

Traffic Impact Analysis

Lemoore Union Elementary School District Elementary School

Located on the Northwest Quadrant of
19th Avenue and Cinnamon Drive

In the City of Lemoore, California

Prepared for:

Lemoore Union Elementary School District
100 Vine Street
Lemoore, CA 93245

September 17, 2019

Project No. 039-002



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For the Elementary School located on the Northwest Quadrant of 19th Avenue and Cinnamon Drive

In the City of Fresno, CA

September 17, 2019

This Traffic Impact Analysis has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions, and decisions are based.

Prepared by:

A handwritten signature in black ink that reads "Jose L Benavides".

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Introduction and Summary

Introduction

This report describes a Traffic Impact Analysis (TIA) prepared by JLB Traffic Engineering, Inc. (JLB) for the Lemoore Union Elementary School District (District) proposed Elementary School (Project) located on the northwest quadrant of 19th Avenue and Cinnamon Drive in the City of Lemoore. The District proposes to build an Elementary School (Project) with approximately 22 classrooms, administrative offices, a multi-purpose building, hard court areas and athletic fields. The Project is estimated to serve up to 700 students in kindergarten through sixth grades. Based on information provided to JLB, the Project is consistent with the City of Lemoore 2030 General Plan. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of this TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures, and identify any critical traffic issues that should be addressed in the on-going planning process. The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. The Scope of Work was prepared via consultation with City of Lemoore, County of Kings and Caltrans staff.

Summary

The potential traffic impacts of the proposed Project were evaluated in accordance with the standards set forth by the Level of Service (LOS) policy of the City of Lemoore, County of Kings and Caltrans.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- The proposed Project is estimated to generate a maximum of 1,323 daily trips, 469 AM peak hour trips and 119 PM peak hour trips.
- It is recommended that the Project implement a Class II Bike Lane along its frontage to 19th Avenue.
- It is recommended that the District work with the City of Lemoore to implement a Safe Routes to School plan and seek grant funding to help build walkways where they are lacking within a one-mile radius of the proposed Project site.
- It is also recommended that a high-visibility crosswalk with rapid rectangular flashing beacons be installed across the south leg of 19th Avenue and Freedom Drive.
- Under this scenario, the study intersection of 19th Avenue and Cinnamon Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, the addition of lanes is recommended. Additional details as to the recommended improvements are presented later in this Report.

Near Term Year 2023 plus Project Traffic Conditions

- Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road, 19th Avenue and Project Driveway 1, and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, the addition of lanes and modification of traffic control mechanisms are recommended. Additional details as to the recommended improvements are presented later in this Report.

Cumulative Year 2040 No Project Traffic Conditions

- Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, the addition of lanes and modification of traffic control mechanisms are recommended. Additional details as to the recommended improvements are presented later in this Report.

Cumulative Year 2040 plus Project Traffic Conditions

- Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, the addition of lanes and modification of traffic control mechanisms are recommended. Additional details as to the recommended improvements are presented later in this Report.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable fair share as listed in Table VIII for the future improvements necessary to maintain an acceptable LOS.

Scope of Work

The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On May 29, 2019, a Draft Scope of Work for the preparation of a Traffic Impact Analysis for this Project was provided to the City of Lemoore, County of Kings and Caltrans for their review and comment. Any comments to the Draft Scope of Work were to be provided by June 19, 2019.

On June 26, 2019, JLB received comments from the City of Lemoore. The City of Lemoore requested that a comparison with City of Lemoore 2030 General Plan LOS threshold be prepared and that the intersections of 19th Avenue and "D" Street and 19th Avenue and Bush Street be included in the analysis. On June 28, 2019, the County of Kings responded to the Draft Scope of Work. The County of Kings accepted the Draft Scope of Work as presented and requested that the Draft Scope of Work be forwarded to Chuck Kinney with the Community Development Agency.

While the City of Lemoore requested that the intersections of 19th Avenue and "D" Street and 19th Avenue and Bush Street be included in the analysis, JLB determined that these intersections would not be impacted by the proposed Project, especially since the anticipated boundary is not projected to extend south of the existing railroad tracks. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The existing peak hour turning movement volume counts were conducted at the study intersections on May 30, 2019, while schools in the vicinity of the proposed Project were in session. The intersection turning movement counts included pedestrian volumes. The traffic counts for the existing study intersections are contained in Appendix B. The existing intersection turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 2.

Study Intersections

1. 19th Avenue / Hanford-Armona Road
2. Liberty Drive / Hanford-Armona Road
3. 19th Avenue / Project Driveway 1
4. 19th Avenue / Project Driveway 2
5. 19th Avenue / Cinnamon Drive
6. Liberty Drive / Cinnamon Drive

Study Scenarios

Existing Traffic Conditions

This scenario evaluates the Existing Traffic Conditions based on existing traffic volumes and roadway conditions from traffic counts and field surveys conducted on May 30, 2019.

Existing plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Existing plus Project Traffic Conditions. The Existing plus Project traffic volumes were obtained by adding the Project Only Trips to the Existing Traffic Conditions scenario. The Project Only Trips to the study facilities were developed based on the anticipated school boundary, data provided by the District, existing travel patterns, the existing roadway network, engineering judgment, knowledge of the study area, existing residential and commercial densities, and the City's General Plan in the vicinity of the Project.

Near Term Year 2023 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term Year 2023 plus Project Traffic Conditions. The Near Term Year 2023 plus Project traffic volumes were obtained by adding the near term related trips to the Existing plus Project Traffic Conditions scenario.

Cumulative Year 2040 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2040 No Project Traffic Conditions. The Cumulative Year 2040 No Project traffic volumes were obtained by Subtracting the Project Only Trips from the Cumulative Year 2040 plus Project Traffic Conditions scenario.

Cumulative Year 2040 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2040 plus Project Traffic Conditions. JLB utilized the Kings County Association of Governments (KCAG) Base Year 2019 and Cumulative Year 2042 models to determine the average annual growth rate along Hanford-Armona Road and 19th Avenue near the vicinity of the proposed Project. JLB found that the average annual growth rate ranged from 1.1 percent to 1.9 percent. Therefore, to be conservative, JLB utilized an average annual growth rate of 1.9 percent to arrive at future year forecast volumes.

Level of Service Analysis Methodology

Level of Service (LOS) is a qualitative index of the performance of an element of the transportation system. LOS is a rating scale running from “A” to “F”, with “A” indicating no congestion of any kind and “F” indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for signalized and unsignalized intersections.

The *Highway Capacity Manual* (HCM) 6th Edition is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. U-turn movements were analyzed using HCM 2000 methodologies and would yield more accurate results for the reason that HCM 6th Edition methodologies do not allow the analysis of U-turns. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix D.

Criteria of Significance

The City of Lemoore 2030 General Plan does not currently have any adopted LOS standard. However, recent traffic studies have utilized LOS D as the acceptable level of traffic congestion. Therefore, LOS D is used to evaluate the potential significance of LOS impacts to City of Lemoore roadway facilities.

The County of Kings 2035 General Plan has established a minimum LOS standard within the County, which shall be no lower than LOS E for urban areas and LOS D for rural areas. For this TIA, LOS D is used to evaluate the potential significance of LOS impacts to intersections within the County of Kings.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies* dated December 2002. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. In this TIA, all study facilities fall within the City of Lemoore. Therefore, the City of Lemoore LOS D threshold is utilized to evaluate the potential significance of LOS impacts.

Operational Analysis Assumptions and Defaults

The following operational analysis values, assumptions and defaults were used in this study to ensure a consistent analysis of LOS among the various scenarios.

- Yellow time consistent with the California Manual of Uniform Traffic Control Devices (CA MUTCD) based on approach speeds
- Yellow time of 3.2 seconds for left-turn phases
- All-red clearance intervals of 1.0 second for all phases
- Walk intervals of 7.0 seconds
- Flashing Don't Walk based on 3.5 feet/second walking speed with yellow plus all-red clearance subtracted and 2.0 seconds added
- All new or modified signals utilize protective left-turn phasing
- A 3 percent heavy vehicle factor
- An average of 3 pedestrian calls per hour at signalized intersections
- The number of observed pedestrians at existing intersections was utilized under all study scenarios
- At existing intersections, the observed approach Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project, and Near Term Year 2023 plus Project scenarios
- For the Cumulative Year 2040 scenarios, the following PHF's were utilized to reflect school traffic operations and an increase in future traffic volumes. As roadways start to reach their saturated flow rates, PHF's tend to increase to 0.90 or higher. The PHF's were established based on historical traffic counts collected by JLB for intersections in proximity of school sites.
 - For the intersections of 19th Avenue and Cinnamon Drive, the following PHF's were utilized:
 - A PHF of 0.86 during the AM peak
 - A PHF of 0.90 during the PM peak
 - A PHF of 0.92, or the existing PHF if higher, is utilized for all other intersections

Existing Traffic Conditions

Roadway Network

The Project site and surrounding study area are illustrated in Figure 1. Important roadways serving the Project are discussed below.

Hanford-Armona Road is an existing east-west two-lane arterial adjacent to the proposed Project. In this area, Hanford-Armona Road extends through the City of Lemoore SOI. Hanford-Armona Road is a two- to three-lane arterial divided by a two-way left-turn lane between Apricot Avenue and Lemoore Avenue, a four-lane undivided arterial between Lemoore Avenue and Cinnamon Drive, and a two-lane undivided arterial east of Cinnamon Drive. The City of Lemoore 2030 General Plan designates Hanford-Armona Road as a four-lane arterial between College Drive and Cinnamon Drive.

19th Avenue is an existing north-south two-lane arterial divided by a two-way left-turn lane adjacent to the proposed Project. In this area, 19th Avenue extends south of Hanford-Armona Road through the City of Lemoore SOI. 19th Avenue is a two-lane divided arterial between Hanford-Armona Road and Silverado Drive, a four-lane arterial between Silverado Drive and Iona Avenue, and a two-lane undivided arterial south of Iona Avenue through the City of Lemoore SOI. The City of Lemoore 2030 General Plan plans to extend 19th Avenue north of Hanford-Armona Road as a two-lane collector and designates 19th Avenue as a four-lane arterial between Hanford-Armona Road and Idaho Avenue.

Liberty Drive is an existing north-south two-lane arterial divided by a two-way left-turn lane in the vicinity of the proposed Project. In this area, Liberty Drive is a two-lane collector divided by a two-way left-turn lane between Cinnamon Drive and Hanford-Armona Road and a two-lane local roadway north of Hanford-Armona Road through the City of Lemoore SOI. The City of Lemoore 2030 General Plan designates Liberty Drive as a divided collector between Cinnamon Drive and Hanford-Armona Road and a four-lane arterial between Hanford-Armona Road and Lacey Boulevard.

Cinnamon Drive is an existing east-west two-lane divided collector adjacent to the proposed Project. In this area, Cinnamon Drive extends east of its connection to 19th ½ Avenue and changes orientation to intersect Hanford-Armona Road. Cinnamon Drive is a two-lane collector divided by a two-way left-turn lane between 19th ½ Avenue and Lemoore Avenue and a two-lane undivided collector east of Lemoore Avenue and south of Hanford-Armona Road. The City of Lemoore 2030 General Plan designates Cinnamon Drive as a four-lane collector between 19th ½ Avenue and Lemoore Avenue.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing Traffic Conditions scenario. These warrants are found in Appendix J. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections satisfy the peak hour signal warrant. Based on the signal warrants and engineering judgement, signalization of these intersections is not recommended, especially since these intersections operate at an acceptable LOS during both peak periods.

Results of Existing Level of Service Analysis

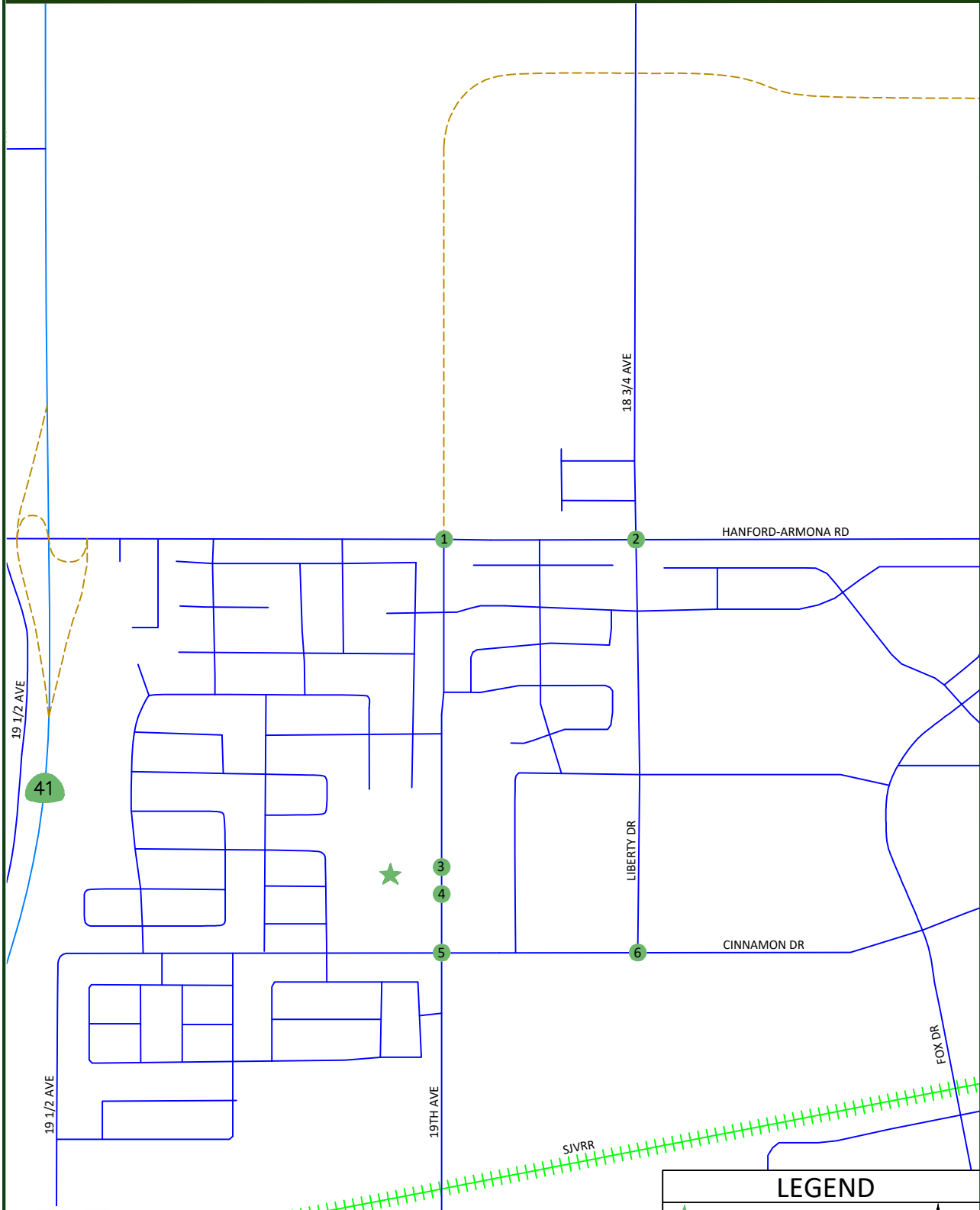
Figure 2 illustrates the Existing Traffic Conditions turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing Traffic Conditions scenario are provided in Appendix E. Table I presents a summary of the Existing peak hour LOS at the study intersections.

At present, all study intersections operate at an acceptable LOS during both peak periods.

Table I: Existing Intersection LOS Results

| ID | Intersection | Intersection Control | AM (7-9) Peak Hour | | PM (4-6) Peak Hour | |
|----|-------------------------------------|----------------------|-------------------------|-----|-------------------------|-----|
| | | | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 1 | 19th Avenue / Hanford-Armona Road | One-Way Stop | 11.5 | B | 12.3 | B |
| 2 | Liberty Drive / Hanford-Armona Road | Two-Way Stop | 25.1 | D | 16.1 | C |
| 3 | 19th Avenue / Project Driveway 1 | Does Not Exist | N/A | N/A | N/A | N/A |
| 4 | 19th Avenue / Project Driveway 2 | Does Not Exist | N/A | N/A | N/A | N/A |
| 5 | 19th Avenue / Cinnamon Drive | All-Way Stop | 22.4 | C | 22.1 | C |
| 6 | Liberty Drive / Cinnamon Drive | Two-Way Stop | 13.7 | B | 11.7 | B |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.



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LEGEND

- ★ = PROJECT LOCATION
- # = STUDY INTERSECTION
- - - = FUTURE ROADWAY

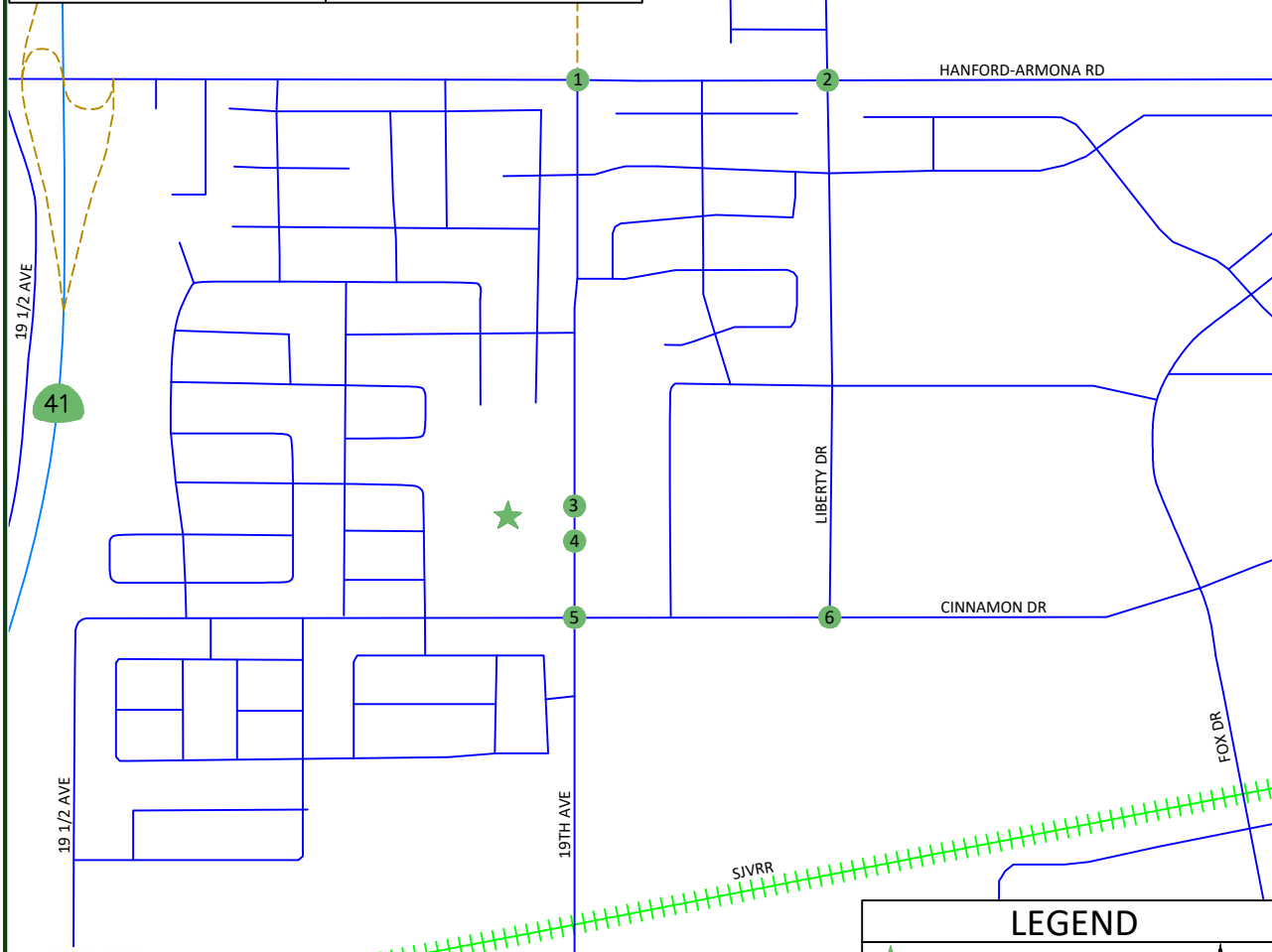


Not To Scale

Elementary School - City of Lemoore Existing - Traffic Volumes, Geometrics and Controls

Figure 2

| | | | | | | | |
|----|---------------------------------|---------------------------|-----------------------------------|-----------------------|------------------------------|----------------|------------------------------|
| 1. | 19th Ave & Hanford-Armona Rd | 2. | Liberty Dr & Hanford-Armona Rd | 3. | 19th Ave & Project Drwy 1 | 4. | 19th Ave & Project Drwy 2 |
| | | | | DOES NOT EXIST | | DOES NOT EXIST | |
| 5. | | 19th Ave & Cinnamon Dr | | | | | |
| | | | | <div>18 3/4 AVE</div> | | | |
| | | | | | | | |



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LEGEND

- ★ = PROJECT LOCATION
- # = STUDY INTERSECTION
- - - = FUTURE ROADWAY
- XX = AM PEAK HOUR TRIPS
- (XX) = PM PEAK HOUR TRIPS
- = STOP SIGN

Not To Scale

Existing plus Project Traffic Conditions

Project Description

The District proposes to build an Elementary School (Project) with approximately 22 classrooms, administrative offices, a multi-purpose building, hard court areas and athletic fields. The Project is estimated to serve up to 700 students in kindergarten through sixth grades. Based on information provided to JLB, the Project is consistent with the City of Lemoore 2030 General Plan. Figure 3 illustrates the latest Project Site Plan.

