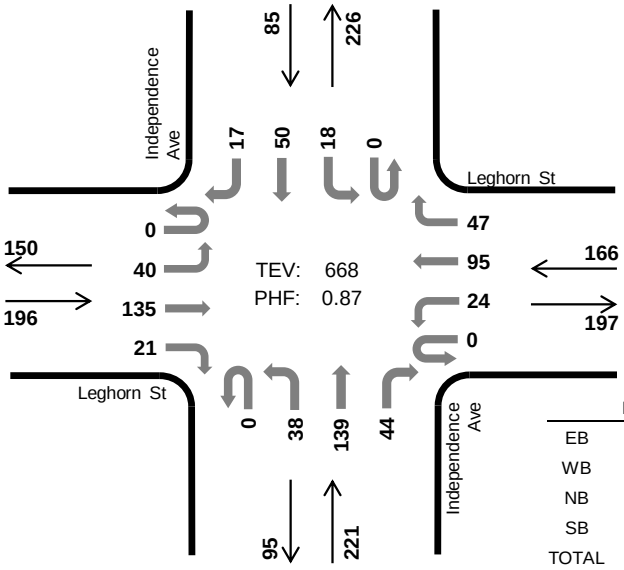
| Interval Start | Driveway | | | Leghorn St | | | San Antonio Rd | | | San Antonio Rd | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 3 | 6 |
| **8:00 AM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | 4 |
| **8:15 AM** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **2** | 5 |
| **8:30 AM** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **1** | **0** | **5** | 10 |
| **8:45 AM** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **8** |
| Count Total | 0 | 4 | 0 | 0 | 0 | 1 | 1 | 5 | 0 | 0 | 3 | 0 | 14 | 0 |
| **Peak Hour** | **0** | **4** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **8** | **0** |

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

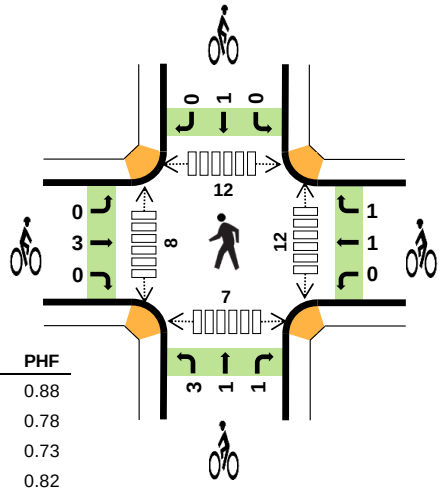
# Independence Ave
# Leghorn St

**Date: 10-17-2019**
**Count Period: 7:00 AM to 9:00 AM**
**Peak Hour: 8:00 AM to 9:00 AM**

Peak Hour




| | HV %: | PHF |
|---|---|---|
| EB | 2.0% | 0.88 |
| WB | 4.2% | 0.78 |
| NB | 2.7% | 0.73 |
| SB | 4.7% | 0.82 |
| TOTAL | 3.1% | 0.87 |




## Two-Hour Count Summaries

| Interval Start | Leghorn St Eastbound | | | | Leghorn St Westbound | | | | Independence Ave Northbound | | | | Independence Ave Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | 0 | 5 | 8 | 4 | 0 | 6 | 23 | 15 | 0 | 5 | 25 | 6 | 0 | 4 | 11 | 4 | 116 | 0 |
| 7:15 AM | 0 | 3 | 11 | 3 | 0 | 7 | 21 | 10 | 0 | 6 | 16 | 3 | 0 | 0 | 9 | 4 | 93 | 0 |
| 7:30 AM | 0 | 9 | 17 | 1 | 0 | 2 | 12 | 16 | 0 | 5 | 19 | 2 | 0 | 0 | 3 | 2 | 88 | 0 |
| 7:45 AM | 0 | 5 | 16 | 1 | 0 | 2 | 19 | 11 | 0 | 8 | 23 | 8 | 0 | 8 | 5 | 2 | 108 | 405 |
| **8:00 AM** | **0** | **14** | **23** | **4** | **0** | **4** | **27** | **13** | **0** | **5** | **23** | **4** | **0** | **2** | **10** | **5** | **134** | 423 |
| **8:15 AM** | **0** | **11** | **27** | **6** | **0** | **7** | **27** | **19** | **0** | **14** | **27** | **5** | **0** | **2** | **15** | **2** | **162** | 492 |
| **8:30 AM** | **0** | **8** | **43** | **5** | **0** | **6** | **19** | **8** | **0** | **6** | **46** | **15** | **0** | **7** | **14** | **2** | **179** | 583 |
| **8:45 AM** | **0** | **7** | **42** | **6** | **0** | **7** | **22** | **7** | **0** | **13** | **43** | **20** | **0** | **7** | **11** | **8** | **193** | **668** |
| Count Total | 0 | 62 | 187 | 30 | 0 | 41 | 170 | 99 | 0 | 62 | 222 | 63 | 0 | 30 | 78 | 29 | 1,073 | 0 |
| **Peak Hour All** | **0** | **40** | **135** | **21** | **0** | **24** | **95** | **47** | **0** | **38** | **139** | **44** | **0** | **18** | **50** | **17** | **668** | **0** |
| **Peak Hour HV** | **0** | **2** | **1** | **1** | **0** | **0** | **7** | **0** | **0** | **2** | **4** | **0** | **0** | **1** | **1** | **2** | **21** | **0** |
| **Peak Hour HV%** | **-** | **5%** | **1%** | **5%** | **-** | **0%** | **7%** | **0%** | **-** | **5%** | **3%** | **0%** | **-** | **6%** | **2%** | **12%** | **3%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 7:00 AM | 1 | 2 | 1 | 1 | *5* | 0 | 0 | 0 | 1 | *1* | 8 | 4 | 4 | 4 | *20* |
| 7:15 AM | 0 | 7 | 3 | 1 | *11* | 0 | 0 | 0 | 0 | *0* | 1 | 0 | 0 | 0 | *1* |
| 7:30 AM | 1 | 4 | 0 | 0 | *5* | 0 | 2 | 1 | 0 | *3* | 1 | 0 | 0 | 0 | *1* |
| 7:45 AM | 0 | 1 | 1 | 1 | *3* | 0 | 0 | 2 | 0 | *2* | 4 | 2 | 0 | 1 | *7* |
| **8:00 AM** | **0** | **0** | **2** | **0** | ***2*** | **0** | **2** | **2** | **0** | ***4*** | **2** | **3** | **3** | **2** | *10* |
| **8:15 AM** | **0** | **2** | **1** | **0** | ***3*** | **1** | **0** | **1** | **1** | ***3*** | **4** | **3** | **5** | **3** | *15* |
| **8:30 AM** | **2** | **3** | **3** | **2** | ***10*** | **1** | **0** | **0** | **0** | ***1*** | **5** | **1** | **2** | **1** | *9* |
| **8:45 AM** | **2** | **2** | **0** | **2** | ***6*** | **1** | **0** | **2** | **0** | ***3*** | **1** | **1** | **2** | **1** | ***5*** |
| Count Total | 6 | 21 | 11 | 7 | *45* | 3 | 4 | 8 | 2 | *17* | 26 | 14 | 16 | 12 | *68* |
| **Peak Hour** | **4** | **7** | **6** | **4** | ***21*** | **3** | **2** | **5** | **1** | ***11*** | **12** | **8** | **12** | **7** | ***39*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Leghorn St Eastbound | | | | Leghorn St Westbound | | | | Independence Ave Northbound | | | | Independence Ave Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 11 | 0 |
| 7:30 AM | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 24 |
| **8:00 AM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **2** | 21 |
| **8:15 AM** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **3** | 13 |
| **8:30 AM** | **0** | **1** | **1** | **0** | **0** | **0** | **3** | **0** | **0** | **2** | **1** | **0** | **0** | **1** | **1** | **0** | **10** | 18 |
| **8:45 AM** | **0** | **1** | **0** | **1** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **6** | **21** |
| Count Total | 0 | 2 | 3 | 1 | 0 | 2 | 14 | 5 | 0 | 2 | 7 | 2 | 0 | 2 | 2 | 3 | 45 | 0 |
| **Peak Hour** | **0** | **2** | **1** | **1** | **0** | **0** | **7** | **0** | **0** | **2** | **4** | **0** | **0** | **1** | **1** | **2** | **21** | **0** |

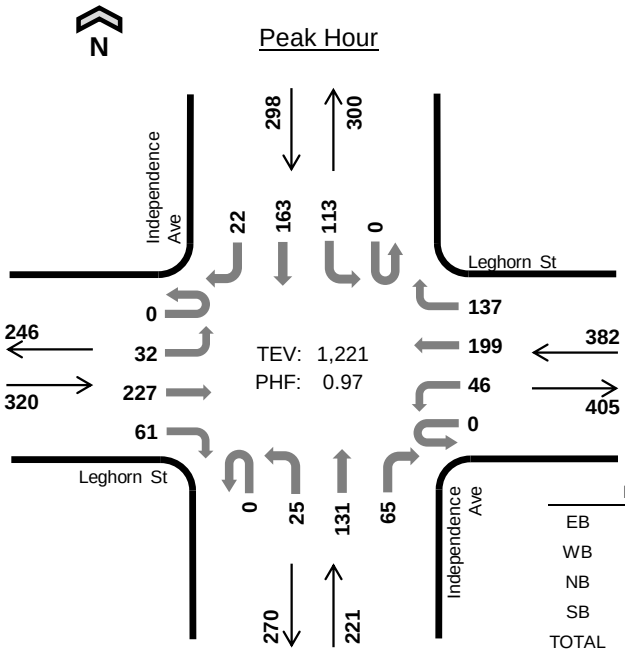
## Two-Hour Count Summaries - Bikes

| Interval Start | Leghorn St Eastbound | | | Leghorn St Westbound | | | Independence Ave Northbound | | | Independence Ave Southbound | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 6 |
| **8:00 AM** | **0** | **0** | **0** | **0** | **1** | **1** | **1** | **0** | **1** | **0** | **0** | **0** | **4** | 9 |
| **8:15 AM** | **0** | **1** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **3** | 12 |
| **8:30 AM** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | 10 |
| **8:45 AM** | **0** | **1** | **0** | **0** | **0** | **0** | **1** | **1** | **0** | **0** | **0** | **0** | **3** | **11** |
| Count Total | 0 | 3 | 0 | 0 | 1 | 3 | 4 | 3 | 1 | 0 | 1 | 1 | 17 | 0 |
| **Peak Hour** | **0** | **3** | **0** | **0** | **1** | **1** | **3** | **1** | **1** | **0** | **1** | **0** | **11** | **0** |

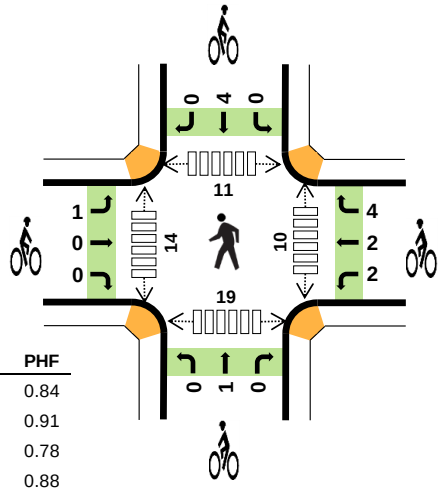
*Note: U-Turn volumes for bikes are included in Left-Turn, if any.*

# Independence Ave
# Leghorn St

**Date: 10-17-2019**
**Count Period: 4:00 PM to 6:00 PM**
**Peak Hour: 4:45 PM to 5:45 PM**




| | HV %: | PHF |
|---|---|---|
| EB | 0.9% | 0.84 |
| WB | 0.0% | 0.91 |
| NB | 0.5% | 0.78 |
| SB | 0.7% | 0.88 |
| TOTAL | 0.5% | 0.97 |




## Two-Hour Count Summaries

| Interval Start | | Leghorn St Eastbound | | | | Leghorn St Westbound | | | | Independence Ave Northbound | | | | Independence Ave Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | | 0 | 15 | 50 | 8 | 0 | 10 | 30 | 12 | 0 | 6 | 27 | 15 | 0 | 15 | 21 | 9 | 218 | 0 |
| 4:15 PM | | 0 | 21 | 65 | 14 | 1 | 8 | 33 | 22 | 0 | 6 | 29 | 12 | 0 | 21 | 33 | 4 | 269 | 0 |
| 4:30 PM | | 0 | 4 | 46 | 17 | 0 | 8 | 43 | 32 | 0 | 6 | 27 | 8 | 0 | 21 | 28 | 5 | 245 | 0 |
| **4:45 PM** | | **0** | **9** | **51** | **13** | **0** | **10** | **51** | **33** | **0** | **7** | **33** | **17** | **0** | **27** | **43** | **5** | **299** | 1,031 |
| **5:00 PM** | | **0** | **6** | **75** | **14** | **0** | **12** | **60** | **23** | **0** | **6** | **28** | **14** | **0** | **27** | **44** | **5** | **314** | 1,127 |
| **5:15 PM** | | **0** | **8** | **55** | **16** | **0** | **12** | **35** | **41** | **0** | **8** | **38** | **25** | **0** | **25** | **28** | **9** | **300** | 1,158 |
| **5:30 PM** | | **0** | **9** | **46** | **18** | **0** | **12** | **53** | **40** | **0** | **4** | **32** | **9** | **0** | **34** | **48** | **3** | **308** | **1,221** |
| 5:45 PM | | 0 | 8 | 41 | 9 | 0 | 11 | 49 | 25 | 0 | 10 | 37 | 11 | 0 | 39 | 47 | 8 | 295 | 1,217 |
| Count Total | | 0 | 80 | 429 | 109 | 1 | 83 | 354 | 228 | 0 | 53 | 251 | 111 | 0 | 209 | 292 | 48 | 2,248 | 0 |
| **Peak Hour** | **All** | **0** | **32** | **227** | **61** | **0** | **46** | **199** | **137** | **0** | **25** | **131** | **65** | **0** | **113** | **163** | **22** | **1,221** | **0** |
| | **HV** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **1** | **6** | **0** |
| | **HV%** | **-** | **0%** | **1%** | **0%** | **-** | **0%** | **0%** | **0%** | **-** | **0%** | **1%** | **0%** | **-** | **1%** | **0%** | **5%** | **0%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:00 PM | 3 | 1 | 1 | 0 | *5* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 1 | 1 | *2* |
| 4:15 PM | 1 | 0 | 0 | 1 | *2* | 0 | 1 | 0 | 0 | *1* | 1 | 0 | 0 | 0 | *1* |
| 4:30 PM | 1 | 0 | 1 | 0 | *2* | 1 | 1 | 0 | 0 | *2* | 1 | 0 | 0 | 0 | *1* |
| **4:45 PM** | **1** | **0** | **0** | **2** | ***3*** | **1** | **1** | **0** | **0** | ***2*** | **5** | **5** | **4** | **8** | *22* |
| **5:00 PM** | **0** | **0** | **1** | **0** | ***1*** | **0** | **3** | **0** | **1** | ***4*** | **3** | **0** | **1** | **0** | *4* |
| **5:15 PM** | **1** | **0** | **0** | **0** | ***1*** | **0** | **1** | **1** | **1** | ***3*** | **2** | **8** | **6** | **11** | *27* |
| **5:30 PM** | **1** | **0** | **0** | **0** | ***1*** | **0** | **3** | **0** | **2** | ***5*** | **0** | **1** | **0** | **0** | ***1*** |
| 5:45 PM | 0 | 0 | 0 | 0 | *0* | 0 | 1 | 0 | 1 | *2* | 0 | 0 | 2 | 1 | *3* |
| Count Total | 8 | 1 | 3 | 3 | *15* | 2 | 11 | 1 | 5 | *19* | 12 | 14 | 14 | 21 | *61* |
| **Peak Hour** | **3** | **0** | **1** | **2** | ***6*** | **1** | **8** | **1** | **4** | ***14*** | **10** | **14** | **11** | **19** | ***54*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Leghorn St | | | | Leghorn St | | | | Independence Ave | | | | Independence Ave | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 4:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| 4:30 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| **4:45 PM** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | **3** | 12 |
| **5:00 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **1** | 8 |
| **5:15 PM** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | 7 |
| **5:30 PM** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **6** |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Count Total | 0 | 1 | 6 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 1 | 15 | 0 |
| **Peak Hour** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **1** | **6** | **0** |

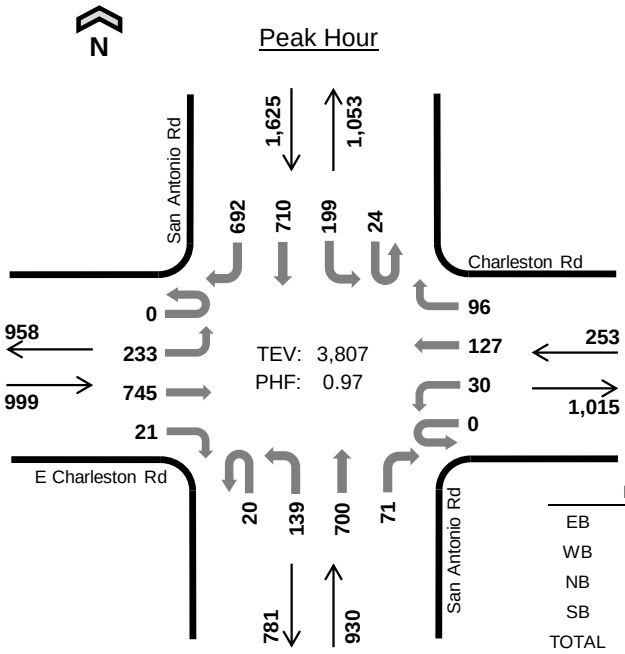
## Two-Hour Count Summaries - Bikes

| Interval Start | Leghorn St | | | Leghorn St | | | Independence Ave | | | Independence Ave | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4:30 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| **4:45 PM** | **1** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | 5 |
| **5:00 PM** | **0** | **0** | **0** | **1** | **0** | **2** | **0** | **0** | **0** | **0** | **1** | **0** | **4** | 9 |
| **5:15 PM** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **3** | 11 |
| **5:30 PM** | **0** | **0** | **0** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | **2** | **0** | **5** | **14** |
| 5:45 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 14 |
| Count Total | 1 | 0 | 1 | 3 | 2 | 6 | 0 | 1 | 0 | 1 | 4 | 0 | 19 | 0 |
| **Peak Hour** | **1** | **0** | **0** | **2** | **2** | **4** | **0** | **1** | **0** | **0** | **4** | **0** | **14** | **0** |

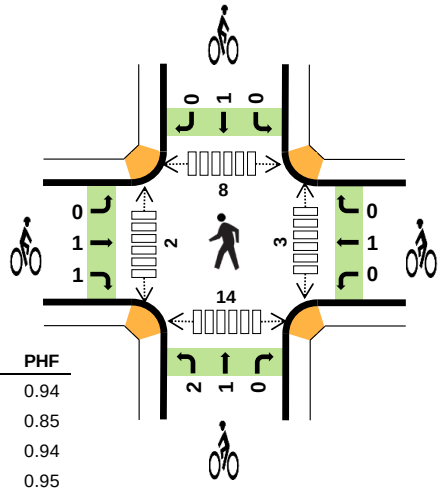
*Note: U-Turn volumes for bikes are included in Left-Turn, if any.*

# San Antonio Rd
# E Charleston Rd

**Date: 10-17-2019**
**Count Period: 7:00 AM to 9:00 AM**
**Peak Hour: 8:00 AM to 9:00 AM**




| | HV %: | PHF |
|---|---|---|
| EB | 1.9% | 0.94 |
| WB | 3.2% | 0.85 |
| NB | 3.5% | 0.94 |
| SB | 4.1% | 0.95 |
| TOTAL | 3.3% | 0.97 |




## Two-Hour Count Summaries

| Interval Start | E Charleston Rd Eastbound | | | | Charleston Rd Westbound | | | | San Antonio Rd Northbound | | | | San Antonio Rd Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | 0 | 24 | 63 | 2 | 0 | 7 | 26 | 15 | 2 | 14 | 80 | 4 | 6 | 41 | 134 | 100 | 518 | 0 |
| 7:15 AM | 0 | 33 | 61 | 4 | 0 | 4 | 31 | 14 | 3 | 22 | 135 | 11 | 3 | 39 | 155 | 129 | 644 | 0 |
| 7:30 AM | 0 | 29 | 100 | 2 | 0 | 3 | 34 | 21 | 10 | 28 | 137 | 11 | 3 | 33 | 176 | 124 | 711 | 0 |
| 7:45 AM | 0 | 35 | 120 | 5 | 0 | 7 | 34 | 21 | 4 | 46 | 157 | 10 | 6 | 36 | 189 | 182 | 852 | 2,725 |
| **8:00 AM** | **0** | **58** | **157** | **6** | **0** | **8** | **31** | **18** | **6** | **42** | **182** | **13** | **5** | **46** | **177** | **200** | **949** | 3,156 |
| **8:15 AM** | **0** | **60** | **200** | **6** | **0** | **12** | **33** | **21** | **5** | **33** | **186** | **23** | **4** | **40** | **168** | **179** | **970** | 3,482 |
| **8:30 AM** | **0** | **65** | **179** | **5** | **0** | **4** | **23** | **29** | **5** | **33** | **157** | **17** | **4** | **57** | **171** | **154** | **903** | 3,674 |
| **8:45 AM** | **0** | **50** | **209** | **4** | **0** | **6** | **40** | **28** | **4** | **31** | **175** | **18** | **11** | **56** | **194** | **159** | **985** | **3,807** |
| Count Total | 0 | 354 | 1,089 | 34 | 0 | 51 | 252 | 167 | 39 | 249 | 1,209 | 107 | 42 | 348 | 1,364 | 1,227 | 6,532 | 0 |
| **Peak Hour All** | **0** | **233** | **745** | **21** | **0** | **30** | **127** | **96** | **20** | **139** | **700** | **71** | **24** | **199** | **710** | **692** | **3,807** | **0** |
| **Peak Hour HV** | **0** | **10** | **9** | **0** | **0** | **0** | **2** | **6** | **1** | **0** | **25** | **7** | **1** | **12** | **35** | **18** | **126** | **0** |
| **Peak Hour HV%** | **-** | **4%** | **1%** | **0%** | **-** | **0%** | **2%** | **6%** | **5%** | **0%** | **4%** | **10%** | **4%** | **6%** | **5%** | **3%** | **3%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 7:00 AM | 3 | 1 | 3 | 17 | *24* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 1 | 2 | *3* |
| 7:15 AM | 1 | 4 | 11 | 11 | *27* | 0 | 1 | 1 | 0 | *2* | 0 | 1 | 2 | 0 | *3* |
| 7:30 AM | 4 | 3 | 7 | 13 | *27* | 0 | 0 | 0 | 0 | *0* | 0 | 0 | 0 | 0 | *0* |
| 7:45 AM | 0 | 0 | 2 | 17 | *19* | 0 | 1 | 2 | 1 | *4* | 1 | 0 | 1 | 1 | *3* |
| **8:00 AM** | **7** | **3** | **8** | **12** | ***30*** | **1** | **0** | **0** | **0** | ***1*** | **0** | **1** | **4** | **2** | *7* |
| **8:15 AM** | **0** | **2** | **6** | **16** | ***24*** | **0** | **0** | **0** | **1** | ***1*** | **2** | **0** | **2** | **5** | *9* |
| **8:30 AM** | **4** | **0** | **12** | **20** | ***36*** | **0** | **0** | **2** | **0** | ***2*** | **0** | **0** | **1** | **0** | *1* |
| **8:45 AM** | **8** | **3** | **7** | **18** | ***36*** | **1** | **1** | **1** | **0** | ***3*** | **1** | **1** | **1** | **7** | ***10*** |
| Count Total | 27 | 16 | 56 | 124 | *223* | 2 | 3 | 6 | 2 | *13* | 4 | 3 | 12 | 17 | *36* |
| **Peak Hour** | **19** | **8** | **33** | **66** | ***126*** | **2** | **1** | **3** | **1** | ***7*** | **3** | **2** | **8** | **14** | ***27*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | E Charleston Rd | | | | Charleston Rd | | | | San Antonio Rd | | | | San Antonio Rd | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 13 | 2 | 24 | 0 |
| 7:15 AM | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 2 | 0 | 8 | 1 | 0 | 2 | 9 | 0 | 27 | 0 |
| 7:30 AM | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 5 | 1 | 0 | 1 | 5 | 7 | 27 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 10 | 5 | 19 | 97 |
| **8:00 AM** | **0** | **3** | **4** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **7** | **1** | **0** | **1** | **6** | **5** | **30** | 103 |
| **8:15 AM** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **1** | **0** | **0** | **5** | **1** | **0** | **1** | **12** | **3** | **24** | 100 |
| **8:30 AM** | **0** | **2** | **2** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **8** | **3** | **0** | **8** | **8** | **4** | **36** | 109 |
| **8:45 AM** | **0** | **5** | **3** | **0** | **0** | **0** | **1** | **2** | **0** | **0** | **5** | **2** | **1** | **2** | **9** | **6** | **36** | **126** |
| Count Total | 0 | 14 | 13 | 0 | 0 | 2 | 7 | 7 | 4 | 0 | 43 | 9 | 1 | 19 | 72 | 32 | 223 | 0 |
| **Peak Hour** | **0** | **10** | **9** | **0** | **0** | **0** | **2** | **6** | **1** | **0** | **25** | **7** | **1** | **12** | **35** | **18** | **126** | **0** |

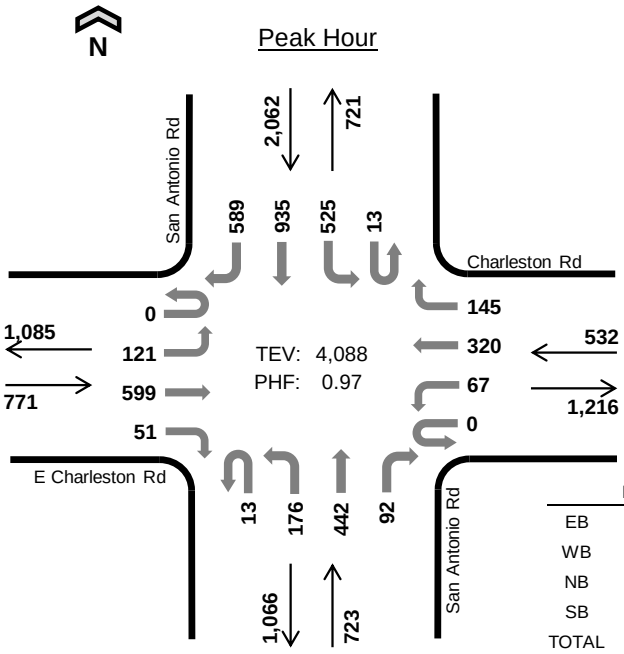
## Two-Hour Count Summaries - Bikes

| Interval Start | E Charleston Rd | | | Charleston Rd | | | San Antonio Rd | | | San Antonio Rd | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 4 | 6 |
| **8:00 AM** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | 7 |
| **8:15 AM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | 6 |
| **8:30 AM** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **2** | 8 |
| **8:45 AM** | **0** | **0** | **1** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **3** | **7** |
| Count Total | 0 | 1 | 1 | 0 | 3 | 0 | 3 | 3 | 0 | 0 | 2 | 0 | 13 | 0 |
| **Peak Hour** | **0** | **1** | **1** | **0** | **1** | **0** | **2** | **1** | **0** | **0** | **1** | **0** | **7** | **0** |

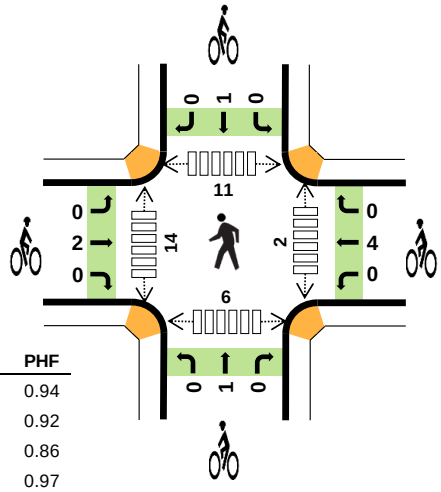
*Note: U-Turn volumes for bikes are included in Left-Turn, if any.*

# San Antonio Rd
# E Charleston Rd

**Date: 10-17-2019**
**Count Period: 4:00 PM to 6:00 PM**
**Peak Hour: 5:00 PM to 6:00 PM**




| | HV %: | PHF |
|---|---|---|
| EB | 1.7% | 0.94 |
| WB | 0.2% | 0.92 |
| NB | 1.8% | 0.86 |
| SB | 1.0% | 0.97 |
| TOTAL | 1.2% | 0.97 |




## Two-Hour Count Summaries

| Interval Start | | E Charleston Rd Eastbound | | | | Charleston Rd Westbound | | | | San Antonio Rd Northbound | | | | San Antonio Rd Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | | 0 | 39 | 184 | 16 | 0 | 20 | 55 | 47 | 1 | 28 | 122 | 12 | 5 | 122 | 224 | 90 | 965 | 0 |
| 4:15 PM | | 0 | 24 | 124 | 11 | 0 | 15 | 50 | 29 | 1 | 28 | 156 | 19 | 3 | 109 | 216 | 105 | 890 | 0 |
| 4:30 PM | | 0 | 34 | 156 | 13 | 0 | 19 | 66 | 32 | 2 | 35 | 114 | 23 | 3 | 122 | 214 | 112 | 945 | 0 |
| 4:45 PM | | 0 | 24 | 134 | 11 | 0 | 17 | 77 | 28 | 6 | 40 | 134 | 21 | 6 | 127 | 240 | 126 | 991 | 3,791 |
| **5:00 PM** | | **0** | **23** | **143** | **10** | **0** | **19** | **66** | **43** | **4** | **50** | **105** | **31** | **4** | **143** | **206** | **137** | **984** | 3,810 |
| **5:15 PM** | | **0** | **30** | **150** | **14** | **0** | **21** | **92** | **32** | **3** | **40** | **101** | **12** | **3** | **139** | **234** | **144** | **1,015** | 3,935 |
| **5:30 PM** | | **0** | **27** | **151** | **17** | **0** | **12** | **75** | **39** | **2** | **47** | **136** | **24** | **4** | **124** | **258** | **135** | **1,051** | 4,041 |
| **5:45 PM** | | **0** | **41** | **155** | **10** | **0** | **15** | **87** | **31** | **4** | **39** | **100** | **25** | **2** | **119** | **237** | **173** | **1,038** | **4,088** |
| Count Total | | 0 | 242 | 1,197 | 102 | 0 | 138 | 568 | 281 | 23 | 307 | 968 | 167 | 30 | 1,005 | 1,829 | 1,022 | 7,879 | 0 |
| **Peak Hour** | **All** | **0** | **121** | **599** | **51** | **0** | **67** | **320** | **145** | **13** | **176** | **442** | **92** | **13** | **525** | **935** | **589** | **4,088** | **0** |
| | **HV** | **0** | **6** | **6** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **12** | **1** | **0** | **3** | **12** | **6** | **48** | **0** |
| | **HV%** | **-** | **5%** | **1%** | **2%** | **-** | **0%** | **0%** | **1%** | **0%** | **0%** | **3%** | **1%** | **0%** | **1%** | **1%** | **1%** | **1%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:00 PM | 6 | 3 | 10 | 8 | *27* | 2 | 2 | 0 | 0 | *4* | 0 | 6 | 4 | 6 | *16* |
| 4:15 PM | 3 | 1 | 6 | 9 | *19* | 1 | 1 | 0 | 0 | *2* | 0 | 7 | 3 | 3 | *13* |
| 4:30 PM | 6 | 2 | 7 | 5 | *20* | 0 | 0 | 0 | 0 | *0* | 1 | 6 | 5 | 3 | *15* |
| 4:45 PM | 3 | 1 | 4 | 12 | *20* | 0 | 3 | 0 | 1 | *4* | 1 | 4 | 1 | 1 | *7* |
| **5:00 PM** | **2** | **0** | **3** | **7** | ***12*** | **2** | **2** | **0** | **1** | ***5*** | **0** | **4** | **2** | **0** | *6* |
| **5:15 PM** | **5** | **0** | **3** | **4** | ***12*** | **0** | **2** | **0** | **0** | ***2*** | **1** | **3** | **4** | **2** | *10* |
| **5:30 PM** | **1** | **1** | **4** | **7** | ***13*** | **0** | **0** | **0** | **0** | ***0*** | **1** | **4** | **2** | **2** | *9* |
| **5:45 PM** | **5** | **0** | **3** | **3** | ***11*** | **0** | **0** | **1** | **0** | ***1*** | **0** | **3** | **3** | **2** | ***8*** |
| Count Total | 31 | 8 | 40 | 55 | *134* | 5 | 10 | 1 | 2 | *18* | 4 | 37 | 24 | 19 | *84* |
| **Peak Hour** | **13** | **1** | **13** | **21** | ***48*** | **2** | **4** | **1** | **1** | ***8*** | **2** | **14** | **11** | **6** | ***33*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | E Charleston Rd | | | | Charleston Rd | | | | San Antonio Rd | | | | San Antonio Rd | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | 0 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 8 | 0 | 0 | 2 | 4 | 2 | 27 | 0 |
| 4:15 PM | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 3 | 4 | 2 | 19 | 0 |
| 4:30 PM | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 2 | 0 | 0 | 4 | 1 | 20 | 0 |
| 4:45 PM | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 3 | 7 | 2 | 20 | 86 |
| **5:00 PM** | **0** | **1** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **1** | **0** | **0** | **5** | **2** | **12** | 71 |
| **5:15 PM** | **0** | **2** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **0** | **4** | **0** | **12** | 64 |
| **5:30 PM** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **4** | **0** | **0** | **2** | **3** | **2** | **13** | 57 |
| **5:45 PM** | **0** | **2** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **1** | **0** | **2** | **11** | **48** |
| Count Total | 0 | 13 | 17 | 1 | 0 | 2 | 2 | 4 | 1 | 1 | 33 | 5 | 0 | 11 | 31 | 13 | 134 | 0 |
| **Peak Hour** | **0** | **6** | **6** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **12** | **1** | **0** | **3** | **12** | **6** | **48** | **0** |

## Two-Hour Count Summaries - Bikes

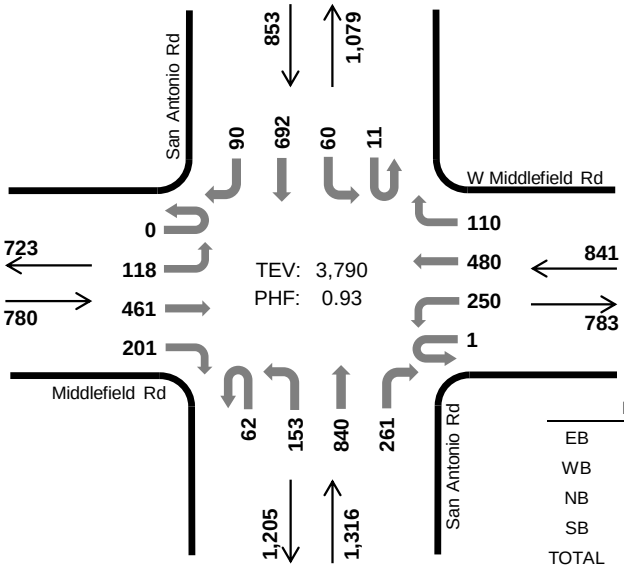
| Interval Start | E Charleston Rd | | | Charleston Rd | | | San Antonio Rd | | | San Antonio Rd | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 4:00 PM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 4:15 PM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 10 |
| **5:00 PM** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **5** | 11 |
| **5:15 PM** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | 11 |
| **5:30 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | 11 |
| **5:45 PM** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **1** | **8** |
| Count Total | 0 | 5 | 0 | 1 | 9 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 18 | 0 |
| **Peak Hour** | **0** | **2** | **0** | **0** | **4** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **8** | **0** |