Project Access

Based on the latest Project Site Plan, access to and from the Project site will be from two (2) main access points located along 19th Avenue and one (1) emergency fire access with access to 19th Avenue and Cinnamon Drive. The main access driveways are located along the west side of 19th Avenue at approximately 660 feet (Project Driveway 1) and 420 feet (Project Driveway 2) north of Cinnamon Drive. Both of these access points are proposed as full access.

JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points indicates that they are located at points that minimize traffic operational impacts to the existing roadway network. However, if upon opening of the school queuing issues are observed between the southbound left-turn lane at the intersection of 19th Avenue and Cinnamon Drive and the northbound two-way left-turn lane at the intersection of 19th Avenue and Project Driveway 2, then it is recommended that Project Driveway 2 be limited to right-in, right-out access only and that a raised median be installed on 19th Avenue so as to prohibit northbound and eastbound left-turning movements to and from Project Driveway 2.

Trip Generation

Trip generation rates for the proposed Project were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table II presents the trip generation for the proposed Project with trip generation rates for Elementary School. The proposed Project is estimated to generate a maximum of 1,323 daily trips, 469 AM peak hour trips and 119 PM peak hour trips.

Table II: Project Trip Generation

| Land Use (ITE Code) | Size | Unit | Daily | | AM (7-9) Peak Hour | | | | | | PM (4-6) Peak Hour | | | | | |
|-------------------------|------|------|-------|-------|--------------------|----|-----|-----|-----|-------|--------------------|----|-----|----|-----|-------|
| | | | Rate | Total | Trip Rate | In | Out | In | Out | Total | Trip Rate | In | Out | In | Out | Total |
| | | | | | | % | | | | | | % | | | | |
| Elementary School (520) | 700 | St. | 1.89 | 1,323 | 0.67 | 54 | 46 | 253 | 216 | 469 | 0.17 | 48 | 52 | 57 | 62 | 119 |
| Total Project Trips | | | | 1,323 | | | | 253 | 216 | 469 | | | | 57 | 62 | 119 |

Note: St. = Students

Trip Distribution

The trip distribution assumptions were developed based on the anticipated school boundary, existing travel patterns, the existing roadway network, engineering judgement, existing residential and commercial densities, knowledge of the study area, and the City of Lemoore 2030 General Plan Circulation element in the vicinity of the Project. Figure 4 illustrates the Project Only Trips to the study intersections.

Bikeways

Currently, Class II Bike Lanes exist in the vicinity of the proposed Project site along Hanford-Armona Road, 19th Avenue, Liberty Drive, and Cinnamon Drive. The 2011 Kings County Regional Bicycle Plan does not plan Class II Bike Lanes on 19th Avenue north of Cinnamon Drive. However, it is recommended that the Project implement a Class II Bike Lane along its frontage to 19th Avenue. By implementing this recommendation, the City will be promoting alternative modes of transportation to and from the Project.

Walkways

Currently, walkways exist in the vicinity of the proposed Project site along Hanford-Armona Road, 19th Avenue, Liberty Drive, and Cinnamon Drive. A goal of the 2011 Kings County Regional Bicycle Plan is to provide for pedestrian-friendly zones in conjunction with the development, redevelopment, and design of mixed-use neighborhood core areas, the Downtown area, schools, parks, and other high use areas. Based on the latest Project Site Plan, the Project proposes to construct walkways along its frontage to 19th Avenue.

Transit

Kings Area Rural Transit (KART), the transit operator in the City of Lemoore, provides fixed-route service. At present, there are no KART fixed routes that operate in the vicinity of the proposed Project. The closest is KART Route 21 – Lemoore NAS, which runs on “E” Street, approximately 0.89 miles to the southeast of the proposed Project. Route 21 operates at 20-minute intervals on weekdays and its nearest stop to the Project site is located on the north side of “E” Street approximately 70 feet east of Heinlen Street. This Route provides a direct connection to the KART Transit Center, Central Valley Health Center, Lemoore Depot, Naval Air Station, and McDonalds. Retention of the existing and expansion of future transit routes is dependent of transit ridership demand and available funding.

Safe Routes to School

The most direct path to the Project site for students residing to the northwest would be head east toward 19th Avenue. Students may then proceed south along the west side of 19th Avenue until reaching the nearest campus entrance.

The most direct path to the Project site for students residing to the northeast would be to head west toward 19th Avenue. Neither the intersection of 19th Avenue and Avalon Drive nor the intersection of 19th Avenue and Freedom Drive have marked crosswalks across 19th Avenue. Students may proceed to safely cross 19th Avenue and continue south along the east side of 19th Avenue until reaching the nearest campus entrance.

The most direct path to the Project site for students residing to the southeast would be to head north toward Cinnamon Drive. Students may then proceed west along the south side of Cinnamon Drive toward the intersection of 19th Avenue and Cinnamon Drive. The intersection of 19th Avenue and Cinnamon Drive is currently controlled by an all-way stop and contains marked crosswalks on all approaches. Students may proceed to cross 19th Avenue and Cinnamon Drive and continue north until reaching the nearest campus entrance.

The most direct path to the Project site for students residing to the southwest would be to head north toward Cinnamon Drive. Students may then proceed east along the south side of Cinnamon Drive toward the intersection of 19th Avenue and Cinnamon Drive. The intersection of 19th Avenue and Cinnamon Drive is currently controlled by an all-way stop and contains marked crosswalks on all approaches. Students may proceed to cross Cinnamon Drive along the west side of 19th Avenue and continue north until reaching the nearest campus entrance.

The most direct path to the Project site for students residing to the west would be to head south toward Cinnamon Drive. Students may then proceed east along the north side of Cinnamon Drive toward the intersection of 19th Avenue and Cinnamon Drive. Students may proceed north until reaching the nearest campus entrance.

Most of the areas are well-developed with walkways and intersection controls, but there are a few exceptions. Therefore, it is recommended that the District work with the City of Lemoore to implement a Safe Routes to School plan and seek grant funding to help build walkways where they are lacking within a one-mile radius of the proposed Project site. It is also recommended that a high-visibility crosswalk with rapid rectangular flashing beacons be installed across the south leg of 19th Avenue and Freedom Drive.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of 19th Avenue and Cinnamon Drive satisfies the peak hour signal warrant during the AM peak period only.

Based on the signal warrants and engineering judgement, signalization of this intersection is not recommended. It is worth noting that the CA MUTCD states "satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal." Therefore, it is recommended that prior to the installation of a traffic signal, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Existing plus Project Level of Service Analysis

The Existing plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 5 illustrates the Existing plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing plus Project Traffic Conditions scenario are provided in Appendix F. Table III presents a summary of the Existing plus Project peak hour LOS at the study intersections.

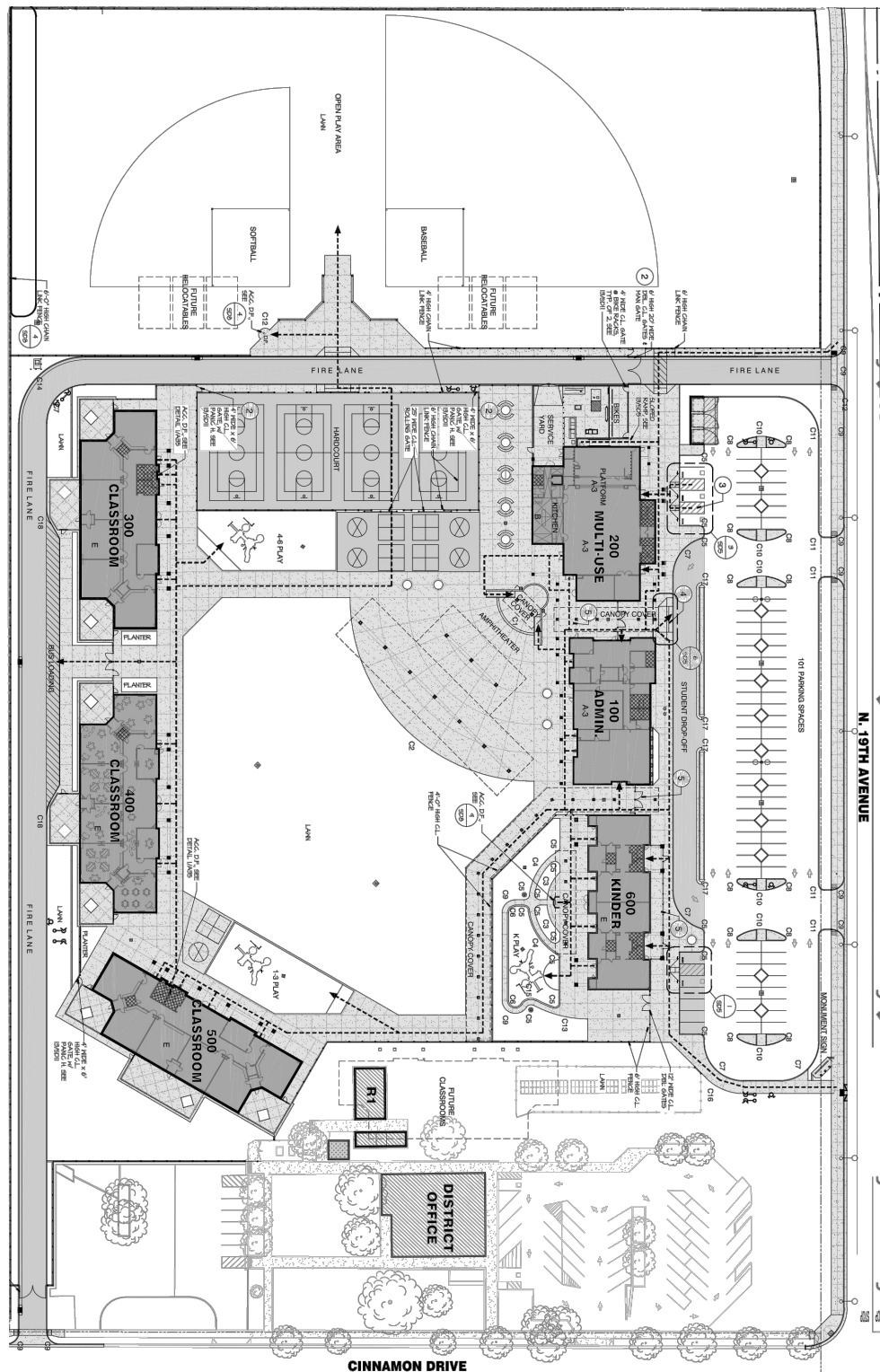
Under this scenario, the study intersection of 19th Avenue and Cinnamon Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.

- 19th Avenue / Cinnamon Drive
 - Modify the westbound through-right lane to a through lane;
 - Add a westbound right-turn lane;
 - Modify the northbound through-right lane to a through lane;
 - Add a northbound right-turn lane;
 - Modify the southbound through-right lane to a through lane; and
 - Add a southbound right-turn lane.

Table III: Existing plus Project Intersection LOS Results

| ID | Intersection | Intersection Control | AM (7-9) Peak Hour | | PM (4-6) Peak Hour | |
|----|-------------------------------------|--------------------------|----------------------------|----------|----------------------------|-----|
| | | | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 1 | 19th Avenue / Hanford-Armona Road | One-Way Stop | 12.3 | B | 12.6 | B |
| 2 | Liberty Drive / Hanford-Armona Road | Two-Way Stop | 28.9 | D | 16.4 | C |
| 3 | 19th Avenue / Project Driveway 1 | One-Way Stop | 28.9 | D | 14.2 | B |
| 4 | 19th Avenue / Project Driveway 2 | One-Way Stop | 24.2 | C | 11.8 | B |
| 5 | 19th Avenue / Cinnamon Drive | All-Way Stop | 50.3 | F | 25.0 | C |
| | | All-Way Stop (Mitigated) | 33.0 | D | 16.1 | C |
| 6 | Liberty Drive / Cinnamon Drive | Two-Way Stop | 14.4 | B | 11.6 | B |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.



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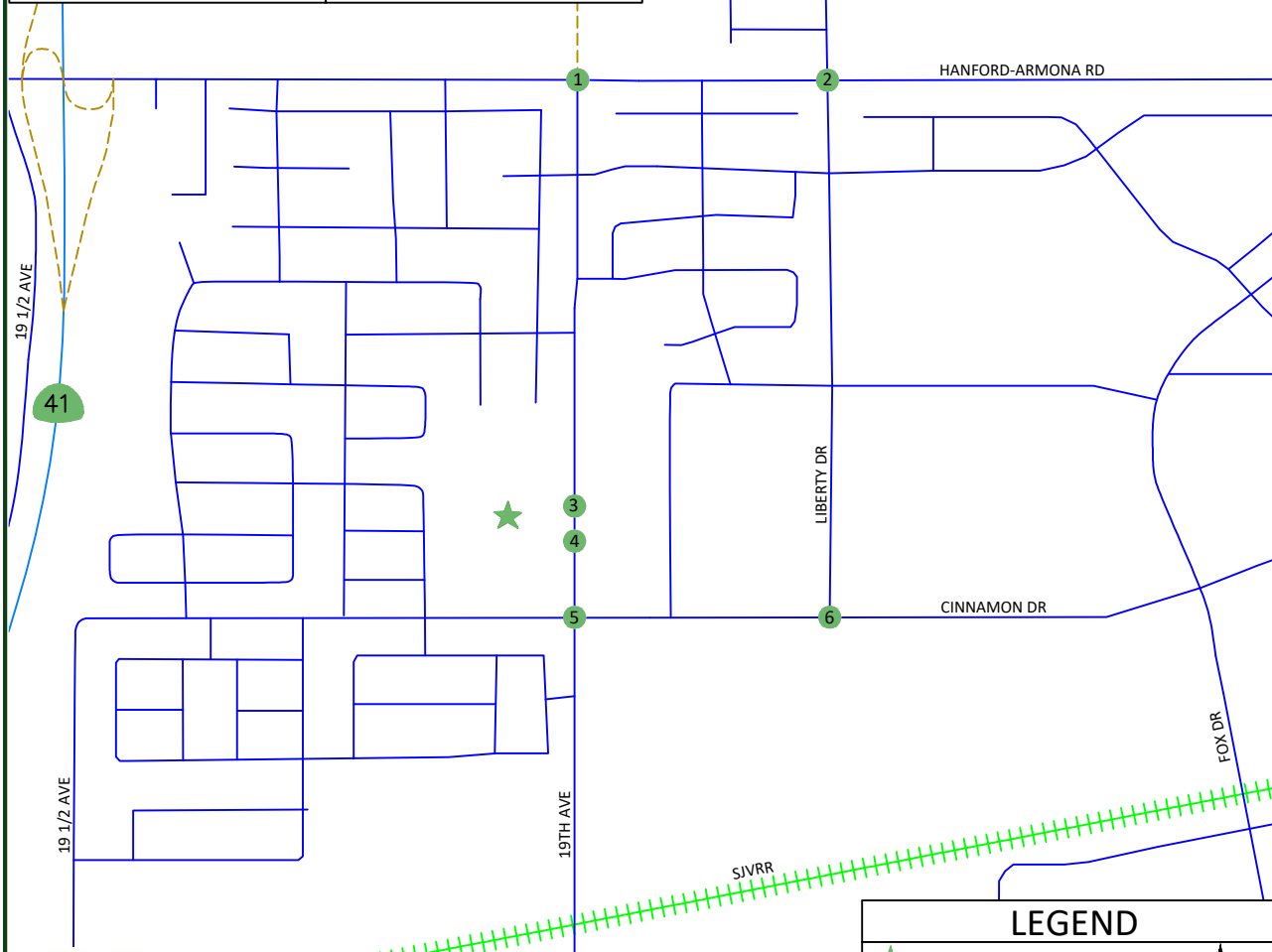


Not To Scale

Elementary School - City of Lemoore Project Only Trips

Figure 4

| | | | | | | | |
|----|------------------------------|----|--------------------------------|----|---------------------------|----|---------------------------|
| 1. | 19th Ave & Hanford-Armona Rd | 2. | Liberty Dr & Hanford-Armona Rd | 3. | 19th Ave & Project Drwy 1 | 4. | 19th Ave & Project Drwy 2 |
| | | | | | | | |
| 5. | 19th Ave & Cinnamon Dr | 6. | Liberty Dr & Cinnamon Dr | | | | |
| | | | | | | | |



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LEGEND

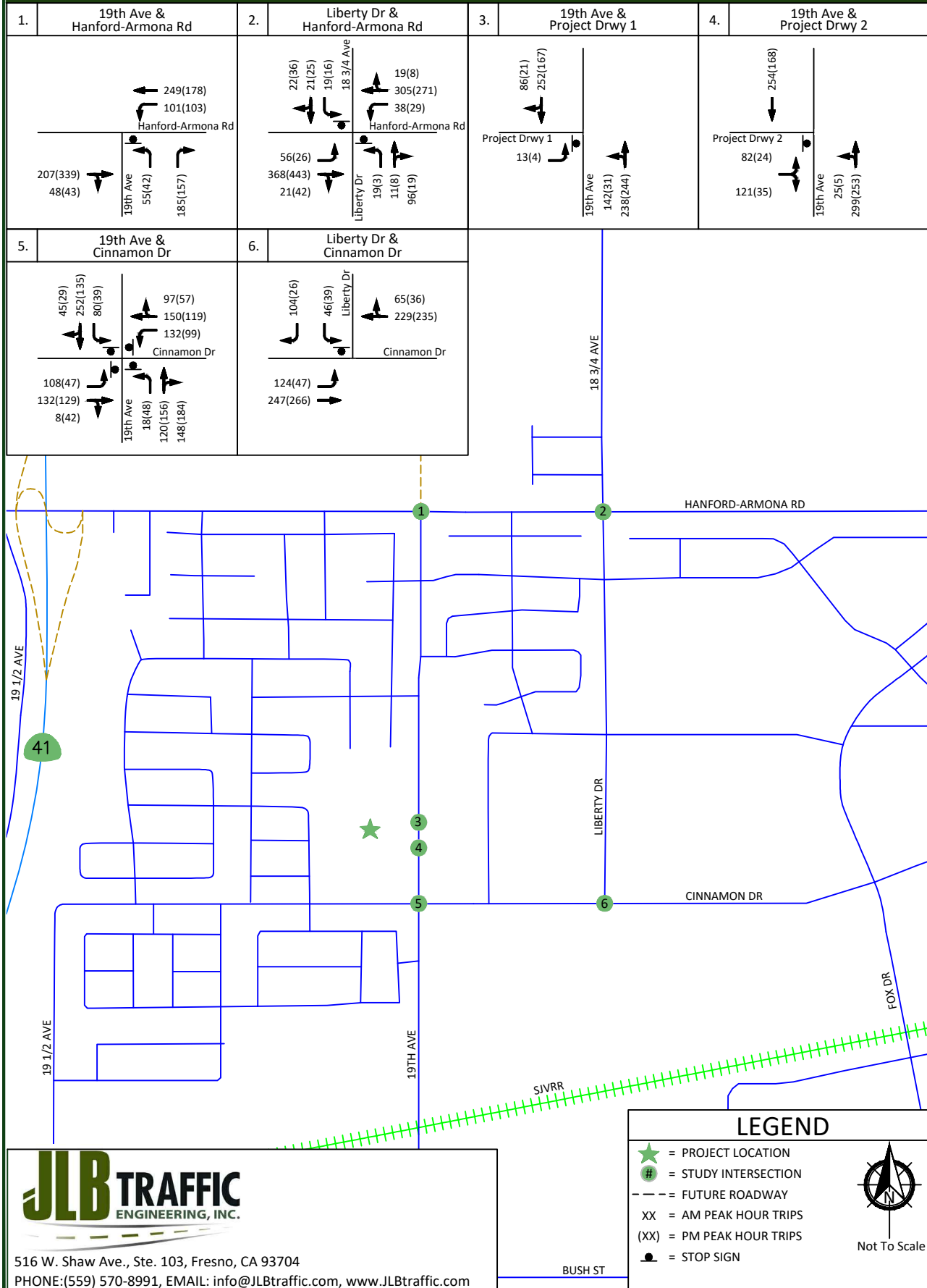
- ★ = PROJECT LOCATION
- # = STUDY INTERSECTION
- - - = FUTURE ROADWAY
- XX = AM PROJECT ONLY TRIPS
- (XX) = PM PROJECT ONLY TRIPS
- = STOP SIGN



Elementary School - City of Lemoore

Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



Near Term Year 2023 plus Project Traffic Conditions

Description of Approved and Pipeline Projects

Approved and Pipeline Projects consist of developments that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval, or for which the lead agency or responsible agencies have knowledge of. The City of Lemoore, County of Kings and Caltrans staff were consulted throughout the preparation of this TIA regarding approved and/or known projects that could potentially impact the study intersections. JLB staff conducted a reconnaissance of the surrounding area to confirm the Near Term Projects. Subsequently, it was agreed that the projects listed in Table IV were approved, near approval, or in the pipeline within the proximity of the proposed Project.