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

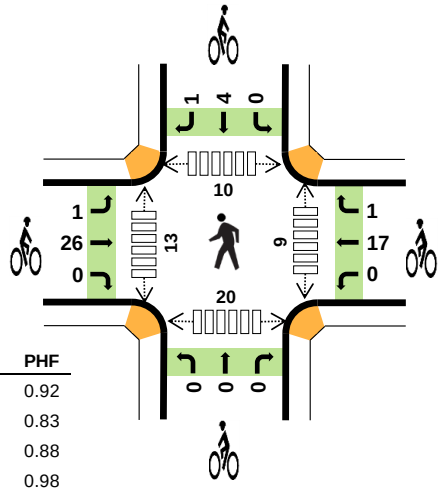
# San Antonio Rd
# Middlefield Rd

**Date:** 10-17-2019
**Count Period:** 7:00 AM to 9:00 AM
**Peak Hour:** 8:00 AM to 9:00 AM

Peak Hour




| | HV %: | PHF |
|---|---|---|
| EB | 0.8% | 0.92 |
| WB | 4.8% | 0.83 |
| NB | 4.3% | 0.88 |
| SB | 4.8% | 0.98 |
| TOTAL | 3.8% | 0.93 |




## Two-Hour Count Summaries

| Interval Start | | Middlefield Rd Eastbound | | | | W Middlefield Rd Westbound | | | | San Antonio Rd Northbound | | | | San Antonio Rd Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | | 0 | 5 | 29 | 12 | 0 | 72 | 63 | 20 | 5 | 10 | 91 | 49 | 3 | 11 | 131 | 8 | 509 | 0 |
| 7:15 AM | | 0 | 10 | 28 | 15 | 0 | 70 | 82 | 28 | 9 | 21 | 142 | 51 | 2 | 6 | 131 | 4 | 599 | 0 |
| 7:30 AM | | 0 | 5 | 33 | 16 | 0 | 68 | 105 | 29 | 5 | 35 | 159 | 78 | 2 | 14 | 165 | 15 | 729 | 0 |
| 7:45 AM | | 0 | 10 | 45 | 24 | 0 | 70 | 111 | 26 | 5 | 54 | 205 | 79 | 2 | 17 | 185 | 18 | 851 | 2,688 |
| **8:00 AM** | | **0** | **27** | **81** | **62** | **0** | **54** | **127** | **24** | **20** | **58** | **217** | **78** | **4** | **8** | **175** | **23** | **958** | 3,137 |
| **8:15 AM** | | **0** | **17** | **121** | **58** | **1** | **78** | **145** | **29** | **19** | **43** | **218** | **71** | **2** | **14** | **180** | **22** | **1,018** | 3,556 |
| **8:30 AM** | | **0** | **35** | **142** | **35** | **0** | **64** | **106** | **19** | **15** | **25** | **196** | **49** | **3** | **22** | **161** | **25** | **897** | 3,724 |
| **8:45 AM** | | **0** | **39** | **117** | **46** | **0** | **54** | **102** | **38** | **8** | **27** | **209** | **63** | **2** | **16** | **176** | **20** | **917** | **3,790** |
| Count Total | | 0 | 148 | 596 | 268 | 1 | 530 | 841 | 213 | 86 | 273 | 1,437 | 518 | 20 | 108 | 1,304 | 135 | 6,478 | 0 |
| **Peak Hour** | **All** | **0** | **118** | **461** | **201** | **1** | **250** | **480** | **110** | **62** | **153** | **840** | **261** | **11** | **60** | **692** | **90** | **3,790** | **0** |
| | **HV** | **0** | **3** | **0** | **3** | **0** | **28** | **6** | **6** | **0** | **5** | **30** | **22** | **0** | **3** | **36** | **2** | **144** | **0** |
| | **HV%** | **-** | **3%** | **0%** | **1%** | **0%** | **11%** | **1%** | **5%** | **0%** | **3%** | **4%** | **8%** | **0%** | **5%** | **5%** | **2%** | **4%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 7:00 AM | 2 | 9 | 8 | 15 | *34* | 2 | 3 | 1 | 0 | *6* | 0 | 5 | 0 | 1 | *6* |
| 7:15 AM | 1 | 8 | 16 | 11 | *36* | 5 | 1 | 1 | 0 | *7* | 0 | 2 | 0 | 1 | *3* |
| 7:30 AM | 1 | 7 | 16 | 8 | *32* | 4 | 0 | 0 | 0 | *4* | 2 | 1 | 1 | 0 | *4* |
| 7:45 AM | 2 | 7 | 10 | 12 | *31* | 6 | 2 | 1 | 0 | *9* | 0 | 3 | 1 | 4 | *8* |
| **8:00 AM** | **1** | **8** | **14** | **8** | ***31*** | **9** | **4** | **0** | **1** | ***14*** | **2** | **2** | **0** | **5** | *9* |
| **8:15 AM** | **2** | **11** | **12** | **16** | ***41*** | **3** | **6** | **0** | **1** | ***10*** | **2** | **2** | **1** | **6** | *11* |
| **8:30 AM** | **2** | **15** | **13** | **7** | ***37*** | **10** | **3** | **0** | **2** | ***15*** | **3** | **1** | **4** | **4** | *12* |
| **8:45 AM** | **1** | **6** | **18** | **10** | ***35*** | **5** | **5** | **0** | **1** | ***11*** | **2** | **8** | **5** | **5** | ***20*** |
| Count Total | 12 | 71 | 107 | 87 | *277* | 44 | 24 | 3 | 5 | *76* | 11 | 24 | 12 | 26 | *73* |
| **Peak Hour** | **6** | **40** | **57** | **41** | ***144*** | **27** | **18** | **0** | **5** | ***50*** | **9** | **13** | **10** | **20** | ***52*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Middlefield Rd | | | | W Middlefield Rd | | | | San Antonio Rd | | | | San Antonio Rd | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 7:00 AM | 0 | 1 | 0 | 1 | 0 | 7 | 1 | 1 | 1 | 1 | 4 | 2 | 0 | 0 | 13 | 2 | 34 | 0 |
| 7:15 AM | 0 | 0 | 0 | 1 | 0 | 5 | 2 | 1 | 1 | 1 | 7 | 7 | 0 | 1 | 10 | 0 | 36 | 0 |
| 7:30 AM | 0 | 0 | 0 | 1 | 0 | 6 | 1 | 0 | 0 | 0 | 6 | 10 | 0 | 1 | 6 | 1 | 32 | 0 |
| 7:45 AM | 0 | 0 | 0 | 2 | 0 | 5 | 1 | 1 | 0 | 2 | 4 | 4 | 0 | 0 | 11 | 1 | 31 | 133 |
| **8:00 AM** | **0** | **1** | **0** | **0** | **0** | **6** | **2** | **0** | **0** | **0** | **8** | **6** | **0** | **0** | **8** | **0** | **31** | 130 |
| **8:15 AM** | **0** | **1** | **0** | **1** | **0** | **7** | **1** | **3** | **0** | **2** | **6** | **4** | **0** | **1** | **13** | **2** | **41** | 135 |
| **8:30 AM** | **0** | **1** | **0** | **1** | **0** | **10** | **3** | **2** | **0** | **0** | **9** | **4** | **0** | **1** | **6** | **0** | **37** | 140 |
| **8:45 AM** | **0** | **0** | **0** | **1** | **0** | **5** | **0** | **1** | **0** | **3** | **7** | **8** | **0** | **1** | **9** | **0** | **35** | **144** |
| Count Total | 0 | 4 | 0 | 8 | 0 | 51 | 11 | 9 | 2 | 9 | 51 | 45 | 0 | 5 | 76 | 6 | 277 | 0 |
| **Peak Hour** | **0** | **3** | **0** | **3** | **0** | **28** | **6** | **6** | **0** | **5** | **30** | **22** | **0** | **3** | **36** | **2** | **144** | **0** |

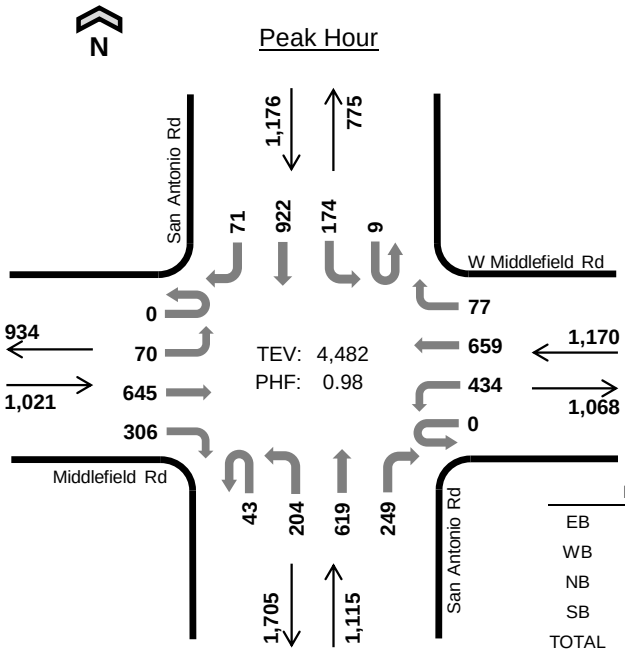
## Two-Hour Count Summaries - Bikes

| Interval Start | Middlefield Rd | | | W Middlefield Rd | | | San Antonio Rd | | | San Antonio Rd | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 7:00 AM | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 |
| 7:15 AM | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 |
| 7:30 AM | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 7:45 AM | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 26 |
| **8:00 AM** | **0** | **9** | **0** | **0** | **4** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **14** | 34 |
| **8:15 AM** | **0** | **3** | **0** | **0** | **5** | **1** | **0** | **0** | **0** | **0** | **1** | **0** | **10** | 37 |
| **8:30 AM** | **1** | **9** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **15** | 48 |
| **8:45 AM** | **0** | **5** | **0** | **0** | **5** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **11** | **50** |
| Count Total | 1 | 43 | 0 | 0 | 22 | 2 | 0 | 3 | 0 | 0 | 4 | 1 | 76 | 0 |
| **Peak Hour** | **1** | **26** | **0** | **0** | **17** | **1** | **0** | **0** | **0** | **0** | **4** | **1** | **50** | **0** |

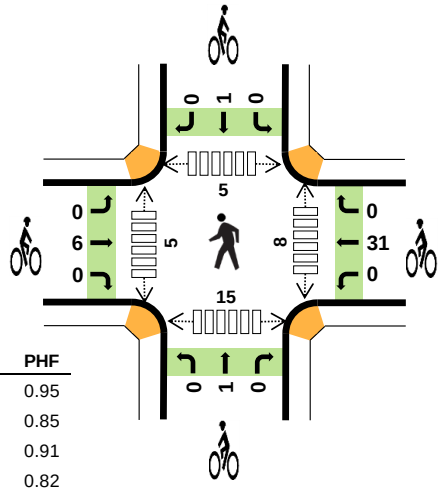
*Note: U-Turn volumes for bikes are included in Left-Turn, if any.*

# San Antonio Rd
# Middlefield Rd

**Date: 10-17-2019**
**Count Period: 4:00 PM to 6:00 PM**
**Peak Hour: 5:00 PM to 6:00 PM**




| | HV %: | PHF |
|---|---|---|
| EB | 0.3% | 0.95 |
| WB | 0.3% | 0.85 |
| NB | 2.2% | 0.91 |
| SB | 1.2% | 0.82 |
| TOTAL | 1.0% | 0.98 |




## Two-Hour Count Summaries

| Interval Start | Middlefield Rd Eastbound | | | | W Middlefield Rd Westbound | | | | San Antonio Rd Northbound | | | | San Antonio Rd Southbound | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | 0 | 24 | 118 | 68 | 0 | 65 | 103 | 11 | 11 | 52 | 198 | 79 | 3 | 44 | 203 | 20 | 999 | 0 |
| 4:15 PM | 0 | 16 | 138 | 46 | 0 | 113 | 100 | 20 | 6 | 35 | 171 | 75 | 4 | 45 | 194 | 19 | 982 | 0 |
| 4:30 PM | 0 | 23 | 141 | 53 | 0 | 81 | 110 | 11 | 9 | 46 | 139 | 56 | 2 | 46 | 225 | 16 | 958 | 0 |
| 4:45 PM | 0 | 18 | 149 | 56 | 0 | 111 | 143 | 19 | 13 | 59 | 154 | 70 | 0 | 50 | 182 | 13 | 1,037 | 3,976 |
| **5:00 PM** | **0** | **20** | **157** | **81** | **0** | **79** | **130** | **16** | **12** | **57** | **166** | **71** | **2** | **66** | **269** | **23** | **1,149** | 4,126 |
| **5:15 PM** | **0** | **18** | **155** | **76** | **0** | **134** | **191** | **21** | **11** | **49** | **144** | **66** | **1** | **41** | **197** | **19** | **1,123** | 4,267 |
| **5:30 PM** | **0** | **14** | **170** | **61** | **0** | **115** | **179** | **21** | **13** | **45** | **159** | **48** | **1** | **34** | **205** | **19** | **1,084** | 4,393 |
| **5:45 PM** | **0** | **18** | **163** | **88** | **0** | **106** | **159** | **19** | **7** | **53** | **150** | **64** | **5** | **33** | **251** | **10** | **1,126** | **4,482** |
| Count Total | 0 | 151 | 1,191 | 529 | 0 | 804 | 1,115 | 138 | 82 | 396 | 1,281 | 529 | 18 | 359 | 1,726 | 139 | 8,458 | 0 |
| **Peak Hour All** | **0** | **70** | **645** | **306** | **0** | **434** | **659** | **77** | **43** | **204** | **619** | **249** | **9** | **174** | **922** | **71** | **4,482** | **0** |
| **Peak Hour HV** | **0** | **0** | **1** | **2** | **0** | **3** | **0** | **0** | **0** | **3** | **14** | **8** | **0** | **2** | **12** | **0** | **45** | **0** |
| **Peak Hour HV%** | **-** | **0%** | **0%** | **1%** | **-** | **1%** | **0%** | **0%** | **0%** | **1%** | **2%** | **3%** | **0%** | **1%** | **1%** | **0%** | **1%** | **0** |

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

| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:00 PM | 1 | 1 | 14 | 1 | *17* | 2 | 2 | 0 | 0 | *4* | 1 | 3 | 2 | 6 | *12* |
| 4:15 PM | 3 | 4 | 7 | 4 | *18* | 1 | 1 | 0 | 1 | *3* | 1 | 4 | 1 | 5 | *11* |
| 4:30 PM | 0 | 2 | 6 | 3 | *11* | 2 | 2 | 0 | 0 | *4* | 4 | 2 | 1 | 2 | *9* |
| 4:45 PM | 1 | 2 | 10 | 7 | *20* | 0 | 4 | 0 | 1 | *5* | 2 | 1 | 2 | 2 | *7* |
| **5:00 PM** | **1** | **1** | **7** | **8** | ***17*** | **1** | **7** | **0** | **1** | ***9*** | **4** | **2** | **0** | **7** | *13* |
| **5:15 PM** | **0** | **1** | **6** | **1** | ***8*** | **3** | **8** | **0** | **0** | ***11*** | **1** | **0** | **2** | **3** | *6* |
| **5:30 PM** | **1** | **1** | **6** | **3** | ***11*** | **1** | **6** | **0** | **0** | ***7*** | **2** | **1** | **1** | **1** | *5* |
| **5:45 PM** | **1** | **0** | **6** | **2** | ***9*** | **1** | **10** | **1** | **0** | ***12*** | **1** | **2** | **2** | **4** | ***9*** |
| Count Total | 8 | 12 | 62 | 29 | *111* | 11 | 40 | 1 | 3 | *55* | 16 | 15 | 11 | 30 | *72* |
| **Peak Hour** | **3** | **3** | **25** | **14** | ***45*** | **6** | **31** | **1** | **1** | ***39*** | **8** | **5** | **5** | **15** | ***33*** |

## Two-Hour Count Summaries - Heavy Vehicles

| Interval Start | Middlefield Rd | | | | W Middlefield Rd | | | | San Antonio Rd | | | | San Antonio Rd | | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 9 | 3 | 0 | 0 | 1 | 0 | 17 | 0 |
| 4:15 PM | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 0 | 4 | 0 | 18 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 4 | 2 | 0 | 0 | 3 | 0 | 11 | 0 |
| 4:45 PM | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 6 | 3 | 0 | 3 | 4 | 0 | 20 | 66 |
| **5:00 PM** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **4** | **3** | **0** | **1** | **7** | **0** | **17** | 66 |
| **5:15 PM** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **4** | **1** | **0** | **0** | **1** | **0** | **8** | 56 |
| **5:30 PM** | **0** | **0** | **0** | **1** | **0** | **1** | **0** | **0** | **0** | **0** | **3** | **3** | **0** | **1** | **2** | **0** | **11** | 56 |
| **5:45 PM** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **2** | **3** | **1** | **0** | **0** | **2** | **0** | **9** | **45** |
| Count Total | 0 | 0 | 4 | 4 | 0 | 9 | 0 | 3 | 2 | 5 | 39 | 16 | 0 | 5 | 24 | 0 | 111 | 0 |
| **Peak Hour** | **0** | **0** | **1** | **2** | **0** | **3** | **0** | **0** | **0** | **3** | **14** | **8** | **0** | **2** | **12** | **0** | **45** | **0** |

## Two-Hour Count Summaries - Bikes

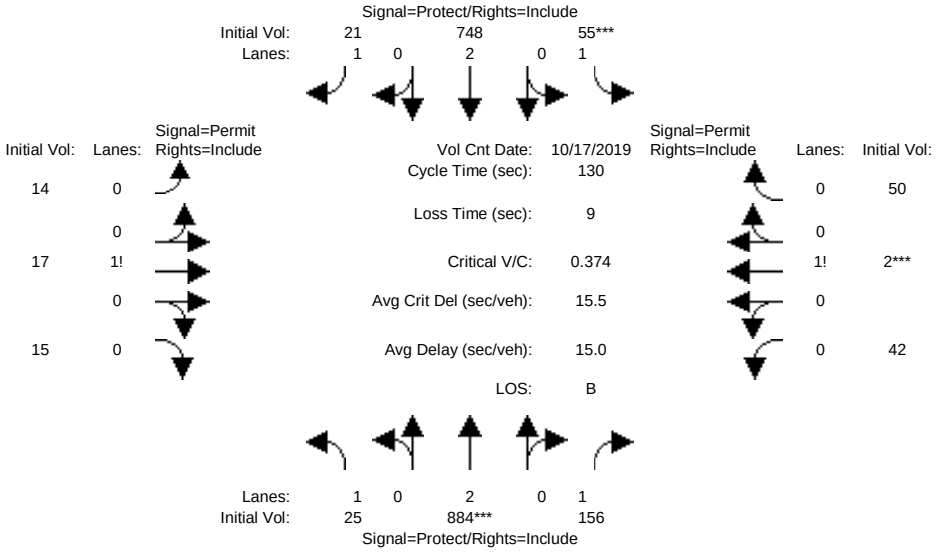
| Interval Start | Middlefield Rd | | | W Middlefield Rd | | | San Antonio Rd | | | San Antonio Rd | | | 15-min Total | Rolling One Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | |
| 4:00 PM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 4:15 PM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 |
| 4:30 PM | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 16 |
| **5:00 PM** | **0** | **1** | **0** | **0** | **7** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **9** | 21 |
| **5:15 PM** | **0** | **3** | **0** | **0** | **8** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **11** | 29 |
| **5:30 PM** | **0** | **1** | **0** | **0** | **6** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **7** | 32 |
| **5:45 PM** | **0** | **1** | **0** | **0** | **10** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **12** | **39** |
| Count Total | 1 | 10 | 0 | 0 | 40 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 55 | 0 |
| **Peak Hour** | **0** | **6** | **0** | **0** | **31** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **39** | **0** |

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

# Appendix C – Existing Conditions Intersection Level of Service Worksheets

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

## Intersection #1: San Antonio Road and Leghorn Road

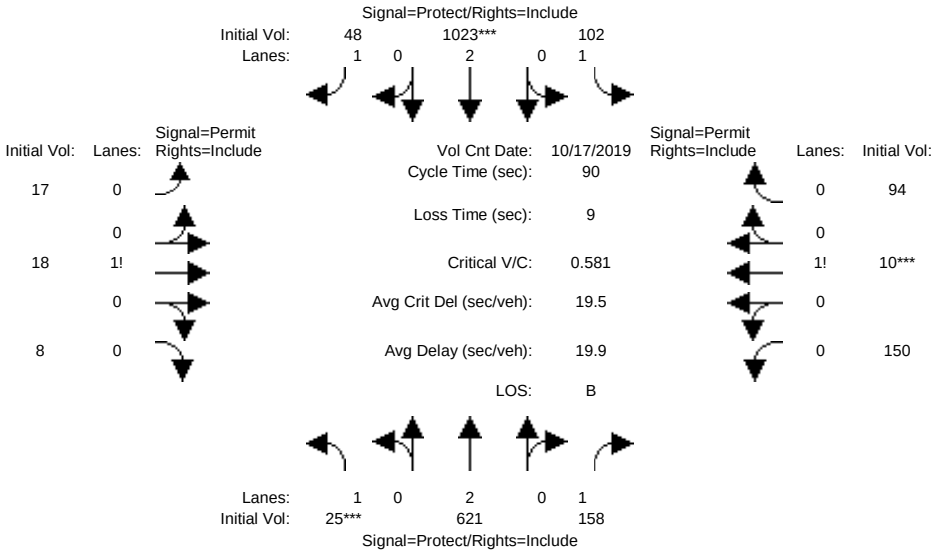



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 7:00-9:00 AM | | | | | | | | | | | | |
| Base Vol: | 25 | 884 | 156 | 55 | 748 | 21 | 14 | 17 | 15 | 42 | 2 | 50 |
| Growth 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 |
| Initial Bse: | 25 | 884 | 156 | 55 | 748 | 21 | 14 | 17 | 15 | 42 | 2 | 50 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 26 | 911 | 161 | 57 | 771 | 22 | 14 | 18 | 15 | 43 | 2 | 52 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 26 | 911 | 161 | 57 | 771 | 22 | 14 | 18 | 15 | 43 | 2 | 52 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 26 | 911 | 161 | 57 | 771 | 22 | 14 | 18 | 15 | 43 | 2 | 52 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.83 | 0.95 | 0.95 | 0.83 | 0.87 | 0.88 | 0.87 | 0.79 | 0.79 | 0.79 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.30 | 0.37 | 0.33 | 0.45 | 0.02 | 0.53 |
| Final Sat.: | 1805 | 3610 | 1576 | 1805 | 3610 | 1573 | 505 | 613 | 541 | 672 | 32 | 799 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.25 | 0.10 | 0.03 | 0.21 | 0.01 | 0.03 | 0.03 | 0.03 | 0.06 | 0.06 | 0.06 |
| Crit Moves: | | **** | | **** | | | | | | | **** | |
| Green/Cycle: | 0.15 | 0.67 | 0.67 | 0.08 | 0.61 | 0.61 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| Volume/Cap: | 0.09 | 0.37 | 0.15 | 0.37 | 0.35 | 0.02 | 0.17 | 0.17 | 0.17 | 0.37 | 0.37 | 0.37 |
| Uniform Del: | 47.3 | 9.2 | 7.7 | 56.3 | 12.8 | 10.2 | 45.8 | 45.8 | 45.8 | 47.6 | 47.6 | 47.6 |
| IncremntDel: | 0.1 | 0.1 | 0.1 | 1.6 | 0.1 | 0.0 | 0.3 | 0.3 | 0.3 | 0.9 | 0.9 | 0.9 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 47.5 | 9.3 | 7.7 | 57.9 | 12.9 | 10.3 | 46.1 | 46.1 | 46.1 | 48.5 | 48.5 | 48.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 47.5 | 9.3 | 7.7 | 57.9 | 12.9 | 10.3 | 46.1 | 46.1 | 46.1 | 48.5 | 48.5 | 48.5 |
| LOS by Move: | D | A | A | E | B | B | D | D | D | D | D | D |
| HCM2kAvgQ: | 1 | 8 | 2 | 3 | 8 | 0 | 2 | 2 | 2 | 4 | 4 | 4 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing PM

Intersection #1: San Antonio Road and Leghorn Road

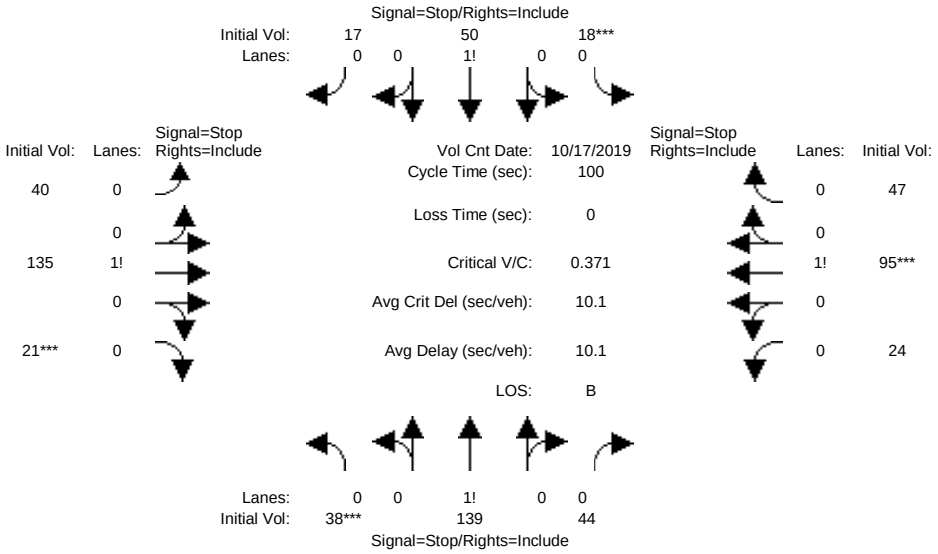



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 4:00 - 6:00 P.M. | | | | | | | | | | | | |
| Base Vol: | 25 | 621 | 158 | 102 | 1023 | 48 | 17 | 18 | 8 | 150 | 10 | 94 |
| Growth 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 |
| Initial Bse: | 25 | 621 | 158 | 102 | 1023 | 48 | 17 | 18 | 8 | 150 | 10 | 94 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 27 | 682 | 174 | 112 | 1124 | 53 | 19 | 20 | 9 | 165 | 11 | 103 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 27 | 682 | 174 | 112 | 1124 | 53 | 19 | 20 | 9 | 165 | 11 | 103 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 27 | 682 | 174 | 112 | 1124 | 53 | 19 | 20 | 9 | 165 | 11 | 103 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.84 | 0.95 | 0.95 | 0.82 | 0.84 | 0.84 | 0.84 | 0.75 | 0.75 | 0.75 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.39 | 0.42 | 0.19 | 0.59 | 0.04 | 0.37 |
| Final Sat.: | 1805 | 3610 | 1603 | 1805 | 3610 | 1551 | 632 | 669 | 298 | 838 | 56 | 525 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.19 | 0.11 | 0.06 | 0.31 | 0.03 | 0.03 | 0.03 | 0.03 | 0.20 | 0.20 | 0.20 |
| Crit Moves: | **** | | | | **** | | | | | | **** | |
| Green/Cycle: | 0.08 | 0.41 | 0.41 | 0.17 | 0.50 | 0.50 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| Volume/Cap: | 0.20 | 0.46 | 0.26 | 0.37 | 0.62 | 0.07 | 0.09 | 0.09 | 0.09 | 0.62 | 0.62 | 0.62 |
| Uniform Del: | 38.9 | 19.2 | 17.4 | 33.1 | 16.1 | 11.5 | 21.6 | 21.6 | 21.6 | 26.0 | 26.0 | 26.0 |
| IncremntDel: | 0.7 | 0.2 | 0.2 | 0.7 | 0.7 | 0.0 | 0.1 | 0.1 | 0.1 | 2.6 | 2.6 | 2.6 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 39.5 | 19.4 | 17.7 | 33.8 | 16.7 | 11.5 | 21.6 | 21.6 | 21.6 | 28.6 | 28.6 | 28.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 39.5 | 19.4 | 17.7 | 33.8 | 16.7 | 11.5 | 21.6 | 21.6 | 21.6 | 28.6 | 28.6 | 28.6 |
| LOS by Move: | D | B | B | C | B | B | C | C | C | C | C | C |
| HCM2kAvgQ: | 1 | 7 | 3 | 3 | 12 | 1 | 1 | 1 | 1 | 7 | 7 | 7 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Base Volume Alternative)
Existing AM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 7:00-9:00 AM | | | | | | | | | | | | |
| Base Vol: | 38 | 139 | 44 | 18 | 50 | 17 | 40 | 135 | 21 | 24 | 95 | 47 |
| Growth 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 |
| Initial Bse: | 38 | 139 | 44 | 18 | 50 | 17 | 40 | 135 | 21 | 24 | 95 | 47 |
| User 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 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 44 | 160 | 51 | 21 | 57 | 20 | 46 | 155 | 24 | 28 | 109 | 54 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 44 | 160 | 51 | 21 | 57 | 20 | 46 | 155 | 24 | 28 | 109 | 54 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 44 | 160 | 51 | 21 | 57 | 20 | 46 | 155 | 24 | 28 | 109 | 54 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.17 | 0.63 | 0.20 | 0.21 | 0.59 | 0.20 | 0.20 | 0.69 | 0.11 | 0.14 | 0.58 | 0.28 |
| Final Sat.: | 118 | 431 | 136 | 134 | 373 | 127 | 139 | 468 | 73 | 99 | 391 | 194 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.37 | 0.37 | 0.37 | 0.15 | 0.15 | 0.15 | 0.33 | 0.33 | 0.33 | 0.28 | 0.28 | 0.28 |
| Crit Moves: | **** | | | **** | | | | | **** | | **** | |
| Delay/Veh: | 10.6 | 10.6 | 10.6 | 9.0 | 9.0 | 9.0 | 10.3 | 10.3 | 10.3 | 9.7 | 9.7 | 9.7 |
| Delay 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 |
| AdjDel/Veh: | 10.6 | 10.6 | 10.6 | 9.0 | 9.0 | 9.0 | 10.3 | 10.3 | 10.3 | 9.7 | 9.7 | 9.7 |
| LOS by Move: | B | B | B | A | A | A | B | B | B | A | A | A |
| ApproachDel: | 10.6 | | | 9.0 | | | 10.3 | | | 9.7 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 10.6 | | | 9.0 | | | 10.3 | | | 9.7 | | |
| LOS by Appr: | B | | | A | | | B | | | A | | |
| AllWayAvgQ: | 0.5 | 0.5 | 0.5 | 0.1 | 0.1 | 0.1 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | South Bound | East Bound | West Bound |
|---|---|---|---|---|

| Movement: | L - T - R | L - T - R | L - T - R | L - T - R |
|---|---|---|---|---|
| Control: | Stop Sign | Stop Sign | Stop Sign | Stop Sign |
| Lanes: | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 |
| Initial Vol: | 38 139 44 | 18 50 17 | 40 135 21 | 24 95 47 |

Major Street Volume: 362
Minor Approach Volume: 221
Minor Approach Volume Threshold: 490

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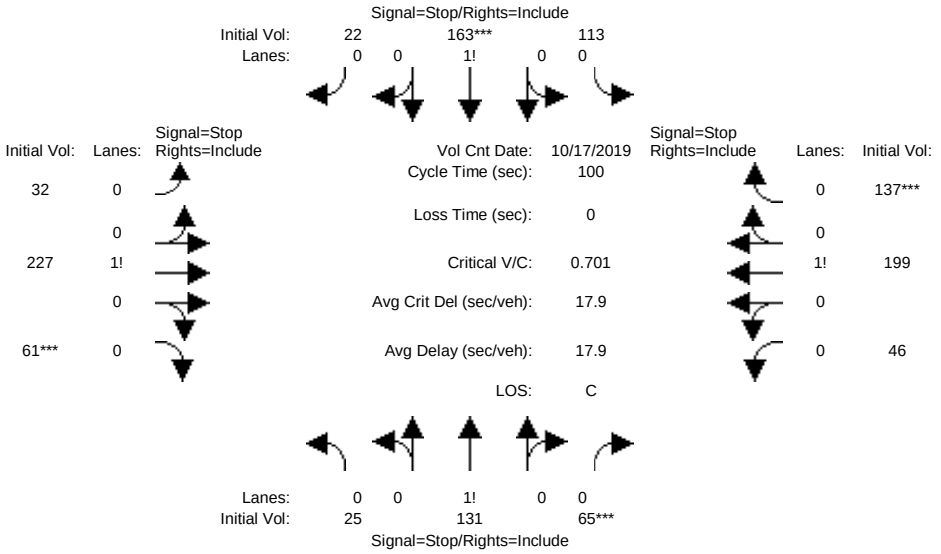
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Base Volume Alternative)
Existing PM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 4:00 - 6:00 P.M. | | | | | | | | | | | | |
| Base Vol: | 25 | 131 | 65 | 113 | 163 | 22 | 32 | 227 | 61 | 46 | 199 | 137 |
| Growth 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 |
| Initial Bse: | 25 | 131 | 65 | 113 | 163 | 22 | 32 | 227 | 61 | 46 | 199 | 137 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 26 | 135 | 67 | 116 | 168 | 23 | 33 | 234 | 63 | 47 | 205 | 141 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 26 | 135 | 67 | 116 | 168 | 23 | 33 | 234 | 63 | 47 | 205 | 141 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 26 | 135 | 67 | 116 | 168 | 23 | 33 | 234 | 63 | 47 | 205 | 141 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.11 | 0.60 | 0.29 | 0.38 | 0.55 | 0.07 | 0.10 | 0.71 | 0.19 | 0.12 | 0.52 | 0.36 |
| Final Sat.: | 54 | 285 | 142 | 192 | 277 | 37 | 53 | 379 | 102 | 68 | 293 | 202 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.47 | 0.47 | 0.47 | 0.61 | 0.61 | 0.61 | 0.62 | 0.62 | 0.62 | 0.70 | 0.70 | 0.70 |
| Crit Moves: | | | **** | | **** | | | | **** | | | **** |
| Delay/Veh: | 14.3 | 14.3 | 14.3 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 20.4 | 20.4 | 20.4 |
| Delay 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 |
| AdjDel/Veh: | 14.3 | 14.3 | 14.3 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 20.4 | 20.4 | 20.4 |
| LOS by Move: | B | B | B | C | C | C | C | C | C | C | C | C |
| ApproachDel: | 14.3 | | | 17.6 | | | 17.6 | | | 20.4 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 14.3 | | | 17.6 | | | 17.6 | | | 20.4 | | |
| LOS by Appr: | B | | | C | | | C | | | C | | |
| AllWayAvgQ: | 0.6 | 0.6 | 0.6 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.8 | 1.8 | 1.8 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | South Bound | East Bound | West Bound |
|---|---|---|---|---|

| Movement: | L - T - R | L - T - R | L - T - R | L - T - R |
|---|---|---|---|---|
| Control: | Stop Sign | Stop Sign | Stop Sign | Stop Sign |
| Lanes: | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 |
| Initial Vol: | 25 131 65 | 113 163 22 | 32 227 61 | 46 199 137 |

Major Street Volume: 702
Minor Approach Volume: 298
Minor Approach Volume Threshold: 314

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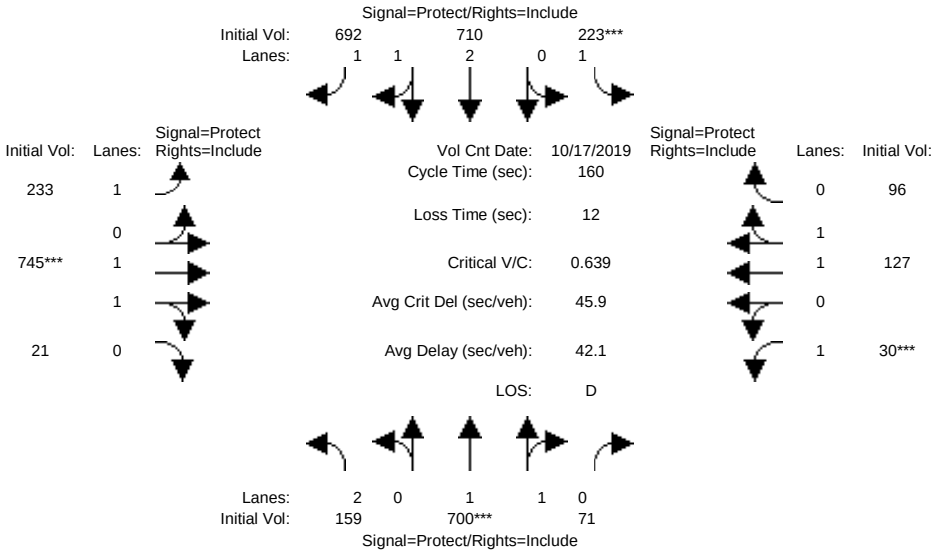
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