The trip generation listed in Table IV is that which is anticipated to be added to the streets and highways by these projects between the time of the preparation of this report and five years after buildout of the proposed Project. As shown in Table IV, the total trip generation for the Near Term Projects is 10,329 daily trips, 720 AM peak hour trips and 841 PM peak hour trips. Figure 6 illustrates the location of the approved, near approval, or pipeline projects and their combined trip assignment to the study intersections under the Near Term Year 2023 plus Project Traffic Conditions scenario.

Table IV: Near Term Projects' Trip Generation

| Approved Project Location | Approved or Pipeline Project Name | Daily Trips | AM Peak Hour | PM Peak Hour |
|--|---|--------------------|---------------------|---------------------|
| A | Parkview Estates ¹ | 831 | 65 | 87 |
| B | Park Meadows ¹ | 189 | 15 | 20 |
| C | Oleander Terrace ¹ | 483 | 30 | 37 |
| D | Dollar General ¹ | 399 | 9 | 36 |
| E | Hanford-Armona Mixed-Use Development ² | 6,775 | 471 | 488 |
| F | County Tract No. 920 ¹ | 1,652 | 130 | 173 |
| Total Approved and Pipeline Project Trips | | 10,329 | 720 | 841 |

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on JLB Traffic Engineering, Inc. Traffic Impact Analysis Report

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Near Term Year 2023 plus Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of 19th Avenue and Cinnamon Drive satisfies the peak hour signal warrant during the AM peak period only. Based on the signal warrants and engineering judgement, signalization of this intersection is recommended.

Results of Near Term Year 2023 plus Project Level of Service Analysis

The Near Term Year 2023 plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 7 illustrates the Near Term Year 2023 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Near Term Year 2023 plus Project Traffic Conditions scenario are provided in Appendix G. Table V presents a summary of the Near Term Year 2023 plus Project peak hour LOS at the study intersections.

Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road, 19th Avenue and Project Driveway 1, and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Liberty Drive / Hanford-Armona Road
 - Add a second eastbound through lane with a receiving lane east of Liberty Drive;
 - Modify the westbound through-right lane to a through lane;
 - Add a westbound right-turn lane;
 - Modify the northbound through-right lane to a through lane;
 - Add a northbound right-turn lane;
 - Modify the southbound through-right lane to a through lane;
 - Add a southbound right-turn lane; and
 - Implement an all-way stop control.
- 19th Avenue / Project Driveway 1
 - Add a northbound left-turn lane; and
 - Modify the northbound left-through lane to a through lane.
- 19th Avenue / Cinnamon Drive
 - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

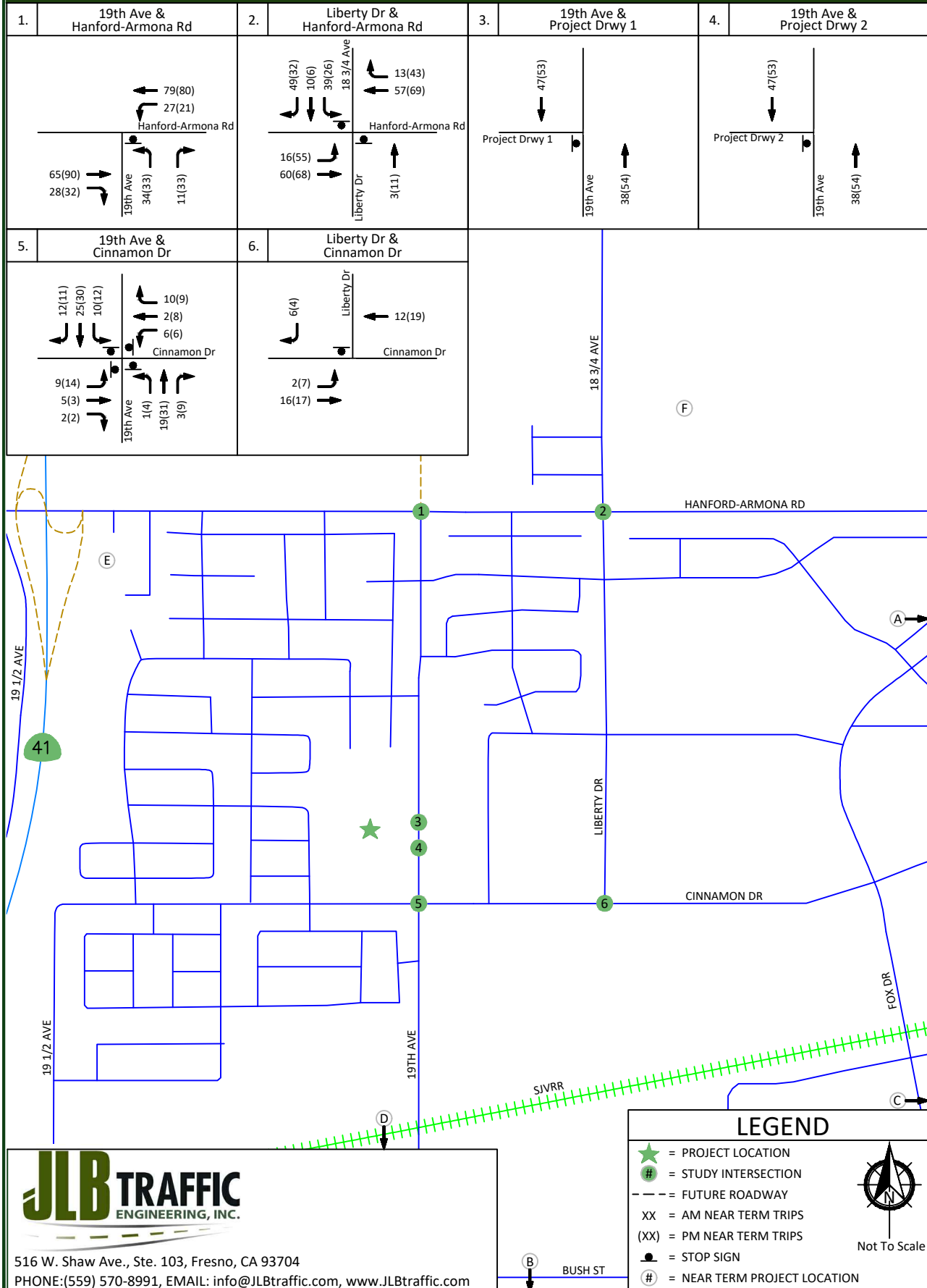
Table V: Near Term Year 2023 plus Project Intersection LOS Results

| ID | Intersection | Intersection Control | AM (7-9) Peak Hour | | PM (4-6) Peak Hour | |
|----|-------------------------------------|--------------------------|-------------------------|-----|-------------------------|-----|
| | | | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 1 | 19th Avenue / Hanford-Armona Road | One-Way Stop | 15.2 | C | 15.6 | C |
| 2 | Liberty Drive / Hanford-Armona Road | Two-Way Stop | 95.9 | F | 27.4 | D |
| | | All-Way Stop (Mitigated) | 34.1 | D | 16.2 | C |
| 3 | 19th Avenue / Project Driveway 1 | One-Way Stop | 35.0 | E | 16.4 | C |
| | | Two-Way Stop (Mitigated) | 32.7 | D | 16.3 | C |
| 4 | 19th Avenue / Project Driveway 2 | One-Way Stop | 32.2 | D | 13.2 | B |
| 5 | 19th Avenue / Cinnamon Drive | All-Way Stop | 69.1 | F | 41.7 | E |
| | | Signalized (Mitigated) | 31.0 | C | 24.4 | C |
| 6 | Liberty Drive / Cinnamon Drive | Two-Way Stop | 14.8 | B | 11.8 | B |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

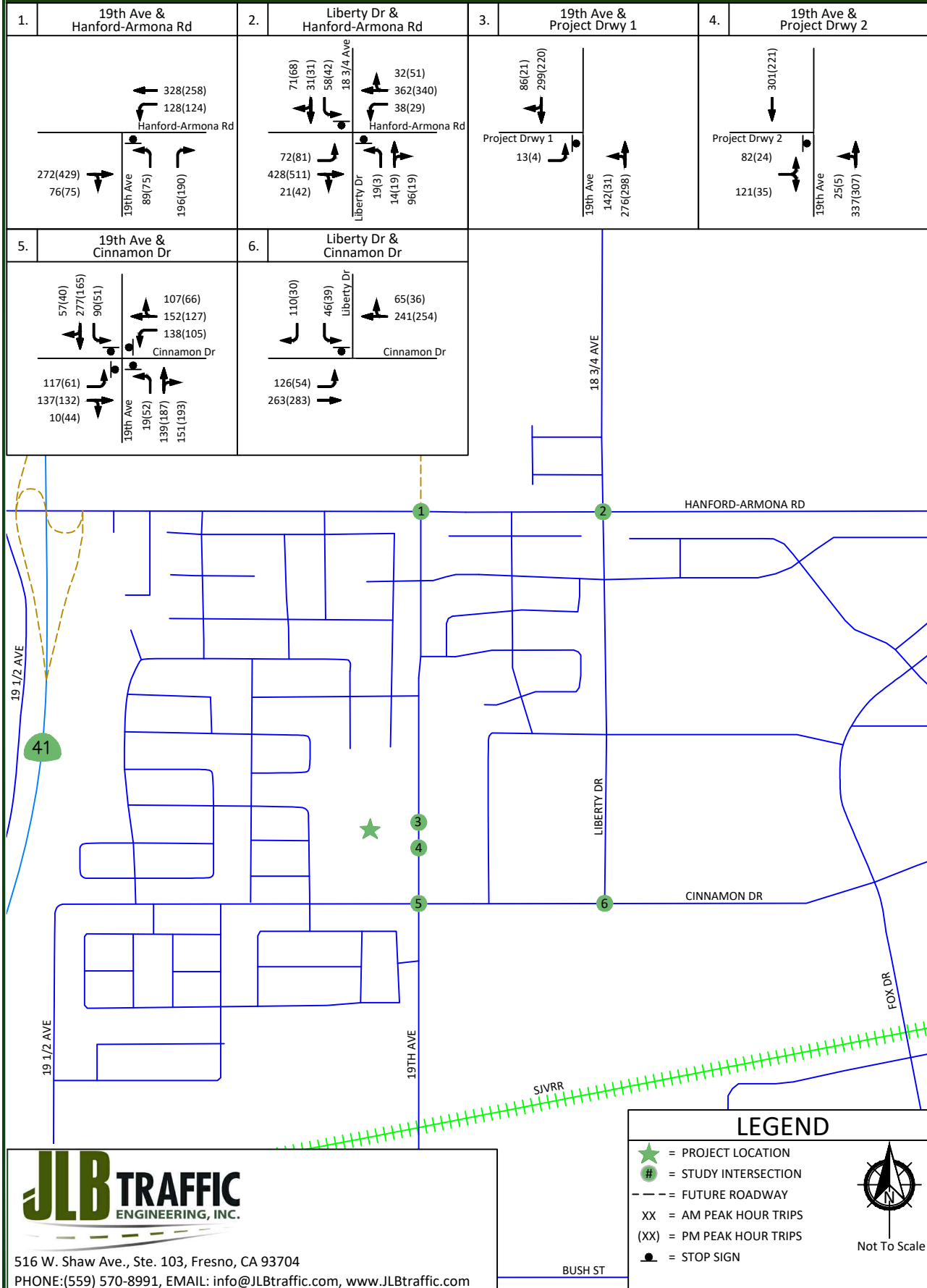
Elementary School - City of Lemoore Near Term Projects' Trip Assignment

Figure 6



Elementary School - City of Lemoore Near Term Year 2023 plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



Cumulative Year 2040 No Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 No Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of 19th Avenue and Cinnamon Drive satisfies the peak hour signal warrant during both peak periods.

Based on the signal warrants and engineering judgement, signalization of this intersection is not recommended. It is worth noting that the CA MUTCD states “satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal.” Therefore, it is recommended that prior to the installation of a traffic signal, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Cumulative Year 2040 No Project Level of Service Analysis

The Cumulative Year 2040 No Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 8 illustrates the Cumulative Year 2040 No Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2040 No Project Traffic Conditions scenario are provided in Appendix H. Table VI presents a summary of the Cumulative Year 2040 No Project peak hour LOS at the study intersections.

Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Liberty Drive / Hanford-Armona Road
 - Add a second eastbound through lane with a receiving lane east of Liberty Drive;
 - Add a second westbound through lane with a receiving lane west of Liberty Drive; and
 - Implement an all-way stop control.
- 19th Avenue / Cinnamon Drive
 - Modify the westbound through-right lane to a through lane;
 - Add a westbound right-turn lane;
 - Modify the northbound through-right lane to a through lane;
 - Add a northbound right-turn lane;
 - Modify the southbound through-right lane to a through lane; and
 - Add a southbound right-turn lane.

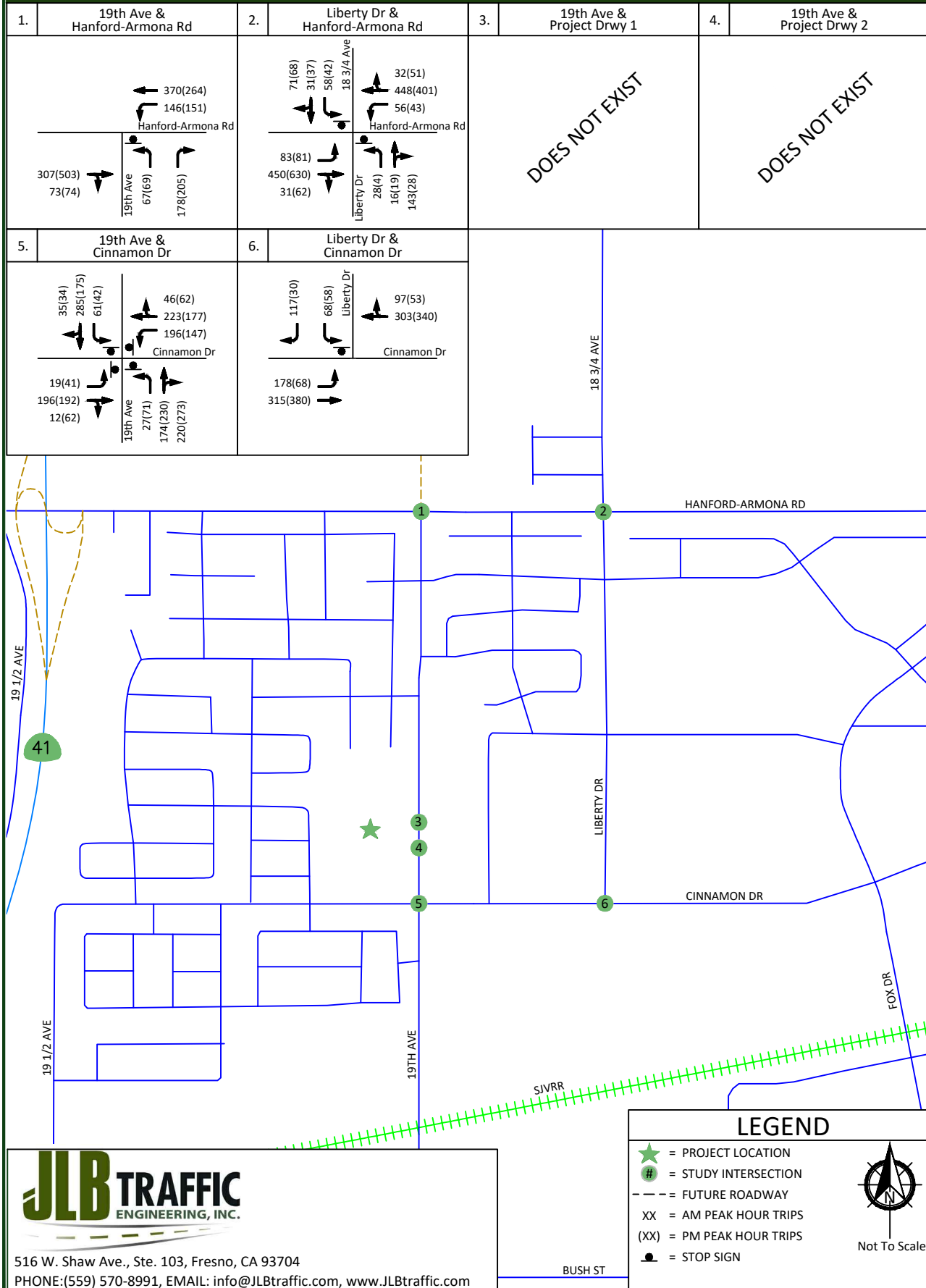
Table VI: Cumulative Year 2040 No Project Intersection LOS Results

| ID | Intersection | Intersection Control | AM (7-9) Peak Hour | | PM (4-6) Peak Hour | |
|----|-------------------------------------|-------------------------|-------------------------|----------|-------------------------|----------|
| | | | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 1 | 19th Avenue / Hanford-Armona Road | One-Way Stop | 14.4 | B | 17.6 | C |
| 2 | Liberty Drive / Hanford-Armona Road | Two-Way Stop | 85.7 | F | 47.2 | E |
| | | All-Way Stop (Improved) | 21.6 | C | 21.2 | C |
| 3 | 19th Avenue / Project Driveway 1 | Does Not Exist | N/A | N/A | N/A | N/A |
| 4 | 19th Avenue / Project Driveway 2 | Does Not Exist | N/A | N/A | N/A | N/A |
| 5 | 19th Avenue / Cinnamon Drive | All-Way Stop | 51.6 | F | 59.4 | F |
| | | All-Way Stop (Improved) | 33.1 | D | 23.6 | C |
| 6 | Liberty Drive / Cinnamon Drive | Two-Way Stop | 14.7 | B | 14.1 | B |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Elementary School - City of Lemoore Cumulative Year 2040 No Project - Traffic Volumes, Geometrics and Controls

Figure 8



Cumulative Year 2040 plus Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 plus Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of 19th Avenue and Cinnamon Drive satisfies the peak hour signal warrant during the AM peak period only. Based on the signal warrants and engineering judgement, signalization of this intersection is recommended.

Results of Cumulative Year 2040 plus Project Level of Service Analysis

The Cumulative Year 2040 plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 9 illustrates the Cumulative Year 2040 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2040 plus Project Traffic Conditions scenario are provided in Appendix I. Table VII presents a summary of the Cumulative Year 2040 plus Project peak hour LOS at the study intersections.

Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Liberty Drive / Hanford-Armona Road
 - Add a second eastbound through lane with a receiving lane east of Liberty Drive;
 - Add a second westbound through lane with a receiving lane west of Liberty Drive; and
 - Implement an all-way stop control.
- 19th Avenue / Cinnamon Drive
 - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

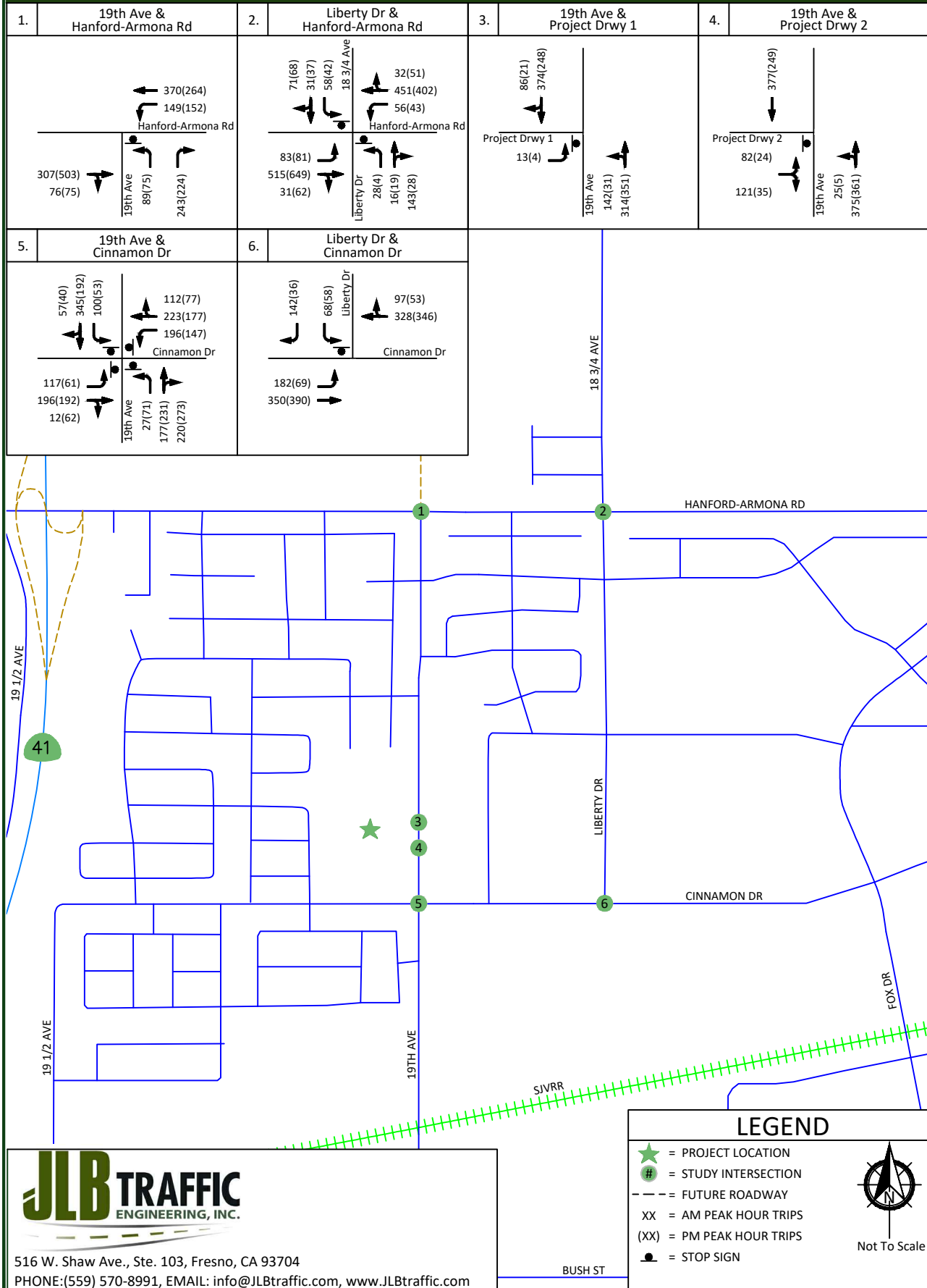
Table VII: Cumulative Year 2040 plus Project Intersection LOS Results

| ID | Intersection | Intersection Control | AM (7-9) Peak Hour | | PM (4-6) Peak Hour | |
|----|-------------------------------------|--------------------------|----------------------------|----------|----------------------------|----------|
| | | | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 1 | 19th Avenue / Hanford-Armona Road | One-Way Stop | 15.9 | C | 18.4 | C |
| 2 | Liberty Drive / Hanford-Armona Road | Two-Way Stop | 113.0 | F | 50.0 | F |
| | | All-Way Stop (Mitigated) | 25.6 | D | 22.5 | C |
| 3 | 19th Avenue / Project Driveway 1 | One-Way Stop | 28.7 | D | 14.9 | B |
| 4 | 19th Avenue / Project Driveway 2 | One-Way Stop | 24.0 | C | 12.3 | B |
| 5 | 19th Avenue / Cinnamon Drive | All-Way Stop | 85.4 | F | 65.1 | F |
| | | Signalized (Mitigated) | 33.1 | C | 31.8 | C |
| 6 | Liberty Drive / Cinnamon Drive | Two-Way Stop | 15.3 | C | 14.1 | B |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Elementary School - City of Lemoore Cumulative Year 2040 plus Project - Traffic Volumes, Geometrics and Controls

Figure 9



Queuing Analysis

Table VIII provides a queue length summary for left-turn and right-turn lanes at the study intersections under all study scenarios. The queuing analyses for the study intersections are contained in the LOS worksheets for the respective scenarios. Appendix D contains the methodologies used to evaluate these intersections. Queuing analyses were completed using Sim Traffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the Synchro manual, "the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes." The queues shown on Table VIII are the 95th percentile queue lengths for the respective lane movements.

The Highway Design Manual (HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. Per the HDM criteria, "tapers for right-turn lanes are usually un-necessary since the main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane." Therefore, a bay taper length pursuant to the Caltrans HDM would need to be added, as necessary, to the recommended storage lengths presented in Table VIII.

Based on the SimTraffic output files and engineering judgement, it is recommended that the storage capacity for the following be considered for the Cumulative Year 2040 plus Project Traffic Conditions. At the remaining approaches, the existing storage capacity will be sufficient to accommodate the maximum queue.

- 19th Avenue / Cinnamon Drive
 - Consider increasing the storage capacity of the eastbound left-turn lane to 150 feet.
 - Consider increasing the storage capacity of the westbound left-turn lane to 200 feet.
 - Consider increasing the storage capacity of the northbound left-turn lane to 200 feet.
 - Consider increasing the storage capacity of the southbound left-turn lane to 150 feet.

Table VIII: Queuing Analysis

| ID | Intersection | Existing Queue Storage Length (ft.) | | Existing | | Existing plus Project | | Near Term Year 2023 plus Project | | Cumulative Year 2040 No Project | | Cumulative Year 2040 plus Project | |
|----|-----------------------------------|-------------------------------------|------|----------|----|-----------------------|----|----------------------------------|----|---------------------------------|----|-----------------------------------|----|
| | | | | AM | PM | AM | PM | AM | AM | AM | PM | AM | PM |
| 1 | 19th Avenue / Hanford-Armona Road | EB Thru-Right | >500 | 7 | 0 | 0 | 0 | 0 | 10 | 10 | 7 | 0 | 17 |
| | | WB Left | 250 | 61 | 47 | 57 | 73 | 60 | 70 | 63 | 64 | 59 | 63 |
| | | WB Thru | >500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | NB Left | 245 | 46 | 47 | 63 | 60 | 83 | 65 | 50 | 50 | 85 | 57 |
| | | NB Right | >500 | 71 | 64 | 68 | 64 | 72 | 72 | 61 | 64 | 72 | 88 |

Note: * = Does not exist or is not projected to exist

Table VIII: Queuing Analysis (cont.)

| ID | Intersection | Existing Queue Storage Length (ft.) | | Existing | | Existing plus Project | | Near Term Year 2023 plus Project | | Cumulative Year 2040 No Project | | Cumulative Year 2040 plus Project | |
|----|-------------------------------------|-------------------------------------|------|----------|-----|-----------------------|----|----------------------------------|-----|---------------------------------|-----|-----------------------------------|-----|
| | | | | AM | PM | AM | PM | AM | AM | AM | PM | AM | PM |
| 2 | Liberty Drive / Hanford-Armona Road | EB Left | 135 | 38 | 10 | 41 | 26 | 45 | 51 | 58 | 54 | 54 | 59 |
| | | EB Thru | * | * | * | * | * | 66 | 64 | 75 | 77 | 73 | 78 |
| | | EB Thru-Right | >500 | 0 | 0 | 7 | 18 | 77 | 70 | 72 | 93 | 73 | 91 |
| | | WB Left | 190 | 38 | 32 | 54 | 32 | 47 | 41 | 63 | 53 | 56 | 52 |
| | | WB Thru | * | * | * | * | * | 101 | 113 | 94 | 95 | 104 | 102 |
| | | WB Thru-Right | >500 | 0 | 0 | 0 | 0 | * | * | 73 | 57 | 70 | 82 |
| | | WB Right | * | * | * | * | * | 33 | 38 | * | * | * | * |
| | | NB Left | 185 | 42 | 8 | 39 | 14 | 46 | 20 | 46 | 18 | 41 | 20 |
| | | NB Thru | * | * | * | * | * | 32 | 43 | * | * | * | * |
| | | NB Thru-Right | >500 | 59 | 43 | 51 | 34 | * | * | 61 | 54 | 65 | 48 |
| | | NB Right | * | * | * | * | * | 63 | 47 | * | * | * | * |
| | | SB Left | 55 | 34 | 26 | 42 | 36 | 32 | 43 | 52 | 52 | 54 | 39 |
| | | SB Thru | * | * | * | * | * | 31 | 34 | * | * | * | * |
| | | SB Thru-Right | >500 | 52 | 61 | 55 | 58 | * | * | 49 | 51 | 51 | 51 |
| 3 | 19th Avenue / Project Driveway 1 | EB Left-Right | * | * | * | 37 | 21 | 37 | 24 | * | * | 43 | 24 |
| | | NB Left | * | * | * | * | * | 66 | 26 | * | * | * | * |
| | | NB Left-Thru | >500 | * | * | 78 | 27 | 0 | 0 | * | * | 88 | 40 |
| | | SB Thru-Right | >500 | * | * | 7 | 0 | 7 | 0 | * | * | 7 | 0 |
| 4 | 19th Avenue / Project Driveway 2 | EB Left-Right | * | * | * | 95 | 53 | 121 | 47 | * | * | 112 | 59 |
| | | NB Left-Thru | >500 | * | * | 32 | 0 | 25 | 10 | * | * | 30 | 14 |
| | | SB Thru-Right | >500 | * | * | 0 | 0 | 0 | 0 | * | * | 0 | 0 |
| 5 | 19th Avenue / Cinnamon Drive | EB Left | 100 | 33 | 41 | 71 | 36 | 135 | 102 | 36 | 42 | 145 | 101 |
| | | EB Thru-Right | >500 | 74 | 66 | 62 | 71 | 153 | 144 | 94 | 100 | 200 | 188 |
| | | WB Left | 100 | 65 | 66 | 63 | 48 | 137 | 111 | 100 | 81 | 191 | 153 |
| | | WB Thru | * | * | * | 64 | 64 | * | * | 106 | 79 | * | * |
| | | WB Thru-Right | >500 | 68 | 69 | * | * | 199 | 155 | * | * | 247 | 172 |
| | | WB Right | * | * | * | 56 | 32 | * | * | 32 | 38 | * | * |
| | | NB Left | 100 | 40 | 53 | 45 | 53 | 50 | 125 | 46 | 69 | 118 | 184 |
| | | NB Thru | * | * | * | 68 | 69 | * | * | 98 | 109 | * | * |
| | | NB Thru-Right | >500 | 126 | 106 | * | * | 203 | 232 | * | * | 266 | 314 |
| | | NB Right | * | * | * | 74 | 90 | * | * | 94 | 112 | * | * |
| | | SB Left | 100 | 53 | 46 | 57 | 45 | 119 | 82 | 57 | 46 | 124 | 85 |
| | | SB Thru | * | * | * | 110 | 71 | * | * | 117 | 83 | * | * |
| | | SB Thru-Right | >500 | 99 | 62 | * | * | 202 | 114 | * | * | 206 | 173 |
| | | SB Right | * | * | * | 36 | 32 | * | * | 34 | 41 | * | * |
| 6 | Liberty Drive / Cinnamon Drive | EB Left | 100 | 60 | 30 | 54 | 45 | 59 | 30 | 64 | 47 | 83 | 42 |
| | | EB Thru | >500 | 0 | 0 | 0 | 0 | 0 | 12 | 10 | 0 | 22 | 21 |
| | | WB Thru-Right | >500 | 14 | 0 | 22 | 7 | 7 | 10 | 21 | 10 | 21 | 21 |
| | | SB Left | 115 | 45 | 47 | 57 | 45 | 59 | 46 | 61 | 60 | 66 | 56 |
| | | SB Right | >500 | 46 | 34 | 53 | 40 | 56 | 40 | 67 | 46 | 77 | 42 |

Note: * = Does not exist or is not projected to exist

Project's Pro-Rata Fair Share of Future Transportation Improvements

The Project's fair share percentage impact to study intersections projected to fall below their LOS threshold and which are not covered by an existing impact fee program is provided in Table IX. The Project's fair share percentage impacts were calculated pursuant to the Caltrans Guide for the Preparation of Traffic Impact Studies. The Project's pro-rata fair shares were calculated utilizing the Existing volumes, Project Only Trips, and Cumulative Year 2040 plus Project volumes. Figure 2 illustrates the Existing traffic volumes, Figure 4 illustrates the Project Only Trips, and Figure 9 illustrates the Cumulative Year 2040 plus Project traffic volumes. Since the critical peak period for the study facilities was determined to be during the AM peak, the AM peak volumes are utilized to determine the Project's pro-rata fair share.

It is recommended that the Project contribute its equitable fair share as listed in Table IX for the future improvements necessary to maintain an acceptable LOS. However, fair share contributions should only be made for those facilities, or portion thereof, currently not funded by the responsible agencies roadway impact fee program(s) or grant funded projects, as appropriate. For those improvements not presently covered by local and regional roadway impact fee programs or grant funding, it is recommended that the Project contribute its equitable fair share. Payment of the Project's equitable fair share in addition to the local and regional impact fee programs would satisfy the Project's traffic mitigation measures.

This study does not provide construction costs for the recommended mitigation measures; therefore, if the recommended mitigation measures are implemented, it is recommended that the District work with the City of Lemoore to develop the estimated construction cost.

Table IX: Project's Fair Share of Future Roadway Improvements

| <i>ID</i> | <i>Intersection</i> | <i>Existing Traffic Volumes (AM Peak)</i> | <i>Cumulative Year 2040 plus Project Traffic Volumes (AM Peak)</i> | <i>Project Only Trips (AM Peak)</i> | <i>Project's Fair Share (%)</i> |
|-----------|-------------------------------------|---|--|---|-------------------------------------|
| 2 | Liberty Drive / Hanford-Armona Road | 927 | 1,516 | 68 | 11.54 |
| 5 | 19th Avenue / Cinnamon Drive | 1,002 | 1,781 | 288 | 36.97 |

Note: Project Fair Share = ((Project Only Trips) / (Cumulative Year 2040 + Project Traffic Volumes - Existing Traffic Volumes)) x 100

Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Project are presented below.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points indicates that they are located at points that minimize traffic operational impacts to the existing roadway network. However, if upon opening of the school queuing issues are observed between the southbound left-turn lane at the intersection of 19th Avenue and Cinnamon Drive and the northbound two-way left-turn lane at the intersection of 19th Avenue and Project Driveway 2, then it is recommended that Project Driveway 2 be limited to right-in, right-out access only and that a raised median be installed so as to prohibit northbound left-turning movements into Project Driveway 2.
- The proposed Project is estimated to generate a maximum of 1,323 daily trips, 469 AM peak hour trips and 119 PM peak hour trips.
- It is recommended that the Project implement a Class II Bike Lane along its frontage to 19th Avenue.
- It is recommended that the District work with the City of Lemoore to implement a Safe Routes to School plan and seek grant funding to help build walkways where they are lacking within a one-mile radius of the proposed Project site.
- It is also recommended that a high-visibility crosswalk with rapid rectangular flashing beacons be installed across the south leg of 19th Avenue and Freedom Drive.
- Under this scenario, the study intersection of 19th Avenue and Cinnamon Drive is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvements be implemented.
 - 19th Avenue / Cinnamon Drive
 - Modify the westbound through-right lane to a through lane;
 - Add a westbound right-turn lane;
 - Modify the northbound through-right lane to a through lane;
 - Add a northbound right-turn lane;
 - Modify the southbound through-right lane to a through lane; and
 - Add a southbound right-turn lane.

Near Term Year 2023 plus Project Traffic Conditions

- Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road, 19th Avenue and Project Driveway 1, and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
 - Liberty Drive / Hanford-Armona Road
 - Add a second eastbound through lane with a receiving lane east of Liberty Drive;
 - Modify the westbound through-right lane to a through lane;
 - Add a westbound right-turn lane;
 - Modify the northbound through-right lane to a through lane;
 - Add a northbound right-turn lane;
 - Modify the southbound through-right lane to a through lane;
 - Add a southbound right-turn lane; and
 - Implement an all-way stop control.
 - 19th Avenue / Project Driveway 1
 - Add a northbound left-turn lane; and
 - Modify the northbound left-through lane to a through lane.
 - 19th Avenue / Cinnamon Drive
 - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Cumulative Year 2040 No Project Traffic Conditions

- Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
 - Liberty Drive / Hanford-Armona Road
 - Add a second eastbound through lane with a receiving lane east of Liberty Drive;
 - Add a second westbound through lane with a receiving lane west of Liberty Drive; and
 - Implement an all-way stop control.
 - 19th Avenue / Cinnamon Drive
 - Modify the westbound through-right lane to a through lane;
 - Add a westbound right-turn lane;
 - Modify the northbound through-right lane to a through lane;
 - Add a northbound right-turn lane;
 - Modify the southbound through-right lane to a through lane; and
 - Add a southbound right-turn lane.

Cumulative Year 2040 plus Project Traffic Conditions

- Under this scenario, the study intersections of Liberty Drive and Hanford-Armona Road and 19th Avenue and Cinnamon Drive are projected to operate at an unacceptable LOS during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
 - Liberty Drive / Hanford-Armona Road
 - Add a second eastbound through lane with a receiving lane east of Liberty Drive;
 - Add a second westbound through lane with a receiving lane west of Liberty Drive; and
 - Implement an all-way stop control.
 - 19th Avenue / Cinnamon Drive
 - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable fair share as listed in Table VIII for the future improvements necessary to maintain an acceptable LOS.

Study Participants

JLB Traffic Engineering, Inc. Personnel:

| | |
|-----------------------------|----------------------------|
| Jose Luis Benavides, PE, TE | Project Manager |
| Susana Maciel, EIT | Project Engineer |
| Matthew Arndt, EIT | Engineer I/II |
| Javier Rios | Engineer I/II |
| Jove Alcazar | Engineer I/II |
| Dennis Wynn | Sr. Engineering Technician |
| Jesus Garcia | Engineering Aide |
| Adrian Benavides | Engineering Aide |
| Justin Barnett | Engineering Aide |

Persons Consulted:

| | |
|------------------|--|
| Julie Fagundes | Lemoore Union Elementary School District |
| Wa Vang | Lane Engineers, Inc. |
| Steve Brandt | City of Lemoore |
| Judy Holwell | City of Lemoore |
| Dominic Tyburski | County of Kings |
| Chuck Kinney | County of Kings |
| Michael Navarro | Caltrans |

References

1. City of Lemoore, *2030 General Plan*.
2. *Guide for the Preparation of Traffic Impact Studies*, Caltrans, dated December 2002.
3. *Trip Generation*, 10th Edition, Washington D.C., Institute of Transportation Engineers, 2017.
4. *2014 California Manual on Uniform Traffic Control Devices*, Caltrans, November 7, 2014.

Appendix A: Scope of Work



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516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

Page | A

June 7, 2019

Steve Brandt
City Planner
City of Lemoore
711 West Cinnamon Drive
Lemoore, CA 93245

Via Email Only: sbrandt@lemoore.com

Subject: *Proposed Draft Scope of Work for the Preparation of a Traffic Impact Analysis for the Lemoore Union Elementary School District, Elementary School in the City of Lemoore (JLB Project 039-002)*

Dear Mr. Steve Brandt,

JLB Traffic Engineering, Inc. (JLB) hereby submits this Draft Scope of Work for the preparation of a Traffic Impact Analysis (TIA) for the proposed Elementary School (Project) located at the northwest quadrant of Cinnamon Drive and 19th Avenue in the City of Lemoore. An aerial of the Project vicinity and Project Site Plan are shown in Exhibit A and Exhibit B, respectively.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. To evaluate the on-site and off-site traffic impacts of the proposed Project, JLB proposes the following Scope of Work.

Scope of Work

- To arrive at the future year forecast volumes, JLB proposes to average annual growth rates for the road network in the vicinity of the Project as derived from the Kings County Association of Governments (Kings CAG) Base Year 2019 and Cumulative Year 2042 model networks. Based on a review of the Kings CAG model networks, a minimum annual growth rate of 1.1 percent, a maximum annual growth rate of 1.9 percent and an average annual growth rate of 1.4 percent were determined. Therefore, JLB proposes to utilize the maximum annual growth rate of 1.9 percent to expand the existing traffic volumes by 21 years to arrive at the Cumulative Year 2040 plus Project scenario.
- JLB will obtain recent or schedule and conduct new traffic counts at the study facility(ies) as necessary. These counts will include pedestrians and vehicles.
- JLB will perform a site visit to observe existing traffic conditions, especially during the AM and PM peak hours. Existing roadway conditions including intersection geometrics and traffic controls will be verified.
- JLB will evaluate on-site circulation and provide recommendations as necessary to improve circulation to and within the Project site.



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Fresno, CA 93710

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Page | 1

- JLB will prepare CA MUTCD Warrant 3 “Peak Hour” for unsignalized study intersections under the Existing, Existing plus Project, Near Term plus Project and Cumulative Year 2040 plus Project scenarios.
- JLB will qualitatively analyze existing and planned transit routes in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned bikeways in the vicinity of the Project.
- JLB will forecast trip distribution based on turn count information and knowledge of the existing and planned circulation network in the vicinity of the Project.
- JLB will evaluate existing and forecasted levels of service (LOS) at the study intersection(s). JLB will use HCM 6 or HCM 2000 methodologies (as appropriate) within Synchro to perform this analysis for the AM and PM peak hours. JLB will identify the causes of poor LOS.
- JLB in consultation with the Environmental Consultant and School District staff will identify the non-busing service boundaries for the elementary school students. Using the no busing boundaries, JLB will conduct a qualitative safe routes to school evaluation. The safe routes to school evaluation will be prepared based on the information to be provided by the School District, and field surveys to be conducted by JLB. Based on the above information, JLB will provide suggested Safe Routes to School recommendations.
- JLB will prepare the Project’s equitable percent fair share of the mitigation measures (if any).