## Intersection #3: San Antonio Road & Chareleston Road

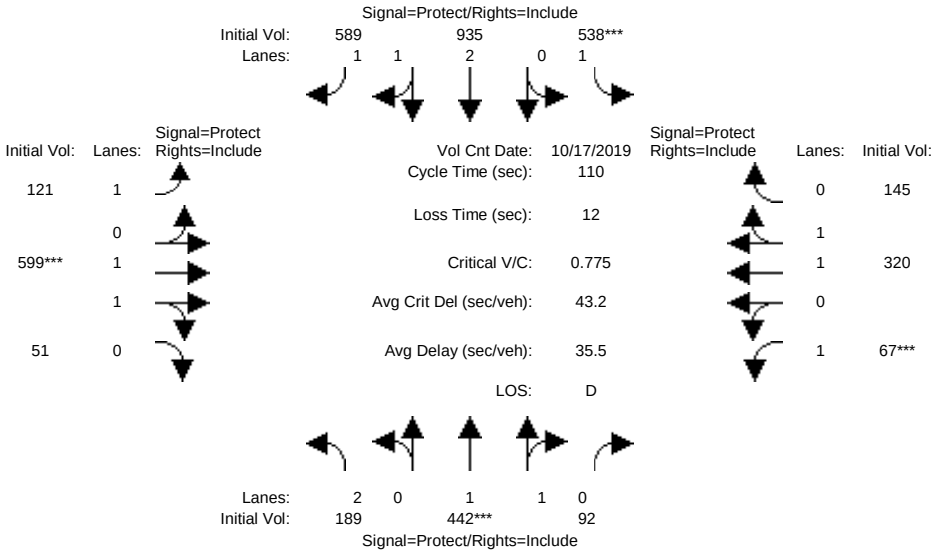



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 7:00-9:00 AM | | | | | | | | | | | | |
| Base Vol: | 159 | 700 | 71 | 223 | 710 | 692 | 233 | 745 | 21 | 30 | 127 | 96 |
| Growth 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 |
| Initial Bse: | 159 | 700 | 71 | 223 | 710 | 692 | 233 | 745 | 21 | 30 | 127 | 96 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 164 | 722 | 73 | 230 | 732 | 713 | 240 | 768 | 22 | 31 | 131 | 99 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 164 | 722 | 73 | 230 | 732 | 713 | 240 | 768 | 22 | 31 | 131 | 99 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 164 | 722 | 73 | 230 | 732 | 713 | 240 | 768 | 22 | 31 | 131 | 99 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.94 | 0.93 | 0.95 | 0.84 | 0.83 | 0.95 | 0.95 | 0.95 | 0.95 | 0.89 | 0.88 |
| Lanes: | 2.00 | 1.82 | 0.18 | 1.00 | 2.01 | 1.99 | 1.00 | 1.95 | 0.05 | 1.00 | 1.13 | 0.87 |
| Final Sat.: | 3502 | 3231 | 328 | 1805 | 3218 | 3136 | 1805 | 3497 | 99 | 1805 | 1914 | 1447 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.22 | 0.22 | 0.13 | 0.23 | 0.23 | 0.13 | 0.22 | 0.22 | 0.02 | 0.07 | 0.07 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.09 | 0.34 | 0.34 | 0.20 | 0.45 | 0.45 | 0.25 | 0.34 | 0.34 | 0.05 | 0.13 | 0.13 |
| Volume/Cap: | 0.51 | 0.65 | 0.65 | 0.65 | 0.51 | 0.51 | 0.53 | 0.65 | 0.65 | 0.37 | 0.53 | 0.53 |
| Uniform Del: | 64.9 | 41.8 | 41.8 | 55.7 | 29.9 | 29.9 | 48.3 | 42.3 | 42.3 | 69.4 | 60.9 | 60.9 |
| IncremntDel: | 1.4 | 1.3 | 1.3 | 4.4 | 0.2 | 0.2 | 1.1 | 1.3 | 1.3 | 2.7 | 1.2 | 1.2 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 66.3 | 43.1 | 43.1 | 60.0 | 30.0 | 30.0 | 49.4 | 43.6 | 43.6 | 72.1 | 62.1 | 62.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 66.3 | 43.1 | 43.1 | 60.0 | 30.0 | 30.0 | 49.4 | 43.6 | 43.6 | 72.1 | 62.1 | 62.1 |
| LOS by Move: | E | D | D | E | C | C | D | D | D | E | E | E |
| HCM2kAvgQ: | 4 | 17 | 17 | 11 | 13 | 13 | 10 | 16 | 16 | 2 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing PM

## Intersection #3: San Antonio Road & Chareleston Road

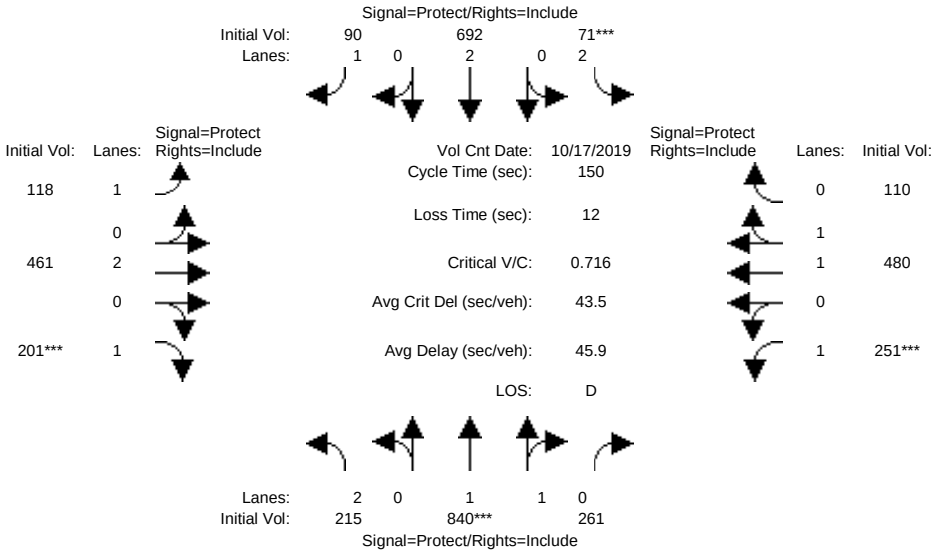



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 4:00 - 6:00 P.M. | | | | | | | | | | | | |
| Base Vol: | 189 | 442 | 92 | 538 | 935 | 589 | 121 | 599 | 51 | 67 | 320 | 145 |
| Growth 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 |
| Initial Bse: | 189 | 442 | 92 | 538 | 935 | 589 | 121 | 599 | 51 | 67 | 320 | 145 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 195 | 456 | 95 | 555 | 964 | 607 | 125 | 618 | 53 | 69 | 330 | 149 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 195 | 456 | 95 | 555 | 964 | 607 | 125 | 618 | 53 | 69 | 330 | 149 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 195 | 456 | 95 | 555 | 964 | 607 | 125 | 618 | 53 | 69 | 330 | 149 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.92 | 0.95 | 0.86 | 0.84 | 0.95 | 0.94 | 0.94 | 0.95 | 0.91 | 0.90 |
| Lanes: | 2.00 | 1.65 | 0.35 | 1.00 | 2.43 | 1.57 | 1.00 | 1.84 | 0.16 | 1.00 | 1.37 | 0.63 |
| Final Sat.: | 3502 | 2909 | 605 | 1805 | 3959 | 2494 | 1805 | 3286 | 280 | 1805 | 2360 | 1070 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.06 | 0.16 | 0.16 | 0.31 | 0.24 | 0.24 | 0.07 | 0.19 | 0.19 | 0.04 | 0.14 | 0.14 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.12 | 0.20 | 0.20 | 0.39 | 0.47 | 0.47 | 0.10 | 0.24 | 0.24 | 0.06 | 0.20 | 0.20 |
| Volume/Cap: | 0.46 | 0.79 | 0.79 | 0.79 | 0.52 | 0.52 | 0.69 | 0.79 | 0.79 | 0.60 | 0.69 | 0.69 |
| Uniform Del: | 44.9 | 41.9 | 41.9 | 29.5 | 20.7 | 20.7 | 47.9 | 39.3 | 39.3 | 50.1 | 40.7 | 40.7 |
| IncremntDel: | 0.8 | 6.0 | 6.0 | 5.9 | 0.2 | 0.2 | 10.9 | 5.0 | 5.0 | 8.6 | 3.0 | 3.0 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 45.7 | 47.8 | 47.8 | 35.5 | 20.8 | 20.8 | 58.8 | 44.2 | 44.2 | 58.8 | 43.7 | 43.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 45.7 | 47.8 | 47.8 | 35.5 | 20.8 | 20.8 | 58.8 | 44.2 | 44.2 | 58.8 | 43.7 | 43.7 |
| LOS by Move: | D | D | D | D | C | C | E | D | D | E | D | D |
| HCM2kAvgQ: | 4 | 11 | 11 | 18 | 10 | 10 | 5 | 13 | 13 | 3 | 9 | 9 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing AM

## Intersection #4: San Antonio Road & Middlefield Road

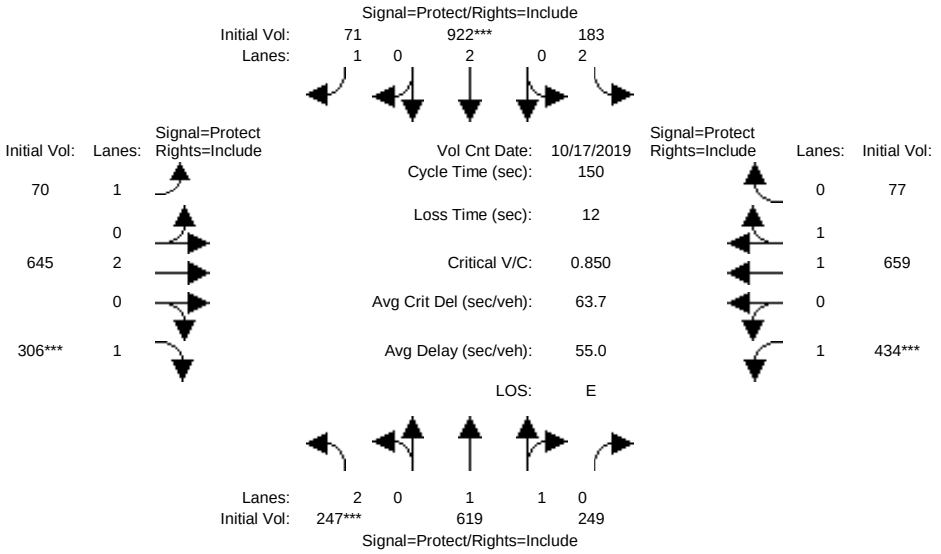



| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Min. Green: | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 7:00-9:00 AM | | | | | | | | | | | | |
| Base Vol: | 215 | 840 | 261 | 71 | 692 | 90 | 118 | 461 | 201 | 251 | 480 | 110 |
| Growth 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 |
| Initial Bse: | 215 | 840 | 261 | 71 | 692 | 90 | 118 | 461 | 201 | 251 | 480 | 110 |
| User 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 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 231 | 903 | 281 | 76 | 744 | 97 | 127 | 496 | 216 | 270 | 516 | 118 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 231 | 903 | 281 | 76 | 744 | 97 | 127 | 496 | 216 | 270 | 516 | 118 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 231 | 903 | 281 | 76 | 744 | 97 | 127 | 496 | 216 | 270 | 516 | 118 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.91 | 0.92 | 0.95 | 0.81 | 0.95 | 0.95 | 0.77 | 0.95 | 0.92 | 0.91 |
| Lanes: | 2.00 | 1.52 | 0.48 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.62 | 0.38 |
| Final Sat.: | 3502 | 2652 | 824 | 3502 | 3610 | 1543 | 1805 | 3610 | 1468 | 1805 | 2849 | 653 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.34 | 0.34 | 0.02 | 0.21 | 0.06 | 0.07 | 0.14 | 0.15 | 0.15 | 0.18 | 0.18 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.12 | 0.47 | 0.47 | 0.03 | 0.38 | 0.38 | 0.12 | 0.20 | 0.20 | 0.21 | 0.30 | 0.30 |
| Volume/Cap: | 0.54 | 0.72 | 0.72 | 0.65 | 0.54 | 0.16 | 0.61 | 0.67 | 0.72 | 0.72 | 0.61 | 0.61 |
| Uniform Del: | 61.8 | 31.5 | 31.5 | 71.6 | 35.8 | 30.3 | 63.1 | 55.0 | 55.6 | 55.3 | 45.2 | 45.2 |
| IncremntDel: | 1.3 | 1.6 | 1.6 | 12.6 | 0.4 | 0.1 | 5.2 | 2.4 | 8.1 | 6.6 | 1.1 | 1.1 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 63.1 | 33.0 | 33.0 | 84.2 | 36.2 | 30.5 | 68.3 | 57.4 | 63.8 | 61.9 | 46.3 | 46.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 63.1 | 33.0 | 33.0 | 84.2 | 36.2 | 30.5 | 68.3 | 57.4 | 63.8 | 61.9 | 46.3 | 46.3 |
| LOS by Move: | E | C | C | F | D | C | E | E | E | E | D | D |
| HCM2kAvgQ: | 6 | 23 | 23 | 3 | 14 | 3 | 6 | 12 | 11 | 13 | 13 | 13 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Existing PM

Intersection #4: San Antonio Road & Middlefield Road



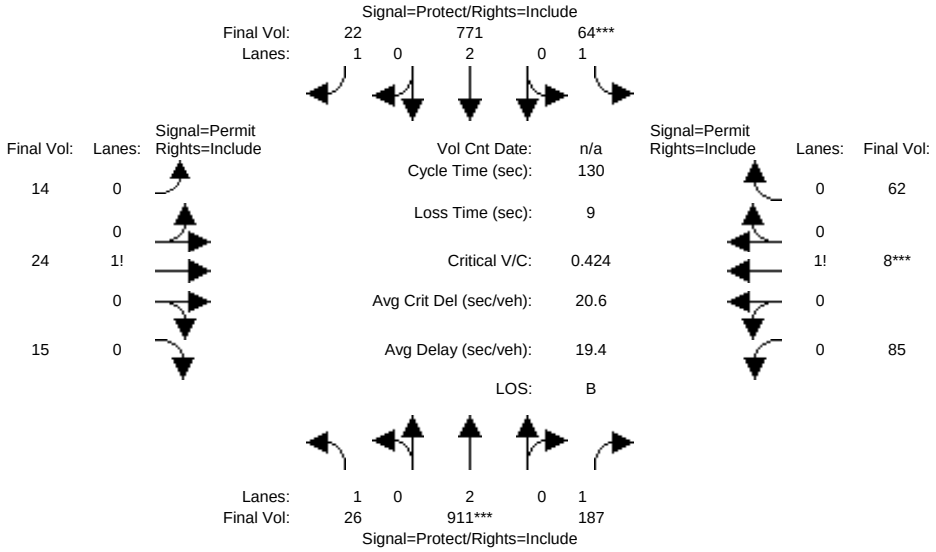

| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 |
| Volume Module: >> Count Date: 17 Oct 2019 << 4:00 - 6:00 P.M. | | | | | | | | | | | | |
| Base Vol: | 247 | 619 | 249 | 183 | 922 | 71 | 70 | 645 | 306 | 434 | 659 | 77 |
| Growth 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 |
| Initial Bse: | 247 | 619 | 249 | 183 | 922 | 71 | 70 | 645 | 306 | 434 | 659 | 77 |
| User 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 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 252 | 632 | 254 | 187 | 941 | 72 | 71 | 658 | 312 | 443 | 672 | 79 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 252 | 632 | 254 | 187 | 941 | 72 | 71 | 658 | 312 | 443 | 672 | 79 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 252 | 632 | 254 | 187 | 941 | 72 | 71 | 658 | 312 | 443 | 672 | 79 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.91 | 0.90 | 0.92 | 0.95 | 0.83 | 0.95 | 0.95 | 0.81 | 0.95 | 0.93 | 0.93 |
| Lanes: | 2.00 | 1.42 | 0.58 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.79 | 0.21 |
| Final Sat.: | 3502 | 2457 | 988 | 3502 | 3610 | 1576 | 1805 | 3610 | 1531 | 1805 | 3178 | 371 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.26 | 0.26 | 0.05 | 0.26 | 0.05 | 0.04 | 0.18 | 0.20 | 0.25 | 0.21 | 0.21 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.08 | 0.32 | 0.32 | 0.07 | 0.31 | 0.31 | 0.08 | 0.24 | 0.24 | 0.29 | 0.45 | 0.45 |
| Volume/Cap: | 0.85 | 0.79 | 0.79 | 0.79 | 0.85 | 0.15 | 0.48 | 0.76 | 0.85 | 0.85 | 0.48 | 0.48 |
| Uniform Del: | 67.7 | 46.1 | 46.1 | 68.9 | 48.8 | 37.8 | 65.6 | 53.0 | 54.4 | 50.3 | 29.3 | 29.3 |
| IncremntDel: | 20.1 | 4.0 | 4.0 | 16.7 | 6.4 | 0.1 | 2.4 | 4.0 | 16.9 | 12.5 | 0.2 | 0.2 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 87.8 | 50.1 | 50.1 | 85.6 | 55.1 | 37.9 | 68.0 | 56.9 | 71.3 | 62.8 | 29.5 | 29.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 87.8 | 50.1 | 50.1 | 85.6 | 55.1 | 37.9 | 68.0 | 56.9 | 71.3 | 62.8 | 29.5 | 29.5 |
| LOS by Move: | F | D | D | F | E | D | E | E | E | E | C | C |
| HCM2kAvgQ: | 8 | 21 | 21 | 6 | 23 | 2 | 4 | 16 | 16 | 21 | 12 | 12 |

Note: Queue reported is the number of cars per lane.

# Appendix D – Existing plus Project Conditions Intersection Level of Service Worksheets

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project AM

## Intersection #1: San Antonio Road and Leghorn Road

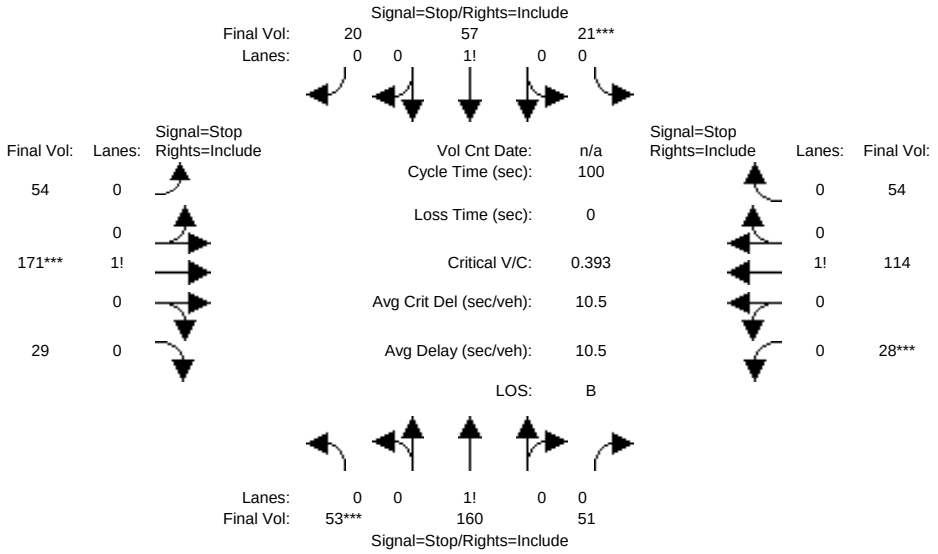



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 25 | 884 | 156 | 55 | 748 | 21 | 14 | 17 | 15 | 42 | 2 | 50 |
| Growth 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 |
| Initial Bse: | 25 | 884 | 156 | 55 | 748 | 21 | 14 | 17 | 15 | 42 | 2 | 50 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 0 | 0 | 25 | 7 | 0 | 0 | 0 | 6 | 0 | 40 | 6 | 10 |
| Initial Fut: | 25 | 884 | 181 | 62 | 748 | 21 | 14 | 23 | 15 | 82 | 8 | 60 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 26 | 911 | 187 | 64 | 771 | 22 | 14 | 24 | 15 | 85 | 8 | 62 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 26 | 911 | 187 | 64 | 771 | 22 | 14 | 24 | 15 | 85 | 8 | 62 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 26 | 911 | 187 | 64 | 771 | 22 | 14 | 24 | 15 | 85 | 8 | 62 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.83 | 0.95 | 0.95 | 0.83 | 0.88 | 0.89 | 0.88 | 0.77 | 0.77 | 0.77 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.27 | 0.44 | 0.29 | 0.55 | 0.05 | 0.40 |
| Final Sat.: | 1805 | 3610 | 1575 | 1805 | 3610 | 1572 | 452 | 742 | 484 | 795 | 78 | 582 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.25 | 0.12 | 0.04 | 0.21 | 0.01 | 0.03 | 0.03 | 0.03 | 0.11 | 0.11 | 0.11 |
| Crit Moves: | | **** | | **** | | | | | | | **** | |
| Green/Cycle: | 0.14 | 0.60 | 0.60 | 0.08 | 0.54 | 0.54 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Volume/Cap: | 0.10 | 0.42 | 0.20 | 0.42 | 0.39 | 0.03 | 0.13 | 0.13 | 0.13 | 0.42 | 0.42 | 0.42 |
| Uniform Del: | 49.1 | 14.2 | 12.0 | 56.6 | 17.3 | 13.8 | 37.7 | 37.7 | 37.7 | 40.8 | 40.8 | 40.8 |
| IncremntDel: | 0.2 | 0.1 | 0.1 | 1.9 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.8 | 0.8 | 0.8 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 49.3 | 14.3 | 12.1 | 58.5 | 17.4 | 13.8 | 37.8 | 37.8 | 37.8 | 41.6 | 41.6 | 41.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 49.3 | 14.3 | 12.1 | 58.5 | 17.4 | 13.8 | 37.8 | 37.8 | 37.8 | 41.6 | 41.6 | 41.6 |
| LOS by Move: | D | B | B | E | B | B | D | D | D | D | D | D |
| HCM2kAvgQ: | 1 | 10 | 3 | 3 | 9 | 0 | 2 | 2 | 2 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Existing Plus Project AM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 38 | 139 | 44 | 18 | 50 | 17 | 40 | 135 | 21 | 24 | 95 | 47 |
| Growth 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 |
| Initial Bse: | 38 | 139 | 44 | 18 | 50 | 17 | 40 | 135 | 21 | 24 | 95 | 47 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 8 | 0 | 0 | 0 | 0 | 0 | 7 | 14 | 4 | 0 | 4 | 0 |
| Initial Fut: | 46 | 139 | 44 | 18 | 50 | 17 | 47 | 149 | 25 | 24 | 99 | 47 |
| User 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 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 53 | 160 | 51 | 21 | 57 | 20 | 54 | 171 | 29 | 28 | 114 | 54 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 160 | 51 | 21 | 57 | 20 | 54 | 171 | 29 | 28 | 114 | 54 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 53 | 160 | 51 | 21 | 57 | 20 | 54 | 171 | 29 | 28 | 114 | 54 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.20 | 0.61 | 0.19 | 0.21 | 0.59 | 0.20 | 0.21 | 0.68 | 0.11 | 0.14 | 0.58 | 0.28 |
| Final Sat.: | 134 | 406 | 129 | 130 | 361 | 123 | 143 | 455 | 76 | 95 | 390 | 185 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.39 | 0.39 | 0.39 | 0.16 | 0.16 | 0.16 | 0.38 | 0.38 | 0.38 | 0.29 | 0.29 | 0.29 |
| Crit Moves: | **** | | | **** | | | | **** | | **** | | |
| Delay/Veh: | 11.0 | 11.0 | 11.0 | 9.2 | 9.2 | 9.2 | 10.8 | 10.8 | 10.8 | 9.9 | 9.9 | 9.9 |
| Delay 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 |
| AdjDel/Veh: | 11.0 | 11.0 | 11.0 | 9.2 | 9.2 | 9.2 | 10.8 | 10.8 | 10.8 | 9.9 | 9.9 | 9.9 |
| LOS by Move: | B | B | B | A | A | A | B | B | B | A | A | A |
| ApproachDel: | 11.0 | | | 9.2 | | | 10.8 | | | 9.9 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 11.0 | | | 9.2 | | | 10.8 | | | 9.9 | | |
| LOS by Appr: | B | | | A | | | B | | | A | | |
| AllWayAvgQ: | 0.5 | 0.5 | 0.5 | 0.2 | 0.2 | 0.2 | 0.5 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! | 0 | | 0 0 1! | 0 | | 0 0 1! | 0 | | 0 0 1! | 0 | |
| Initial Vol: | 46 | 139 | 44 | 18 | 50 | 17 | 47 | 149 | 25 | 24 | 99 | 47 |

Major Street Volume: 391
Minor Approach Volume: 229
Minor Approach Volume Threshold: 470

SIGNAL WARRANT DISCLAIMER

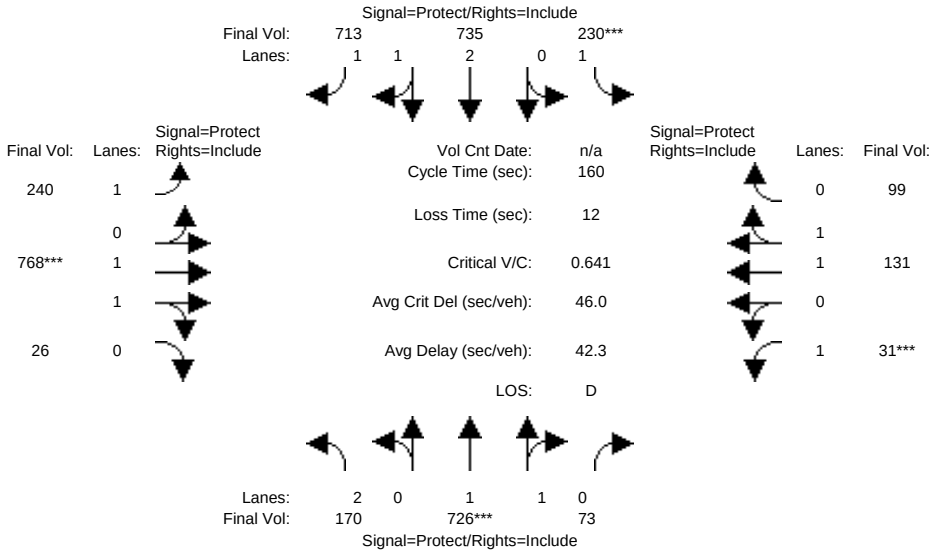
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project AM

## Intersection #3: San Antonio Road & Chareleston Road

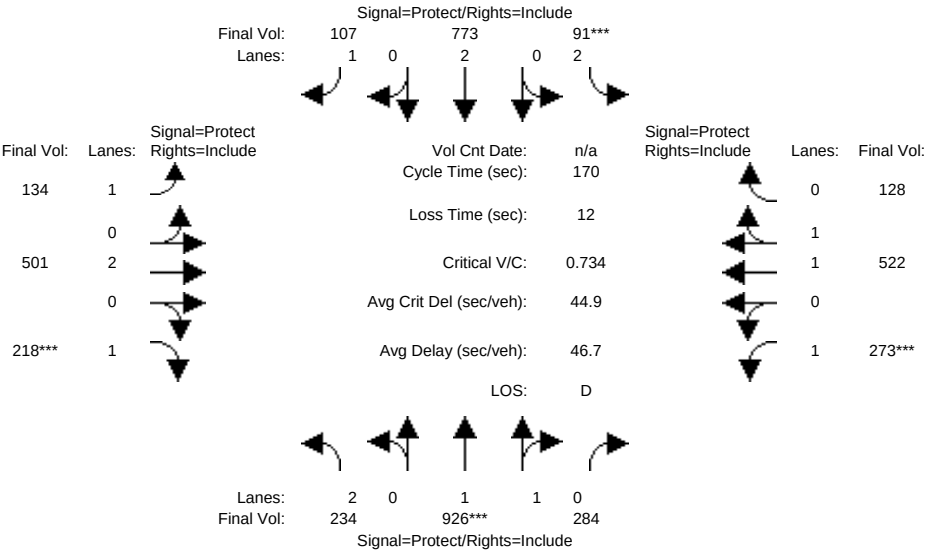



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 159 | 700 | 71 | 223 | 710 | 692 | 233 | 745 | 21 | 30 | 127 | 96 |
| Growth 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 |
| Initial Bse: | 159 | 700 | 71 | 223 | 710 | 692 | 233 | 745 | 21 | 30 | 127 | 96 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 6 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Initial Fut: | 165 | 704 | 71 | 223 | 713 | 692 | 233 | 745 | 25 | 30 | 127 | 96 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 170 | 726 | 73 | 230 | 735 | 713 | 240 | 768 | 26 | 31 | 131 | 99 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 170 | 726 | 73 | 230 | 735 | 713 | 240 | 768 | 26 | 31 | 131 | 99 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 170 | 726 | 73 | 230 | 735 | 713 | 240 | 768 | 26 | 31 | 131 | 99 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.94 | 0.93 | 0.95 | 0.84 | 0.83 | 0.95 | 0.95 | 0.94 | 0.95 | 0.89 | 0.88 |
| Lanes: | 2.00 | 1.82 | 0.18 | 1.00 | 2.01 | 1.99 | 1.00 | 1.93 | 0.07 | 1.00 | 1.13 | 0.87 |
| Final Sat.: | 3502 | 3233 | 326 | 1805 | 3225 | 3130 | 1805 | 3475 | 117 | 1805 | 1914 | 1447 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.22 | 0.22 | 0.13 | 0.23 | 0.23 | 0.13 | 0.22 | 0.22 | 0.02 | 0.07 | 0.07 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.09 | 0.34 | 0.34 | 0.19 | 0.44 | 0.44 | 0.25 | 0.34 | 0.34 | 0.05 | 0.13 | 0.13 |
| Volume/Cap: | 0.52 | 0.66 | 0.66 | 0.66 | 0.52 | 0.52 | 0.53 | 0.66 | 0.66 | 0.37 | 0.53 | 0.53 |
| Uniform Del: | 64.7 | 41.8 | 41.8 | 55.8 | 30.2 | 30.2 | 48.2 | 42.3 | 42.3 | 69.4 | 60.9 | 60.9 |
| IncremntDel: | 1.4 | 1.3 | 1.3 | 4.5 | 0.2 | 0.2 | 1.1 | 1.3 | 1.3 | 2.7 | 1.2 | 1.2 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 66.1 | 43.2 | 43.2 | 60.3 | 30.4 | 30.4 | 49.4 | 43.7 | 43.7 | 72.1 | 62.1 | 62.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 66.1 | 43.2 | 43.2 | 60.3 | 30.4 | 30.4 | 49.4 | 43.7 | 43.7 | 72.1 | 62.1 | 62.1 |
| LOS by Move: | E | D | D | E | C | C | D | D | D | E | E | E |
| HCM2kAvgQ: | 4 | 17 | 17 | 11 | 13 | 13 | 10 | 17 | 17 | 2 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project AM

Intersection #4: San Antonio Road & Middlefield Road

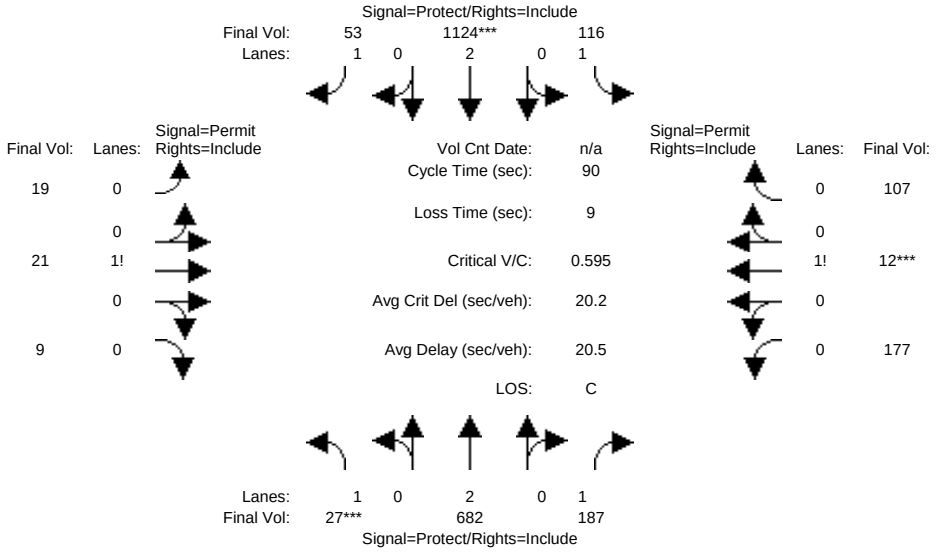



| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 215 | 840 | 261 | 71 | 692 | 90 | 118 | 461 | 201 | 251 | 480 | 110 |
| Growth 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 |
| Initial Bse: | 215 | 840 | 261 | 71 | 692 | 90 | 118 | 461 | 201 | 251 | 480 | 110 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 0 | 12 | 0 | 13 | 19 | 8 | 5 | 0 | 0 | 0 | 0 | 8 |
| Initial Fut: | 215 | 852 | 261 | 84 | 711 | 98 | 123 | 461 | 201 | 251 | 480 | 118 |
| User 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 |
| PHF Adj: | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| PHF Volume: | 234 | 926 | 284 | 91 | 773 | 107 | 134 | 501 | 218 | 273 | 522 | 128 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 234 | 926 | 284 | 91 | 773 | 107 | 134 | 501 | 218 | 273 | 522 | 128 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 234 | 926 | 284 | 91 | 773 | 107 | 134 | 501 | 218 | 273 | 522 | 128 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.91 | 0.92 | 0.95 | 0.81 | 0.95 | 0.95 | 0.76 | 0.95 | 0.92 | 0.91 |
| Lanes: | 2.00 | 1.53 | 0.47 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.60 | 0.40 |
| Final Sat.: | 3502 | 2663 | 816 | 3502 | 3610 | 1536 | 1805 | 3610 | 1452 | 1805 | 2804 | 689 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.35 | 0.35 | 0.03 | 0.21 | 0.07 | 0.07 | 0.14 | 0.15 | 0.15 | 0.19 | 0.19 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.12 | 0.47 | 0.47 | 0.05 | 0.39 | 0.39 | 0.12 | 0.20 | 0.20 | 0.20 | 0.29 | 0.29 |
| Volume/Cap: | 0.55 | 0.74 | 0.74 | 0.56 | 0.55 | 0.18 | 0.64 | 0.69 | 0.74 | 0.74 | 0.64 | 0.64 |
| Uniform Del: | 61.9 | 32.6 | 32.6 | 70.0 | 35.3 | 29.8 | 63.4 | 55.4 | 56.2 | 56.1 | 46.4 | 46.4 |
| IncremntDel: | 1.5 | 1.9 | 1.9 | 4.3 | 0.4 | 0.1 | 6.6 | 2.7 | 9.8 | 8.0 | 1.4 | 1.4 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 63.4 | 34.5 | 34.5 | 74.3 | 35.7 | 29.9 | 70.0 | 58.1 | 66.0 | 64.1 | 47.8 | 47.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 63.4 | 34.5 | 34.5 | 74.3 | 35.7 | 29.9 | 70.0 | 58.1 | 66.0 | 64.1 | 47.8 | 47.8 |
| LOS by Move: | E | C | C | E | D | C | E | E | E | E | D | D |
| HCM2kAvgQ: | 6 | 24 | 24 | 3 | 14 | 3 | 7 | 12 | 11 | 13 | 14 | 14 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project PM

Intersection #1: San Antonio Road and Leghorn Road

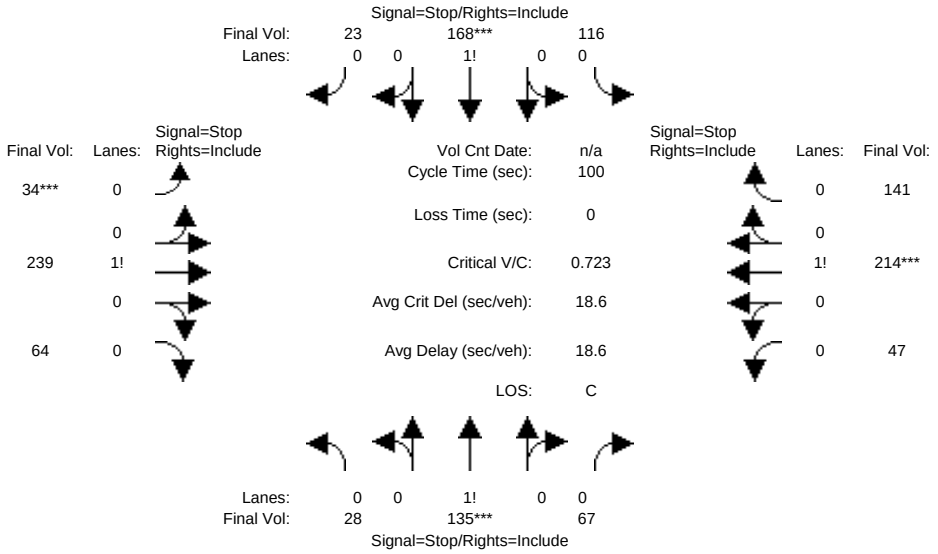



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 25 | 621 | 158 | 102 | 1023 | 48 | 17 | 18 | 8 | 150 | 10 | 94 |
| Growth 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 |
| Initial Bse: | 25 | 621 | 158 | 102 | 1023 | 48 | 17 | 18 | 8 | 150 | 10 | 94 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 0 | 0 | 12 | 4 | 0 | 0 | 0 | 1 | 0 | 11 | 1 | 3 |
| Initial Fut: | 25 | 621 | 170 | 106 | 1023 | 48 | 17 | 19 | 8 | 161 | 11 | 97 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 27 | 682 | 187 | 116 | 1124 | 53 | 19 | 21 | 9 | 177 | 12 | 107 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 27 | 682 | 187 | 116 | 1124 | 53 | 19 | 21 | 9 | 177 | 12 | 107 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 27 | 682 | 187 | 116 | 1124 | 53 | 19 | 21 | 9 | 177 | 12 | 107 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.84 | 0.95 | 0.95 | 0.82 | 0.84 | 0.84 | 0.84 | 0.75 | 0.75 | 0.74 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.39 | 0.43 | 0.18 | 0.60 | 0.04 | 0.36 |
| Final Sat.: | 1805 | 3610 | 1603 | 1805 | 3610 | 1550 | 617 | 690 | 290 | 847 | 58 | 510 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.19 | 0.12 | 0.06 | 0.31 | 0.03 | 0.03 | 0.03 | 0.03 | 0.21 | 0.21 | 0.21 |
| Crit Moves: | **** | | | | **** | | | | | | **** | |
| Green/Cycle: | 0.08 | 0.40 | 0.40 | 0.17 | 0.49 | 0.49 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| Volume/Cap: | 0.20 | 0.47 | 0.29 | 0.39 | 0.63 | 0.07 | 0.09 | 0.09 | 0.09 | 0.63 | 0.63 | 0.63 |
| Uniform Del: | 38.9 | 19.7 | 18.1 | 33.4 | 16.9 | 12.0 | 20.8 | 20.8 | 20.8 | 25.5 | 25.5 | 25.5 |
| IncremntDel: | 0.7 | 0.2 | 0.2 | 0.8 | 0.8 | 0.0 | 0.1 | 0.1 | 0.1 | 2.8 | 2.8 | 2.8 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 39.5 | 20.0 | 18.4 | 34.3 | 17.6 | 12.1 | 20.9 | 20.9 | 20.9 | 28.4 | 28.4 | 28.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 39.5 | 20.0 | 18.4 | 34.3 | 17.6 | 12.1 | 20.9 | 20.9 | 20.9 | 28.4 | 28.4 | 28.4 |
| LOS by Move: | D | B | B | C | B | B | C | C | C | C | C | C |
| HCM2kAvgQ: | 1 | 7 | 4 | 3 | 13 | 1 | 1 | 1 | 1 | 8 | 8 | 8 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Existing Plus Project PM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 25 | 131 | 65 | 113 | 163 | 22 | 32 | 227 | 61 | 46 | 199 | 137 |
| Growth 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 |
| Initial Bse: | 25 | 131 | 65 | 113 | 163 | 22 | 32 | 227 | 61 | 46 | 199 | 137 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 0 | 9 | 0 |
| Initial Fut: | 27 | 131 | 65 | 113 | 163 | 22 | 33 | 232 | 62 | 46 | 208 | 137 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 28 | 135 | 67 | 116 | 168 | 23 | 34 | 239 | 64 | 47 | 214 | 141 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 28 | 135 | 67 | 116 | 168 | 23 | 34 | 239 | 64 | 47 | 214 | 141 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 28 | 135 | 67 | 116 | 168 | 23 | 34 | 239 | 64 | 47 | 214 | 141 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.12 | 0.59 | 0.29 | 0.38 | 0.55 | 0.07 | 0.10 | 0.71 | 0.19 | 0.12 | 0.53 | 0.35 |
| Final Sat.: | 57 | 278 | 138 | 189 | 273 | 37 | 53 | 375 | 100 | 66 | 297 | 195 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.49 | 0.49 | 0.62 | 0.62 | 0.62 | 0.64 | 0.64 | 0.64 | 0.72 | 0.72 | 0.72 |
| Crit Moves: | | **** | | | **** | | | **** | | | **** | |
| Delay/Veh: | 14.6 | 14.6 | 14.6 | 18.0 | 18.0 | 18.0 | 18.3 | 18.3 | 18.3 | 21.6 | 21.6 | 21.6 |
| Delay 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 |
| AdjDel/Veh: | 14.6 | 14.6 | 14.6 | 18.0 | 18.0 | 18.0 | 18.3 | 18.3 | 18.3 | 21.6 | 21.6 | 21.6 |
| LOS by Move: | B | B | B | C | C | C | C | C | C | C | C | C |
| ApproachDel: | | 14.6 | | | 18.0 | | | 18.3 | | | 21.6 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 14.6 | | | 18.0 | | | 18.3 | | | 21.6 | |
| LOS by Appr: | | B | | | C | | | C | | | C | |
| AllWayAvgQ: | 0.6 | 0.6 | 0.6 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.9 | 1.9 | 1.9 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 27 | 131 | 65 | 113 | 163 | 22 | 33 | 232 | 62 | 46 | 208 | 137 |

Major Street Volume: 718
Minor Approach Volume: 298
Minor Approach Volume Threshold: 308

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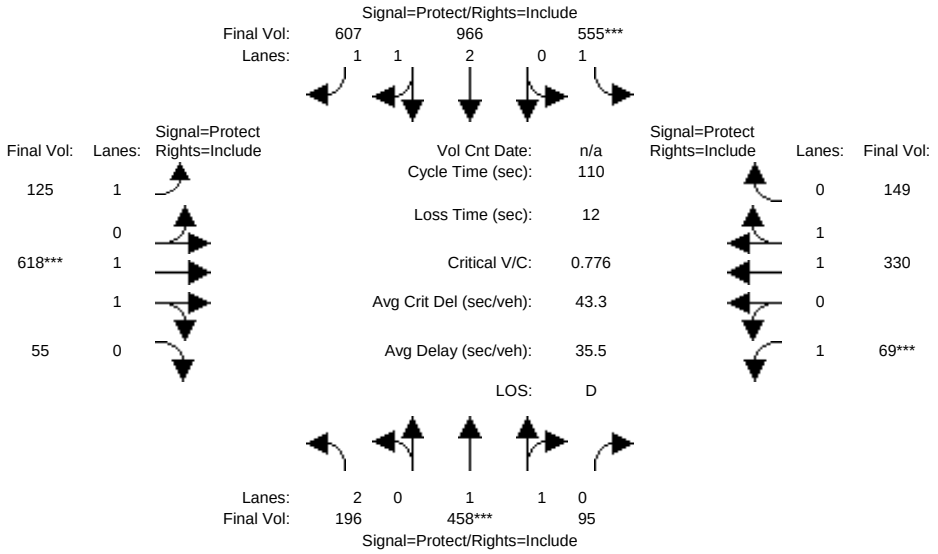
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project PM

Intersection #3: San Antonio Road & Chareleston Road

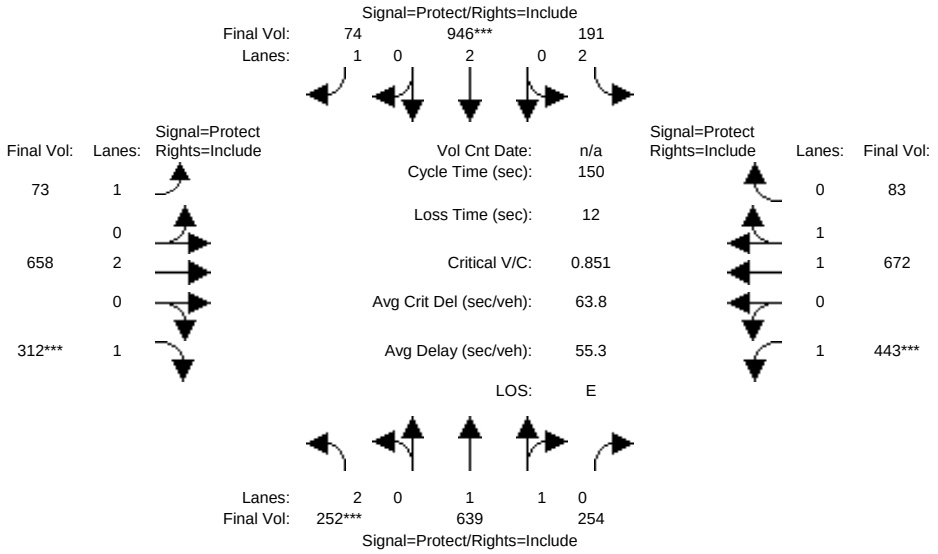



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 189 | 442 | 92 | 538 | 935 | 589 | 121 | 599 | 51 | 67 | 320 | 145 |
| Growth 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 |
| Initial Bse: | 189 | 442 | 92 | 538 | 935 | 589 | 121 | 599 | 51 | 67 | 320 | 145 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Initial Fut: | 190 | 444 | 92 | 538 | 937 | 589 | 121 | 599 | 53 | 67 | 320 | 145 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 196 | 458 | 95 | 555 | 966 | 607 | 125 | 618 | 55 | 69 | 330 | 149 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 196 | 458 | 95 | 555 | 966 | 607 | 125 | 618 | 55 | 69 | 330 | 149 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 196 | 458 | 95 | 555 | 966 | 607 | 125 | 618 | 55 | 69 | 330 | 149 |
| **Saturation Flow Module:** | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.92 | 0.95 | 0.86 | 0.84 | 0.95 | 0.94 | 0.94 | 0.95 | 0.91 | 0.90 |
| Lanes: | 2.00 | 1.66 | 0.34 | 1.00 | 2.43 | 1.57 | 1.00 | 1.84 | 0.16 | 1.00 | 1.37 | 0.63 |
| Final Sat.: | 3502 | 2911 | 603 | 1805 | 3962 | 2490 | 1805 | 3276 | 290 | 1805 | 2360 | 1070 |
| **Capacity Analysis Module:** | | | | | | | | | | | | |
| Vol/Sat: | 0.06 | 0.16 | 0.16 | 0.31 | 0.24 | 0.24 | 0.07 | 0.19 | 0.19 | 0.04 | 0.14 | 0.14 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.12 | 0.20 | 0.20 | 0.39 | 0.47 | 0.47 | 0.10 | 0.24 | 0.24 | 0.06 | 0.20 | 0.20 |
| Volume/Cap: | 0.46 | 0.79 | 0.79 | 0.79 | 0.52 | 0.52 | 0.69 | 0.79 | 0.79 | 0.60 | 0.69 | 0.69 |
| Uniform Del: | 44.9 | 41.9 | 41.9 | 29.6 | 20.7 | 20.7 | 47.9 | 39.3 | 39.3 | 50.1 | 40.7 | 40.7 |
| IncremntDel: | 0.8 | 6.0 | 6.0 | 6.0 | 0.2 | 0.2 | 10.8 | 5.0 | 5.0 | 8.6 | 3.0 | 3.0 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 45.7 | 47.9 | 47.9 | 35.6 | 20.9 | 20.9 | 58.7 | 44.3 | 44.3 | 58.8 | 43.7 | 43.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 45.7 | 47.9 | 47.9 | 35.6 | 20.9 | 20.9 | 58.7 | 44.3 | 44.3 | 58.8 | 43.7 | 43.7 |
| LOS by Move: | D | D | D | D | C | C | E | D | D | E | D | D |
| HCM2kAvgQ: | 4 | 11 | 11 | 18 | 10 | 10 | 5 | 13 | 13 | 3 | 9 | 9 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing Plus Project PM

Intersection #4: San Antonio Road & Middlefield Road



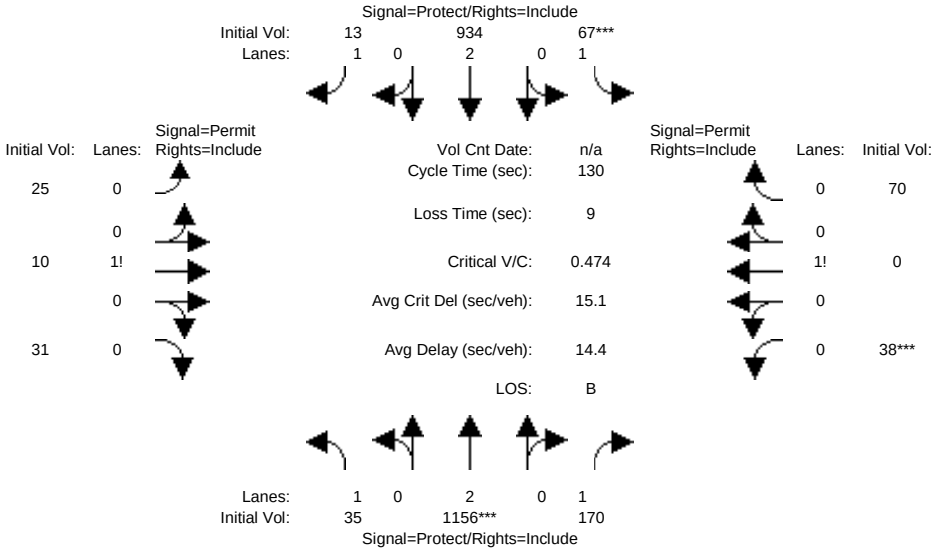

| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Min. Green: | 5 | 10 | 10 | 10 | 10 | 5 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 247 | 619 | 249 | 183 | 922 | 71 | 70 | 645 | 306 | 434 | 659 | 77 |
| Growth 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 |
| Initial Bse: | 247 | 619 | 249 | 183 | 922 | 71 | 70 | 645 | 306 | 434 | 659 | 77 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 0 | 7 | 0 | 4 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| Initial Fut: | 247 | 626 | 249 | 187 | 927 | 73 | 72 | 645 | 306 | 434 | 659 | 81 |
| User 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 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 252 | 639 | 254 | 191 | 946 | 74 | 73 | 658 | 312 | 443 | 672 | 83 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 252 | 639 | 254 | 191 | 946 | 74 | 73 | 658 | 312 | 443 | 672 | 83 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 252 | 639 | 254 | 191 | 946 | 74 | 73 | 658 | 312 | 443 | 672 | 83 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.91 | 0.90 | 0.92 | 0.95 | 0.83 | 0.95 | 0.95 | 0.81 | 0.95 | 0.93 | 0.93 |
| Lanes: | 2.00 | 1.43 | 0.57 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.78 | 0.22 |
| Final Sat.: | 3502 | 2465 | 980 | 3502 | 3610 | 1576 | 1805 | 3610 | 1531 | 1805 | 3161 | 389 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.26 | 0.26 | 0.05 | 0.26 | 0.05 | 0.04 | 0.18 | 0.20 | 0.25 | 0.21 | 0.21 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.08 | 0.31 | 0.31 | 0.08 | 0.31 | 0.31 | 0.08 | 0.24 | 0.24 | 0.29 | 0.44 | 0.44 |
| Volume/Cap: | 0.85 | 0.83 | 0.83 | 0.68 | 0.85 | 0.15 | 0.48 | 0.76 | 0.85 | 0.85 | 0.48 | 0.48 |
| Uniform Del: | 67.7 | 47.9 | 47.9 | 67.1 | 48.7 | 37.7 | 65.5 | 53.0 | 54.5 | 50.4 | 29.6 | 29.6 |
| IncremntDel: | 20.4 | 5.6 | 5.6 | 6.6 | 6.5 | 0.1 | 2.4 | 4.0 | 17.1 | 12.7 | 0.2 | 0.2 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 88.1 | 53.5 | 53.5 | 73.7 | 55.2 | 37.9 | 67.9 | 57.1 | 71.6 | 63.1 | 29.8 | 29.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 88.1 | 53.5 | 53.5 | 73.7 | 55.2 | 37.9 | 67.9 | 57.1 | 71.6 | 63.1 | 29.8 | 29.8 |
| LOS by Move: | F | D | D | E | E | D | E | E | E | E | C | C |
| HCM2kAvgQ: | 8 | 22 | 22 | 6 | 24 | 2 | 4 | 16 | 16 | 21 | 13 | 13 |

Note: Queue reported is the number of cars per lane.

# Appendix E – Background Conditions Intersection Level of Service Worksheets

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

## Intersection #1: San Antonio Road and Leghorn Road

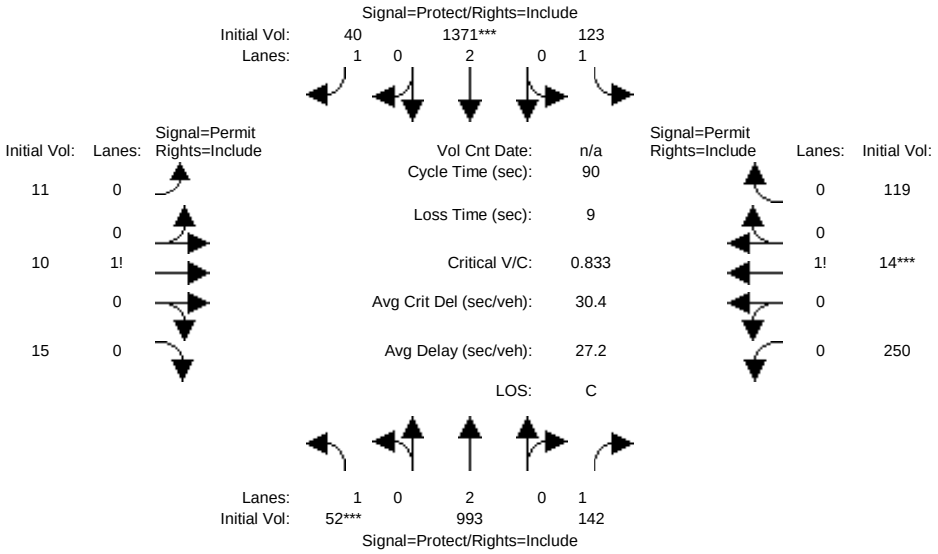



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 35 | 1156 | 170 | 67 | 934 | 13 | 25 | 10 | 31 | 38 | 0 | 70 |
| Growth 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 |
| Initial Bse: | 35 | 1156 | 170 | 67 | 934 | 13 | 25 | 10 | 31 | 38 | 0 | 70 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 36 | 1192 | 175 | 69 | 963 | 13 | 26 | 10 | 32 | 39 | 0 | 72 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 36 | 1192 | 175 | 69 | 963 | 13 | 26 | 10 | 32 | 39 | 0 | 72 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 36 | 1192 | 175 | 69 | 963 | 13 | 26 | 10 | 32 | 39 | 0 | 72 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.83 | 0.95 | 0.95 | 0.83 | 0.81 | 0.82 | 0.81 | 0.81 | 1.00 | 0.81 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.38 | 0.15 | 0.47 | 0.35 | 0.00 | 0.65 |
| Final Sat.: | 1805 | 3610 | 1576 | 1805 | 3610 | 1574 | 584 | 233 | 724 | 540 | 0 | 994 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.33 | 0.11 | 0.04 | 0.27 | 0.01 | 0.04 | 0.04 | 0.04 | 0.07 | 0.00 | 0.07 |
| Crit Moves: | | **** | | | **** | | | | | **** | | |
| Green/Cycle: | 0.13 | 0.70 | 0.70 | 0.08 | 0.65 | 0.65 | 0.15 | 0.15 | 0.15 | 0.15 | 0.00 | 0.15 |
| Volume/Cap: | 0.15 | 0.47 | 0.16 | 0.47 | 0.41 | 0.01 | 0.29 | 0.29 | 0.29 | 0.47 | 0.00 | 0.47 |
| Uniform Del: | 50.1 | 8.9 | 6.7 | 57.1 | 11.0 | 8.2 | 48.8 | 48.8 | 48.8 | 50.3 | 0.0 | 50.3 |
| IncremntDel: | 0.3 | 0.1 | 0.1 | 2.4 | 0.1 | 0.0 | 0.7 | 0.7 | 0.7 | 1.5 | 0.0 | 1.5 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Delay/Veh: | 50.4 | 9.1 | 6.8 | 59.5 | 11.2 | 8.2 | 49.4 | 49.4 | 49.4 | 51.8 | 0.0 | 51.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 50.4 | 9.1 | 6.8 | 59.5 | 11.2 | 8.2 | 49.4 | 49.4 | 49.4 | 51.8 | 0.0 | 51.8 |
| LOS by Move: | D | A | A | E | B | A | D | D | D | D | A | D |
| HCM2kAvgQ: | 1 | 11 | 2 | 3 | 10 | 0 | 3 | 3 | 3 | 5 | 0 | 5 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background PM

Intersection #1: San Antonio Road and Leghorn Road

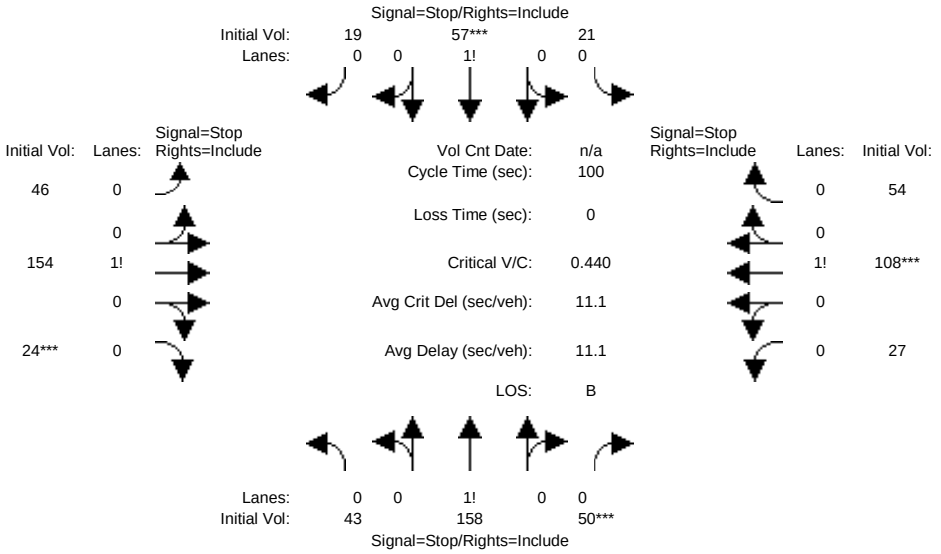



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 52 | 993 | 142 | 123 | 1371 | 40 | 11 | 10 | 15 | 250 | 14 | 119 |
| Growth 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 |
| Initial Bse: | 52 | 993 | 142 | 123 | 1371 | 40 | 11 | 10 | 15 | 250 | 14 | 119 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 57 | 1091 | 156 | 135 | 1507 | 44 | 12 | 11 | 16 | 275 | 15 | 131 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 57 | 1091 | 156 | 135 | 1507 | 44 | 12 | 11 | 16 | 275 | 15 | 131 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 57 | 1091 | 156 | 135 | 1507 | 44 | 12 | 11 | 16 | 275 | 15 | 131 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.84 | 0.95 | 0.95 | 0.82 | 0.83 | 0.83 | 0.83 | 0.74 | 0.74 | 0.74 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.30 | 0.28 | 0.42 | 0.65 | 0.04 | 0.31 |
| Final Sat.: | 1805 | 3610 | 1604 | 1805 | 3610 | 1549 | 484 | 440 | 659 | 913 | 51 | 435 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.30 | 0.10 | 0.07 | 0.42 | 0.03 | 0.02 | 0.02 | 0.02 | 0.30 | 0.30 | 0.30 |
| Crit Moves: | **** | | | | **** | | | | | | **** | |
| Green/Cycle: | 0.08 | 0.44 | 0.44 | 0.11 | 0.48 | 0.48 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| Volume/Cap: | 0.41 | 0.68 | 0.22 | 0.66 | 0.87 | 0.06 | 0.07 | 0.07 | 0.07 | 0.87 | 0.87 | 0.87 |
| Uniform Del: | 39.5 | 20.1 | 15.5 | 38.2 | 21.1 | 12.6 | 19.8 | 19.8 | 19.8 | 27.7 | 27.7 | 27.7 |
| IncremntDel: | 1.9 | 1.2 | 0.2 | 7.6 | 5.3 | 0.0 | 0.1 | 0.1 | 0.1 | 16.0 | 16.0 | 16.0 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 41.4 | 21.3 | 15.7 | 45.8 | 26.3 | 12.7 | 19.9 | 19.9 | 19.9 | 43.7 | 43.7 | 43.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 41.4 | 21.3 | 15.7 | 45.8 | 26.3 | 12.7 | 19.9 | 19.9 | 19.9 | 43.7 | 43.7 | 43.7 |
| LOS by Move: | D | C | B | D | C | B | B | B | B | D | D | D |
| HCM2kAvgQ: | 2 | 14 | 3 | 5 | 23 | 1 | 1 | 1 | 1 | 14 | 14 | 14 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Base Volume Alternative)
Background AM

## Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 43 | 158 | 50 | 21 | 57 | 19 | 46 | 154 | 24 | 27 | 108 | 54 |
| Growth 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 |
| Initial Bse: | 43 | 158 | 50 | 21 | 57 | 19 | 46 | 154 | 24 | 27 | 108 | 54 |
| User 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 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 49 | 182 | 57 | 24 | 66 | 22 | 53 | 177 | 28 | 31 | 124 | 62 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 49 | 182 | 57 | 24 | 66 | 22 | 53 | 177 | 28 | 31 | 124 | 62 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 49 | 182 | 57 | 24 | 66 | 22 | 53 | 177 | 28 | 31 | 124 | 62 |
| **Saturation Flow Module:** | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.17 | 0.63 | 0.20 | 0.22 | 0.59 | 0.19 | 0.20 | 0.69 | 0.11 | 0.14 | 0.57 | 0.29 |
| Final Sat.: | 112 | 412 | 131 | 129 | 350 | 117 | 133 | 446 | 70 | 93 | 371 | 186 |
| **Capacity Analysis Module:** | | | | | | | | | | | | |
| Vol/Sat: | 0.44 | 0.44 | 0.44 | 0.19 | 0.19 | 0.19 | 0.40 | 0.40 | 0.40 | 0.33 | 0.33 | 0.33 |
| Crit Moves: | | | **** | | **** | | | | **** | | **** | |
| Delay/Veh: | 11.8 | 11.8 | 11.8 | 9.6 | 9.6 | 9.6 | 11.3 | 11.3 | 11.3 | 10.5 | 10.5 | 10.5 |
| Delay 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 |
| AdjDel/Veh: | 11.8 | 11.8 | 11.8 | 9.6 | 9.6 | 9.6 | 11.3 | 11.3 | 11.3 | 10.5 | 10.5 | 10.5 |
| LOS by Move: | B | B | B | A | A | A | B | B | B | B | B | B |
| ApproachDel: | | 11.8 | | | 9.6 | | | 11.3 | | | 10.5 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 11.8 | | | 9.6 | | | 11.3 | | | 10.5 | |
| LOS by Appr: | | B | | | A | | | B | | | B | |
| AllWayAvgQ: | 0.7 | 0.7 | 0.7 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.4 | 0.4 | 0.4 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | South Bound | East Bound | West Bound |
|---|---|---|---|---|

| Movement: | L - T - R | L - T - R | L - T - R | L - T - R |
|---|---|---|---|---|
| Control: | Stop Sign | Stop Sign | Stop Sign | Stop Sign |
| Lanes: | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 |
| Initial Vol: | 43 158 50 | 21 57 19 | 46 154 24 | 27 108 54 |

Major Street Volume: 413
Minor Approach Volume: 251
Minor Approach Volume Threshold: 455

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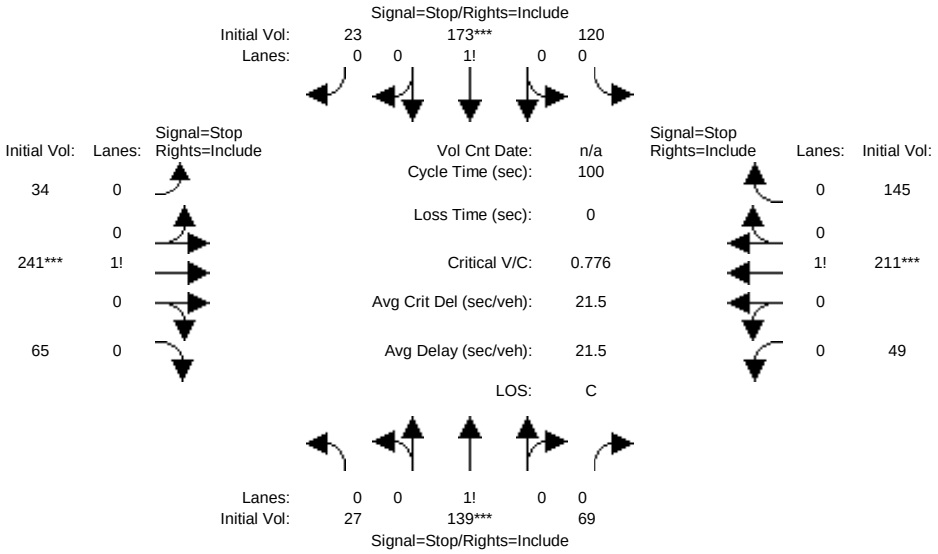
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Base Volume Alternative)
Background PM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 27 | 139 | 69 | 120 | 173 | 23 | 34 | 241 | 65 | 49 | 211 | 145 |
| Growth 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 |
| Initial Bse: | 27 | 139 | 69 | 120 | 173 | 23 | 34 | 241 | 65 | 49 | 211 | 145 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 28 | 143 | 71 | 124 | 178 | 24 | 35 | 248 | 67 | 51 | 218 | 149 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 28 | 143 | 71 | 124 | 178 | 24 | 35 | 248 | 67 | 51 | 218 | 149 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 28 | 143 | 71 | 124 | 178 | 24 | 35 | 248 | 67 | 51 | 218 | 149 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.11 | 0.60 | 0.29 | 0.38 | 0.55 | 0.07 | 0.10 | 0.71 | 0.19 | 0.12 | 0.52 | 0.36 |
| Final Sat.: | 52 | 268 | 133 | 183 | 264 | 35 | 51 | 360 | 97 | 65 | 280 | 193 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.53 | 0.53 | 0.53 | 0.67 | 0.67 | 0.67 | 0.69 | 0.69 | 0.69 | 0.78 | 0.78 | 0.78 |
| Crit Moves: | | **** | | | **** | | | **** | | | **** | |
| Delay/Veh: | 16.0 | 16.0 | 16.0 | 20.7 | 20.7 | 20.7 | 20.9 | 20.9 | 20.9 | 25.6 | 25.6 | 25.6 |
| Delay 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 |
| AdjDel/Veh: | 16.0 | 16.0 | 16.0 | 20.7 | 20.7 | 20.7 | 20.9 | 20.9 | 20.9 | 25.6 | 25.6 | 25.6 |
| LOS by Move: | C | C | C | C | C | C | C | C | C | D | D | D |
| ApproachDel: | | 16.0 | | | 20.7 | | | 20.9 | | | 25.6 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 16.0 | | | 20.7 | | | 20.9 | | | 25.6 | |
| LOS by Appr: | | C | | | C | | | C | | | D | |
| AllWayAvgQ: | 0.8 | 0.8 | 0.8 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 2.4 | 2.4 | 2.4 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Base Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | South Bound | East Bound | West Bound |
|---|---|---|---|---|

| Movement: | L - T - R | L - T - R | L - T - R | L - T - R |
|---|---|---|---|---|
| Control: | Stop Sign | Stop Sign | Stop Sign | Stop Sign |
| Lanes: | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 | 0 0 1! 0 0 |
| Initial Vol: | 27 139 69 | 120 173 23 | 34 241 65 | 49 211 145 |

Major Street Volume: 745
Minor Approach Volume: 316
Minor Approach Volume Threshold: 298

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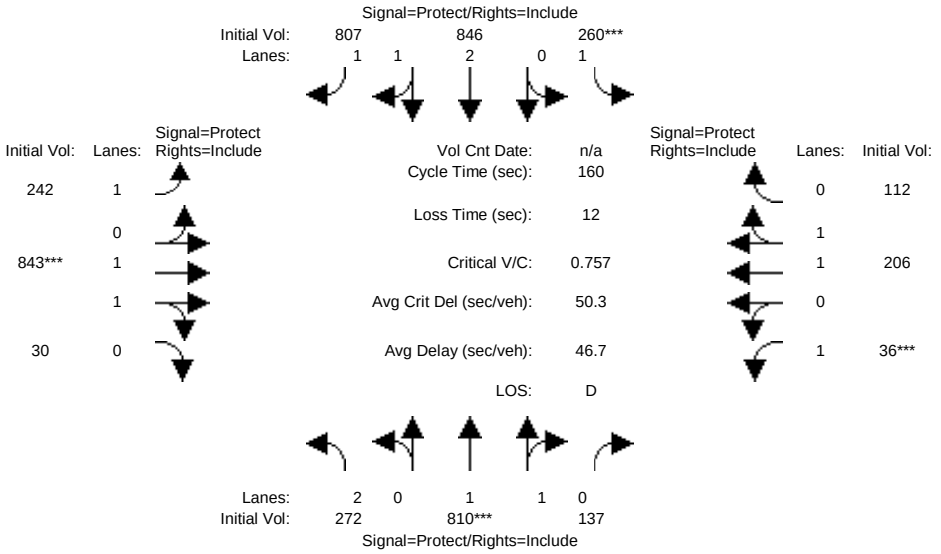
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