Study Scenarios:

1. Existing traffic conditions with proposed mitigation measures (if any);
2. Existing plus Project traffic conditions with proposed mitigation measures (if any);
3. Near Term (2023) plus Project (include pending and approved projects) traffic conditions with proposed mitigation measures (if any); and
4. Cumulative Year 2040 No Project traffic conditions with proposed mitigation measures (if any)
5. Cumulative Year 2040 plus Project traffic conditions with proposed mitigation measures (if any).

Weekday peak hours to be analyzed (Tuesday through Thursday only):

1. 7 - 9 AM peak hour
2. 4 - 6 PM peak hour

Study Intersections:

1. 19th Avenue / Hanford-Armona Road
2. Liberty Drive / Hanford-Armona Road
3. 19th Avenue / Main Drop-off Aisle Access Driveway
4. 19th Avenue / Main Exit Aisle Access Driveway
5. 19th Avenue / Cinnamon Drive
6. Liberty Drive / Cinnamon Drive

Queuing analysis is included in the proposed Scope of Work for the study intersection(s) listed above under all study scenarios. This analysis will be utilized to recommend minimum storage lengths for left- and right-turn lanes at all study intersections.

Study Segments:

1. None



Project Only Trip Assignment to State Facilities:

1. None

Project Trip Generation

The trip generation rates for the proposed Project were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for the proposed with trip generation rates for an Elementary School. The proposed Project is estimated to generate a maximum of 1,323 daily trips, 469 AM peak hour trips and 119 PM peak hour trips.

Table I: Project Trip Generation

| Land Use (ITE CODE) | Size | Unit | | | | | | | | | | | | | | |
|-------------------------------|------|----------|-------|-------|----------------|---------|-----|-----|-----|-------|----------------|---------|-----|----|-----|-------|
| | | | Daily | | A.M. Peak Hour | | | | | | P.M. Peak Hour | | | | | |
| | | | Rate | Total | Trip Rate | In % | Out | In | Out | Total | Trip Rate | In % | Out | In | Out | Total |
| Elementary School (520) | 700 | Students | 1.89 | 1,323 | 0.67 | 54 | 46 | 253 | 216 | 469 | 0.17 | 48 | 52 | 57 | 62 | 119 |
| Sub Total Project Trips | | | | 1,323 | | | | 253 | 216 | 469 | | | | 57 | 62 | 119 |

Near Term Projects to be Included

Based on our local knowledge of the study area, JLB proposes to include near term projects in the vicinity of the proposed Project under the Near Term plus Project scenario. The near term projects proposed to be included in the Near Term scenario are:

Project name

1. Silvia Estates Patio Homes
2. Parkview Estates
3. Park Meadows
4. Oleander Terrace
5. Dollar General
6. Hanford-Armona Road Mixed-Use Development
7. Other projects provided to us by other responsible agencies. These include Near Term (2023) Projects the City of Lemoore, County of Kings or Caltrans has knowledge of and for which it is anticipated that said project(s) is/are projected to be whole or partially built by the Near Term (2023) Project Year, and for which the City of Lemoore, County of Kings or Caltrans, as appropriate, provides JLB with near term project details. Near term project details include project description, location, proposed land uses with breakdowns and type of residential units and amount of square footages for non-residential uses.

This Draft Scope of Work is based on our understanding of this Project and our experience with similar TIAs. In the absence of comments by June 19, 2019 it will be assumed that the Scope of Work is acceptable to the agency(ies) that have not submitted any comments.



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Page | 3

Mr. Steve Brandt
Lemoore Union Elementary School TIA - Draft Scope of Work
June 7, 2019

If you have any questions or require additional information, please contact me by phone at (559) 317-6243 or by e-mail at marndt@JLBtraffic.com.

Sincerely,



Matthew Arndt
Engineer I/II

cc: Judy Holwell, City of Lemoore
Dominic Tyburski, County of Kings
Michael Navarro, Caltrans
Jose Benavides, JLB Traffic Engineering, Inc.

Z:\01 Projects\039 Lemoore\039-002 Elementary School TIA\Draft Scope of Work\L05282019 LESD ES TIA.docx



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Page | 4

Exhibit A – Aerial

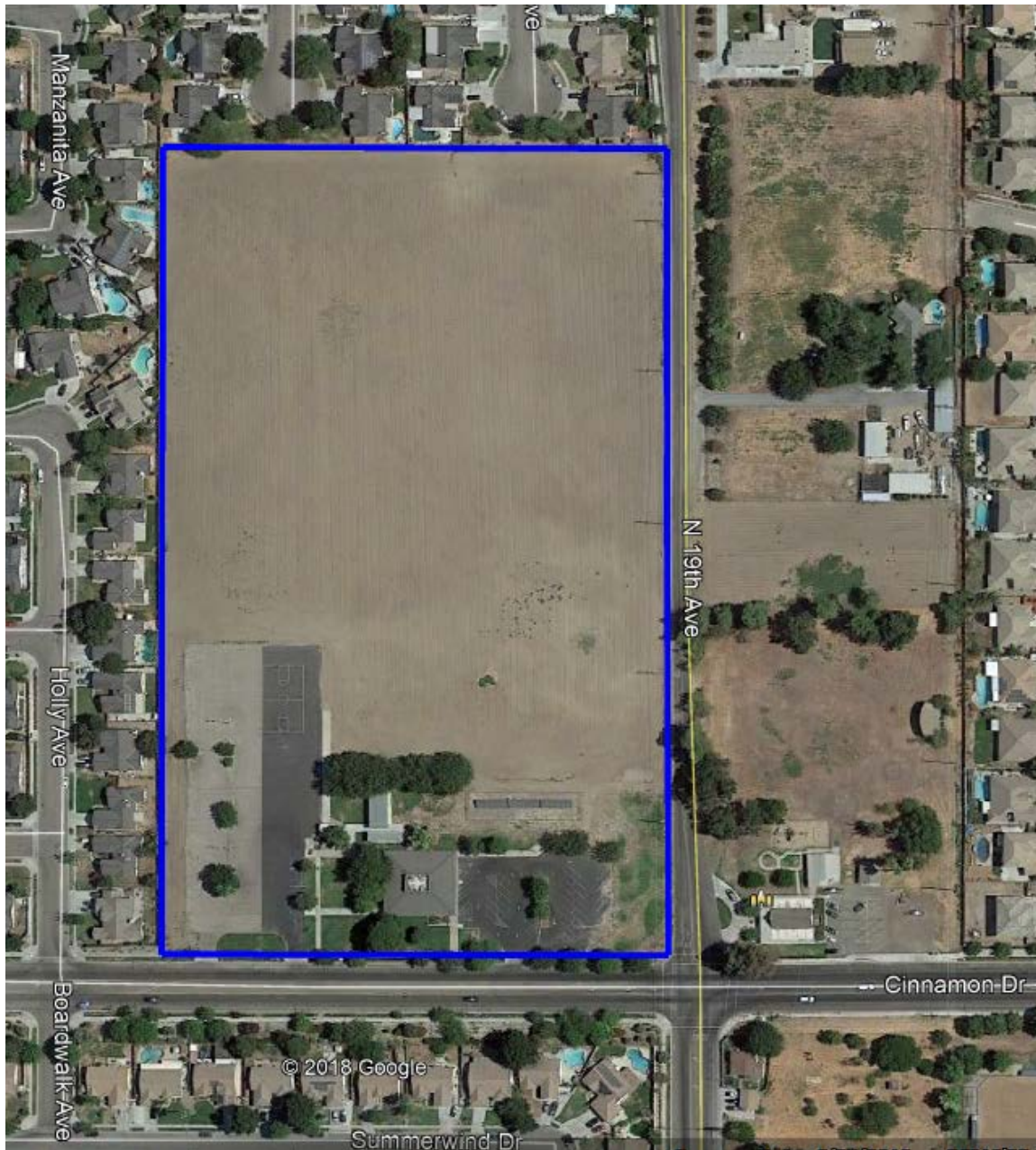
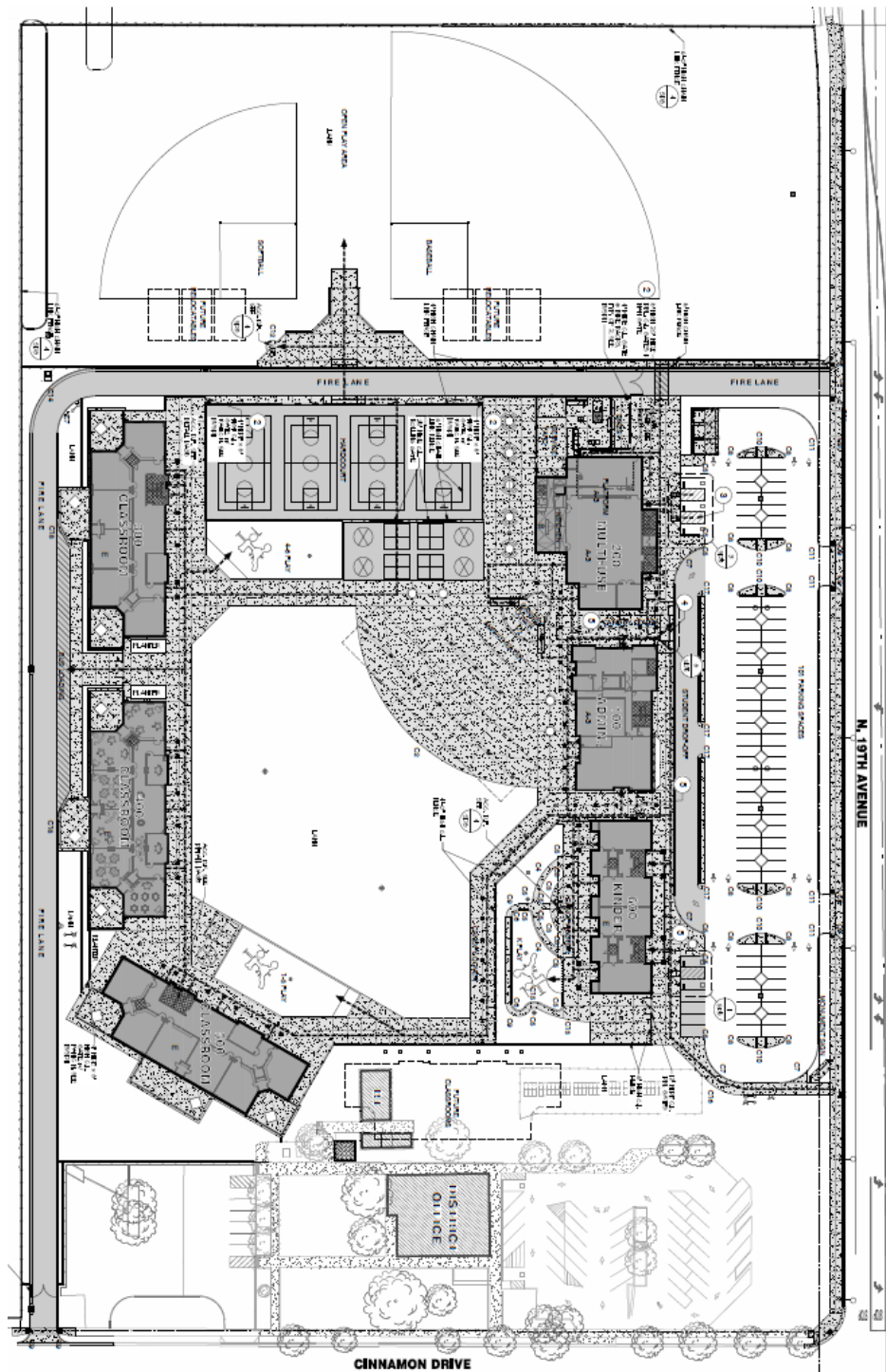


Exhibit B – Project Site Plan



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Page | 6

Matt Arndt

From: Steve Brandt <Steve.Brandt@qkinc.com>
Sent: Wednesday, June 26, 2019 5:42 PM
To: Matt Arndt
Subject: Lemoore Elementary School TIS

Hi Matt,

I had made some recommendations to the Lemoore City staff about your TIS scope for the Lemoore elementary school, but I am not sure if they ever got to you. Here they are, just in case. Thanks. Let me know if you have any questions.

- Scope of Work bullet points (pp. 1-2): Add 'Compare with Lemoore General Plan LOS thresholds'
- Study Intersections (p. 2): Add 19th Avenue / D Street and add 19th Avenue / Bush Street

Regards,

Steve

Steve Brandt, AICP
Principal Planner
901 East Main Street
Visalia, CA 93292
(559) 733-0440 Office
(559) 259-1466 Cell
www.QKinc.com



Jose Benavides

From: Tyburski, Dominic <Dominic.Tyburski@co.kings.ca.us>
Sent: Friday, June 28, 2019 8:39 AM
To: Matt Arndt; sbrandt@lemoore.com
Cc: jholwell@lemoore.com; michael.navarro@dot.ca.gov; Jose Benavides; Kinney, Chuck
Subject: RE: Draft Scope of Work for Lemoore Union Elementary School
Attachments: L05282019 LESD ES TIA.PDF

Hi Matt,

Public Works accepts the scope as proposed. Have you forwarded this to the Community Development Agency? Deputy Director Chuck Kinney should be included on all such correspondence. Thank you.

Dominic Tyburski, P.E.
Chief Engineer | Division of Engineering

County of Kings | Public Works Department
1400 W. Lacey Blvd. | Hanford, CA 93230

Direct 559-852-2698 | Fax 559-582-2506

Dominic.Tyburski@co.kings.ca.us | www.countyofkings.com



From: Matt Arndt [mailto:marndt@jlbtraffic.com]
Sent: Friday, June 07, 2019 4:25 PM
To: sbrandt@lemoore.com
Cc: Tyburski, Dominic; jholwell@lemoore.com; michael.navarro@dot.ca.gov; Jose Benavides
Subject: Draft Scope of Work for Lemoore Union Elementary School

Hello Mr. Brandt,

Attached is the Draft Scope of Work for the preparation of a Traffic Impact Analysis for Lemoore Union Elementary School.

Please take a moment to review and comment on the proposed Scope of Work. In the absence of comments by June 28, 2019, it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please feel free to contact me by phone at 559.317.6243 or email at marndt@jlbtraffic.com. I appreciate your time and attention to this matter.

Have a good day.

Sincerely,

Matthew Arndt



Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

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Appendix B: Traffic Counts



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Fresno, CA 93704
(559) 570-8991

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
1300 E. Shaw Ave, Suite 103
Fresno, CA

LOCATION 19th Ave @ Hanford-Armona Rd

LATITUDE 36.3134

COUNTY Kings

LONGITUDE -119.7988

COLLECTION DATE Thursday, May 30, 2019

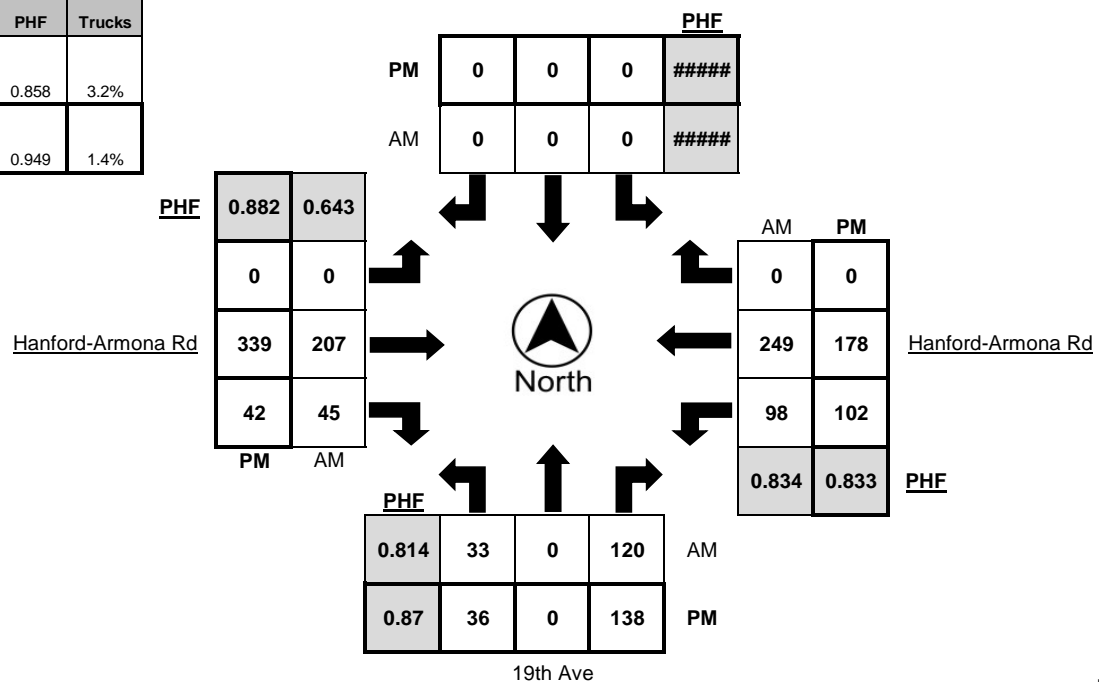
WEATHER Clear

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------|-------|--------|------------|------|-------|--------|-----------|------|-------|--------|-----------|------|-------|--------|
| Time | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 13 | 0 | 27 | 1 | 0 | 0 | 0 | 0 | 0 | 24 | 4 | 0 | 15 | 81 | 0 | 1 |
| 7:15 AM - 7:30 AM | 12 | 0 | 18 | 2 | 0 | 0 | 0 | 0 | 0 | 40 | 7 | 1 | 17 | 68 | 0 | 2 |
| 7:30 AM - 7:45 AM | 10 | 0 | 37 | 1 | 0 | 0 | 0 | 0 | 0 | 40 | 14 | 2 | 23 | 81 | 0 | 2 |
| 7:45 AM - 8:00 AM | 4 | 0 | 29 | 2 | 0 | 0 | 0 | 0 | 0 | 84 | 14 | 2 | 32 | 56 | 0 | 3 |
| 8:00 AM - 8:15 AM | 7 | 0 | 36 | 2 | 0 | 0 | 0 | 0 | 0 | 43 | 10 | 1 | 26 | 44 | 0 | 4 |
| 8:15 AM - 8:30 AM | 7 | 0 | 18 | 2 | 0 | 0 | 0 | 0 | 0 | 27 | 4 | 0 | 14 | 51 | 0 | 2 |
| 8:30 AM - 8:45 AM | 7 | 0 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 30 | 4 | 3 | 8 | 31 | 0 | 5 |
| 8:45 AM - 9:00 AM | 5 | 0 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 31 | 5 | 0 | 14 | 22 | 0 | 1 |
| TOTAL | 65 | 0 | 187 | 13 | 0 | 0 | 0 | 0 | 0 | 319 | 62 | 9 | 149 | 434 | 0 | 20 |

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------|-------|--------|------------|------|-------|--------|-----------|------|-------|--------|-----------|------|-------|--------|
| Time | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 6 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 83 | 13 | 1 | 17 | 44 | 0 | 3 |
| 4:15 PM - 4:30 PM | 9 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 13 | 0 | 32 | 39 | 0 | 1 |
| 4:30 PM - 4:45 PM | 7 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 9 | 2 | 26 | 42 | 0 | 0 |
| 4:45 PM - 5:00 PM | 13 | 0 | 37 | 2 | 0 | 0 | 0 | 0 | 0 | 100 | 8 | 0 | 24 | 34 | 0 | 1 |
| 5:00 PM - 5:15 PM | 9 | 0 | 32 | 2 | 0 | 0 | 0 | 0 | 0 | 71 | 9 | 1 | 23 | 48 | 0 | 1 |
| 5:15 PM - 5:30 PM | 8 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 13 | 2 | 26 | 41 | 0 | 0 |
| 5:30 PM - 5:45 PM | 6 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 12 | 1 | 29 | 55 | 0 | 2 |
| 5:45 PM - 6:00 PM | 8 | 0 | 22 | 1 | 0 | 0 | 0 | 0 | 0 | 76 | 6 | 1 | 27 | 46 | 0 | 1 |
| TOTAL | 66 | 0 | 232 | 5 | 0 | 0 | 0 | 0 | 0 | 683 | 83 | 8 | 204 | 349 | 0 | 9 |

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------|-------|--------|------------|------|-------|--------|-----------|------|-------|--------|-----------|------|-------|--------|
| PEAK HOUR | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:15 AM - 8:15 AM | 33 | 0 | 120 | 7 | 0 | 0 | 0 | 0 | 0 | 207 | 45 | 6 | 98 | 249 | 0 | 11 |
| 4:45 PM - 5:45 PM | 36 | 0 | 138 | 4 | 0 | 0 | 0 | 0 | 0 | 339 | 42 | 4 | 102 | 178 | 0 | 4 |

| | | |
|----|-------|--------|
| | PHF | Trucks |
| AM | 0.858 | 3.2% |
| PM | 0.949 | 1.4% |





Metro Traffic Data Inc.
 310 N. Irwin Street - Suite 20
 Hanford, CA 93230
 800-975-6938 Phone/Fax
 www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
 1300 E. Shaw Ave, Suite 103
 Fresno, CA

LOCATION 19th Ave @ Hanford-Armona Rd
COUNTY Kings
COLLECTION DATE Thursday, May 30, 2019