## Intersection #3: San Antonio Road & Chareleston Road

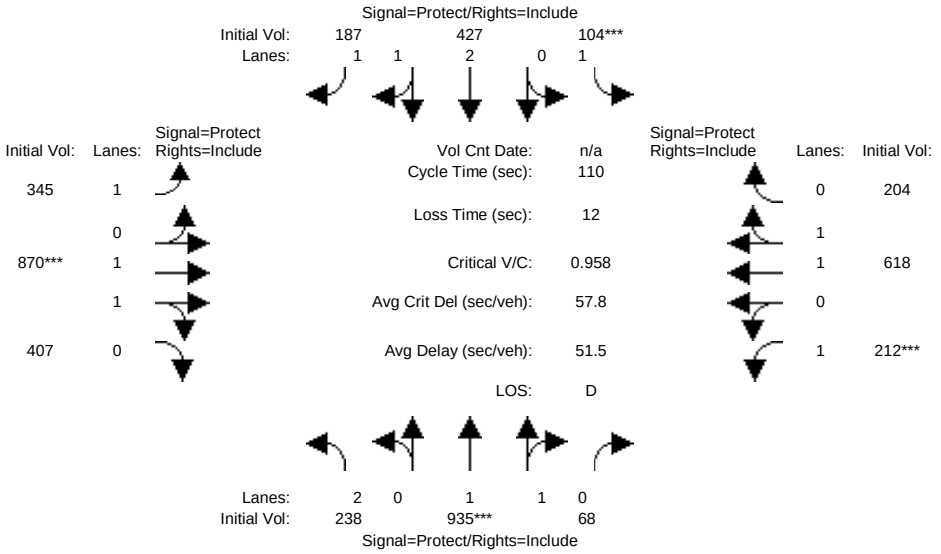



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 272 | 810 | 137 | 260 | 846 | 807 | 242 | 843 | 30 | 36 | 206 | 112 |
| Growth 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 |
| Initial Bse: | 272 | 810 | 137 | 260 | 846 | 807 | 242 | 843 | 30 | 36 | 206 | 112 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 280 | 835 | 141 | 268 | 872 | 832 | 249 | 869 | 31 | 37 | 212 | 115 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 280 | 835 | 141 | 268 | 872 | 832 | 249 | 869 | 31 | 37 | 212 | 115 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 280 | 835 | 141 | 268 | 872 | 832 | 249 | 869 | 31 | 37 | 212 | 115 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.93 | 0.95 | 0.84 | 0.83 | 0.95 | 0.95 | 0.94 | 0.95 | 0.90 | 0.89 |
| Lanes: | 2.00 | 1.71 | 0.29 | 1.00 | 2.03 | 1.97 | 1.00 | 1.93 | 0.07 | 1.00 | 1.29 | 0.71 |
| Final Sat.: | 3502 | 3018 | 511 | 1805 | 3256 | 3106 | 1805 | 3468 | 123 | 1805 | 2207 | 1200 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.28 | 0.28 | 0.15 | 0.27 | 0.27 | 0.14 | 0.25 | 0.25 | 0.02 | 0.10 | 0.10 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.13 | 0.36 | 0.36 | 0.19 | 0.42 | 0.42 | 0.22 | 0.32 | 0.32 | 0.05 | 0.15 | 0.15 |
| Volume/Cap: | 0.63 | 0.77 | 0.77 | 0.77 | 0.63 | 0.63 | 0.63 | 0.77 | 0.77 | 0.44 | 0.63 | 0.63 |
| Uniform Del: | 62.2 | 42.8 | 42.8 | 57.5 | 34.1 | 34.1 | 53.2 | 45.8 | 45.8 | 69.6 | 59.7 | 59.7 |
| IncremntDel: | 3.0 | 3.0 | 3.0 | 10.4 | 0.5 | 0.5 | 3.3 | 3.3 | 3.3 | 3.6 | 2.5 | 2.5 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 65.2 | 45.8 | 45.8 | 67.9 | 34.6 | 34.6 | 56.5 | 49.0 | 49.0 | 73.2 | 62.2 | 62.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 65.2 | 45.8 | 45.8 | 67.9 | 34.6 | 34.6 | 56.5 | 49.0 | 49.0 | 73.2 | 62.2 | 62.2 |
| LOS by Move: | E | D | D | E | C | C | E | D | D | E | E | E |
| HCM2kAvgQ: | 7 | 22 | 22 | 13 | 17 | 17 | 11 | 21 | 21 | 2 | 8 | 8 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background PM

## Intersection #3: San Antonio Road & Chareleston Road

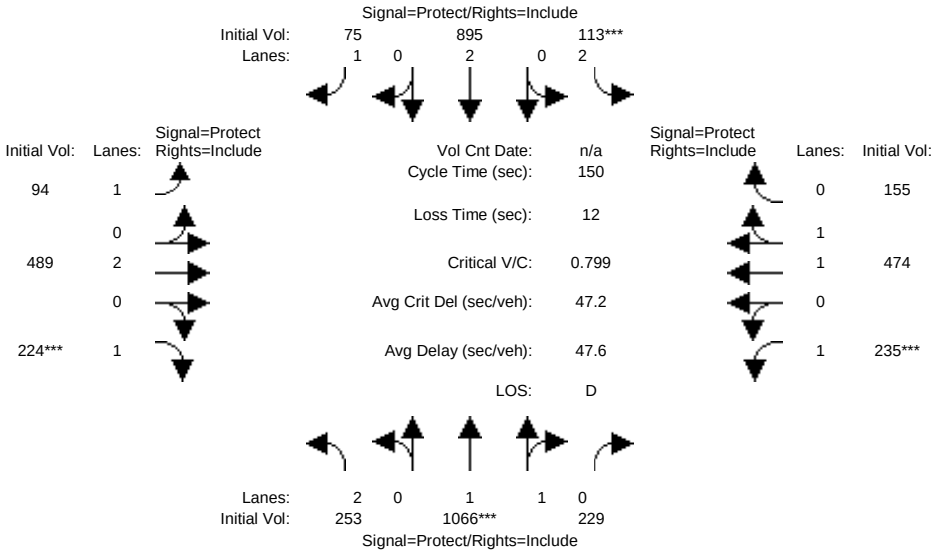



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 238 | 935 | 68 | 104 | 427 | 187 | 345 | 870 | 407 | 212 | 618 | 204 |
| Growth 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 |
| Initial Bse: | 238 | 935 | 68 | 104 | 427 | 187 | 345 | 870 | 407 | 212 | 618 | 204 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 245 | 964 | 70 | 107 | 440 | 193 | 356 | 897 | 420 | 219 | 637 | 210 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 245 | 964 | 70 | 107 | 440 | 193 | 356 | 897 | 420 | 219 | 637 | 210 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 245 | 964 | 70 | 107 | 440 | 193 | 356 | 897 | 420 | 219 | 637 | 210 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.94 | 0.94 | 0.95 | 0.87 | 0.85 | 0.95 | 0.90 | 0.90 | 0.95 | 0.91 | 0.91 |
| Lanes: | 2.00 | 1.86 | 0.14 | 1.00 | 2.77 | 1.23 | 1.00 | 1.36 | 0.64 | 1.00 | 1.50 | 0.50 |
| Final Sat.: | 3502 | 3331 | 242 | 1805 | 4561 | 1997 | 1805 | 2336 | 1093 | 1805 | 2609 | 861 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.29 | 0.29 | 0.06 | 0.10 | 0.10 | 0.20 | 0.38 | 0.38 | 0.12 | 0.24 | 0.24 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.15 | 0.30 | 0.30 | 0.06 | 0.21 | 0.21 | 0.23 | 0.40 | 0.40 | 0.13 | 0.29 | 0.29 |
| Volume/Cap: | 0.46 | 0.96 | 0.96 | 0.93 | 0.46 | 0.46 | 0.84 | 0.96 | 0.96 | 0.96 | 0.84 | 0.84 |
| Uniform Del: | 42.4 | 37.8 | 37.8 | 51.3 | 37.9 | 37.9 | 40.1 | 32.2 | 32.2 | 47.8 | 36.6 | 36.6 |
| IncremntDel: | 0.6 | 18.6 | 18.6 | 63.2 | 0.2 | 0.2 | 13.8 | 15.8 | 15.8 | 48.3 | 6.3 | 6.3 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 43.0 | 56.3 | 56.3 | 114.4 | 38.1 | 38.1 | 53.9 | 47.9 | 47.9 | 96.1 | 42.9 | 42.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 43.0 | 56.3 | 56.3 | 114.4 | 38.1 | 38.1 | 53.9 | 47.9 | 47.9 | 96.1 | 42.9 | 42.9 |
| LOS by Move: | D | E | E | F | D | D | D | D | D | F | D | D |
| HCM2kAvgQ: | 4 | 23 | 23 | 6 | 5 | 5 | 14 | 28 | 28 | 11 | 17 | 17 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM

## Intersection #4: San Antonio Road & Middlefield Road

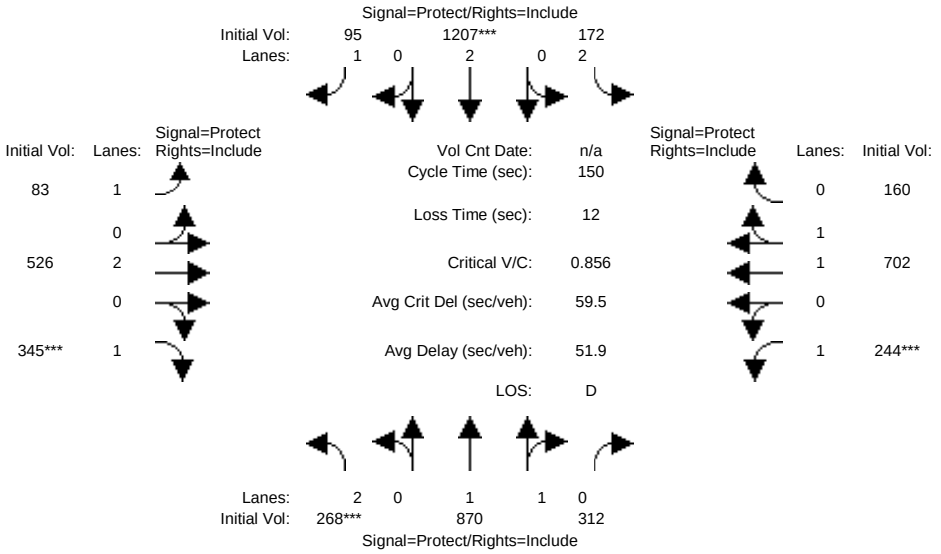



| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 253 | 1066 | 229 | 113 | 895 | 75 | 94 | 489 | 224 | 235 | 474 | 155 |
| Growth 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 |
| Initial Bse: | 253 | 1066 | 229 | 113 | 895 | 75 | 94 | 489 | 224 | 235 | 474 | 155 |
| User 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 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 272 | 1146 | 246 | 122 | 962 | 81 | 101 | 526 | 241 | 253 | 510 | 167 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 272 | 1146 | 246 | 122 | 962 | 81 | 101 | 526 | 241 | 253 | 510 | 167 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 272 | 1146 | 246 | 122 | 962 | 81 | 101 | 526 | 241 | 253 | 510 | 167 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.92 | 0.92 | 0.95 | 0.81 | 0.95 | 0.95 | 0.77 | 0.95 | 0.91 | 0.90 |
| Lanes: | 2.00 | 1.65 | 0.35 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.50 | 0.50 |
| Final Sat.: | 3502 | 2889 | 621 | 3502 | 3610 | 1543 | 1805 | 3610 | 1468 | 1805 | 2611 | 854 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.40 | 0.40 | 0.03 | 0.27 | 0.05 | 0.06 | 0.15 | 0.16 | 0.14 | 0.20 | 0.20 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.12 | 0.50 | 0.50 | 0.04 | 0.42 | 0.42 | 0.08 | 0.21 | 0.21 | 0.18 | 0.30 | 0.30 |
| Volume/Cap: | 0.64 | 0.80 | 0.80 | 0.80 | 0.64 | 0.13 | 0.66 | 0.71 | 0.80 | 0.80 | 0.66 | 0.66 |
| Uniform Del: | 62.7 | 31.5 | 31.5 | 71.1 | 34.7 | 26.8 | 66.5 | 55.5 | 56.7 | 59.3 | 46.2 | 46.2 |
| IncremntDel: | 3.2 | 2.7 | 2.7 | 25.1 | 0.9 | 0.1 | 10.2 | 3.2 | 14.0 | 13.4 | 1.6 | 1.6 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 65.9 | 34.3 | 34.3 | 96.2 | 35.6 | 26.9 | 76.8 | 58.7 | 70.7 | 72.8 | 47.9 | 47.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 65.9 | 34.3 | 34.3 | 96.2 | 35.6 | 26.9 | 76.8 | 58.7 | 70.7 | 72.8 | 47.9 | 47.9 |
| LOS by Move: | E | C | C | F | D | C | E | E | E | E | D | D |
| HCM2kAvgQ: | 7 | 29 | 29 | 5 | 18 | 2 | 6 | 13 | 12 | 13 | 15 | 15 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background PM

Intersection #4: San Antonio Road & Middlefield Road



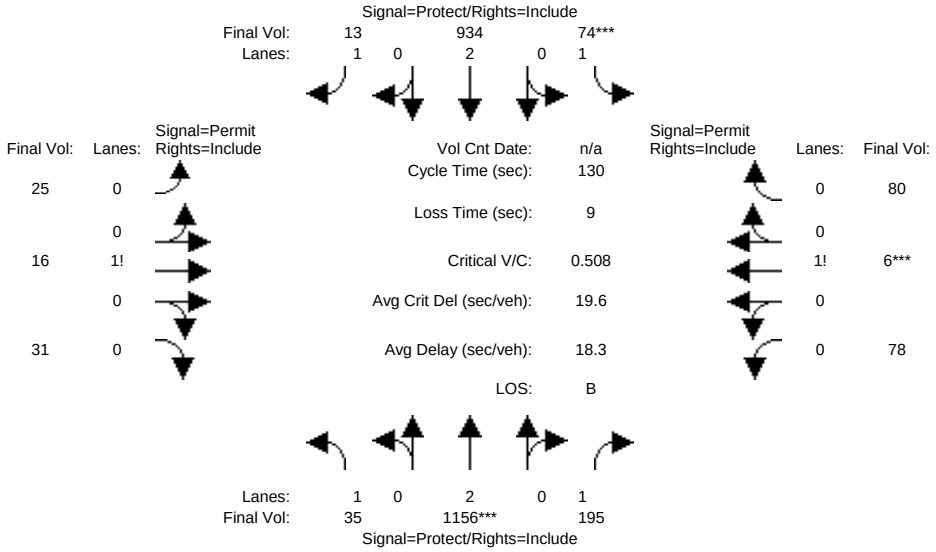

| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 268 | 870 | 312 | 172 | 1207 | 95 | 83 | 526 | 345 | 244 | 702 | 160 |
| Growth 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 |
| Initial Bse: | 268 | 870 | 312 | 172 | 1207 | 95 | 83 | 526 | 345 | 244 | 702 | 160 |
| User 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 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 273 | 888 | 318 | 176 | 1232 | 97 | 85 | 537 | 352 | 249 | 716 | 163 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 273 | 888 | 318 | 176 | 1232 | 97 | 85 | 537 | 352 | 249 | 716 | 163 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 273 | 888 | 318 | 176 | 1232 | 97 | 85 | 537 | 352 | 249 | 716 | 163 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.91 | 0.90 | 0.92 | 0.95 | 0.83 | 0.95 | 0.95 | 0.81 | 0.95 | 0.92 | 0.91 |
| Lanes: | 2.00 | 1.47 | 0.53 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.63 | 0.37 |
| Final Sat.: | 3502 | 2545 | 913 | 3502 | 3610 | 1576 | 1805 | 3610 | 1531 | 1805 | 2851 | 650 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.35 | 0.35 | 0.05 | 0.34 | 0.06 | 0.05 | 0.15 | 0.23 | 0.14 | 0.25 | 0.25 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.09 | 0.43 | 0.43 | 0.06 | 0.40 | 0.40 | 0.07 | 0.27 | 0.27 | 0.16 | 0.36 | 0.36 |
| Volume/Cap: | 0.86 | 0.81 | 0.81 | 0.81 | 0.86 | 0.15 | 0.69 | 0.55 | 0.86 | 0.86 | 0.69 | 0.69 |
| Uniform Del: | 67.2 | 37.6 | 37.6 | 69.5 | 41.1 | 28.9 | 68.4 | 47.1 | 52.1 | 61.2 | 40.7 | 40.7 |
| IncremntDel: | 19.7 | 3.6 | 3.6 | 20.6 | 5.3 | 0.1 | 15.8 | 0.7 | 16.0 | 21.2 | 1.7 | 1.7 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 86.9 | 41.2 | 41.2 | 90.1 | 46.4 | 29.0 | 84.2 | 47.8 | 68.1 | 82.4 | 42.4 | 42.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 86.9 | 41.2 | 41.2 | 90.1 | 46.4 | 29.0 | 84.2 | 47.8 | 68.1 | 82.4 | 42.4 | 42.4 |
| LOS by Move: | F | D | D | F | D | C | F | D | E | F | D | D |
| HCM2kAvgQ: | 9 | 27 | 27 | 6 | 29 | 3 | 5 | 11 | 18 | 14 | 19 | 18 |

Note: Queue reported is the number of cars per lane.

# Appendix F – Background plus Project Conditions Intersection Level of Service Worksheets

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #1: San Antonio Road and Leghorn Road

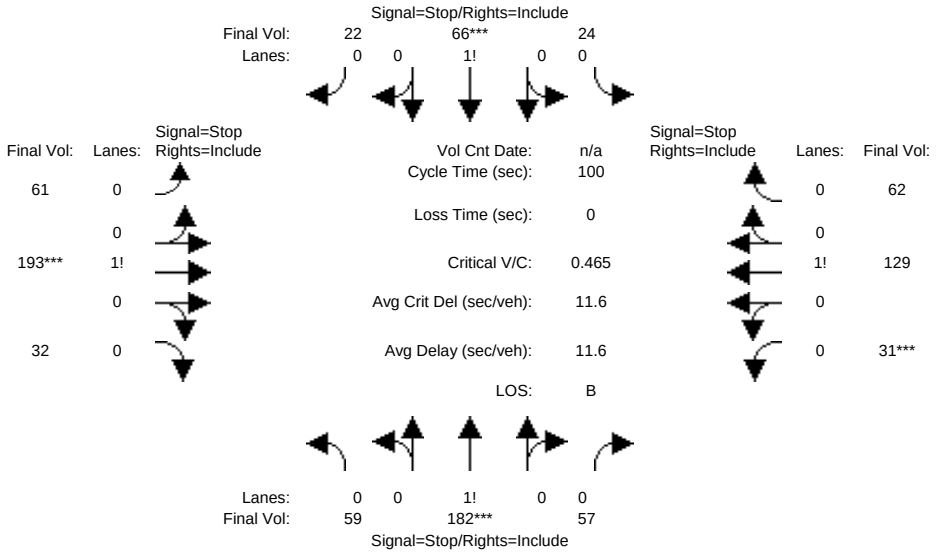



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 35 | 1156 | 170 | 67 | 934 | 13 | 25 | 10 | 31 | 38 | 0 | 70 |
| Growth 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 |
| Initial Bse: | 35 | 1156 | 170 | 67 | 934 | 13 | 25 | 10 | 31 | 38 | 0 | 70 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 0 | 0 | 25 | 7 | 0 | 0 | 0 | 6 | 0 | 40 | 6 | 10 |
| Initial Fut: | 35 | 1156 | 195 | 74 | 934 | 13 | 25 | 16 | 31 | 78 | 6 | 80 |
| User 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 |
| PHF 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 |
| PHF Volume: | 35 | 1156 | 195 | 74 | 934 | 13 | 25 | 16 | 31 | 78 | 6 | 80 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 35 | 1156 | 195 | 74 | 934 | 13 | 25 | 16 | 31 | 78 | 6 | 80 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 35 | 1156 | 195 | 74 | 934 | 13 | 25 | 16 | 31 | 78 | 6 | 80 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.83 | 0.95 | 0.95 | 0.83 | 0.83 | 0.84 | 0.83 | 0.77 | 0.78 | 0.77 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.35 | 0.22 | 0.43 | 0.47 | 0.04 | 0.49 |
| Final Sat.: | 1805 | 3610 | 1576 | 1805 | 3610 | 1573 | 549 | 352 | 681 | 698 | 54 | 716 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.32 | 0.12 | 0.04 | 0.26 | 0.01 | 0.05 | 0.05 | 0.05 | 0.11 | 0.11 | 0.11 |
| Crit Moves: | | **** | | | **** | | | | | | **** | |
| Green/Cycle: | 0.12 | 0.63 | 0.63 | 0.08 | 0.59 | 0.59 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| Volume/Cap: | 0.16 | 0.51 | 0.20 | 0.51 | 0.44 | 0.01 | 0.21 | 0.21 | 0.21 | 0.51 | 0.51 | 0.51 |
| Uniform Del: | 51.0 | 13.1 | 10.1 | 57.3 | 14.8 | 11.1 | 41.5 | 41.5 | 41.5 | 44.5 | 44.5 | 44.5 |
| IncremntDel: | 0.3 | 0.2 | 0.1 | 2.9 | 0.1 | 0.0 | 0.3 | 0.3 | 0.3 | 1.3 | 1.3 | 1.3 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 51.4 | 13.3 | 10.2 | 60.2 | 15.0 | 11.1 | 41.7 | 41.7 | 41.7 | 45.9 | 45.9 | 45.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 51.4 | 13.3 | 10.2 | 60.2 | 15.0 | 11.1 | 41.7 | 41.7 | 41.7 | 45.9 | 45.9 | 45.9 |
| LOS by Move: | D | B | B | E | B | B | D | D | D | D | D | D |
| HCM2kAvgQ: | 1 | 13 | 3 | 3 | 11 | 0 | 2 | 2 | 2 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Background Plus Project AM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 43 | 158 | 50 | 21 | 57 | 19 | 46 | 154 | 24 | 27 | 108 | 54 |
| Growth 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 |
| Initial Bse: | 43 | 158 | 50 | 21 | 57 | 19 | 46 | 154 | 24 | 27 | 108 | 54 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 8 | 0 | 0 | 0 | 0 | 0 | 7 | 14 | 4 | 0 | 4 | 0 |
| Initial Fut: | 51 | 158 | 50 | 21 | 57 | 19 | 53 | 168 | 28 | 27 | 112 | 54 |
| User 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 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 59 | 182 | 57 | 24 | 66 | 22 | 61 | 193 | 32 | 31 | 129 | 62 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 59 | 182 | 57 | 24 | 66 | 22 | 61 | 193 | 32 | 31 | 129 | 62 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 59 | 182 | 57 | 24 | 66 | 22 | 61 | 193 | 32 | 31 | 129 | 62 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.20 | 0.61 | 0.19 | 0.22 | 0.59 | 0.19 | 0.21 | 0.68 | 0.11 | 0.14 | 0.58 | 0.28 |
| Final Sat.: | 126 | 391 | 124 | 125 | 338 | 113 | 137 | 434 | 72 | 89 | 369 | 178 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.46 | 0.46 | 0.46 | 0.19 | 0.19 | 0.19 | 0.44 | 0.44 | 0.44 | 0.35 | 0.35 | 0.35 |
| Crit Moves: | | **** | | | **** | | | **** | | | **** | |
| Delay/Veh: | 12.4 | 12.4 | 12.4 | 9.8 | 9.8 | 9.8 | 12.1 | 12.1 | 12.1 | 10.8 | 10.8 | 10.8 |
| Delay 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 |
| AdjDel/Veh: | 12.4 | 12.4 | 12.4 | 9.8 | 9.8 | 9.8 | 12.1 | 12.1 | 12.1 | 10.8 | 10.8 | 10.8 |
| LOS by Move: | B | B | B | A | A | A | B | B | B | B | B | B |
| ApproachDel: | | 12.4 | | | 9.8 | | | 12.1 | | | 10.8 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 12.4 | | | 9.8 | | | 12.1 | | | 10.8 | |
| LOS by Appr: | | B | | | A | | | B | | | B | |
| AllWayAvgQ: | 0.7 | 0.7 | 0.7 | 0.2 | 0.2 | 0.2 | 0.7 | 0.7 | 0.7 | 0.4 | 0.4 | 0.4 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #2 Independence Avenue & Leghorn Road

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Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! | 0 | | 0 0 1! | 0 | | 0 0 1! | 0 | | 0 0 1! | 0 | |
| Initial Vol: | 51 | 158 | 50 | 21 | 57 | 19 | 53 | 168 | 28 | 27 | 112 | 54 |

Major Street Volume: 442
Minor Approach Volume: 259
Minor Approach Volume Threshold: 437

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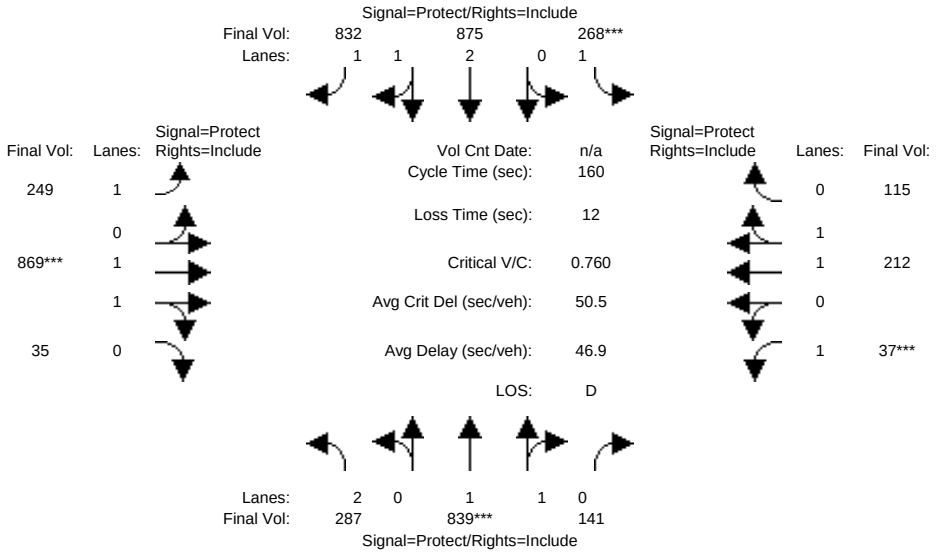
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #3: San Antonio Road & Chareleston Road

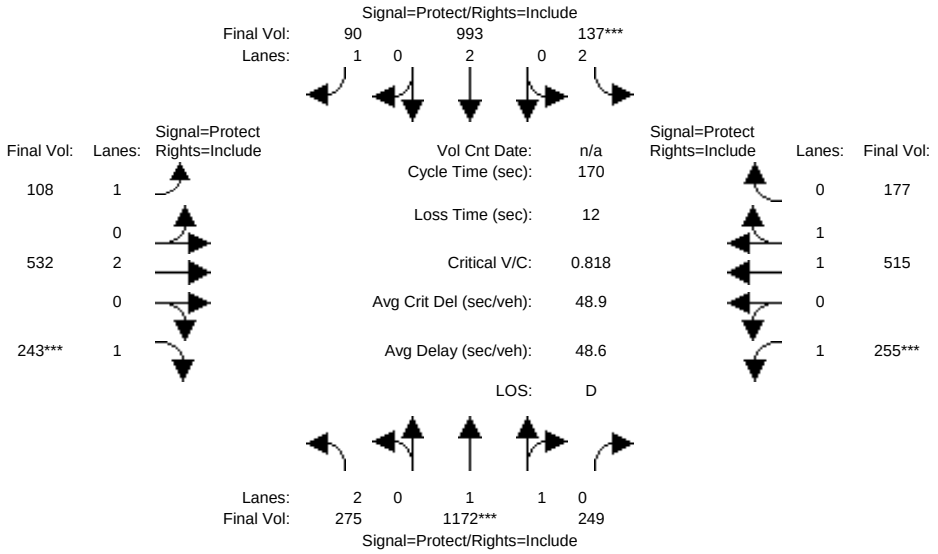



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 272 | 810 | 137 | 260 | 846 | 807 | 242 | 843 | 30 | 36 | 206 | 112 |
| Growth 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 |
| Initial Bse: | 272 | 810 | 137 | 260 | 846 | 807 | 242 | 843 | 30 | 36 | 206 | 112 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 6 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Initial Fut: | 278 | 814 | 137 | 260 | 849 | 807 | 242 | 843 | 34 | 36 | 206 | 112 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 287 | 839 | 141 | 268 | 875 | 832 | 249 | 869 | 35 | 37 | 212 | 115 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 287 | 839 | 141 | 268 | 875 | 832 | 249 | 869 | 35 | 37 | 212 | 115 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 287 | 839 | 141 | 268 | 875 | 832 | 249 | 869 | 35 | 37 | 212 | 115 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.93 | 0.95 | 0.84 | 0.83 | 0.95 | 0.94 | 0.94 | 0.95 | 0.90 | 0.89 |
| Lanes: | 2.00 | 1.71 | 0.29 | 1.00 | 2.04 | 1.96 | 1.00 | 1.92 | 0.08 | 1.00 | 1.29 | 0.71 |
| Final Sat.: | 3502 | 3021 | 508 | 1805 | 3262 | 3100 | 1805 | 3449 | 139 | 1805 | 2207 | 1200 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.28 | 0.28 | 0.15 | 0.27 | 0.27 | 0.14 | 0.25 | 0.25 | 0.02 | 0.10 | 0.10 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.13 | 0.36 | 0.36 | 0.19 | 0.42 | 0.42 | 0.22 | 0.32 | 0.32 | 0.05 | 0.15 | 0.15 |
| Volume/Cap: | 0.64 | 0.78 | 0.78 | 0.78 | 0.64 | 0.64 | 0.63 | 0.78 | 0.78 | 0.44 | 0.63 | 0.63 |
| Uniform Del: | 62.1 | 42.8 | 42.8 | 57.6 | 34.4 | 34.4 | 53.1 | 45.8 | 45.8 | 69.6 | 59.6 | 59.6 |
| IncremntDel: | 3.1 | 3.1 | 3.1 | 10.6 | 0.5 | 0.5 | 3.3 | 3.4 | 3.4 | 3.6 | 2.5 | 2.5 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 65.1 | 46.0 | 46.0 | 68.2 | 34.9 | 34.9 | 56.4 | 49.1 | 49.1 | 73.2 | 62.2 | 62.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 65.1 | 46.0 | 46.0 | 68.2 | 34.9 | 34.9 | 56.4 | 49.1 | 49.1 | 73.2 | 62.2 | 62.2 |
| LOS by Move: | E | D | D | E | C | C | E | D | D | E | E | E |
| HCM2kAvgQ: | 7 | 22 | 22 | 13 | 17 | 17 | 11 | 21 | 21 | 2 | 8 | 8 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project AM

Intersection #4: San Antonio Road & Middlefield Road

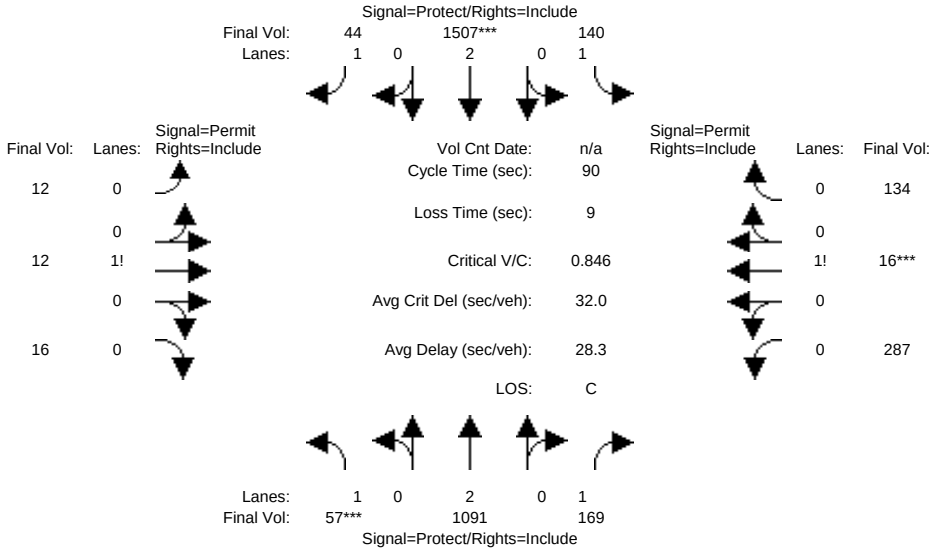



| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 253 | 1066 | 229 | 113 | 895 | 75 | 94 | 489 | 224 | 235 | 474 | 155 |
| Growth 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 |
| Initial Bse: | 253 | 1066 | 229 | 113 | 895 | 75 | 94 | 489 | 224 | 235 | 474 | 155 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 0 | 12 | 0 | 13 | 19 | 8 | 5 | 0 | 0 | 0 | 0 | 8 |
| Initial Fut: | 253 | 1078 | 229 | 126 | 914 | 83 | 99 | 489 | 224 | 235 | 474 | 163 |
| User 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 |
| PHF Adj: | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| PHF Volume: | 275 | 1172 | 249 | 137 | 993 | 90 | 108 | 532 | 243 | 255 | 515 | 177 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 275 | 1172 | 249 | 137 | 993 | 90 | 108 | 532 | 243 | 255 | 515 | 177 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 275 | 1172 | 249 | 137 | 993 | 90 | 108 | 532 | 243 | 255 | 515 | 177 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.92 | 0.92 | 0.95 | 0.81 | 0.95 | 0.95 | 0.76 | 0.95 | 0.91 | 0.90 |
| Lanes: | 2.00 | 1.65 | 0.35 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.48 | 0.52 |
| Final Sat.: | 3502 | 2898 | 616 | 3502 | 3610 | 1536 | 1805 | 3610 | 1452 | 1805 | 2574 | 885 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.40 | 0.40 | 0.04 | 0.28 | 0.06 | 0.06 | 0.15 | 0.17 | 0.14 | 0.20 | 0.20 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.12 | 0.49 | 0.49 | 0.05 | 0.42 | 0.42 | 0.09 | 0.20 | 0.20 | 0.17 | 0.29 | 0.29 |
| Volume/Cap: | 0.65 | 0.82 | 0.82 | 0.82 | 0.65 | 0.14 | 0.69 | 0.72 | 0.82 | 0.82 | 0.69 | 0.69 |
| Uniform Del: | 63.0 | 32.2 | 32.2 | 70.8 | 34.6 | 26.6 | 66.5 | 55.6 | 57.0 | 59.8 | 47.1 | 47.1 |
| IncremntDel: | 3.6 | 3.2 | 3.2 | 26.0 | 1.0 | 0.1 | 12.1 | 3.4 | 16.1 | 15.5 | 2.0 | 2.0 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 66.6 | 35.4 | 35.4 | 96.8 | 35.6 | 26.7 | 78.6 | 59.0 | 73.1 | 75.2 | 49.1 | 49.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 66.6 | 35.4 | 35.4 | 96.8 | 35.6 | 26.7 | 78.6 | 59.0 | 73.1 | 75.2 | 49.1 | 49.1 |
| LOS by Move: | E | D | D | F | D | C | E | E | E | E | D | D |
| HCM2kAvgQ: | 7 | 30 | 30 | 5 | 19 | 2 | 6 | 13 | 13 | 13 | 16 | 15 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project PM

Intersection #1: San Antonio Road and Leghorn Road

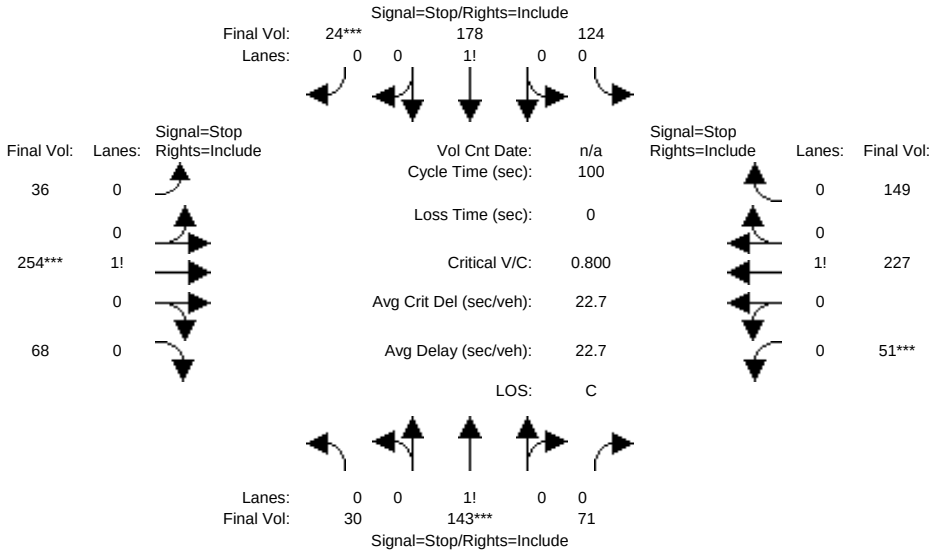



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 52 | 993 | 142 | 123 | 1371 | 40 | 11 | 10 | 15 | 250 | 14 | 119 |
| Growth 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 |
| Initial Bse: | 52 | 993 | 142 | 123 | 1371 | 40 | 11 | 10 | 15 | 250 | 14 | 119 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 0 | 0 | 12 | 4 | 0 | 0 | 0 | 1 | 0 | 11 | 1 | 3 |
| Initial Fut: | 52 | 993 | 154 | 127 | 1371 | 40 | 11 | 11 | 15 | 261 | 15 | 122 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 57 | 1091 | 169 | 140 | 1507 | 44 | 12 | 12 | 16 | 287 | 16 | 134 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 57 | 1091 | 169 | 140 | 1507 | 44 | 12 | 12 | 16 | 287 | 16 | 134 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 57 | 1091 | 169 | 140 | 1507 | 44 | 12 | 12 | 16 | 287 | 16 | 134 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.84 | 0.95 | 0.95 | 0.81 | 0.83 | 0.84 | 0.83 | 0.74 | 0.74 | 0.74 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.30 | 0.30 | 0.40 | 0.65 | 0.04 | 0.31 |
| Final Sat.: | 1805 | 3610 | 1604 | 1805 | 3610 | 1548 | 472 | 472 | 643 | 917 | 53 | 429 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.30 | 0.11 | 0.08 | 0.42 | 0.03 | 0.03 | 0.03 | 0.03 | 0.31 | 0.31 | 0.31 |
| Crit Moves: | **** | | | | **** | | | | | | **** | |
| Green/Cycle: | 0.08 | 0.44 | 0.44 | 0.11 | 0.47 | 0.47 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Volume/Cap: | 0.41 | 0.69 | 0.24 | 0.69 | 0.89 | 0.06 | 0.07 | 0.07 | 0.07 | 0.89 | 0.89 | 0.89 |
| Uniform Del: | 39.5 | 20.5 | 16.0 | 38.4 | 21.7 | 13.0 | 19.4 | 19.4 | 19.4 | 27.5 | 27.5 | 27.5 |
| IncremntDel: | 1.9 | 1.4 | 0.2 | 9.7 | 6.1 | 0.0 | 0.1 | 0.1 | 0.1 | 17.6 | 17.6 | 17.6 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 41.4 | 21.9 | 16.2 | 48.1 | 27.8 | 13.0 | 19.4 | 19.4 | 19.4 | 45.1 | 45.1 | 45.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 41.4 | 21.9 | 16.2 | 48.1 | 27.8 | 13.0 | 19.4 | 19.4 | 19.4 | 45.1 | 45.1 | 45.1 |
| LOS by Move: | D | C | B | D | C | B | B | B | B | D | D | D |
| HCM2kAvgQ: | 2 | 14 | 3 | 5 | 24 | 1 | 1 | 1 | 1 | 15 | 15 | 15 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Background Plus Project PM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 27 | 139 | 69 | 120 | 173 | 23 | 34 | 241 | 65 | 49 | 211 | 145 |
| Growth 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 |
| Initial Bse: | 27 | 139 | 69 | 120 | 173 | 23 | 34 | 241 | 65 | 49 | 211 | 145 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 0 | 9 | 0 |
| Initial Fut: | 29 | 139 | 69 | 120 | 173 | 23 | 35 | 246 | 66 | 49 | 220 | 145 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 30 | 143 | 71 | 124 | 178 | 24 | 36 | 254 | 68 | 51 | 227 | 149 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 143 | 71 | 124 | 178 | 24 | 36 | 254 | 68 | 51 | 227 | 149 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 30 | 143 | 71 | 124 | 178 | 24 | 36 | 254 | 68 | 51 | 227 | 149 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.12 | 0.59 | 0.29 | 0.38 | 0.55 | 0.07 | 0.10 | 0.71 | 0.19 | 0.12 | 0.53 | 0.35 |
| Final Sat.: | 54 | 261 | 130 | 181 | 260 | 35 | 51 | 357 | 96 | 63 | 284 | 187 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.55 | 0.55 | 0.55 | 0.68 | 0.68 | 0.68 | 0.71 | 0.71 | 0.71 | 0.80 | 0.80 | 0.80 |
| Crit Moves: | | **** | | | | **** | | **** | | | **** | |
| Delay/Veh: | 16.5 | 16.5 | 16.5 | 21.4 | 21.4 | 21.4 | 22.1 | 22.1 | 22.1 | 27.7 | 27.7 | 27.7 |
| Delay 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 |
| AdjDel/Veh: | 16.5 | 16.5 | 16.5 | 21.4 | 21.4 | 21.4 | 22.1 | 22.1 | 22.1 | 27.7 | 27.7 | 27.7 |
| LOS by Move: | C | C | C | C | C | C | C | C | C | D | D | D |
| ApproachDel: | | 16.5 | | | 21.4 | | | 22.1 | | | 27.7 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 16.5 | | | 21.4 | | | 22.1 | | | 27.7 | |
| LOS by Appr: | | C | | | C | | | C | | | D | |
| AllWayAvgQ: | 0.8 | 0.8 | 0.8 | 1.5 | 1.5 | 1.5 | 1.7 | 1.7 | 1.7 | 2.7 | 2.7 | 2.7 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 29 | 139 | 69 | 120 | 173 | 23 | 35 | 246 | 66 | 49 | 220 | 145 |

Major Street Volume: 761
Minor Approach Volume: 316
Minor Approach Volume Threshold: 292

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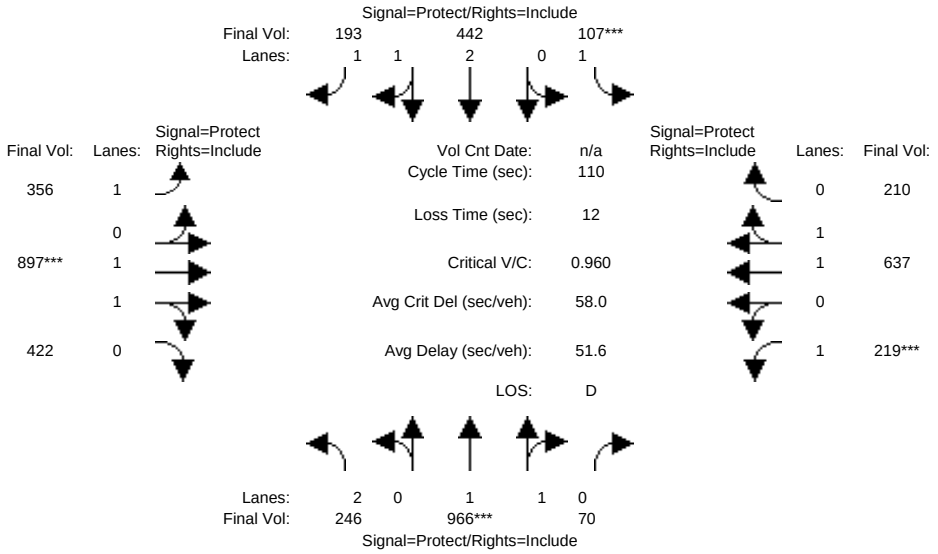
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project PM

Intersection #3: San Antonio Road & Chareleston Road

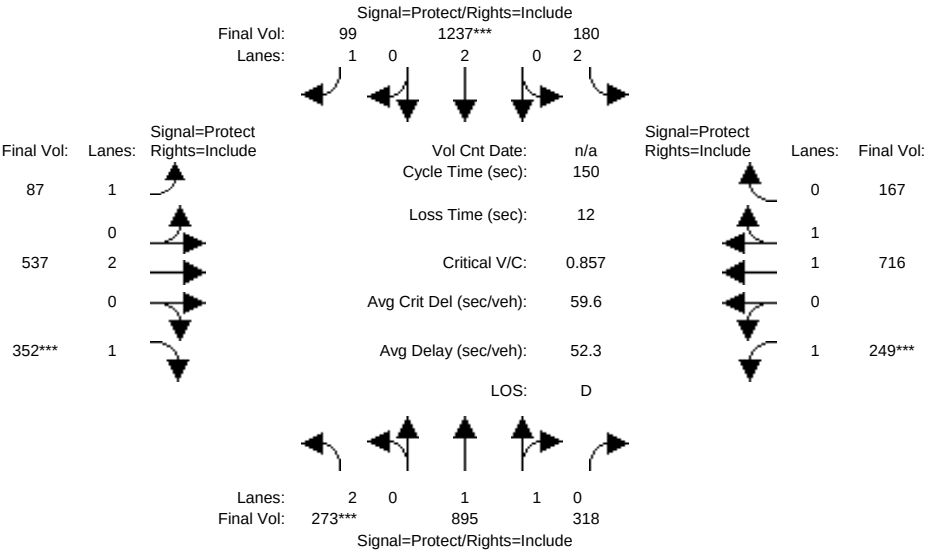



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 238 | 935 | 68 | 104 | 427 | 187 | 345 | 870 | 407 | 212 | 618 | 204 |
| Growth 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 |
| Initial Bse: | 238 | 935 | 68 | 104 | 427 | 187 | 345 | 870 | 407 | 212 | 618 | 204 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Initial Fut: | 239 | 937 | 68 | 104 | 429 | 187 | 345 | 870 | 409 | 212 | 618 | 204 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 246 | 966 | 70 | 107 | 442 | 193 | 356 | 897 | 422 | 219 | 637 | 210 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 246 | 966 | 70 | 107 | 442 | 193 | 356 | 897 | 422 | 219 | 637 | 210 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 246 | 966 | 70 | 107 | 442 | 193 | 356 | 897 | 422 | 219 | 637 | 210 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.94 | 0.94 | 0.95 | 0.87 | 0.85 | 0.95 | 0.90 | 0.90 | 0.95 | 0.91 | 0.91 |
| Lanes: | 2.00 | 1.86 | 0.14 | 1.00 | 2.77 | 1.23 | 1.00 | 1.36 | 0.64 | 1.00 | 1.50 | 0.50 |
| Final Sat.: | 3502 | 3332 | 242 | 1805 | 4568 | 1991 | 1805 | 2332 | 1097 | 1805 | 2609 | 861 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.29 | 0.29 | 0.06 | 0.10 | 0.10 | 0.20 | 0.38 | 0.38 | 0.12 | 0.24 | 0.24 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.15 | 0.30 | 0.30 | 0.06 | 0.21 | 0.21 | 0.23 | 0.40 | 0.40 | 0.13 | 0.29 | 0.29 |
| Volume/Cap: | 0.46 | 0.96 | 0.96 | 0.93 | 0.46 | 0.46 | 0.84 | 0.96 | 0.96 | 0.96 | 0.84 | 0.84 |
| Uniform Del: | 42.4 | 37.8 | 37.8 | 51.3 | 37.9 | 37.9 | 40.1 | 32.2 | 32.2 | 47.8 | 36.6 | 36.6 |
| IncremntDel: | 0.6 | 18.8 | 18.8 | 63.2 | 0.2 | 0.2 | 13.8 | 16.0 | 16.0 | 48.7 | 6.4 | 6.4 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 43.0 | 56.6 | 56.6 | 114.4 | 38.1 | 38.1 | 53.9 | 48.2 | 48.2 | 96.6 | 42.9 | 42.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 43.0 | 56.6 | 56.6 | 114.4 | 38.1 | 38.1 | 53.9 | 48.2 | 48.2 | 96.6 | 42.9 | 42.9 |
| LOS by Move: | D | E | E | F | D | D | D | D | D | F | D | D |
| HCM2kAvgQ: | 4 | 23 | 23 | 6 | 6 | 5 | 14 | 28 | 28 | 11 | 17 | 17 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background Plus Project PM

Intersection #4: San Antonio Road & Middlefield Road



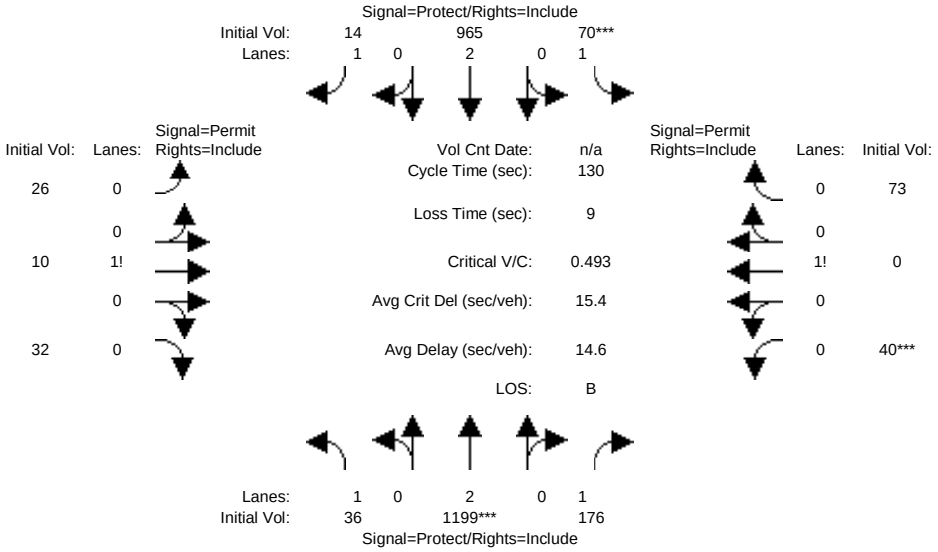

| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 5 | 10 | 10 | 10 | 10 | 5 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 268 | 870 | 312 | 172 | 1207 | 95 | 83 | 526 | 345 | 244 | 702 | 160 |
| Growth 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 |
| Initial Bse: | 268 | 870 | 312 | 172 | 1207 | 95 | 83 | 526 | 345 | 244 | 702 | 160 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 0 | 7 | 0 | 4 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| Initial Fut: | 268 | 877 | 312 | 176 | 1212 | 97 | 85 | 526 | 345 | 244 | 702 | 164 |
| User 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 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 273 | 895 | 318 | 180 | 1237 | 99 | 87 | 537 | 352 | 249 | 716 | 167 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 273 | 895 | 318 | 180 | 1237 | 99 | 87 | 537 | 352 | 249 | 716 | 167 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 273 | 895 | 318 | 180 | 1237 | 99 | 87 | 537 | 352 | 249 | 716 | 167 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.91 | 0.91 | 0.92 | 0.95 | 0.83 | 0.95 | 0.95 | 0.81 | 0.95 | 0.92 | 0.91 |
| Lanes: | 2.00 | 1.47 | 0.53 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.62 | 0.38 |
| Final Sat.: | 3502 | 2553 | 908 | 3502 | 3610 | 1576 | 1805 | 3610 | 1531 | 1805 | 2838 | 663 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.35 | 0.35 | 0.05 | 0.34 | 0.06 | 0.05 | 0.15 | 0.23 | 0.14 | 0.25 | 0.25 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.09 | 0.41 | 0.41 | 0.08 | 0.40 | 0.40 | 0.07 | 0.27 | 0.27 | 0.16 | 0.36 | 0.36 |
| Volume/Cap: | 0.86 | 0.85 | 0.85 | 0.65 | 0.86 | 0.16 | 0.70 | 0.55 | 0.86 | 0.86 | 0.70 | 0.70 |
| Uniform Del: | 67.2 | 39.9 | 39.9 | 67.1 | 41.1 | 28.8 | 68.3 | 47.2 | 52.2 | 61.3 | 41.0 | 41.0 |
| IncremntDel: | 19.9 | 5.1 | 5.1 | 5.6 | 5.3 | 0.1 | 16.3 | 0.7 | 16.2 | 21.5 | 1.8 | 1.8 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 87.1 | 44.9 | 44.9 | 72.7 | 46.4 | 29.0 | 84.7 | 47.9 | 68.3 | 82.7 | 42.8 | 42.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 87.1 | 44.9 | 44.9 | 72.7 | 46.4 | 29.0 | 84.7 | 47.9 | 68.3 | 82.7 | 42.8 | 42.8 |
| LOS by Move: | F | D | D | E | D | C | F | D | E | F | D | D |
| HCM2kAvgQ: | 9 | 28 | 28 | 5 | 29 | 3 | 5 | 11 | 18 | 14 | 19 | 19 |

Note: Queue reported is the number of cars per lane.

# Appendix G – Cumulative Conditions Intersection Level of Service Worksheets

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

## Intersection #1: San Antonio Road and Leghorn Road

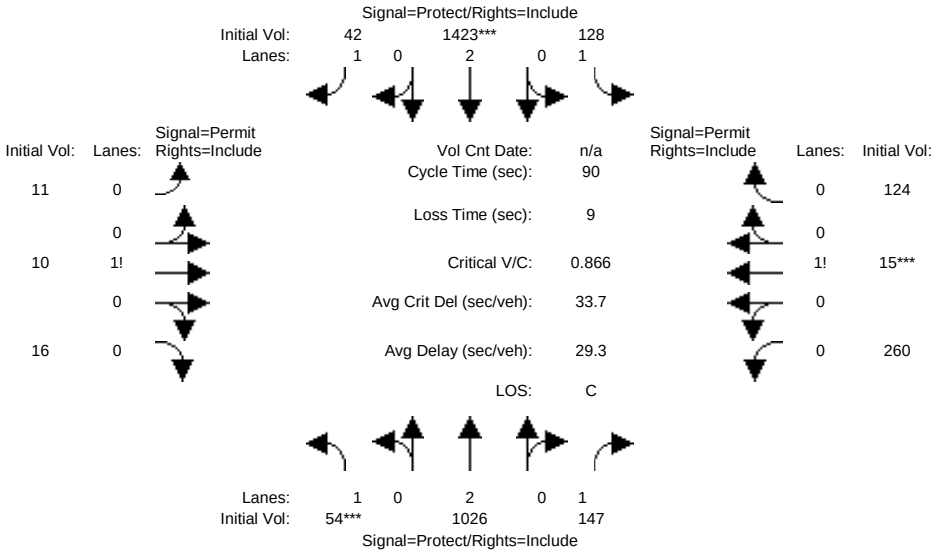



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 36 | 1199 | 176 | 70 | 965 | 14 | 26 | 10 | 32 | 40 | 0 | 73 |
| Growth 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 |
| Initial Bse: | 36 | 1199 | 176 | 70 | 965 | 14 | 26 | 10 | 32 | 40 | 0 | 73 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 36 | 1199 | 176 | 70 | 965 | 14 | 26 | 10 | 32 | 40 | 0 | 73 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 37 | 1236 | 181 | 72 | 995 | 14 | 27 | 10 | 33 | 41 | 0 | 75 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 37 | 1236 | 181 | 72 | 995 | 14 | 27 | 10 | 33 | 41 | 0 | 75 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 37 | 1236 | 181 | 72 | 995 | 14 | 27 | 10 | 33 | 41 | 0 | 75 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.83 | 0.95 | 0.95 | 0.83 | 0.80 | 0.81 | 0.80 | 0.81 | 1.00 | 0.80 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.38 | 0.15 | 0.47 | 0.35 | 0.00 | 0.65 |
| Final Sat.: | 1805 | 3610 | 1576 | 1805 | 3610 | 1574 | 582 | 224 | 717 | 542 | 0 | 990 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.34 | 0.12 | 0.04 | 0.28 | 0.01 | 0.05 | 0.05 | 0.05 | 0.08 | 0.00 | 0.08 |
| Crit Moves: | | **** | | **** | | | | | | **** | | |
| Green/Cycle: | 0.13 | 0.70 | 0.70 | 0.08 | 0.65 | 0.65 | 0.15 | 0.15 | 0.15 | 0.15 | 0.00 | 0.15 |
| Volume/Cap: | 0.16 | 0.49 | 0.17 | 0.49 | 0.42 | 0.01 | 0.30 | 0.30 | 0.30 | 0.49 | 0.00 | 0.49 |
| Uniform Del: | 50.6 | 9.2 | 6.8 | 57.2 | 11.0 | 8.1 | 48.7 | 48.7 | 48.7 | 50.3 | 0.0 | 50.3 |
| IncremntDel: | 0.3 | 0.2 | 0.1 | 2.6 | 0.1 | 0.0 | 0.7 | 0.7 | 0.7 | 1.6 | 0.0 | 1.6 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Delay/Veh: | 50.9 | 9.3 | 6.9 | 59.8 | 11.1 | 8.1 | 49.4 | 49.4 | 49.4 | 51.9 | 0.0 | 51.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 50.9 | 9.3 | 6.9 | 59.8 | 11.1 | 8.1 | 49.4 | 49.4 | 49.4 | 51.9 | 0.0 | 51.9 |
| LOS by Move: | D | A | A | E | B | A | D | D | D | D | A | D |
| HCM2kAvgQ: | 1 | 12 | 2 | 3 | 10 | 0 | 3 | 3 | 3 | 5 | 0 | 5 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #1: San Antonio Road and Leghorn Road

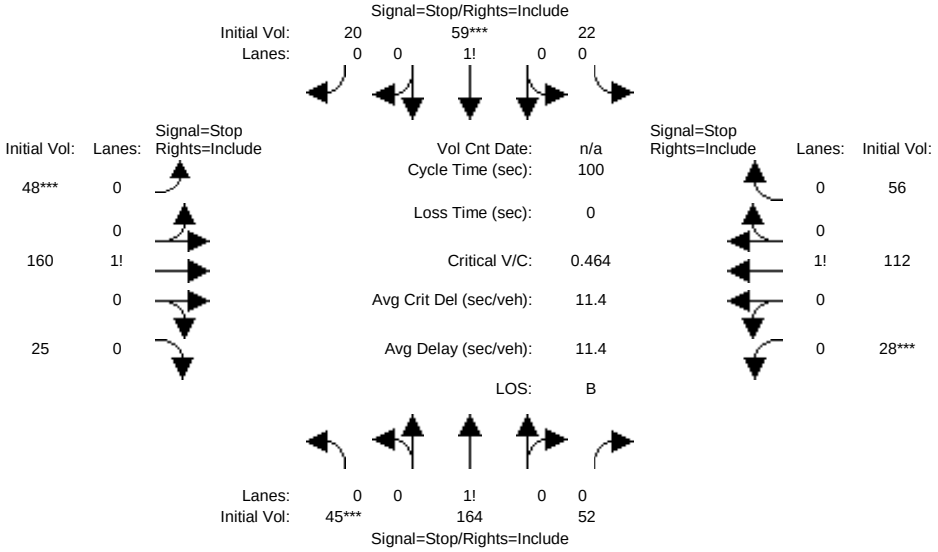



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 54 | 1026 | 147 | 128 | 1423 | 42 | 11 | 10 | 16 | 260 | 15 | 124 |
| Growth 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 |
| Initial Bse: | 54 | 1026 | 147 | 128 | 1423 | 42 | 11 | 10 | 16 | 260 | 15 | 124 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 54 | 1026 | 147 | 128 | 1423 | 42 | 11 | 10 | 16 | 260 | 15 | 124 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 59 | 1127 | 162 | 141 | 1564 | 46 | 12 | 11 | 18 | 286 | 16 | 136 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 59 | 1127 | 162 | 141 | 1564 | 46 | 12 | 11 | 18 | 286 | 16 | 136 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 59 | 1127 | 162 | 141 | 1564 | 46 | 12 | 11 | 18 | 286 | 16 | 136 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.84 | 0.95 | 0.95 | 0.82 | 0.83 | 0.83 | 0.83 | 0.74 | 0.74 | 0.74 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.30 | 0.27 | 0.43 | 0.65 | 0.04 | 0.31 |
| Final Sat.: | 1805 | 3610 | 1604 | 1805 | 3610 | 1549 | 469 | 427 | 683 | 912 | 53 | 435 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.31 | 0.10 | 0.08 | 0.43 | 0.03 | 0.03 | 0.03 | 0.03 | 0.31 | 0.31 | 0.31 |
| Crit Moves: | **** | | | | **** | | | | | | **** | |
| Green/Cycle: | 0.08 | 0.44 | 0.44 | 0.11 | 0.48 | 0.48 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Volume/Cap: | 0.42 | 0.70 | 0.23 | 0.70 | 0.91 | 0.06 | 0.07 | 0.07 | 0.07 | 0.91 | 0.91 | 0.91 |
| Uniform Del: | 39.6 | 20.2 | 15.5 | 38.6 | 21.7 | 12.7 | 19.8 | 19.8 | 19.8 | 28.1 | 28.1 | 28.1 |
| IncremntDel: | 2.0 | 1.4 | 0.2 | 10.8 | 7.5 | 0.0 | 0.1 | 0.1 | 0.1 | 20.9 | 20.9 | 20.9 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 41.6 | 21.7 | 15.6 | 49.3 | 29.2 | 12.7 | 19.9 | 19.9 | 19.9 | 49.0 | 49.0 | 49.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 41.6 | 21.7 | 15.6 | 49.3 | 29.2 | 12.7 | 19.9 | 19.9 | 19.9 | 49.0 | 49.0 | 49.0 |
| LOS by Move: | D | C | B | D | C | B | B | B | B | D | D | D |
| HCM2kAvgQ: | 2 | 14 | 3 | 5 | 25 | 1 | 1 | 1 | 1 | 16 | 16 | 16 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Cumulative AM

## Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 43 | 158 | 50 | 21 | 57 | 19 | 46 | 154 | 24 | 27 | 108 | 54 |
| Growth Adj: | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| Initial Bse: | 45 | 164 | 52 | 22 | 59 | 20 | 48 | 160 | 25 | 28 | 112 | 56 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 45 | 164 | 52 | 22 | 59 | 20 | 48 | 160 | 25 | 28 | 112 | 56 |
| User 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 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 51 | 189 | 60 | 25 | 68 | 23 | 55 | 184 | 29 | 32 | 129 | 64 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 51 | 189 | 60 | 25 | 68 | 23 | 55 | 184 | 29 | 32 | 129 | 64 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 51 | 189 | 60 | 25 | 68 | 23 | 55 | 184 | 29 | 32 | 129 | 64 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.17 | 0.63 | 0.20 | 0.22 | 0.59 | 0.19 | 0.20 | 0.69 | 0.11 | 0.14 | 0.57 | 0.29 |
| Final Sat.: | 111 | 407 | 129 | 126 | 342 | 114 | 132 | 440 | 69 | 91 | 365 | 183 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.46 | 0.46 | 0.46 | 0.20 | 0.20 | 0.20 | 0.42 | 0.42 | 0.42 | 0.35 | 0.35 | 0.35 |
| Crit Moves: | **** | | | | **** | | **** | | | **** | | |
| Delay/Veh: | 12.3 | 12.3 | 12.3 | 9.8 | 9.8 | 9.8 | 11.7 | 11.7 | 11.7 | 10.8 | 10.8 | 10.8 |
| Delay 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 |
| AdjDel/Veh: | 12.3 | 12.3 | 12.3 | 9.8 | 9.8 | 9.8 | 11.7 | 11.7 | 11.7 | 10.8 | 10.8 | 10.8 |
| LOS by Move: | B | B | B | A | A | A | B | B | B | B | B | B |
| ApproachDel: | 12.3 | | | 9.8 | | | 11.7 | | | 10.8 | | |
| Delay Adj: | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| ApprAdjDel: | 12.3 | | | 9.8 | | | 11.7 | | | 10.8 | | |
| LOS by Appr: | B | | | A | | | B | | | B | | |
| AllWayAvgQ: | 0.7 | 0.7 | 0.7 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #2 Independence Avenue & Leghorn Road

**********

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! | 0 | 0 | 0 0 1! | 0 | 0 | 0 0 1! | 0 | 0 | 0 0 1! | 0 | 0 |
| Initial Vol: | 45 | 164 | 52 | 22 | 59 | 20 | 48 | 160 | 25 | 28 | 112 | 56 |

Major Street Volume: 429
Minor Approach Volume: 261
Minor Approach Volume Threshold: 445

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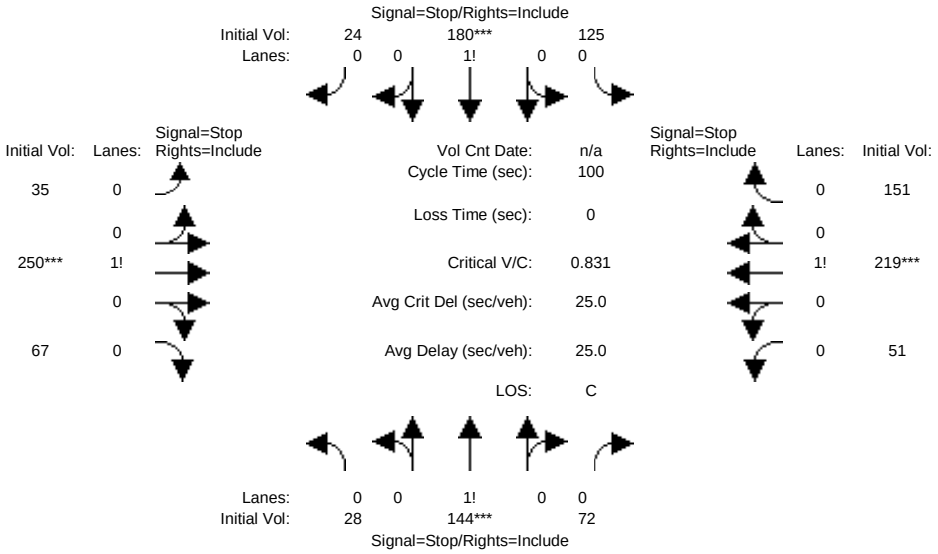
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Cumulative PM

## Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 27 | 139 | 69 | 120 | 173 | 23 | 34 | 241 | 65 | 49 | 211 | 145 |
| Growth Adj: | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| Initial Bse: | 28 | 144 | 72 | 125 | 180 | 24 | 35 | 250 | 67 | 51 | 219 | 151 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 28 | 144 | 72 | 125 | 180 | 24 | 35 | 250 | 67 | 51 | 219 | 151 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 29 | 149 | 74 | 128 | 185 | 25 | 36 | 258 | 70 | 52 | 226 | 155 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 29 | 149 | 74 | 128 | 185 | 25 | 36 | 258 | 70 | 52 | 226 | 155 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 29 | 149 | 74 | 128 | 185 | 25 | 36 | 258 | 70 | 52 | 226 | 155 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.11 | 0.60 | 0.29 | 0.38 | 0.55 | 0.07 | 0.10 | 0.71 | 0.19 | 0.12 | 0.52 | 0.36 |
| Final Sat.: | 50 | 256 | 127 | 178 | 256 | 34 | 49 | 349 | 94 | 63 | 272 | 187 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.58 | 0.58 | 0.58 | 0.72 | 0.72 | 0.72 | 0.74 | 0.74 | 0.74 | 0.83 | 0.83 | 0.83 |
| Crit Moves: | | **** | | | **** | | | **** | | | **** | |
| Delay/Veh: | 17.5 | 17.5 | 17.5 | 23.6 | 23.6 | 23.6 | 24.2 | 24.2 | 24.2 | 31.0 | 31.0 | 31.0 |
| Delay 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 |
| AdjDel/Veh: | 17.5 | 17.5 | 17.5 | 23.6 | 23.6 | 23.6 | 24.2 | 24.2 | 24.2 | 31.0 | 31.0 | 31.0 |
| LOS by Move: | C | C | C | C | C | C | C | C | C | D | D | D |
| ApproachDel: | | 17.5 | | | 23.6 | | | 24.2 | | | 31.0 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 17.5 | | | 23.6 | | | 24.2 | | | 31.0 | |
| LOS by Appr: | | C | | | C | | | C | | | D | |
| AllWayAvgQ: | 0.9 | 0.9 | 0.9 | 1.7 | 1.7 | 1.7 | 1.9 | 1.9 | 1.9 | 3.1 | 3.1 | 3.1 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #2 Independence Avenue & Leghorn Road

**********

  

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 28 | 144 | 72 | 125 | 180 | 24 | 35 | 250 | 67 | 51 | 219 | 151 |

Major Street Volume: 773
Minor Approach Volume: 328
Minor Approach Volume Threshold: 288

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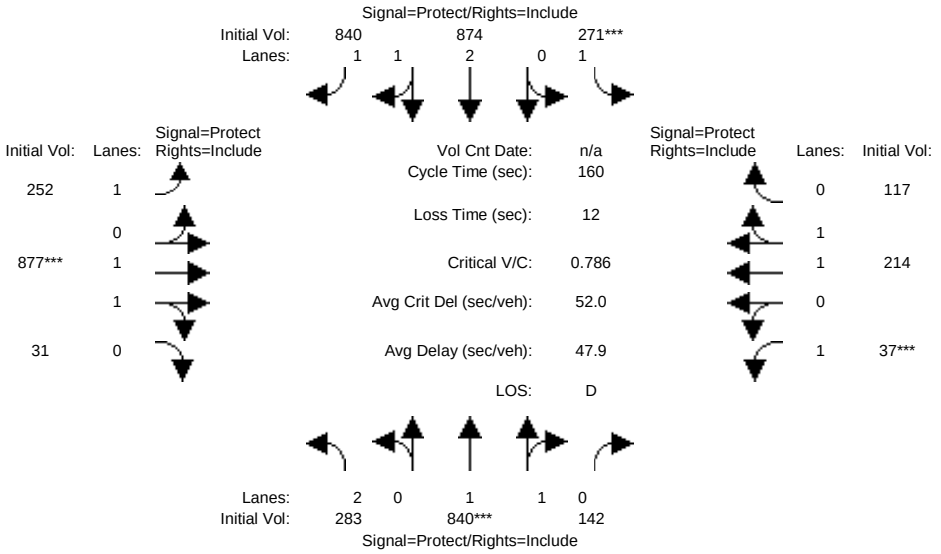
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #3: San Antonio Road & Chareleston Road

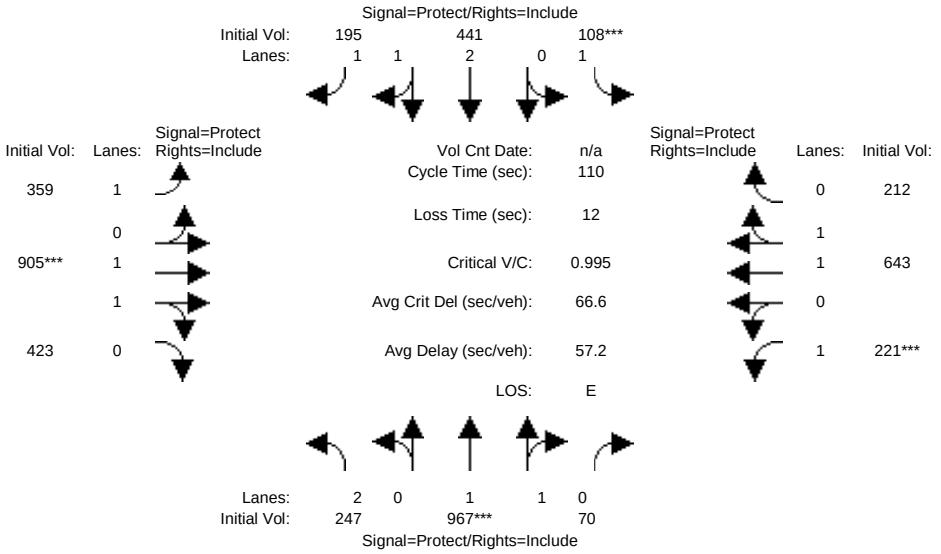



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 283 | 840 | 142 | 271 | 874 | 840 | 252 | 877 | 31 | 37 | 214 | 117 |
| Growth 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 |
| Initial Bse: | 283 | 840 | 142 | 271 | 874 | 840 | 252 | 877 | 31 | 37 | 214 | 117 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 283 | 840 | 142 | 271 | 874 | 840 | 252 | 877 | 31 | 37 | 214 | 117 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 292 | 866 | 146 | 279 | 901 | 866 | 260 | 904 | 32 | 38 | 221 | 121 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 292 | 866 | 146 | 279 | 901 | 866 | 260 | 904 | 32 | 38 | 221 | 121 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 292 | 866 | 146 | 279 | 901 | 866 | 260 | 904 | 32 | 38 | 221 | 121 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.93 | 0.95 | 0.84 | 0.83 | 0.95 | 0.95 | 0.94 | 0.95 | 0.90 | 0.89 |
| Lanes: | 2.00 | 1.71 | 0.29 | 1.00 | 2.02 | 1.98 | 1.00 | 1.93 | 0.07 | 1.00 | 1.29 | 0.71 |
| Final Sat.: | 3502 | 3019 | 510 | 1805 | 3244 | 3118 | 1805 | 3469 | 123 | 1805 | 2202 | 1204 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.29 | 0.29 | 0.15 | 0.28 | 0.28 | 0.14 | 0.26 | 0.26 | 0.02 | 0.10 | 0.10 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.13 | 0.36 | 0.36 | 0.19 | 0.42 | 0.42 | 0.22 | 0.32 | 0.32 | 0.05 | 0.15 | 0.15 |
| Volume/Cap: | 0.66 | 0.80 | 0.80 | 0.80 | 0.66 | 0.66 | 0.66 | 0.80 | 0.80 | 0.45 | 0.66 | 0.66 |
| Uniform Del: | 62.4 | 43.5 | 43.5 | 57.9 | 34.6 | 34.6 | 53.5 | 46.3 | 46.3 | 69.6 | 59.9 | 59.9 |
| IncremntDel: | 3.6 | 3.9 | 3.9 | 12.8 | 0.6 | 0.6 | 4.1 | 4.2 | 4.2 | 3.8 | 3.1 | 3.1 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 66.0 | 47.4 | 47.4 | 70.6 | 35.2 | 35.2 | 57.5 | 50.5 | 50.5 | 73.5 | 63.0 | 63.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 66.0 | 47.4 | 47.4 | 70.6 | 35.2 | 35.2 | 57.5 | 50.5 | 50.5 | 73.5 | 63.0 | 63.0 |
| LOS by Move: | E | D | D | E | D | D | E | D | D | E | E | E |
| HCM2kAvgQ: | 8 | 23 | 23 | 14 | 18 | 18 | 12 | 22 | 22 | 2 | 9 | 9 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #3: San Antonio Road & Chareleston Road