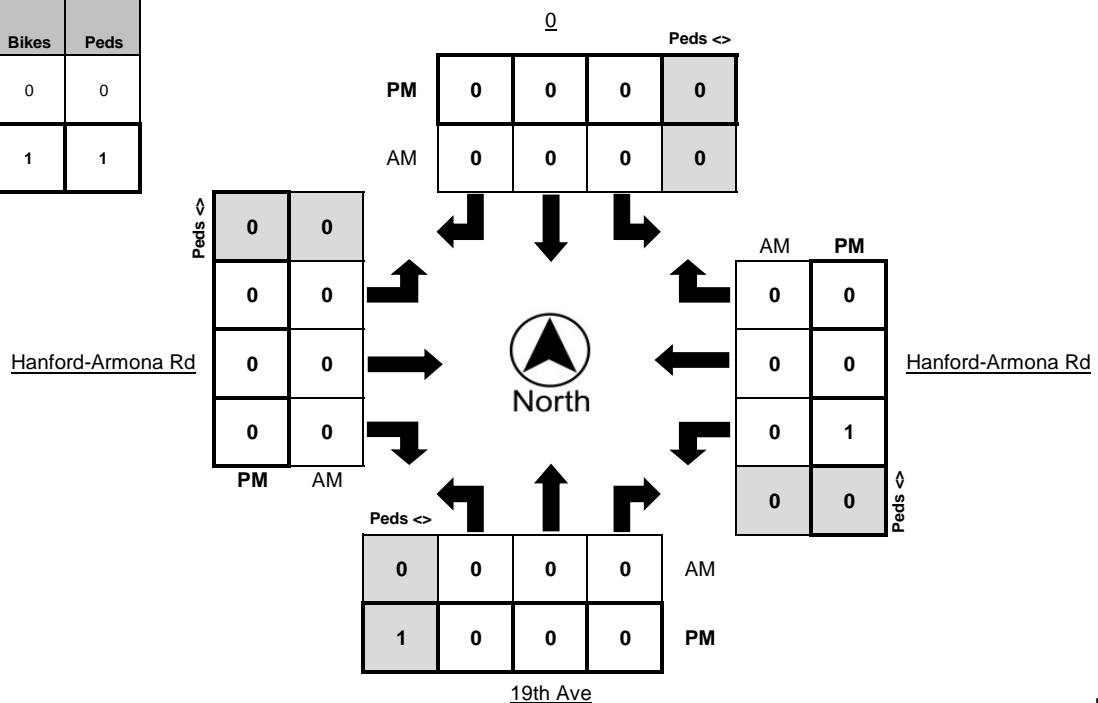
LATITUDE 36.3134
LONGITUDE -119.7988
WEATHER Clear

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:00 AM - 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM - 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM - 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM - 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM - 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM - 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM - 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM - 9:00 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 4:00 PM - 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM - 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM - 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM - 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM - 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM - 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM - 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 5:45 PM - 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

| PEAK HOUR | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:15 AM - 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM - 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

| | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0 | 0 |
| PM Peak Total | 1 | 1 |





Metro Traffic Data Inc.
 310 N. Irwin Street - Suite 20
 Hanford, CA 93230
 800-975-6938 Phone/Fax
 www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
 1300 E. Shaw Ave, Suite 103
 Fresno, CA

LOCATION Liberty Dr @ Hanford-Armona Rd

LATITUDE 36.3134

COUNTY Kings

LONGITUDE -119.7943

COLLECTION DATE Thursday, May 30, 2019

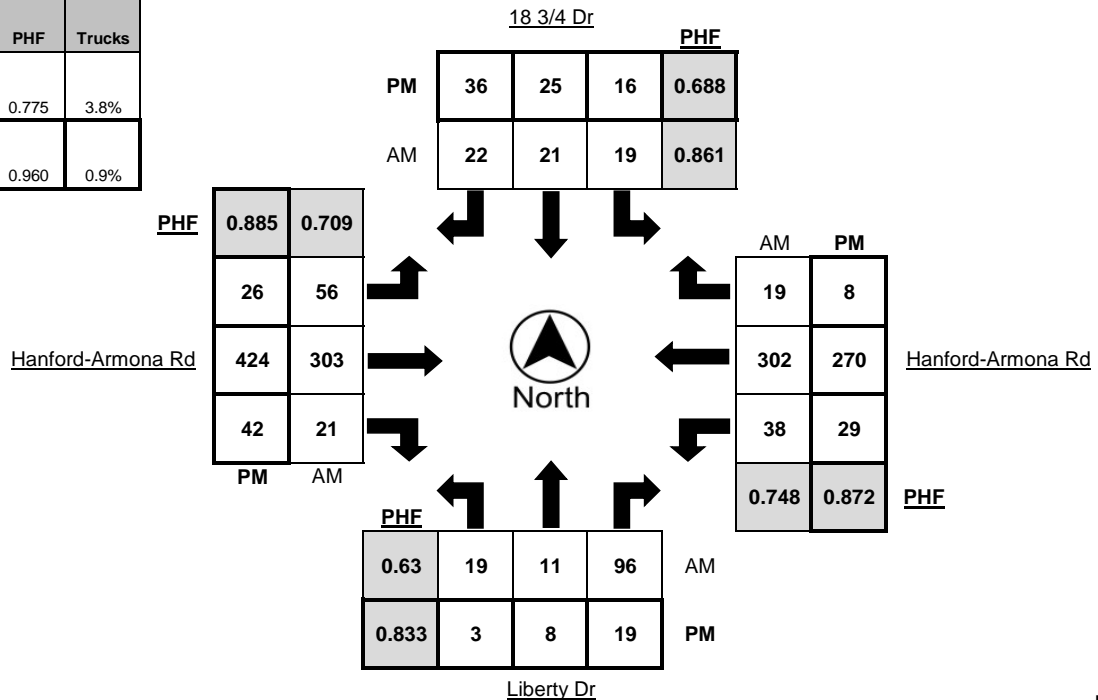
WEATHER Clear

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|-----------|------------|-----------|------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|------------|-----------|-----------|
| Time | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 5 | 4 | 5 | 0 | 2 | 4 | 7 | 0 | 14 | 45 | 1 | 2 | 1 | 68 | 4 | 3 |
| 7:15 AM - 7:30 AM | 9 | 3 | 11 | 4 | 2 | 11 | 5 | 2 | 12 | 53 | 4 | 1 | 6 | 65 | 3 | 1 |
| 7:30 AM - 7:45 AM | 3 | 4 | 33 | 2 | 8 | 3 | 7 | 1 | 18 | 76 | 5 | 2 | 14 | 97 | 9 | 4 |
| 7:45 AM - 8:00 AM | 4 | 2 | 44 | 1 | 4 | 5 | 7 | 2 | 13 | 111 | 10 | 6 | 16 | 80 | 3 | 0 |
| 8:00 AM - 8:15 AM | 3 | 2 | 8 | 1 | 5 | 2 | 3 | 1 | 13 | 63 | 2 | 3 | 2 | 60 | 4 | 4 |
| 8:15 AM - 8:30 AM | 4 | 4 | 6 | 1 | 2 | 2 | 3 | 3 | 4 | 35 | 2 | 2 | 0 | 56 | 4 | 1 |
| 8:30 AM - 8:45 AM | 1 | 3 | 4 | 1 | 1 | 1 | 4 | 2 | 10 | 32 | 0 | 3 | 1 | 26 | 0 | 1 |
| 8:45 AM - 9:00 AM | 1 | 2 | 5 | 0 | 1 | 1 | 2 | 1 | 6 | 36 | 2 | 1 | 0 | 37 | 1 | 0 |
| TOTAL | 30 | 24 | 116 | 10 | 25 | 29 | 38 | 12 | 90 | 451 | 26 | 20 | 40 | 489 | 28 | 14 |

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|-----------|-----------|----------|------------|-----------|-----------|----------|-----------|------------|-----------|----------|-----------|------------|-----------|----------|
| Time | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 1 | 3 | 6 | 0 | 3 | 3 | 7 | 1 | 5 | 120 | 7 | 0 | 2 | 56 | 5 | 2 |
| 4:15 PM - 4:30 PM | 0 | 5 | 5 | 1 | 1 | 3 | 11 | 0 | 6 | 94 | 6 | 1 | 4 | 64 | 4 | 2 |
| 4:30 PM - 4:45 PM | 3 | 3 | 4 | 0 | 3 | 5 | 12 | 0 | 10 | 113 | 10 | 1 | 3 | 59 | 3 | 0 |
| 4:45 PM - 5:00 PM | 2 | 2 | 5 | 1 | 3 | 4 | 4 | 0 | 3 | 121 | 15 | 0 | 4 | 70 | 0 | 0 |
| 5:00 PM - 5:15 PM | 0 | 4 | 5 | 0 | 3 | 5 | 6 | 0 | 6 | 97 | 11 | 2 | 4 | 70 | 3 | 1 |
| 5:15 PM - 5:30 PM | 1 | 0 | 6 | 1 | 4 | 11 | 13 | 0 | 9 | 103 | 8 | 1 | 7 | 60 | 1 | 1 |
| 5:30 PM - 5:45 PM | 0 | 2 | 3 | 0 | 6 | 5 | 13 | 0 | 8 | 103 | 8 | 0 | 14 | 70 | 4 | 1 |
| 5:45 PM - 6:00 PM | 2 | 2 | 7 | 1 | 4 | 7 | 8 | 0 | 9 | 86 | 7 | 0 | 10 | 71 | 5 | 2 |
| TOTAL | 9 | 21 | 41 | 4 | 27 | 43 | 74 | 1 | 56 | 837 | 72 | 5 | 48 | 520 | 25 | 9 |

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------|-------|--------|------------|------|-------|--------|-----------|------|-------|--------|-----------|------|-------|--------|
| PEAK HOUR | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:15 AM - 8:15 AM | 19 | 11 | 96 | 8 | 19 | 21 | 22 | 6 | 56 | 303 | 21 | 12 | 38 | 302 | 19 | 9 |
| 4:45 PM - 5:45 PM | 3 | 8 | 19 | 2 | 16 | 25 | 36 | 0 | 26 | 424 | 42 | 3 | 29 | 270 | 8 | 3 |

| | PHF | Trucks |
|----|-------|--------|
| AM | 0.775 | 3.8% |
| PM | 0.960 | 0.9% |





Metro Traffic Data Inc.
 310 N. Irwin Street - Suite 20
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 800-975-6938 Phone/Fax
 www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
 1300 E. Shaw Ave, Suite 103
 Fresno, CA

LOCATION Liberty Dr @ Hanford-Armona Rd
COUNTY Kings
COLLECTION DATE Thursday, May 30, 2019

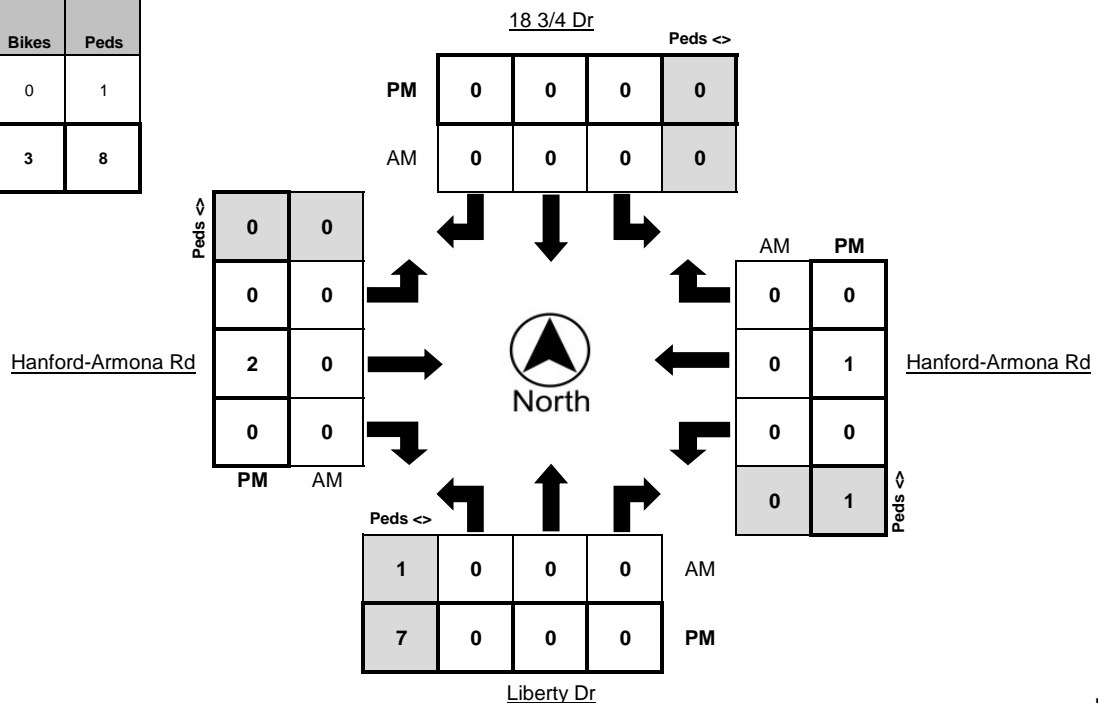
LATITUDE 36.3134
LONGITUDE -119.7943
WEATHER Clear

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:00 AM - 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM - 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM - 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM - 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM - 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM - 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:30 AM - 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM - 9:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 4:00 PM - 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 4:15 PM - 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4:30 PM - 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM - 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM - 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5:15 PM - 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM - 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5:45 PM - 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| TOTAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 3 | 0 | 3 | 0 | 4 | 0 | 0 |

| PEAK HOUR | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:15 AM - 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM - 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 |

| | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0 | 1 |
| PM Peak Total | 3 | 8 |





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Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
 1300 E. Shaw Ave, Suite 103
 Fresno, CA

LOCATION 19th Ave @ Cinnamon Dr

LATITUDE 36.3056

COUNTY Kings

LONGITUDE -119.7988

COLLECTION DATE Thursday, May 30, 2019

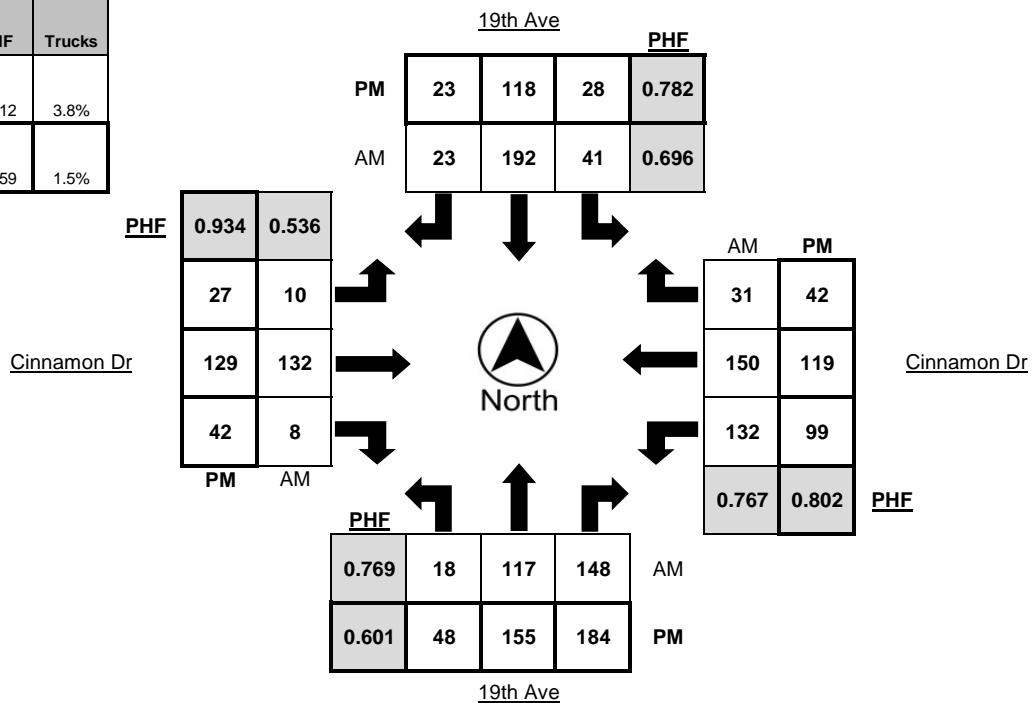
WEATHER Clear

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------------|------------|-----------|------------|------------|-----------|-----------|-----------|------------|----------|----------|------------|------------|-----------|-----------|
| Time | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 1 | 17 | 10 | 3 | 7 | 21 | 3 | 0 | 1 | 24 | 0 | 0 | 5 | 26 | 9 | 0 |
| 7:15 AM - 7:30 AM | 3 | 20 | 19 | 3 | 6 | 23 | 5 | 0 | 2 | 20 | 3 | 1 | 17 | 35 | 7 | 1 |
| 7:30 AM - 7:45 AM | 8 | 25 | 28 | 4 | 10 | 40 | 8 | 3 | 3 | 26 | 0 | 0 | 23 | 30 | 7 | 0 |
| 7:45 AM - 8:00 AM | 1 | 28 | 59 | 4 | 17 | 70 | 5 | 11 | 5 | 60 | 5 | 1 | 53 | 46 | 3 | 0 |
| 8:00 AM - 8:15 AM | 6 | 44 | 42 | 5 | 8 | 59 | 5 | 2 | 0 | 26 | 0 | 0 | 39 | 39 | 14 | 3 |
| 8:15 AM - 8:30 AM | 7 | 15 | 26 | 3 | 5 | 23 | 3 | 0 | 2 | 19 | 0 | 0 | 24 | 17 | 8 | 2 |
| 8:30 AM - 8:45 AM | 0 | 16 | 14 | 3 | 7 | 13 | 2 | 3 | 1 | 21 | 0 | 0 | 15 | 23 | 3 | 2 |
| 8:45 AM - 9:00 AM | 0 | 12 | 26 | 3 | 3 | 15 | 1 | 1 | 0 | 22 | 0 | 1 | 14 | 13 | 3 | 3 |
| TOTAL | 26 | 177 | 224 | 28 | 63 | 264 | 32 | 20 | 14 | 218 | 8 | 3 | 190 | 229 | 54 | 11 |

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------------|------------|-----------|------------|------------|-----------|----------|-----------|------------|-----------|----------|------------|------------|-----------|-----------|
| Time | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 10 | 25 | 20 | 0 | 9 | 19 | 5 | 2 | 6 | 32 | 6 | 0 | 21 | 31 | 9 | 1 |
| 4:15 PM - 4:30 PM | 7 | 27 | 27 | 3 | 7 | 38 | 5 | 0 | 7 | 41 | 3 | 0 | 26 | 27 | 15 | 3 |
| 4:30 PM - 4:45 PM | 6 | 25 | 43 | 3 | 9 | 30 | 2 | 0 | 5 | 36 | 12 | 0 | 25 | 33 | 13 | 2 |
| 4:45 PM - 5:00 PM | 6 | 38 | 38 | 1 | 6 | 30 | 4 | 0 | 6 | 37 | 10 | 1 | 31 | 34 | 16 | 4 |
| 5:00 PM - 5:15 PM | 7 | 28 | 26 | 1 | 6 | 20 | 8 | 1 | 8 | 30 | 8 | 0 | 16 | 31 | 11 | 0 |
| 5:15 PM - 5:30 PM | 16 | 29 | 38 | 1 | 4 | 30 | 7 | 0 | 6 | 33 | 10 | 1 | 23 | 22 | 7 | 1 |
| 5:30 PM - 5:45 PM | 19 | 60 | 82 | 2 | 12 | 38 | 4 | 1 | 7 | 29 | 14 | 1 | 29 | 32 | 8 | 0 |
| 5:45 PM - 6:00 PM | 8 | 20 | 40 | 1 | 4 | 28 | 6 | 2 | 3 | 32 | 7 | 0 | 22 | 26 | 10 | 3 |
| TOTAL | 79 | 252 | 314 | 12 | 57 | 233 | 41 | 6 | 48 | 270 | 70 | 3 | 193 | 236 | 89 | 14 |

| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------|-------|--------|------------|------|-------|--------|-----------|------|-------|--------|-----------|------|-------|--------|
| PEAK HOUR | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:15 AM - 8:15 AM | 18 | 117 | 148 | 16 | 41 | 192 | 23 | 16 | 10 | 132 | 8 | 2 | 132 | 150 | 31 | 4 |
| 4:45 PM - 5:45 PM | 48 | 155 | 184 | 5 | 28 | 118 | 23 | 2 | 27 | 129 | 42 | 3 | 99 | 119 | 42 | 5 |

| | PHF | Trucks |
|----|-------|--------|
| AM | 0.712 | 3.8% |
| PM | 0.759 | 1.5% |





Metro Traffic Data Inc.
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 800-975-6938 Phone/Fax
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Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
 1300 E. Shaw Ave, Suite 103
 Fresno, CA

LOCATION 19th Ave @ Cinnamon Dr
COUNTY Kings
COLLECTION DATE Thursday, May 30, 2019