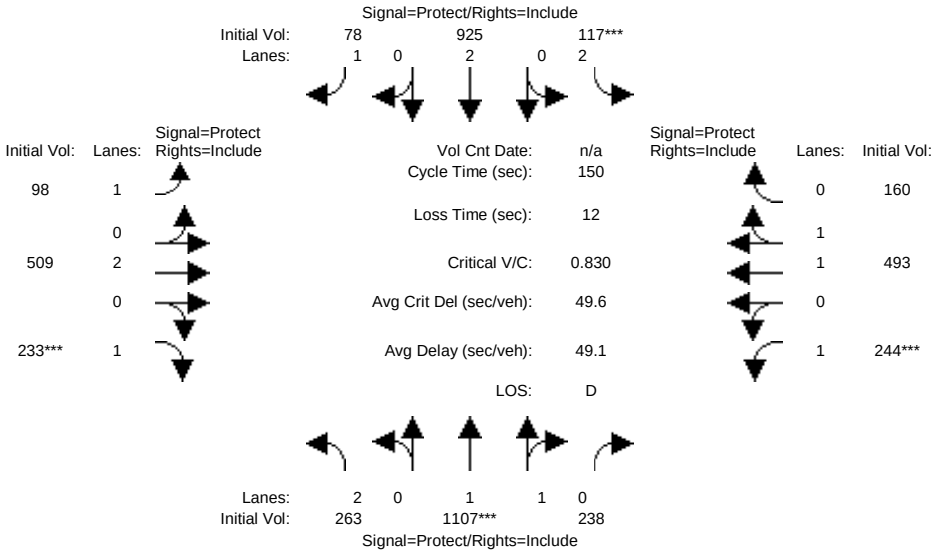



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 247 | 967 | 70 | 108 | 441 | 195 | 359 | 905 | 423 | 221 | 643 | 212 |
| Growth 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 |
| Initial Bse: | 247 | 967 | 70 | 108 | 441 | 195 | 359 | 905 | 423 | 221 | 643 | 212 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 247 | 967 | 70 | 108 | 441 | 195 | 359 | 905 | 423 | 221 | 643 | 212 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 255 | 997 | 72 | 111 | 455 | 201 | 370 | 933 | 436 | 228 | 663 | 219 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 255 | 997 | 72 | 111 | 455 | 201 | 370 | 933 | 436 | 228 | 663 | 219 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 255 | 997 | 72 | 111 | 455 | 201 | 370 | 933 | 436 | 228 | 663 | 219 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.94 | 0.94 | 0.95 | 0.87 | 0.85 | 0.95 | 0.90 | 0.90 | 0.95 | 0.91 | 0.91 |
| Lanes: | 2.00 | 1.86 | 0.14 | 1.00 | 2.76 | 1.24 | 1.00 | 1.36 | 0.64 | 1.00 | 1.50 | 0.50 |
| Final Sat.: | 3502 | 3332 | 241 | 1805 | 4547 | 2011 | 1805 | 2337 | 1092 | 1805 | 2609 | 860 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.30 | 0.30 | 0.06 | 0.10 | 0.10 | 0.21 | 0.40 | 0.40 | 0.13 | 0.25 | 0.25 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.15 | 0.30 | 0.30 | 0.06 | 0.21 | 0.21 | 0.24 | 0.40 | 0.40 | 0.13 | 0.29 | 0.29 |
| Volume/Cap: | 0.47 | 1.00 | 1.00 | 0.97 | 0.47 | 0.47 | 0.87 | 1.00 | 1.00 | 1.00 | 0.87 | 0.87 |
| Uniform Del: | 42.5 | 38.4 | 38.4 | 51.4 | 38.1 | 38.1 | 40.4 | 32.9 | 32.9 | 48.0 | 37.0 | 37.0 |
| IncremntDel: | 0.7 | 26.7 | 26.7 | 74.0 | 0.3 | 0.3 | 17.4 | 23.5 | 23.5 | 58.6 | 8.3 | 8.3 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 43.2 | 65.1 | 65.1 | 125.4 | 38.3 | 38.3 | 57.9 | 56.4 | 56.4 | 106.6 | 45.3 | 45.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 43.2 | 65.1 | 65.1 | 125.4 | 38.3 | 38.3 | 57.9 | 56.4 | 56.4 | 106.6 | 45.3 | 45.3 |
| LOS by Move: | D | E | E | F | D | D | E | E | E | F | D | D |
| HCM2kAvgQ: | 5 | 25 | 25 | 7 | 6 | 6 | 15 | 31 | 31 | 12 | 18 | 18 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

## Intersection #4: San Antonio Road & Middlefield Road

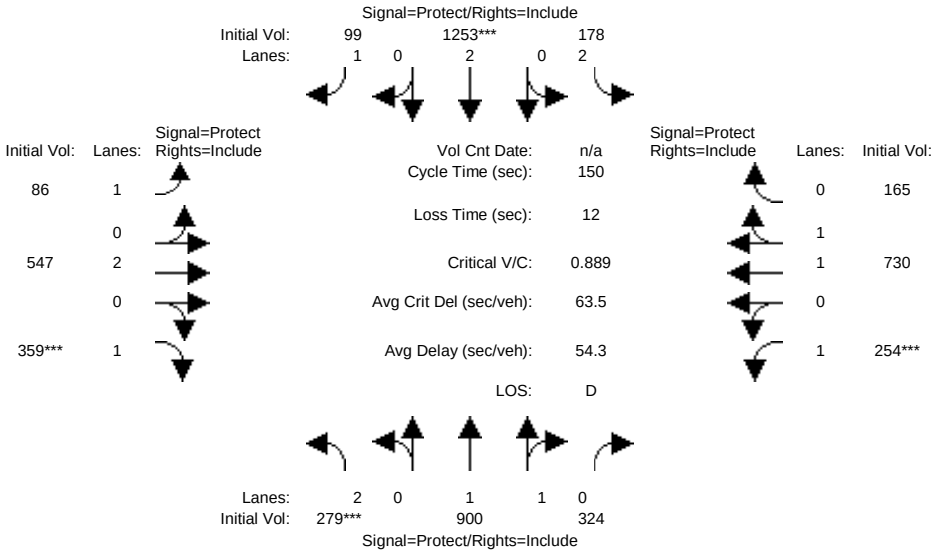



| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 263 | 1107 | 238 | 117 | 925 | 78 | 98 | 509 | 233 | 244 | 493 | 160 |
| Growth 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 |
| Initial Bse: | 263 | 1107 | 238 | 117 | 925 | 78 | 98 | 509 | 233 | 244 | 493 | 160 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 263 | 1107 | 238 | 117 | 925 | 78 | 98 | 509 | 233 | 244 | 493 | 160 |
| User 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 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 283 | 1190 | 256 | 126 | 995 | 84 | 105 | 547 | 251 | 262 | 530 | 172 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 283 | 1190 | 256 | 126 | 995 | 84 | 105 | 547 | 251 | 262 | 530 | 172 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 283 | 1190 | 256 | 126 | 995 | 84 | 105 | 547 | 251 | 262 | 530 | 172 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.92 | 0.92 | 0.95 | 0.81 | 0.95 | 0.95 | 0.77 | 0.95 | 0.91 | 0.90 |
| Lanes: | 2.00 | 1.64 | 0.36 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.51 | 0.49 |
| Final Sat.: | 3502 | 2889 | 621 | 3502 | 3610 | 1543 | 1805 | 3610 | 1468 | 1805 | 2616 | 849 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.41 | 0.41 | 0.04 | 0.28 | 0.05 | 0.06 | 0.15 | 0.17 | 0.15 | 0.20 | 0.20 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.12 | 0.50 | 0.50 | 0.04 | 0.42 | 0.42 | 0.09 | 0.21 | 0.21 | 0.18 | 0.30 | 0.30 |
| Volume/Cap: | 0.66 | 0.83 | 0.83 | 0.83 | 0.66 | 0.13 | 0.69 | 0.74 | 0.83 | 0.83 | 0.69 | 0.69 |
| Uniform Del: | 62.9 | 32.4 | 32.4 | 71.2 | 35.2 | 26.9 | 66.7 | 55.8 | 57.1 | 59.7 | 46.7 | 46.7 |
| IncremntDel: | 3.8 | 3.5 | 3.5 | 30.3 | 1.1 | 0.1 | 12.2 | 3.9 | 17.3 | 16.7 | 2.0 | 2.0 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 66.7 | 35.9 | 35.9 | 101.5 | 36.3 | 27.0 | 78.9 | 59.7 | 74.4 | 76.4 | 48.7 | 48.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 66.7 | 35.9 | 35.9 | 101.5 | 36.3 | 27.0 | 78.9 | 59.7 | 74.4 | 76.4 | 48.7 | 48.7 |
| LOS by Move: | E | D | D | F | D | C | E | E | E | E | D | D |
| HCM2kAvgQ: | 7 | 31 | 31 | 5 | 19 | 2 | 6 | 14 | 13 | 14 | 16 | 15 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

## Intersection #4: San Antonio Road & Middlefield Road



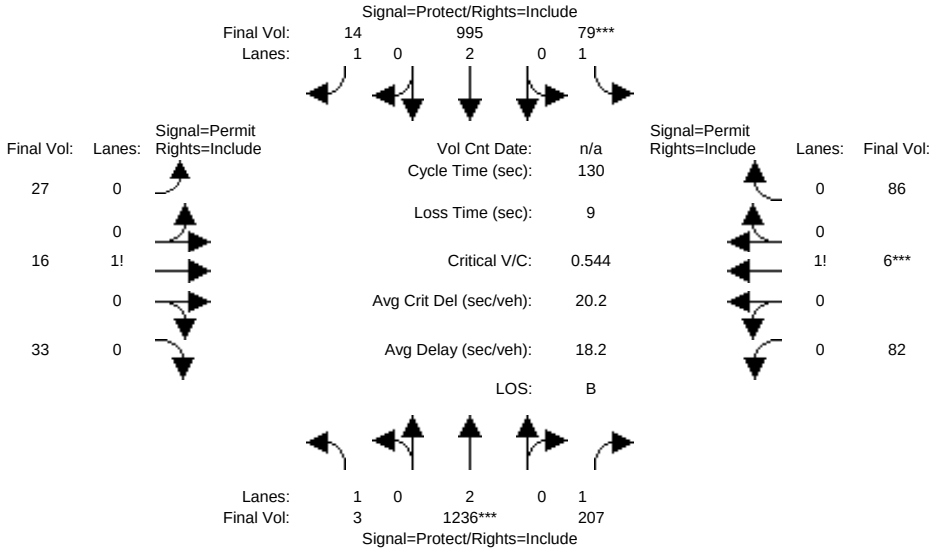

| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Min. Green: | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 279 | 900 | 324 | 178 | 1253 | 99 | 86 | 547 | 359 | 254 | 730 | 165 |
| Growth 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 |
| Initial Bse: | 279 | 900 | 324 | 178 | 1253 | 99 | 86 | 547 | 359 | 254 | 730 | 165 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 279 | 900 | 324 | 178 | 1253 | 99 | 86 | 547 | 359 | 254 | 730 | 165 |
| User 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 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 285 | 918 | 331 | 182 | 1279 | 101 | 88 | 558 | 366 | 259 | 745 | 168 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 285 | 918 | 331 | 182 | 1279 | 101 | 88 | 558 | 366 | 259 | 745 | 168 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 285 | 918 | 331 | 182 | 1279 | 101 | 88 | 558 | 366 | 259 | 745 | 168 |
| **Saturation Flow Module:** | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.91 | 0.90 | 0.92 | 0.95 | 0.83 | 0.95 | 0.95 | 0.81 | 0.95 | 0.92 | 0.91 |
| Lanes: | 2.00 | 1.47 | 0.53 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.63 | 0.37 |
| Final Sat.: | 3502 | 2542 | 915 | 3502 | 3610 | 1576 | 1805 | 3610 | 1531 | 1805 | 2856 | 645 |
| **Capacity Analysis Module:** | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.36 | 0.36 | 0.05 | 0.35 | 0.06 | 0.05 | 0.15 | 0.24 | 0.14 | 0.26 | 0.26 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.09 | 0.43 | 0.43 | 0.06 | 0.40 | 0.40 | 0.07 | 0.27 | 0.27 | 0.16 | 0.36 | 0.36 |
| Volume/Cap: | 0.89 | 0.84 | 0.84 | 0.84 | 0.89 | 0.16 | 0.72 | 0.57 | 0.89 | 0.89 | 0.72 | 0.72 |
| Uniform Del: | 67.4 | 38.4 | 38.4 | 69.7 | 42.1 | 29.0 | 68.5 | 47.4 | 52.7 | 61.6 | 41.2 | 41.2 |
| IncremntDel: | 24.8 | 4.6 | 4.6 | 25.0 | 7.2 | 0.1 | 18.6 | 0.8 | 20.5 | 26.6 | 2.0 | 2.0 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 92.2 | 43.0 | 43.0 | 94.7 | 49.3 | 29.1 | 87.2 | 48.3 | 73.2 | 88.2 | 43.2 | 43.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 92.2 | 43.0 | 43.0 | 94.7 | 49.3 | 29.1 | 87.2 | 48.3 | 73.2 | 88.2 | 43.2 | 43.2 |
| LOS by Move: | F | D | D | F | D | C | F | D | E | F | D | D |
| HCM2kAvgQ: | 9 | 29 | 29 | 6 | 31 | 3 | 5 | 12 | 19 | 15 | 20 | 19 |

Note: Queue reported is the number of cars per lane.

# Appendix H – Cumulative plus Project Conditions Intersection Level of Service Worksheets

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #1: San Antonio Road and Leghorn Road

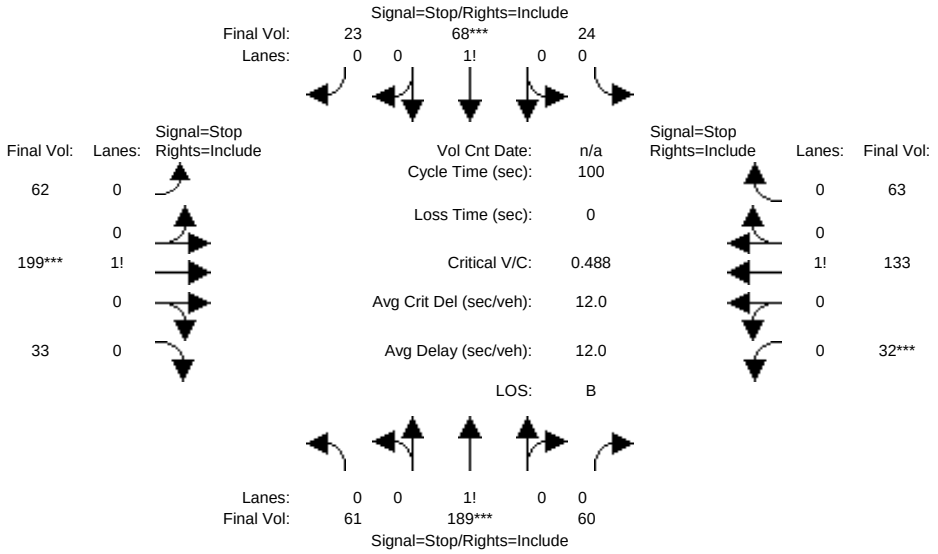



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 36 | 1199 | 176 | 70 | 965 | 14 | 26 | 10 | 32 | 40 | 0 | 73 |
| Growth 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 |
| Initial Bse: | 36 | 1199 | 176 | 70 | 965 | 14 | 26 | 10 | 32 | 40 | 0 | 73 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 0 | 0 | 25 | 7 | 0 | 0 | 0 | 6 | 0 | 40 | 6 | 10 |
| Initial Fut: | 36 | 1199 | 201 | 77 | 965 | 14 | 26 | 16 | 32 | 80 | 6 | 83 |
| User 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 |
| PHF Adj: | xxxx | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 3 | 1236 | 207 | 79 | 995 | 14 | 27 | 16 | 33 | 82 | 6 | 86 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 3 | 1236 | 207 | 79 | 995 | 14 | 27 | 16 | 33 | 82 | 6 | 86 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 3 | 1236 | 207 | 79 | 995 | 14 | 27 | 16 | 33 | 82 | 6 | 86 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.83 | 0.95 | 0.95 | 0.83 | 0.82 | 0.83 | 0.82 | 0.77 | 0.77 | 0.76 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.35 | 0.22 | 0.43 | 0.47 | 0.04 | 0.49 |
| Final Sat.: | 1805 | 3610 | 1576 | 1805 | 3610 | 1573 | 549 | 338 | 676 | 688 | 52 | 714 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.34 | 0.13 | 0.04 | 0.28 | 0.01 | 0.05 | 0.05 | 0.05 | 0.12 | 0.12 | 0.12 |
| Crit Moves: | | **** | | **** | | | | | | | **** | |
| Green/Cycle: | 0.12 | 0.63 | 0.63 | 0.08 | 0.59 | 0.59 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| Volume/Cap: | 0.02 | 0.54 | 0.21 | 0.54 | 0.46 | 0.02 | 0.22 | 0.22 | 0.22 | 0.54 | 0.54 | 0.54 |
| Delay/Veh: | 50.9 | 13.8 | 10.4 | 61.6 | 14.9 | 10.8 | 41.9 | 41.9 | 41.9 | 46.8 | 46.8 | 46.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 50.9 | 13.8 | 10.4 | 61.6 | 14.9 | 10.8 | 41.9 | 41.9 | 41.9 | 46.8 | 46.8 | 46.8 |
| LOS by Move: | D | B | B | E | B | B | D | D | D | D | D | D |
| HCM2kAvgQ: | 0 | 14 | 3 | 4 | 11 | 0 | 3 | 3 | 3 | 7 | 7 | 7 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Cumulative Plus Project AM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 45 | 164 | 52 | 21 | 59 | 20 | 47 | 159 | 25 | 28 | 112 | 55 |
| Growth 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 |
| Initial Bse: | 45 | 164 | 52 | 21 | 59 | 20 | 47 | 159 | 25 | 28 | 112 | 55 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 8 | 0 | 0 | 0 | 0 | 0 | 7 | 14 | 4 | 0 | 4 | 0 |
| Initial Fut: | 53 | 164 | 52 | 21 | 59 | 20 | 54 | 173 | 29 | 28 | 116 | 55 |
| User 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 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 61 | 189 | 60 | 24 | 68 | 23 | 62 | 199 | 33 | 32 | 133 | 63 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 61 | 189 | 60 | 24 | 68 | 23 | 62 | 199 | 33 | 32 | 133 | 63 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 61 | 189 | 60 | 24 | 68 | 23 | 62 | 199 | 33 | 32 | 133 | 63 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.20 | 0.61 | 0.19 | 0.21 | 0.59 | 0.20 | 0.21 | 0.68 | 0.11 | 0.14 | 0.58 | 0.28 |
| Final Sat.: | 125 | 386 | 122 | 119 | 334 | 113 | 134 | 429 | 72 | 88 | 365 | 173 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.49 | 0.49 | 0.20 | 0.20 | 0.20 | 0.46 | 0.46 | 0.46 | 0.37 | 0.37 | 0.37 |
| Crit Moves: | | **** | | | **** | | | **** | | | **** | |
| Delay/Veh: | 12.9 | 12.9 | 12.9 | 9.9 | 9.9 | 9.9 | 12.5 | 12.5 | 12.5 | 11.1 | 11.1 | 11.1 |
| Delay 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 |
| AdjDel/Veh: | 12.9 | 12.9 | 12.9 | 9.9 | 9.9 | 9.9 | 12.5 | 12.5 | 12.5 | 11.1 | 11.1 | 11.1 |
| LOS by Move: | B | B | B | A | A | A | B | B | B | B | B | B |
| ApproachDel: | | 12.9 | | | 9.9 | | | 12.5 | | | 11.1 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 12.9 | | | 9.9 | | | 12.5 | | | 11.1 | |
| LOS by Appr: | | B | | | A | | | B | | | B | |
| AllWayAvgQ: | 0.8 | 0.8 | 0.8 | 0.2 | 0.2 | 0.2 | 0.7 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! | 0 | | 0 0 1! | 0 | | 0 0 1! | 0 | | 0 0 1! | 0 | |
| Initial Vol: | 53 | 164 | 52 | 21 | 59 | 20 | 54 | 173 | 29 | 28 | 116 | 55 |

Major Street Volume: 455
Minor Approach Volume: 269
Minor Approach Volume Threshold: 429

SIGNAL WARRANT DISCLAIMER

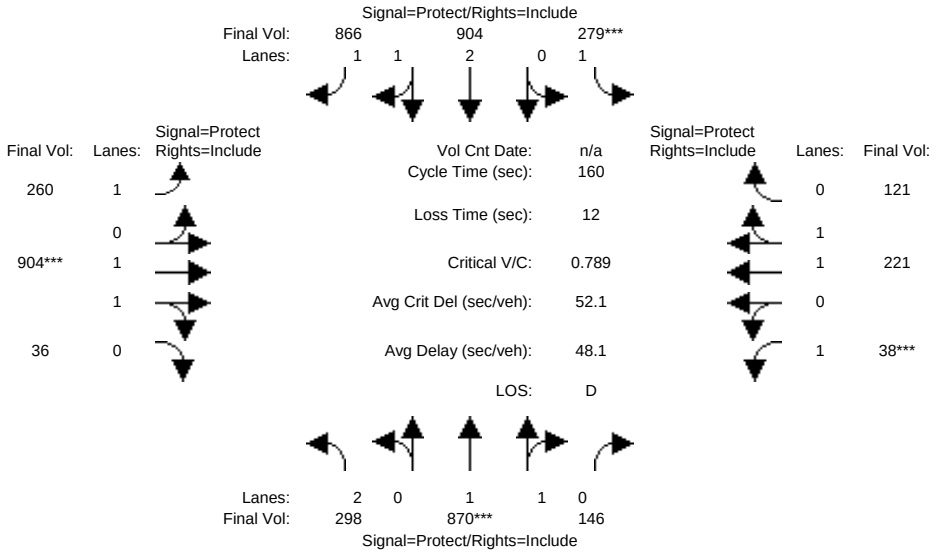
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

## Intersection #3: San Antonio Road & Chareleston Road

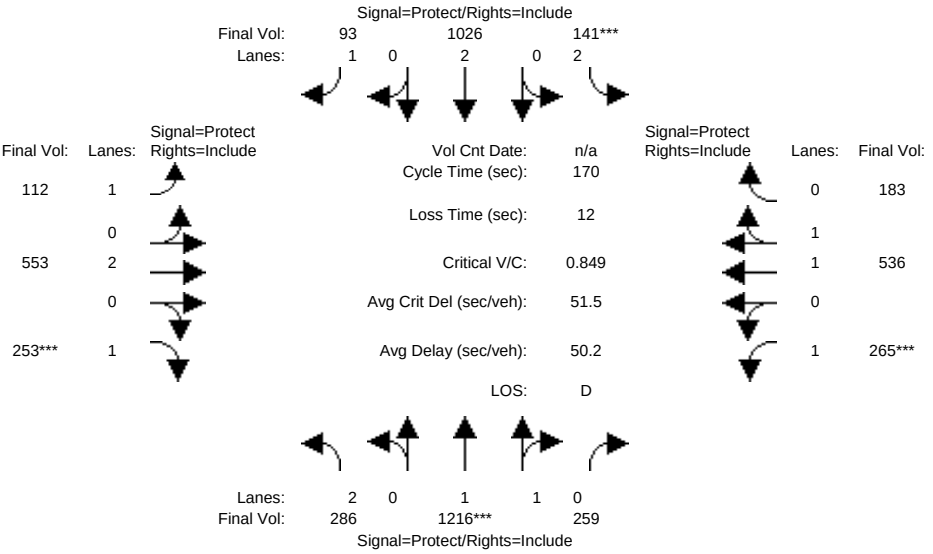



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 283 | 840 | 142 | 271 | 874 | 840 | 252 | 877 | 31 | 37 | 214 | 117 |
| Growth 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 |
| Initial Bse: | 283 | 840 | 142 | 271 | 874 | 840 | 252 | 877 | 31 | 37 | 214 | 117 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 6 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Initial Fut: | 289 | 844 | 142 | 271 | 877 | 840 | 252 | 877 | 35 | 37 | 214 | 117 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 298 | 870 | 146 | 279 | 904 | 866 | 260 | 904 | 36 | 38 | 221 | 121 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 298 | 870 | 146 | 279 | 904 | 866 | 260 | 904 | 36 | 38 | 221 | 121 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 298 | 870 | 146 | 279 | 904 | 866 | 260 | 904 | 36 | 38 | 221 | 121 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.93 | 0.95 | 0.84 | 0.83 | 0.95 | 0.94 | 0.94 | 0.95 | 0.90 | 0.89 |
| Lanes: | 2.00 | 1.71 | 0.29 | 1.00 | 2.03 | 1.97 | 1.00 | 1.92 | 0.08 | 1.00 | 1.29 | 0.71 |
| Final Sat.: | 3502 | 3021 | 508 | 1805 | 3250 | 3112 | 1805 | 3450 | 138 | 1805 | 2202 | 1204 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.09 | 0.29 | 0.29 | 0.15 | 0.28 | 0.28 | 0.14 | 0.26 | 0.26 | 0.02 | 0.10 | 0.10 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.13 | 0.36 | 0.36 | 0.19 | 0.42 | 0.42 | 0.22 | 0.32 | 0.32 | 0.05 | 0.15 | 0.15 |
| Volume/Cap: | 0.66 | 0.81 | 0.81 | 0.81 | 0.66 | 0.66 | 0.66 | 0.81 | 0.81 | 0.45 | 0.66 | 0.66 |
| Delay/Veh: | 65.9 | 47.5 | 47.5 | 71.0 | 35.6 | 35.6 | 57.5 | 50.6 | 50.6 | 73.5 | 63.0 | 63.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 65.9 | 47.5 | 47.5 | 71.0 | 35.6 | 35.6 | 57.5 | 50.6 | 50.6 | 73.5 | 63.0 | 63.0 |
| LOS by Move: | E | D | D | E | D | D | E | D | D | E | E | E |
| HCM2kAvgQ: | 8 | 24 | 24 | 14 | 18 | 18 | 12 | 22 | 22 | 2 | 9 | 9 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project AM

## Intersection #4: San Antonio Road & Middlefield Road

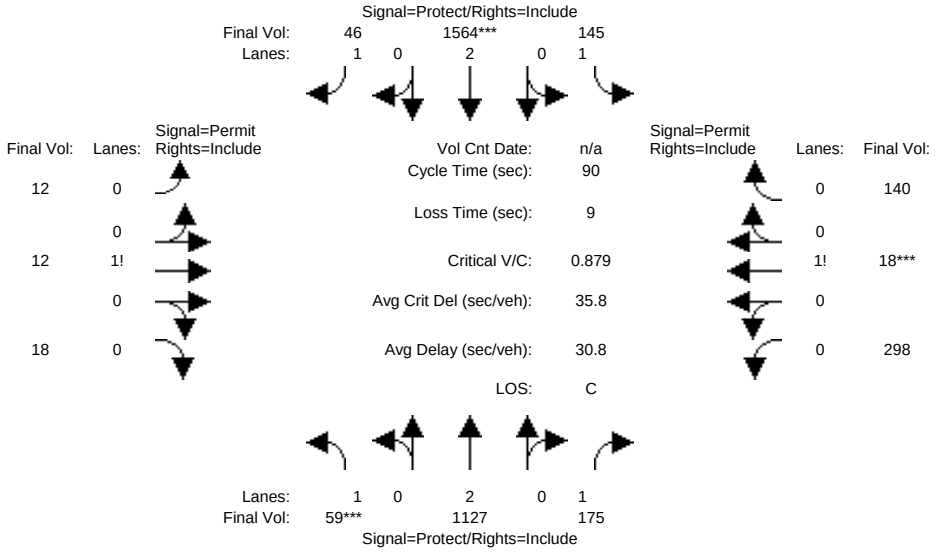



| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 263 | 1107 | 238 | 117 | 925 | 78 | 98 | 509 | 233 | 244 | 493 | 160 |
| Growth 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 |
| Initial Bse: | 263 | 1107 | 238 | 117 | 925 | 78 | 98 | 509 | 233 | 244 | 493 | 160 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AM Project : | 0 | 12 | 0 | 13 | 19 | 8 | 5 | 0 | 0 | 0 | 0 | 8 |
| Initial Fut: | 263 | 1119 | 238 | 130 | 944 | 86 | 103 | 509 | 233 | 244 | 493 | 168 |
| User 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 |
| PHF Adj: | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| PHF Volume: | 286 | 1216 | 259 | 141 | 1026 | 93 | 112 | 553 | 253 | 265 | 536 | 183 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 286 | 1216 | 259 | 141 | 1026 | 93 | 112 | 553 | 253 | 265 | 536 | 183 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 286 | 1216 | 259 | 141 | 1026 | 93 | 112 | 553 | 253 | 265 | 536 | 183 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.93 | 0.92 | 0.92 | 0.95 | 0.81 | 0.95 | 0.95 | 0.76 | 0.95 | 0.91 | 0.90 |
| Lanes: | 2.00 | 1.65 | 0.35 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.49 | 0.51 |
| Final Sat.: | 3502 | 2898 | 616 | 3502 | 3610 | 1536 | 1805 | 3610 | 1452 | 1805 | 2580 | 879 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.42 | 0.42 | 0.04 | 0.28 | 0.06 | 0.06 | 0.15 | 0.17 | 0.15 | 0.21 | 0.21 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.12 | 0.49 | 0.49 | 0.05 | 0.42 | 0.42 | 0.09 | 0.21 | 0.21 | 0.17 | 0.29 | 0.29 |
| Volume/Cap: | 0.68 | 0.85 | 0.85 | 0.85 | 0.68 | 0.14 | 0.71 | 0.75 | 0.85 | 0.85 | 0.71 | 0.71 |
| Delay/Veh: | 67.4 | 37.2 | 37.2 | 102.5 | 36.4 | 26.9 | 80.9 | 60.1 | 77.3 | 79.3 | 50.0 | 50.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 67.4 | 37.2 | 37.2 | 102.5 | 36.4 | 26.9 | 80.9 | 60.1 | 77.3 | 79.3 | 50.0 | 50.0 |
| LOS by Move: | E | D | D | F | D | C | F | E | E | E | D | D |
| HCM2kAvgQ: | 8 | 33 | 33 | 5 | 20 | 3 | 6 | 14 | 14 | 14 | 16 | 16 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

## Intersection #1: San Antonio Road and Leghorn Road

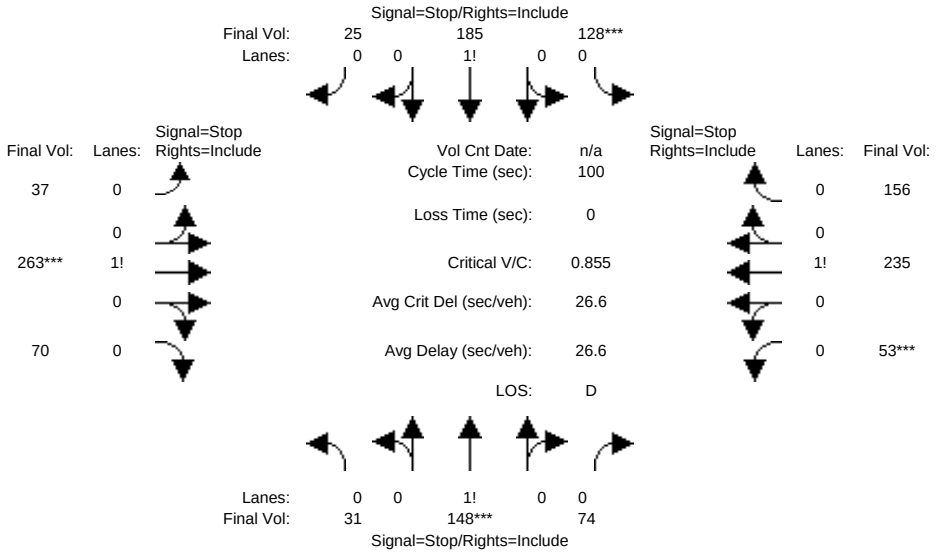



| Street Name: | San Antonio Road | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 54 | 1026 | 147 | 128 | 1423 | 42 | 11 | 10 | 16 | 260 | 15 | 124 |
| Growth 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 |
| Initial Bse: | 54 | 1026 | 147 | 128 | 1423 | 42 | 11 | 10 | 16 | 260 | 15 | 124 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 0 | 0 | 12 | 4 | 0 | 0 | 0 | 1 | 0 | 11 | 1 | 3 |
| Initial Fut: | 54 | 1026 | 159 | 132 | 1423 | 42 | 11 | 11 | 16 | 271 | 16 | 127 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 59 | 1127 | 175 | 145 | 1564 | 46 | 12 | 12 | 18 | 298 | 18 | 140 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 59 | 1127 | 175 | 145 | 1564 | 46 | 12 | 12 | 18 | 298 | 18 | 140 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 59 | 1127 | 175 | 145 | 1564 | 46 | 12 | 12 | 18 | 298 | 18 | 140 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.95 | 0.84 | 0.95 | 0.95 | 0.81 | 0.83 | 0.83 | 0.83 | 0.74 | 0.74 | 0.74 |
| Lanes: | 1.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 0.29 | 0.29 | 0.42 | 0.65 | 0.04 | 0.31 |
| Final Sat.: | 1805 | 3610 | 1604 | 1805 | 3610 | 1548 | 458 | 458 | 666 | 916 | 54 | 429 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.31 | 0.11 | 0.08 | 0.43 | 0.03 | 0.03 | 0.03 | 0.03 | 0.33 | 0.33 | 0.33 |
| Crit Moves: | **** | | | | **** | | | | | | **** | |
| Green/Cycle: | 0.08 | 0.44 | 0.44 | 0.11 | 0.47 | 0.47 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Volume/Cap: | 0.42 | 0.72 | 0.25 | 0.72 | 0.92 | 0.06 | 0.07 | 0.07 | 0.07 | 0.92 | 0.92 | 0.92 |
| Uniform Del: | 39.6 | 20.9 | 16.1 | 38.6 | 22.3 | 13.0 | 19.4 | 19.4 | 19.4 | 28.0 | 28.0 | 28.0 |
| IncremntDel: | 2.0 | 1.6 | 0.2 | 11.7 | 8.8 | 0.0 | 0.1 | 0.1 | 0.1 | 22.9 | 22.9 | 22.9 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 41.6 | 22.5 | 16.3 | 50.3 | 31.2 | 13.1 | 19.4 | 19.4 | 19.4 | 50.9 | 50.9 | 50.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 41.6 | 22.5 | 16.3 | 50.3 | 31.2 | 13.1 | 19.4 | 19.4 | 19.4 | 50.9 | 50.9 | 50.9 |
| LOS by Move: | D | C | B | D | C | B | B | B | B | D | D | D |
| HCM2kAvgQ: | 2 | 15 | 3 | 5 | 26 | 1 | 1 | 1 | 1 | 16 | 16 | 16 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #2: Independence Avenue & Leghorn Road




| Street Name: | Independence Avenue | | | | | | Leghorn Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 28 | 144 | 72 | 124 | 179 | 24 | 35 | 250 | 67 | 51 | 219 | 151 |
| Growth 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 |
| Initial Bse: | 28 | 144 | 72 | 124 | 179 | 24 | 35 | 250 | 67 | 51 | 219 | 151 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 0 | 9 | 0 |
| Initial Fut: | 30 | 144 | 72 | 124 | 179 | 24 | 36 | 255 | 68 | 51 | 228 | 151 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 31 | 148 | 74 | 128 | 185 | 25 | 37 | 263 | 70 | 53 | 235 | 156 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 31 | 148 | 74 | 128 | 185 | 25 | 37 | 263 | 70 | 53 | 235 | 156 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 31 | 148 | 74 | 128 | 185 | 25 | 37 | 263 | 70 | 53 | 235 | 156 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Adjustment: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Lanes: | 0.12 | 0.59 | 0.29 | 0.38 | 0.55 | 0.07 | 0.10 | 0.71 | 0.19 | 0.12 | 0.53 | 0.35 |
| Final Sat.: | 53 | 252 | 126 | 175 | 252 | 34 | 49 | 346 | 92 | 62 | 275 | 182 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.59 | 0.59 | 0.59 | 0.73 | 0.73 | 0.73 | 0.76 | 0.76 | 0.76 | 0.85 | 0.85 | 0.85 |
| Crit Moves: | | **** | | | **** | | | **** | | | **** | |
| Delay/Veh: | 18.0 | 18.0 | 18.0 | 24.3 | 24.3 | 24.3 | 25.7 | 25.7 | 25.7 | 34.1 | 34.1 | 34.1 |
| Delay 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 |
| AdjDel/Veh: | 18.0 | 18.0 | 18.0 | 24.3 | 24.3 | 24.3 | 25.7 | 25.7 | 25.7 | 34.1 | 34.1 | 34.1 |
| LOS by Move: | C | C | C | C | C | C | D | D | D | D | D | D |
| ApproachDel: | | 18.0 | | | 24.3 | | | 25.7 | | | 34.1 | |
| Delay Adj: | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| ApprAdjDel: | | 18.0 | | | 24.3 | | | 25.7 | | | 34.1 | |
| LOS by Appr: | | C | | | C | | | D | | | D | |
| AllWayAvgQ: | 0.9 | 0.9 | 0.9 | 1.8 | 1.8 | 1.8 | 2.1 | 2.1 | 2.1 | 3.5 | 3.5 | 3.5 |

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #2 Independence Avenue & Leghorn Road

**********

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 30 | 144 | 72 | 124 | 179 | 24 | 36 | 255 | 68 | 51 | 228 | 151 |

Major Street Volume: 789
Minor Approach Volume: 327
Minor Approach Volume Threshold: 283

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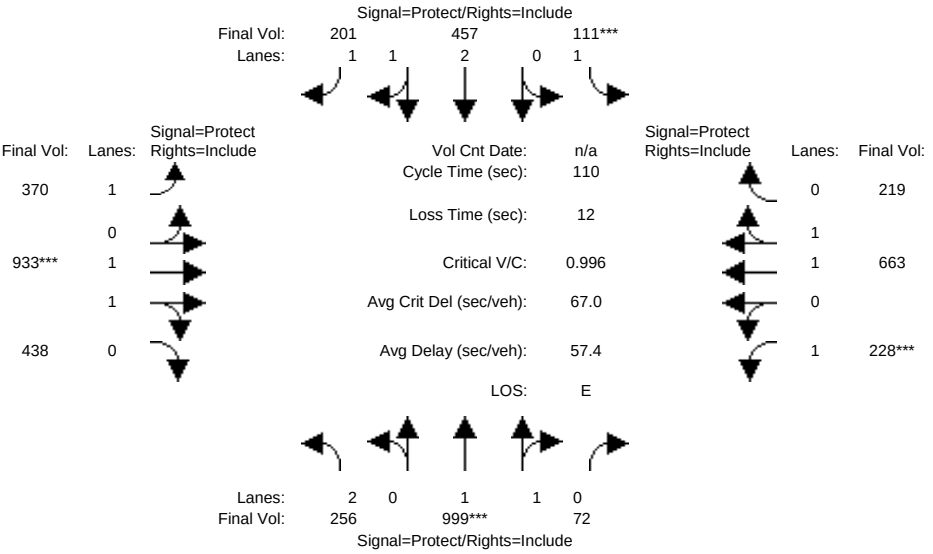
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #3: San Antonio Road & Chareleston Road

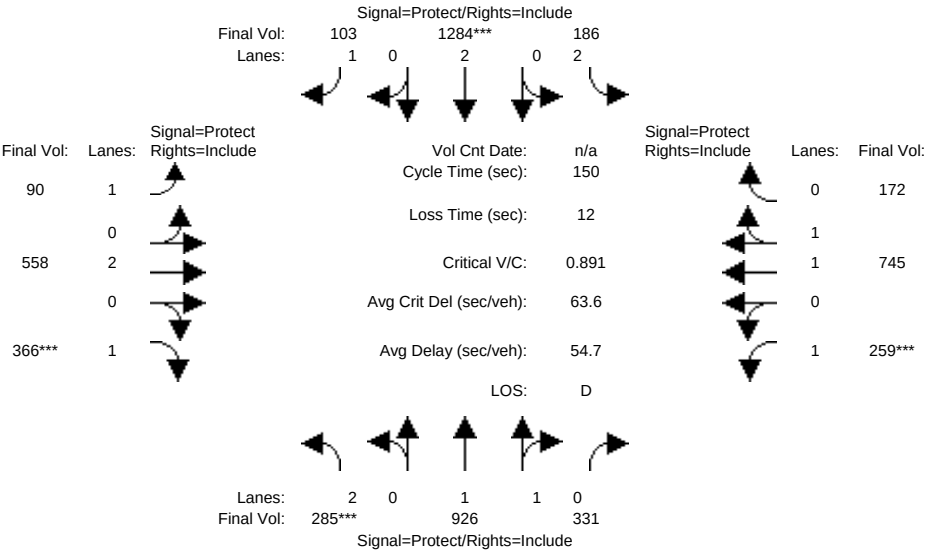



| Street Name: | San Antonio Road | | | | | | Charleston Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 | 7 | 10 | 10 |
| Y+R: | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 247 | 967 | 70 | 108 | 441 | 195 | 359 | 905 | 423 | 221 | 643 | 212 |
| Growth 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 |
| Initial Bse: | 247 | 967 | 70 | 108 | 441 | 195 | 359 | 905 | 423 | 221 | 643 | 212 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Initial Fut: | 248 | 969 | 70 | 108 | 443 | 195 | 359 | 905 | 425 | 221 | 643 | 212 |
| User 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 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 256 | 999 | 72 | 111 | 457 | 201 | 370 | 933 | 438 | 228 | 663 | 219 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 256 | 999 | 72 | 111 | 457 | 201 | 370 | 933 | 438 | 228 | 663 | 219 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 256 | 999 | 72 | 111 | 457 | 201 | 370 | 933 | 438 | 228 | 663 | 219 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.94 | 0.94 | 0.95 | 0.87 | 0.85 | 0.95 | 0.90 | 0.90 | 0.95 | 0.91 | 0.91 |
| Lanes: | 2.00 | 1.87 | 0.13 | 1.00 | 2.76 | 1.24 | 1.00 | 1.36 | 0.64 | 1.00 | 1.50 | 0.50 |
| Final Sat.: | 3502 | 3333 | 241 | 1805 | 4554 | 2004 | 1805 | 2333 | 1096 | 1805 | 2609 | 860 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.30 | 0.30 | 0.06 | 0.10 | 0.10 | 0.21 | 0.40 | 0.40 | 0.13 | 0.25 | 0.25 |
| Crit Moves: | | **** | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.15 | 0.30 | 0.30 | 0.06 | 0.21 | 0.21 | 0.24 | 0.40 | 0.40 | 0.13 | 0.29 | 0.29 |
| Volume/Cap: | 0.48 | 1.00 | 1.00 | 0.97 | 0.48 | 0.48 | 0.87 | 1.00 | 1.00 | 1.00 | 0.87 | 0.87 |
| Uniform Del: | 42.5 | 38.5 | 38.5 | 51.4 | 38.1 | 38.1 | 40.4 | 32.9 | 32.9 | 48.0 | 37.0 | 37.0 |
| IncremntDel: | 0.7 | 27.0 | 27.0 | 74.0 | 0.3 | 0.3 | 17.5 | 23.8 | 23.8 | 59.0 | 8.3 | 8.3 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 43.2 | 65.5 | 65.5 | 125.4 | 38.4 | 38.4 | 57.9 | 56.8 | 56.8 | 107.1 | 45.3 | 45.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 43.2 | 65.5 | 65.5 | 125.4 | 38.4 | 38.4 | 57.9 | 56.8 | 56.8 | 107.1 | 45.3 | 45.3 |
| LOS by Move: | D | E | E | F | D | D | E | E | E | F | D | D |
| HCM2kAvgQ: | 5 | 26 | 26 | 7 | 6 | 6 | 15 | 32 | 31 | 12 | 18 | 18 |

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative Plus Project PM

Intersection #4: San Antonio Road & Middlefield Road




| Street Name: | San Antonio Road | | | | | | Middlefield Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - | T - | R | L - | T - | R | L - | T - | R | L - | T - | R |
| Min. Green: | 5 | 10 | 10 | 10 | 10 | 5 | 5 | 10 | 10 | 5 | 10 | 10 |
| Y+R: | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 279 | 900 | 324 | 178 | 1253 | 99 | 86 | 547 | 359 | 254 | 730 | 165 |
| Growth 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 |
| Initial Bse: | 279 | 900 | 324 | 178 | 1253 | 99 | 86 | 547 | 359 | 254 | 730 | 165 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PM Project : | 0 | 7 | 0 | 4 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| Initial Fut: | 279 | 907 | 324 | 182 | 1258 | 101 | 88 | 547 | 359 | 254 | 730 | 169 |
| User 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 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 285 | 926 | 331 | 186 | 1284 | 103 | 90 | 558 | 366 | 259 | 745 | 172 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 285 | 926 | 331 | 186 | 1284 | 103 | 90 | 558 | 366 | 259 | 745 | 172 |
| PCE 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 |
| MLF 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 |
| FinalVolume: | 285 | 926 | 331 | 186 | 1284 | 103 | 90 | 558 | 366 | 259 | 745 | 172 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.91 | 0.91 | 0.92 | 0.95 | 0.83 | 0.95 | 0.95 | 0.81 | 0.95 | 0.92 | 0.91 |
| Lanes: | 2.00 | 1.47 | 0.53 | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.62 | 0.38 |
| Final Sat.: | 3502 | 2550 | 911 | 3502 | 3610 | 1576 | 1805 | 3610 | 1531 | 1805 | 2843 | 658 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.08 | 0.36 | 0.36 | 0.05 | 0.36 | 0.07 | 0.05 | 0.15 | 0.24 | 0.14 | 0.26 | 0.26 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.09 | 0.41 | 0.41 | 0.08 | 0.40 | 0.40 | 0.07 | 0.27 | 0.27 | 0.16 | 0.36 | 0.36 |
| Volume/Cap: | 0.89 | 0.88 | 0.88 | 0.70 | 0.89 | 0.16 | 0.73 | 0.58 | 0.89 | 0.89 | 0.73 | 0.73 |
| Uniform Del: | 67.4 | 40.4 | 40.4 | 67.6 | 42.0 | 29.0 | 68.5 | 47.5 | 52.8 | 61.6 | 41.5 | 41.5 |
| IncremntDel: | 25.1 | 6.4 | 6.4 | 7.9 | 7.3 | 0.1 | 19.2 | 0.9 | 20.8 | 26.9 | 2.1 | 2.1 |
| InitQueuDel: | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Delay 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 |
| Delay/Veh: | 92.6 | 46.8 | 46.8 | 75.5 | 49.4 | 29.1 | 87.7 | 48.3 | 73.5 | 88.6 | 43.6 | 43.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 92.6 | 46.8 | 46.8 | 75.5 | 49.4 | 29.1 | 87.7 | 48.3 | 73.5 | 88.6 | 43.6 | 43.6 |
| LOS by Move: | F | D | D | E | D | C | F | D | E | F | D | D |
| HCM2kAvgQ: | 9 | 30 | 30 | 6 | 32 | 3 | 6 | 12 | 19 | 15 | 20 | 20 |

Note: Queue reported is the number of cars per lane.

# Appendix I – Vehicle Miles Traveled (VMT) Reports

**Vehicle Miles Traveled (VMT) methodology:** The VMT Estimation Tool was provided by the City of Palo Alto to TJKM for use in this analysis. City staff requested that TJKM utilize the tool to determine the applicable VMT per Capita applicable to the project and to the significance threshold (13.33 daily miles per capita). The outputs from the tool as shown on the following pages present the VMT per Capita for each applicable traffic analysis zone (TAZ) described on Table 13 of this report.

# Santa Clara Countywide VMT Evaluation Tool Report



## Project Details

Timestamp of Analysis: June 24, 2020, 06:19:22 PM

Project Name: Test 2020

Project Description: Residential

## Project Location

Jurisdiction:
Palo Alto

Inside Transit Priority Area (TPA)?
No (Fail)

| APN | TAZ | 12755035 | 482 |
|---|---|---|---|
| 14708039 | 529 | | |
| 14771012 | 409 | | |
| 14703041 | 456 | | |
| 12771016 | 524 | | |
| 14701007 | 477 | | |
| 12755030 | 482 | | |

## Analysis Details

Santa Clara Countywide VMT Evaluation Tool Version: 1

Data Version: VTA Countywide Model December 2019

Analysis Methodology: TAZ

Baseline Year: 2020

## Project Land Use

### Residential:

Single Family DU:

Multifamily DU:

Total DUs: 0

### Non-Residential:

Office KSF:

Local Serving Retail KSF:

Industrial KSF:

### Residential Affordability (percent of all units):

Extremely Low Income: 0 %

Very Low Income: 0 %

Low Income: 0 %

### Parking:

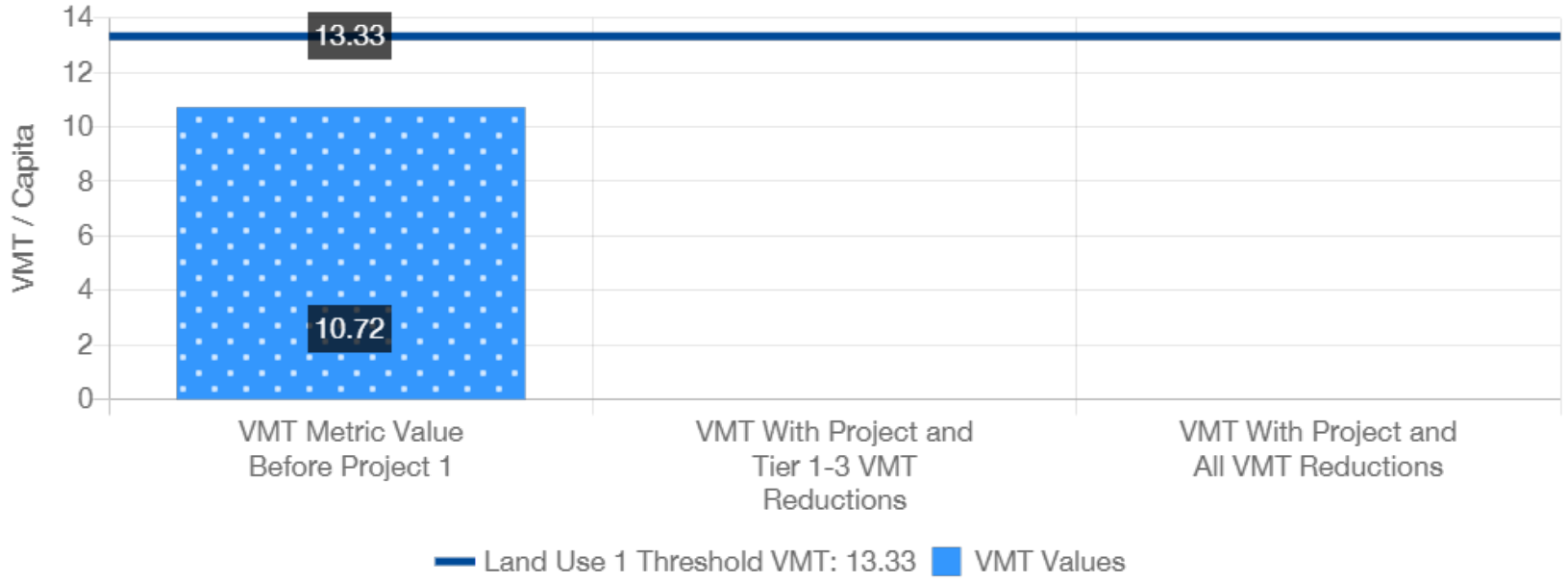
Motor Vehicle Parking:

Bicycle Parking:

## Residential Vehicle Miles Traveled (VMT) Screening Results

| | |
|---|---|
| Land Use Type 1: | Residential |
| VMT Without Project: | Home-based VMT per Capita |
| VMT Baseline Description 1: | County Average |
| VMT Baseline Value 1: | 13.33 |
| TAZ: | 409 |
| VMT Threshold Description 1: | 0% |
| Land Use 1 has been Pre-Screened by the Local Jurisdiction: | N/A |

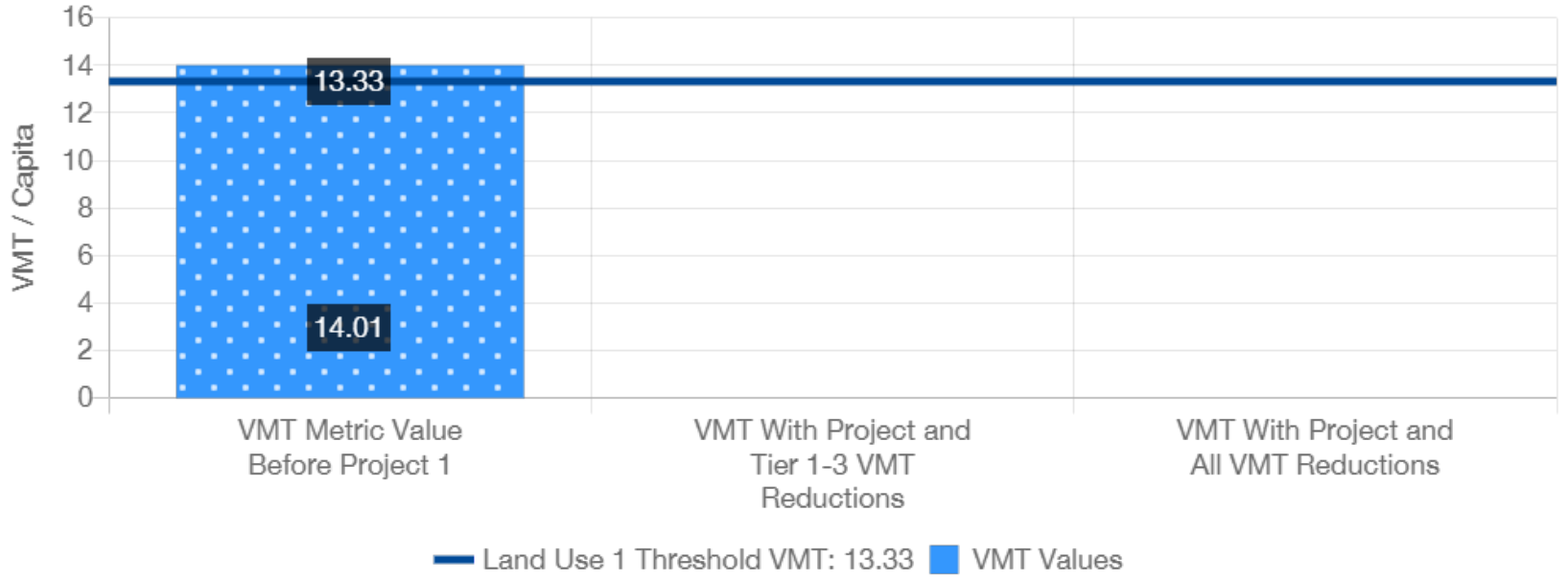
| | Without Project | With Project & Tier 1-3 VMT Reductions | With Project & All VMT Reductions |
|---|---|---|---|
| Project Generated Vehicle Miles Traveled (VMT) Rate | 10.72 | null | null |
| Low VMT Screening Analysis | Yes (Pass) | null | null |



## Residential Vehicle Miles Traveled (VMT) Screening Results

| | |
|---|---|
| Land Use Type 1: | Residential |
| VMT Without Project: | Home-based VMT per Capita |
| VMT Baseline Description 1: | County Average |
| VMT Baseline Value 1: | 13.33 |
| TAZ: | 456 |
| VMT Threshold Description 1: | 0% |
| Land Use 1 has been Pre-Screened by the Local Jurisdiction: | N/A |

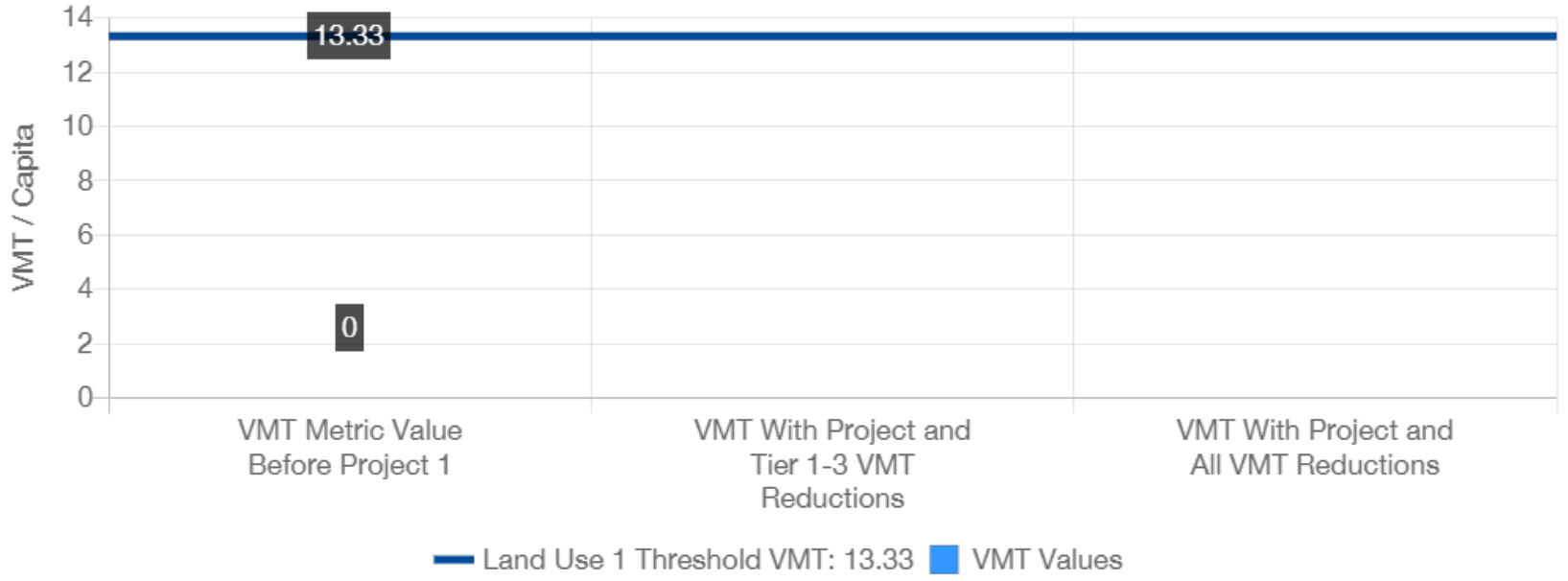
| | Without Project | With Project & Tier 1-3 VMT Reductions | With Project & All VMT Reductions |
|---|---|---|---|
| Project Generated Vehicle Miles Traveled (VMT) Rate | 14.01 | null | null |
| Low VMT Screening Analysis | No (Fail) | null | null |



## Residential Vehicle Miles Traveled (VMT) Screening Results

| | |
|---|---|
| Land Use Type 1: | Residential |
| VMT Without Project: | Home-based VMT per Capita |
| VMT Baseline Description 1: | County Average |
| VMT Baseline Value 1: | 13.33 |
| TAZ: | 477 |
| VMT Threshold Description 1: | 0% |
| Land Use 1 has been Pre-Screened by the Local Jurisdiction: | N/A |

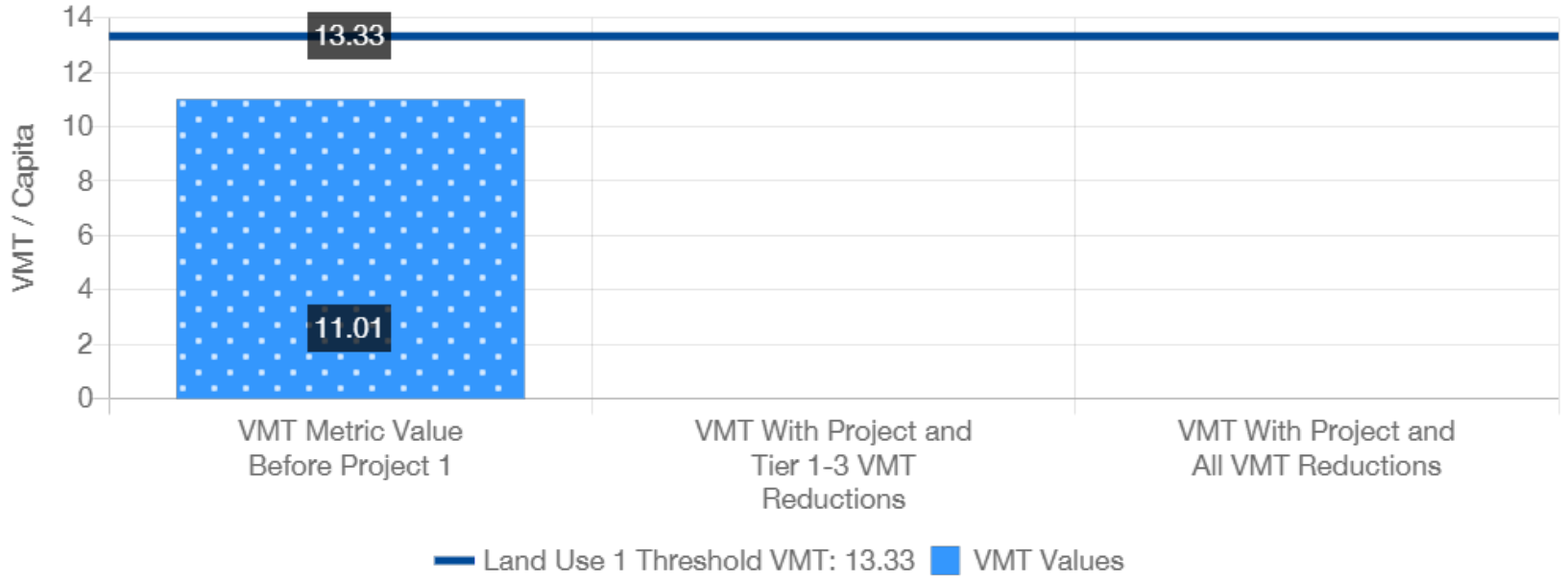
| | Without Project | With Project & Tier 1-3 VMT Reductions | With Project & All VMT Reductions |
|---|---|---|---|
| Project Generated Vehicle Miles Traveled (VMT) Rate | 0 | null | null |
| Low VMT Screening Analysis | Yes (Pass) | null | null |



## Residential Vehicle Miles Traveled (VMT) Screening Results

| | |
|---|---|
| Land Use Type 1: | Residential |
| VMT Without Project: | Home-based VMT per Capita |
| VMT Baseline Description 1: | County Average |
| VMT Baseline Value 1: | 13.33 |
| TAZ: | 482 |
| VMT Threshold Description 1: | 0% |
| Land Use 1 has been Pre-Screened by the Local Jurisdiction: | N/A |

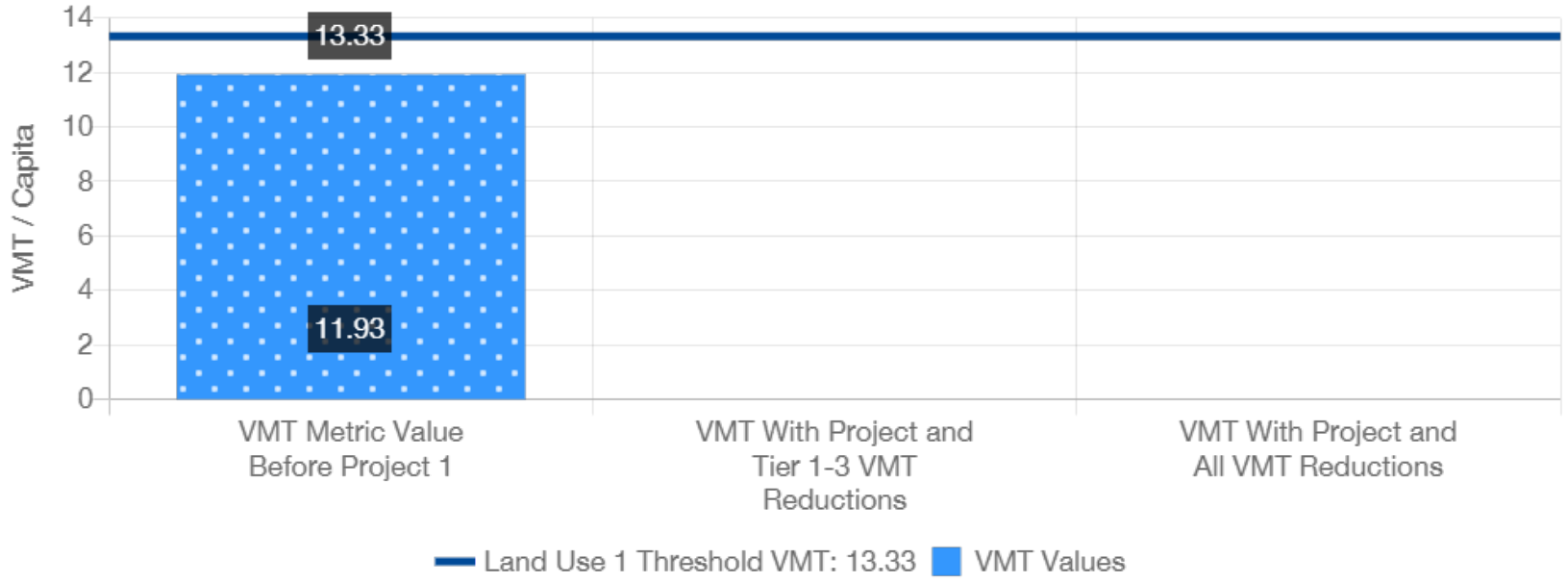
| | Without Project | With Project & Tier 1-3 VMT Reductions | With Project & All VMT Reductions |
|---|---|---|---|
| Project Generated Vehicle Miles Traveled (VMT) Rate | 11.01 | null | null |
| Low VMT Screening Analysis | Yes (Pass) | null | null |



## Residential Vehicle Miles Traveled (VMT) Screening Results

| | |
|---|---|
| Land Use Type 1: | Residential |
| VMT Without Project: | Home-based VMT per Capita |
| VMT Baseline Description 1: | County Average |
| VMT Baseline Value 1: | 13.33 |
| TAZ: | 524 |
| VMT Threshold Description 1: | 0% |
| Land Use 1 has been Pre-Screened by the Local Jurisdiction: | N/A |

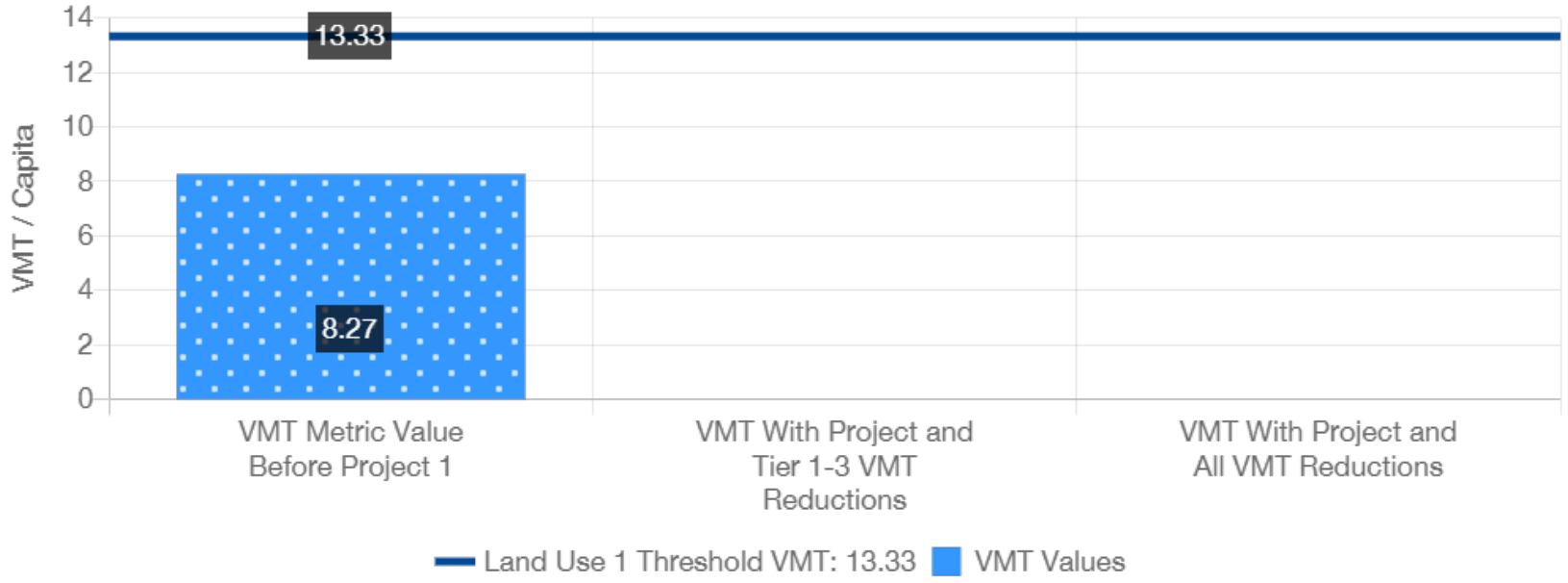
| | Without Project | With Project & Tier 1-3 VMT Reductions | With Project & All VMT Reductions |
|---|---|---|---|
| Project Generated Vehicle Miles Traveled (VMT) Rate | 11.93 | null | null |
| Low VMT Screening Analysis | Yes (Pass) | null | null |



## Residential Vehicle Miles Traveled (VMT) Screening Results

| | |
|---|---|
| Land Use Type 1: | Residential |
| VMT Without Project: | Home-based VMT per Capita |
| VMT Baseline Description 1: | County Average |
| VMT Baseline Value 1: | 13.33 |
| TAZ: | 529 |
| VMT Threshold Description 1: | 0% |
| Land Use 1 has been Pre-Screened by the Local Jurisdiction: | N/A |

| | Without Project | With Project & Tier 1-3 VMT Reductions | With Project & All VMT Reductions |
|---|---|---|---|
| Project Generated Vehicle Miles Traveled (VMT) Rate | 8.27 | null | null |
| Low VMT Screening Analysis | Yes (Pass) | null | null |

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