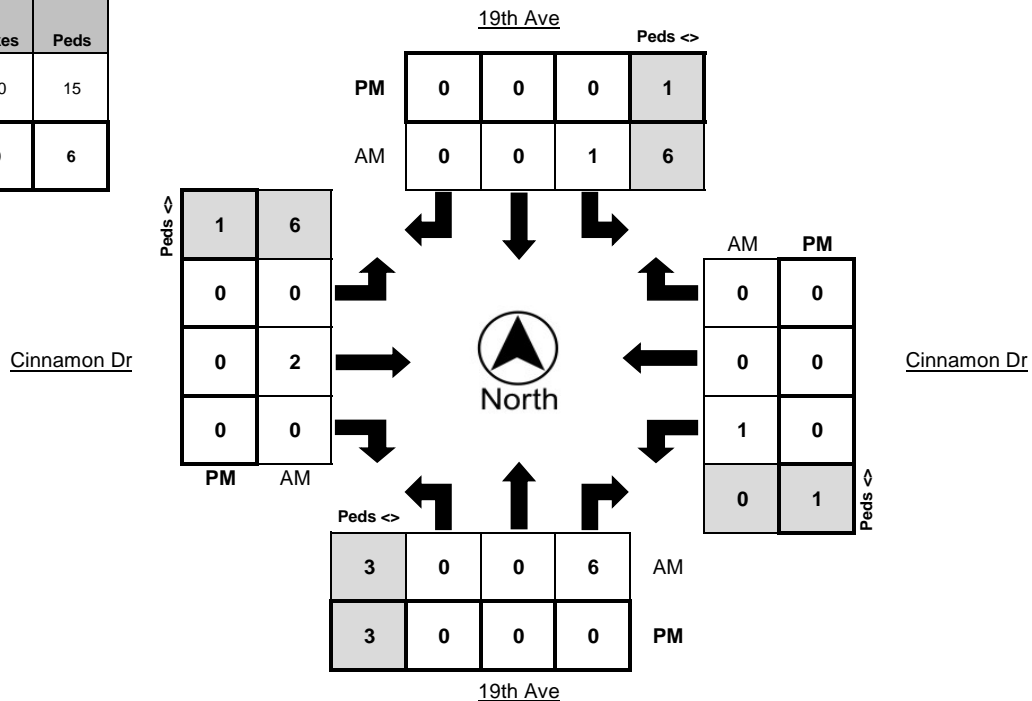
LATITUDE 36.3056
LONGITUDE -119.7988
WEATHER Clear

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:00 AM - 7:15 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 7:15 AM - 7:30 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM - 7:45 AM | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 4 |
| 7:45 AM - 8:00 AM | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 8:00 AM - 8:15 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM - 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM - 8:45 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:45 AM - 9:00 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 1 | 6 | 9 | 1 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 1 | 2 | 1 | 6 |

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 4:00 PM - 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM - 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4:30 PM - 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM - 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM - 5:15 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 5:15 PM - 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM - 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM - 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |

| PEAK HOUR | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:15 AM - 8:15 AM | 0 | 0 | 6 | 6 | 1 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 6 |
| 4:45 PM - 5:45 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |

| | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 10 | 15 |
| PM Peak Total | 0 | 6 |





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Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
 1300 E. Shaw Ave, Suite 103
 Fresno, CA

LOCATION _____ Liberty Dr @ Cinnamon Dr

LATITUDE _____ 36.3056

COUNTY _____ Kings

LONGITUDE _____ -119.7943

COLLECTION DATE _____ Thursday, May 30, 2019

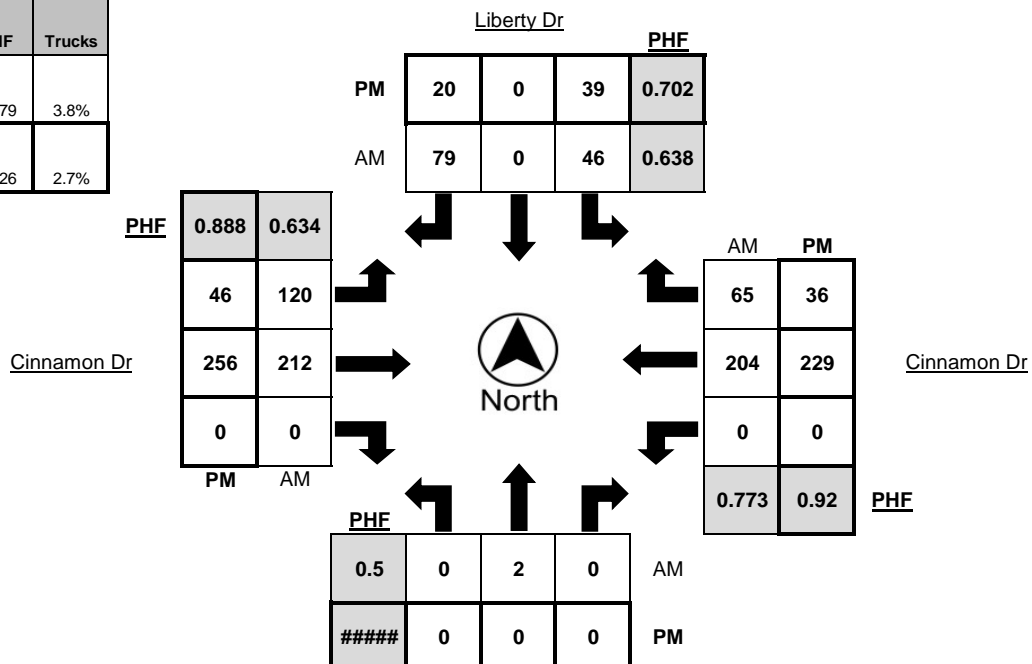
WEATHER _____ Clear

| Time | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|----------|----------|----------|------------|----------|-----------|----------|------------|------------|----------|-----------|-----------|------------|-----------|-----------|
| | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0 | 0 | 0 | 0 | 6 | 0 | 5 | 1 | 9 | 26 | 0 | 0 | 0 | 34 | 5 | 1 |
| 7:15 AM - 7:30 AM | 0 | 0 | 0 | 0 | 11 | 0 | 9 | 1 | 15 | 30 | 0 | 2 | 0 | 44 | 9 | 5 |
| 7:30 AM - 7:45 AM | 0 | 1 | 0 | 0 | 12 | 0 | 25 | 0 | 42 | 58 | 0 | 8 | 0 | 43 | 22 | 5 |
| 7:45 AM - 8:00 AM | 0 | 1 | 0 | 0 | 14 | 0 | 35 | 0 | 58 | 73 | 0 | 3 | 0 | 60 | 27 | 1 |
| 8:00 AM - 8:15 AM | 0 | 0 | 0 | 0 | 9 | 0 | 10 | 0 | 5 | 51 | 0 | 1 | 0 | 57 | 7 | 2 |
| 8:15 AM - 8:30 AM | 0 | 0 | 0 | 0 | 4 | 0 | 6 | 2 | 3 | 37 | 0 | 2 | 0 | 35 | 8 | 1 |
| 8:30 AM - 8:45 AM | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 1 | 2 | 31 | 0 | 1 | 0 | 29 | 5 | 2 |
| 8:45 AM - 9:00 AM | 0 | 0 | 0 | 0 | 10 | 0 | 4 | 0 | 6 | 52 | 0 | 4 | 0 | 19 | 3 | 2 |
| TOTAL | 0 | 2 | 0 | 0 | 73 | 0 | 96 | 5 | 140 | 358 | 0 | 21 | 0 | 321 | 86 | 19 |

| Time | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|----------|----------|----------|------------|----------|-----------|----------|-----------|------------|----------|-----------|-----------|------------|-----------|----------|
| | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0 | 0 | 0 | 0 | 5 | 0 | 11 | 1 | 4 | 59 | 0 | 2 | 0 | 48 | 5 | 1 |
| 4:15 PM - 4:30 PM | 0 | 0 | 0 | 0 | 15 | 0 | 5 | 1 | 3 | 62 | 0 | 3 | 0 | 66 | 7 | 1 |
| 4:30 PM - 4:45 PM | 0 | 0 | 0 | 0 | 12 | 0 | 4 | 2 | 10 | 65 | 0 | 6 | 0 | 70 | 6 | 1 |
| 4:45 PM - 5:00 PM | 0 | 0 | 0 | 0 | 10 | 0 | 4 | 0 | 7 | 70 | 0 | 3 | 0 | 64 | 7 | 3 |
| 5:00 PM - 5:15 PM | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 2 | 4 | 61 | 0 | 2 | 0 | 48 | 13 | 2 |
| 5:15 PM - 5:30 PM | 0 | 0 | 0 | 0 | 16 | 0 | 5 | 0 | 12 | 63 | 0 | 1 | 0 | 52 | 9 | 0 |
| 5:30 PM - 5:45 PM | 0 | 0 | 0 | 0 | 5 | 0 | 7 | 0 | 23 | 62 | 0 | 3 | 0 | 65 | 7 | 1 |
| 5:45 PM - 6:00 PM | 0 | 0 | 0 | 0 | 12 | 0 | 4 | 0 | 24 | 49 | 0 | 6 | 0 | 52 | 14 | 0 |
| TOTAL | 0 | 0 | 0 | 0 | 83 | 0 | 44 | 6 | 87 | 491 | 0 | 26 | 0 | 465 | 68 | 9 |

| PEAK HOUR | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
|-------------------|------------|------|-------|--------|------------|------|-------|--------|-----------|------|-------|--------|-----------|------|-------|--------|
| | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks | Left | Thru | Right | Trucks |
| 7:15 AM - 8:15 AM | 0 | 2 | 0 | 0 | 46 | 0 | 79 | 1 | 120 | 212 | 0 | 14 | 0 | 204 | 65 | 13 |
| 4:45 PM - 5:45 PM | 0 | 0 | 0 | 0 | 39 | 0 | 20 | 2 | 46 | 256 | 0 | 9 | 0 | 229 | 36 | 6 |

| | PHF | Trucks |
|----|-------|--------|
| AM | 0.679 | 3.8% |
| PM | 0.926 | 2.7% |





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LOCATION Liberty Dr @ Cinnamon Dr
COUNTY Kings
COLLECTION DATE Thursday, May 30, 2019

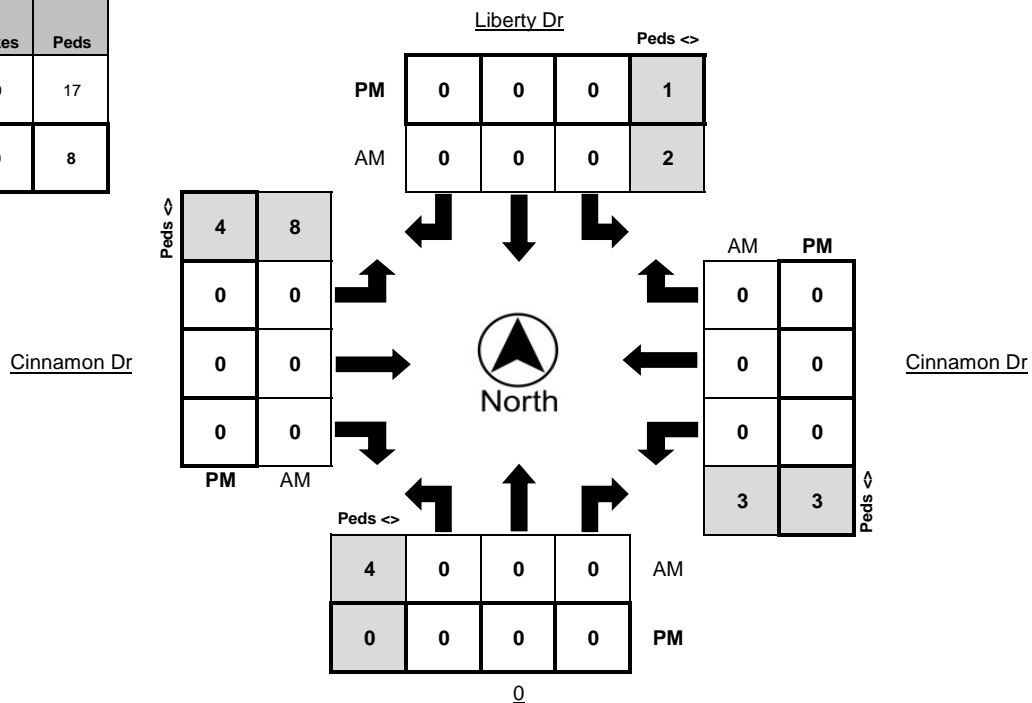
LATITUDE 36.3056
LONGITUDE -119.7943
WEATHER Clear

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:00 AM - 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM - 7:30 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 7:30 AM - 7:45 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 7:45 AM - 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 8:00 AM - 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 8:15 AM - 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 8:30 AM - 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 8:45 AM - 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 13 |

| Time | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|----------|----------|------------|------------------|----------|----------|------------|-----------------|----------|----------|------------|-----------------|----------|----------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 4:00 PM - 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4:15 PM - 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4:30 PM - 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 4:45 PM - 5:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM - 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5:15 PM - 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:30 PM - 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 |
| 5:45 PM - 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| TOTAL | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 11 |

| PEAK HOUR | Northbound Bikes | | | N.Leg Peds | Southbound Bikes | | | S.Leg Peds | Eastbound Bikes | | | E.Leg Peds | Westbound Bikes | | | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
| | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| 7:15 AM - 8:15 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 8 |
| 4:45 PM - 5:45 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 |

| | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0 | 17 |
| PM Peak Total | 0 | 8 |



Appendix C: Traffic Modeling



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Appendix D: Methodology



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Levels of Service Methodology

The description and procedures for calculating capacity and level of service (LOS) are found in the Transportation Research Board, Highway Capacity Manual (HCM). The HCM 2010 represents the 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, comfort and convenience.

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

Urban Streets (Automobile Mode)

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 taxicabs, buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

Flow Characteristics

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control.

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/access point density, spacing between signalized intersections, existence of parking, level of pedestrian and bicyclist 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 controls (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.



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Levels of Service (automobile Mode)

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service (LOS). 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.

LOS A describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal. Travel speeds exceed 85 of the base free flow speed (FFS).

LOS B describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67 and 85 percent of the base FFS.

LOS C describes stable operations. The ability to maneuver and change lanes in midblock location may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50 and 67 percent of the base FFS.

LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volumes, inappropriate signal timing, at the boundary intersections. The travel speed is between 40 and 50 percent of the base FFS.

LOS E is characterized unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30 and 40 percent of the base FFS.

LOS F is characterized by street flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30 percent or less of the base FFS.

Table A-1: Urban Street Levels of Service (Automobile Mode)

| Travel Speed as a Percentage of Base Free-Flow Speed (%) | LOS by Critical Volume-to-Capacity Ratio ^a | |
|--|---|------|
| | ≤1.0 | >1.0 |
| >85 | A | F |
| >67 to 85 | B | F |
| >50 to 67 | C | F |
| >40 to 50 | D | F |
| >30 to 40 | E | F |
| ≤30 | F | F |

a = The Critical volume-to-capacity ratio is based on consideration of the through movement-to-capacity ratio at each boundary intersection in the subject direction of travel. The critical volume-to-capacity ratio is the largest ratio of those considered.

Source: Highway Capacity Manual 2010, Exhibit 16-4. Urban Street LOS Criteria (Automobile Mode)

Intersection Levels of Service

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.

Signalized Intersections – Performance Measures

For signalized intersections the performance measures include automobile volume-to-capacity ratio, automobile delay, queue storage length, ratio of pedestrian delay, pedestrian circulation area, pedestrian perception score, bicycle delay, and bicycle perception score. LOS is also considered a performance measure. For the automobile mode 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 LOS designation is given to the weighted average control delay to better describe the level of operation. A description of LOS for signalized intersections is found in Table A-2.

Table A-2: Signalized Intersection Level of Service Description (Automobile Mode)

| Level of Service | Description | Average Control Delay (seconds per vehicle) |
|------------------|--|---|
| A | Operations with a control delay of 10 seconds/vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when volume-to-capacity ratio is and either progression is exceptionally favorable or the cycle length is very short. If it's due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping. | ≤10 |
| B | Operations with control delay between 10.1 to 20.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A. | >10.0 to 20.0 |
| C | Operations with average control delays between 20.1 to 35.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping. | >20 to 35 |
| D | Operations with control delay between 35.1 to 55.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop, and individual cycle failures are noticeable. | >35 to 55 |
| E | Operations with control delay between 55.1 to 80.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent. | >55 to 80 |
| F | Operations with unacceptable control delay exceeding 80.0 seconds/vehicle and a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue. | >80 |

Source: Highway Capacity Manual 2010

Unsignalized Intersections

The HCM 2010 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.

All-Way Stop Controlled Intersections

All-way stop controlled intersections is a form of traffic controls in which all approaches to an intersection are required to stop. Similar to signalized intersections, at all-way stop controlled intersections 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 as a whole. In other words the delay measured for all-way stop controlled intersections is a measure of the average delay for all vehicles passing through the intersection during the peak hour. A LOS designation is given to the weighted average control delay to better describe the level of operation.

Two-Way Stop Controlled Intersections

Two-way stop controlled (TWSC) 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 TWSC 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 LOS for TWSC intersection is determined by the computed or measured control delay for each minor movement. LOS is not defined for the intersection as a whole for three main reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at the typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay from all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. Table A-3 provides a description of LOS at unsignalized intersections.

Table A-3: Unsignalized Intersection Level of Service Description (Automobile Mode)

| Control Delay (seconds per vehicle) | LOS by Volume-to-Capacity Ratio | |
|-------------------------------------|---------------------------------|-------------|
| | $v/c \leq 1.0$ | $v/c > 1.0$ |
| ≤ 10 | A | F |
| >10 to 15 | B | F |
| >15 to 25 | C | F |
| >25 to 35 | D | F |
| >35 to 50 | E | F |
| >50 | F | F |

Source: HCM 2010 Exhibit 19-1.

Appendix E: Existing Traffic Conditions








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Intersection

Int Delay, s/veh 3.4

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|--------------------------|---|------|---|---|---|--|
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 207 | 45 | 98 | 249 | 33 | 120 |
| Future Vol, veh/h | 207 | 45 | 98 | 249 | 33 | 120 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 241 | 52 | 114 | 290 | 38 | 140 |









| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 293 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 1263 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1263 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.3 | 11.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|------|-----|
| Capacity (veh/h) | 431 | 769 | - | - | 1263 | - |
| HCM Lane V/C Ratio | 0.089 | 0.181 | - | - | 0.09 | - |
| HCM Control Delay (s) | 14.2 | 10.7 | - | - | 8.1 | - |
| HCM Lane LOS | B | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0.7 | - | - | 0.3 | - |

HCM 6th TWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Existing AM Peak
08/08/2019









| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|------|---|---|------|---|---|------|---|---|------|
| Int Delay, s/veh | 4.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 56 | 303 | 21 | 38 | 302 | 19 | 19 | 11 | 96 | 19 | 21 | 22 |
| Future Vol, veh/h | 56 | 303 | 21 | 38 | 302 | 19 | 19 | 11 | 96 | 19 | 21 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 72 | 388 | 27 | 49 | 387 | 24 | 24 | 14 | 123 | 24 | 27 | 28 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 411 | 0 | 0 | 416 | 0 | 0 | 1072 | 1056 | 403 | 1111 | 1057 | 399 |
| Stage 1 | - | - | - | - | - | - | 547 | 547 | - | 497 | 497 | - |
| Stage 2 | - | - | - | - | - | - | 525 | 509 | - | 614 | 560 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1142 | - | - | 1138 | - | - | 197 | 224 | 645 | 186 | 224 | 649 |
| Stage 1 | - | - | - | - | - | - | 519 | 516 | - | 553 | 543 | - |
| Stage 2 | - | - | - | - | - | - | 534 | 536 | - | 477 | 509 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1142 | - | - | 1137 | - | - | 156 | 201 | 644 | 131 | 201 | 649 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 156 | 201 | - | 131 | 201 | - |
| Stage 1 | - | - | - | - | - | - | 486 | 483 | - | 518 | 520 | - |
| Stage 2 | - | - | - | - | - | - | 463 | 513 | - | 351 | 476 | - |

| Approach | EB | WB | NB | SB |
|----------------------|-----|-----|----|------|
| HCM Control Delay, s | 1.2 | 0.9 | 17 | 25.1 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h) | 156 | 525 | 1142 | - | - | 1137 | - | - | 131 | 311 |
| HCM Lane V/C Ratio | 0.156 | 0.261 | 0.063 | - | - | 0.043 | - | - | 0.186 | 0.177 |
| HCM Control Delay (s) | 32.3 | 14.3 | 8.4 | - | - | 8.3 | - | - | 38.7 | 19.1 |
| HCM Lane LOS | D | B | A | - | - | A | - | - | E | C |
| HCM 95th %tile Q(veh) | 0.5 | 1 | 0.2 | - | - | 0.1 | - | - | 0.7 | 0.6 |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 22.4 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 10 | 132 | 8 | 132 | 150 | 31 | 18 | 117 | 148 | 41 | 192 | 23 |
| Future Vol, veh/h | 10 | 132 | 8 | 132 | 150 | 31 | 18 | 117 | 148 | 41 | 192 | 23 |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 14 | 186 | 11 | 186 | 211 | 44 | 25 | 165 | 208 | 58 | 270 | 32 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 17.6 | 18.8 | 28.9 | 22.6 |
| HCM LOS | C | C | D | C |






| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 44% | 0% | 94% | 0% | 83% | 0% | 89% |
| Vol Right, % | 0% | 56% | 0% | 6% | 0% | 17% | 0% | 11% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 18 | 265 | 10 | 140 | 132 | 181 | 41 | 215 |
| LT Vol | 18 | 0 | 10 | 0 | 132 | 0 | 41 | 0 |
| Through Vol | 0 | 117 | 0 | 132 | 0 | 150 | 0 | 192 |
| RT Vol | 0 | 148 | 0 | 8 | 0 | 31 | 0 | 23 |
| Lane Flow Rate | 25 | 373 | 14 | 197 | 186 | 255 | 58 | 303 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.059 | 0.76 | 0.035 | 0.458 | 0.435 | 0.552 | 0.135 | 0.66 |
| Departure Headway (Hd) | 8.345 | 7.455 | 8.928 | 8.368 | 8.428 | 7.789 | 8.434 | 7.841 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 430 | 489 | 402 | 432 | 429 | 464 | 427 | 463 |
| Service Time | 6.074 | 5.155 | 6.659 | 6.098 | 6.145 | 5.505 | 6.152 | 5.558 |
| HCM Lane V/C Ratio | 0.058 | 0.763 | 0.035 | 0.456 | 0.434 | 0.55 | 0.136 | 0.654 |
| HCM Control Delay | 11.6 | 30.1 | 12 | 18 | 17.5 | 19.7 | 12.5 | 24.5 |
| HCM Lane LOS | B | D | B | C | C | C | B | C |
| HCM 95th-tile Q | 0.2 | 6.5 | 0.1 | 2.3 | 2.2 | 3.3 | 0.5 | 4.7 |

HCM 6th TWSC
6: Cinnamon Drive & Liberty Drive

Existing AM Peak
08/08/2019

Intersection

Int Delay, s/veh 3.8

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|---|---|---|------|---|---|
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 120 | 212 | 204 | 65 | 46 | 79 |
| Future Vol, veh/h | 120 | 212 | 204 | 65 | 46 | 79 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 2 | 3 | 8 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 176 | 312 | 300 | 96 | 68 | 116 |






| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|-----------------|
| Conflicting Flow All | 398 | 0 | 0 1017 358 |
| Stage 1 | - | - | - - 350 - |
| Stage 2 | - | - | - - 667 - |
| Critical Hdwy | 4.13 | - | - - 6.43 6.23 |
| Critical Hdwy Stg 1 | - | - | - - 5.43 - |
| Critical Hdwy Stg 2 | - | - | - - 5.43 - |
| Follow-up Hdwy | 2.227 | - | - - 3.527 3.327 |
| Pot Cap-1 Maneuver | 1155 | - | - - 262 684 |
| Stage 1 | - | - | - - 711 - |
| Stage 2 | - | - | - - 508 - |
| Platoon blocked, % | | - | - - |
| Mov Cap-1 Maneuver | 1153 | - | - - 221 677 |
| Mov Cap-2 Maneuver | - | - | - - 351 - |
| Stage 1 | - | - | - - 601 - |
| Stage 2 | - | - | - - 507 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 3.1 | 0 | 13.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1153 | - | - | - | 351 | 677 |
| HCM Lane V/C Ratio | 0.153 | - | - | - | 0.193 | 0.172 |
| HCM Control Delay (s) | 8.7 | - | - | - | 17.7 | 11.4 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.5 | - | - | - | 0.7 | 0.6 |









HCM 6th TWSC
1: 19th Avenue & Hanford-Armona Road

Existing PM Peak
08/08/2019









| Intersection | | | | | | |
|--------------------------|---|-------|---|---|---|--|
| Int Delay, s/veh | 3.6 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 339 | 42 | 102 | 178 | 36 | 138 |
| Future Vol, veh/h | 339 | 42 | 102 | 178 | 36 | 138 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 357 | 44 | 107 | 187 | 38 | 145 |
| | | | | | | |
| Major/Minor | Major1 | | Major2 | | Minor1 | |
| Conflicting Flow All | 0 | 0 | 402 | 0 | 781 | 380 |
| Stage 1 | - | - | - | - | 380 | - |
| Stage 2 | - | - | - | - | 401 | - |
| Critical Hdwy | - | - | 4.13 | - | 6.43 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | - | - | 2.227 | - | 3.527 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 1151 | - | 362 | 665 |
| Stage 1 | - | - | - | - | 689 | - |
| Stage 2 | - | - | - | - | 674 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1150 | - | 328 | 664 |
| Mov Cap-2 Maneuver | - | - | - | - | 444 | - |
| Stage 1 | - | - | - | - | 688 | - |
| Stage 2 | - | - | - | - | 611 | - |
| | | | | | | |
| | | | | | | |
| Approach | EB | | WB | | NB | |
| HCM Control Delay, s | 0 | | 3.1 | | 12.3 | |
| HCM LOS | B | | | | | |
| | | | | | | |
| | | | | | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
| Capacity (veh/h) | 444 | 664 | - | - | 1150 | - |
| HCM Lane V/C Ratio | 0.085 | 0.219 | - | - | 0.093 | - |
| HCM Control Delay (s) | 13.9 | 11.9 | - | - | 8.5 | - |
| HCM Lane LOS | B | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0.8 | - | - | 0.3 | - |

HCM 6th TWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Existing PM Peak
08/08/2019

| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 2.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 26 | 424 | 42 | 29 | 270 | 8 | 3 | 8 | 19 | 16 | 25 | 36 |
| Future Vol, veh/h | 26 | 424 | 42 | 29 | 270 | 8 | 3 | 8 | 19 | 16 | 25 | 36 |
| Conflicting Peds, #/hr | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 27 | 442 | 44 | 30 | 281 | 8 | 3 | 8 | 20 | 17 | 26 | 38 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 289 | 0 | 0 | 493 | 0 | 0 | 902 | 874 | 472 | 878 | 892 | 285 |
| Stage 1 | - | - | - | - | - | - | 525 | 525 | - | 345 | 345 | - |
| Stage 2 | - | - | - | - | - | - | 377 | 349 | - | 533 | 547 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1267 | - | - | 1065 | - | - | 258 | 287 | 590 | 267 | 280 | 752 |
| Stage 1 | - | - | - | - | - | - | 534 | 528 | - | 668 | 634 | - |
| Stage 2 | - | - | - | - | - | - | 642 | 632 | - | 529 | 516 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1267 | - | - | 1058 | - | - | 217 | 271 | 586 | 242 | 265 | 752 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 217 | 271 | - | 242 | 265 | - |
| Stage 1 | - | - | - | - | - | - | 519 | 513 | - | 654 | 616 | - |
| Stage 2 | - | - | - | - | - | - | 568 | 614 | - | 492 | 502 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 0.4 | | | 0.8 | | | 14.6 | | | 16.1 | | |
| HCM LOS | | | | | | | B | | | C | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 217 | 436 | 1267 | - | - | 1058 | - | - | 242 | 429 | | |
| HCM Lane V/C Ratio | 0.014 | 0.065 | 0.021 | - | - | 0.029 | - | - | 0.069 | 0.148 | | |
| HCM Control Delay (s) | 21.8 | 13.8 | 7.9 | - | - | 8.5 | - | - | 21 | 14.8 | | |
| HCM Lane LOS | C | B | A | - | - | A | - | - | C | B | | |
| HCM 95th %tile Q(veh) | 0 | 0.2 | 0.1 | - | - | 0.1 | - | - | 0.2 | 0.5 | | |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 22.1 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 27 | 129 | 42 | 99 | 119 | 42 | 48 | 155 | 184 | 28 | 118 | 23 |
| Future Vol, veh/h | 27 | 129 | 42 | 99 | 119 | 42 | 48 | 155 | 184 | 28 | 118 | 23 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 36 | 170 | 55 | 130 | 157 | 55 | 63 | 204 | 242 | 37 | 155 | 30 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 16.5 | 15.4 | 32.8 | 14.7 |
| HCM LOS | C | C | D | B |






| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 46% | 0% | 75% | 0% | 74% | 0% | 84% |
| Vol Right, % | 0% | 54% | 0% | 25% | 0% | 26% | 0% | 16% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 48 | 339 | 27 | 171 | 99 | 161 | 28 | 141 |
| LT Vol | 48 | 0 | 27 | 0 | 99 | 0 | 28 | 0 |
| Through Vol | 0 | 155 | 0 | 129 | 0 | 119 | 0 | 118 |
| RT Vol | 0 | 184 | 0 | 42 | 0 | 42 | 0 | 23 |
| Lane Flow Rate | 63 | 446 | 36 | 225 | 130 | 212 | 37 | 186 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.135 | 0.84 | 0.082 | 0.476 | 0.295 | 0.438 | 0.085 | 0.394 |
| Departure Headway (Hd) | 7.678 | 6.778 | 8.306 | 7.614 | 8.149 | 7.448 | 8.271 | 7.638 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 466 | 531 | 430 | 473 | 440 | 481 | 432 | 469 |
| Service Time | 5.441 | 4.54 | 6.082 | 5.389 | 5.924 | 5.222 | 6.05 | 5.416 |
| HCM Lane V/C Ratio | 0.135 | 0.84 | 0.084 | 0.476 | 0.295 | 0.441 | 0.086 | 0.397 |
| HCM Control Delay | 11.6 | 35.8 | 11.8 | 17.2 | 14.3 | 16 | 11.8 | 15.3 |
| HCM Lane LOS | B | E | B | C | B | C | B | C |
| HCM 95th-tile Q | 0.5 | 8.6 | 0.3 | 2.5 | 1.2 | 2.2 | 0.3 | 1.9 |

HCM 6th TWSC
6: Cinnamon Drive & Liberty Drive

Existing PM Peak
08/08/2019

Intersection

Int Delay, s/veh 1.7

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|---|---|---|------|---|---|
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 46 | 256 | 229 | 36 | 39 | 20 |
| Future Vol, veh/h | 46 | 256 | 229 | 36 | 39 | 20 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 3 | 4 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 49 | 275 | 246 | 39 | 42 | 22 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 286 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.13 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 2.227 | - | - |
| Pot Cap-1 Maneuver | 1270 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1269 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.2 | 0 | 11.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1269 | - | - | - | 517 | 761 |
| HCM Lane V/C Ratio | 0.039 | - | - | - | 0.081 | 0.028 |
| HCM Control Delay (s) | 8 | - | - | - | 12.6 | 9.9 |
| HCM Lane LOS | A | - | - | - | B | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.3 | 0.1 |

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB |
|-----------------------|------|-----|-----|-----|
| Directions Served | TR | L | L | R |
| Maximum Queue (ft) | 22 | 76 | 52 | 98 |
| Average Queue (ft) | 1 | 25 | 20 | 43 |
| 95th Queue (ft) | 7 | 61 | 46 | 71 |
| Link Distance (ft) | 1523 | | | 924 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 250 | 245 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|----|------|
| Directions Served | L | L | L | TR | L | TR |
| Maximum Queue (ft) | 55 | 54 | 60 | 75 | 31 | 54 |
| Average Queue (ft) | 12 | 11 | 15 | 37 | 12 | 26 |
| 95th Queue (ft) | 38 | 38 | 42 | 59 | 34 | 52 |
| Link Distance (ft) | | | | 2740 | | 2636 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 135 | 190 | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | 1 |
| Queuing Penalty (veh) | | | | | | 0 |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|------|-----|-----|-----|-----|
| Directions Served | L | TR | L | TR | L | TR | L | TR |
| Maximum Queue (ft) | 31 | 105 | 79 | 77 | 31 | 198 | 68 | 117 |
| Average Queue (ft) | 10 | 45 | 41 | 45 | 15 | 69 | 28 | 61 |
| 95th Queue (ft) | 33 | 74 | 65 | 68 | 40 | 126 | 53 | 99 |
| Link Distance (ft) | | 2548 | | 1262 | | 995 | | 384 |
| Upstream Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 100 | | 100 | |
| Storage Blk Time (%) | | 0 | | | | 3 | | 1 |
| Queuing Penalty (veh) | | 0 | | | | 0 | | 0 |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | WB | SB | SB |
|-----------------------|-----|------|-----|------|
| Directions Served | L | TR | L | R |
| Maximum Queue (ft) | 93 | 31 | 51 | 64 |
| Average Queue (ft) | 24 | 2 | 25 | 31 |
| 95th Queue (ft) | 60 | 14 | 45 | 46 |
| Link Distance (ft) | | 1121 | | 2740 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 100 | | 115 | |
| Storage Blk Time (%) | 0 | | | |
| Queuing Penalty (veh) | 0 | | | |

Zone Summary

Zone wide Queuing Penalty: 1

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | WB | NB | NB |
|-----------------------|-----|-----|-----|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 54 | 52 | 75 |
| Average Queue (ft) | 18 | 19 | 38 |
| 95th Queue (ft) | 47 | 47 | 64 |
| Link Distance (ft) | | | 924 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 250 | 245 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|----|------|
| Directions Served | L | L | L | TR | L | TR |
| Maximum Queue (ft) | 31 | 31 | 25 | 50 | 31 | 90 |
| Average Queue (ft) | 1 | 10 | 1 | 18 | 7 | 27 |
| 95th Queue (ft) | 10 | 32 | 8 | 43 | 26 | 61 |
| Link Distance (ft) | | | | 2740 | | 2636 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 135 | 190 | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | 1 |
| Queuing Penalty (veh) | | | | | | 0 |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|------|-----|-----|-----|-----|
| Directions Served | L | TR | L | TR | L | TR | L | TR |
| Maximum Queue (ft) | 31 | 56 | 79 | 97 | 55 | 115 | 50 | 67 |
| Average Queue (ft) | 16 | 40 | 46 | 43 | 25 | 71 | 21 | 43 |
| 95th Queue (ft) | 41 | 66 | 66 | 69 | 53 | 106 | 46 | 62 |
| Link Distance (ft) | | 2548 | | 1262 | | 995 | | 384 |
| Upstream Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 100 | | 100 | |
| Storage Blk Time (%) | | | | 0 | | 1 | | |
| Queuing Penalty (veh) | | | | 0 | | 0 | | |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | SB | SB |
|-----------------------|-----|------|----|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 31 | 53 | 29 |
| Average Queue (ft) | 8 | 22 | 12 |
| 95th Queue (ft) | 30 | 47 | 34 |
| Link Distance (ft) | | 2740 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 100 | 115 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Zone Summary

| |
|------------------------------|
| Zone wide Queuing Penalty: 1 |
|------------------------------|






Appendix F: Existing plus Project Traffic Conditions



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516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

Page | F

| Intersection | | | | | | |
|--------------------------|---|------|---|---|---|--|
| Int Delay, s/veh | 4.5 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 207 | 48 | 101 | 249 | 55 | 185 |
| Future Vol, veh/h | 207 | 48 | 101 | 249 | 55 | 185 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 241 | 56 | 117 | 290 | 64 | 215 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 297 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 1259 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1259 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |









| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.4 | 12.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 427 | 767 | - | - | 1259 | - |
| HCM Lane V/C Ratio | 0.15 | 0.28 | - | - | 0.093 | - |
| HCM Control Delay (s) | 14.9 | 11.5 | - | - | 8.2 | - |
| HCM Lane LOS | B | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.5 | 1.1 | - | - | 0.3 | - |

HCM 6th TWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Existing plus Project AM Peak

08/08/2019

| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|------|---|---|------|---|---|------|---|---|------|
| Int Delay, s/veh | 5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 56 | 368 | 21 | 38 | 305 | 19 | 19 | 11 | 96 | 19 | 21 | 22 |
| Future Vol, veh/h | 56 | 368 | 21 | 38 | 305 | 19 | 19 | 11 | 96 | 19 | 21 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 72 | 472 | 27 | 49 | 391 | 24 | 24 | 14 | 123 | 24 | 27 | 28 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 415 | 0 | 0 | 500 | 0 | 0 | 1160 | 1144 | 487 | 1199 | 1145 | 403 |
| Stage 1 | - | - | - | - | - | - | 631 | 631 | - | 501 | 501 | - |
| Stage 2 | - | - | - | - | - | - | 529 | 513 | - | 698 | 644 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1139 | - | - | 1059 | - | - | 172 | 199 | 579 | 161 | 199 | 645 |
| Stage 1 | - | - | - | - | - | - | 467 | 473 | - | 550 | 541 | - |
| Stage 2 | - | - | - | - | - | - | 531 | 534 | - | 429 | 466 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1139 | - | - | 1058 | - | - | 134 | 178 | 578 | 109 | 178 | 645 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 134 | 178 | - | 109 | 178 | - |
| Stage 1 | - | - | - | - | - | - | 437 | 443 | - | 515 | 516 | - |
| Stage 2 | - | - | - | - | - | - | 459 | 509 | - | 306 | 436 | - |




| Approach | EB | WB | NB | SB |
|----------------------|-----|-----|------|------|
| HCM Control Delay, s | 1.1 | 0.9 | 19.1 | 28.9 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h) | 134 | 470 | 1139 | - | - | 1058 | - | - | 109 | 283 |
| HCM Lane V/C Ratio | 0.182 | 0.292 | 0.063 | - | - | 0.046 | - | - | 0.223 | 0.195 |
| HCM Control Delay (s) | 37.7 | 15.8 | 8.4 | - | - | 8.6 | - | - | 47.3 | 20.8 |
| HCM Lane LOS | E | C | A | - | - | A | - | - | E | C |
| HCM 95th %tile Q(veh) | 0.6 | 1.2 | 0.2 | - | - | 0.1 | - | - | 0.8 | 0.7 |

HCM 6th TWSC
3: 19th Avenue & Project Driveway 1

Existing plus Project AM Peak




08/08/2019

| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 2.3 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 13 | 0 | 142 | 238 | 252 | 86 |
| Future Vol, veh/h | 13 | 0 | 142 | 238 | 252 | 86 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 18 | 0 | 200 | 335 | 355 | 121 |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 1151 | - | 476 | 0 | - | 0 |
| Stage 1 | 416 | - | - | - | - | - |
| Stage 2 | 735 | - | - | - | - | - |
| Critical Hdwy | 6.43 | - | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | - | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 218 | 0 | 1081 | - | - | - |
| Stage 1 | 664 | 0 | - | - | - | - |
| Stage 2 | 473 | 0 | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 169 | - | 1081 | - | - | - |
| Mov Cap-2 Maneuver | 169 | - | - | - | - | - |
| Stage 1 | 513 | - | - | - | - | - |
| Stage 2 | 473 | - | - | - | - | - |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 28.9 | 3.4 | | 0 | | |
| HCM LOS | D | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1081 | - | 169 | - | - | |
| HCM Lane V/C Ratio | 0.185 | - | 0.108 | - | - | |
| HCM Control Delay (s) | 9.1 | 0 | 28.9 | - | - | |
| HCM Lane LOS | A | A | D | - | - | |
| HCM 95th %tile Q(veh) | 0.7 | - | 0.4 | - | - | |









HCM 6th TWSC
4: 19th Avenue & Project Driveway 2

Existing plus Project AM Peak

08/08/2019






| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 6.5 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 82 | 121 | 25 | 299 | 254 | 0 |
| Future Vol, veh/h | 82 | 121 | 25 | 299 | 254 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 115 | 170 | 35 | 421 | 358 | 0 |
| | | | | | | |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 849 | 358 | 358 | 0 | - | 0 |
| Stage 1 | 358 | - | - | - | - | - |
| Stage 2 | 491 | - | - | - | - | - |
| Critical Hdwy | 6.43 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | 3.327 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 330 | 684 | 1195 | - | - | - |
| Stage 1 | 705 | - | - | - | - | - |
| Stage 2 | 613 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 317 | 684 | 1195 | - | - | - |
| Mov Cap-2 Maneuver | 317 | - | - | - | - | - |
| Stage 1 | 678 | - | - | - | - | - |
| Stage 2 | 613 | - | - | - | - | - |
| | | | | | | |
| | | | | | | |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 24.2 | 0.6 | | 0 | | |
| HCM LOS | C | | | | | |
| | | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1195 | - | 466 | - | - | |
| HCM Lane V/C Ratio | 0.029 | - | 0.614 | - | - | |
| HCM Control Delay (s) | 8.1 | 0 | 24.2 | - | - | |
| HCM Lane LOS | A | A | C | - | - | |
| HCM 95th %tile Q(veh) | 0.1 | - | 4 | - | - | |






| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 50.3 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 108 | 132 | 8 | 132 | 150 | 97 | 18 | 120 | 148 | 80 | 252 | 45 |
| Future Vol, veh/h | 108 | 132 | 8 | 132 | 150 | 97 | 18 | 120 | 148 | 80 | 252 | 45 |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 152 | 186 | 11 | 186 | 211 | 137 | 25 | 169 | 208 | 113 | 355 | 63 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|----|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 21.7 | 38 | 57.4 | 76.2 |
| HCM LOS | C | E | F | F |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|--------|-------|--------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 45% | 0% | 94% | 0% | 61% | 0% | 85% |
| Vol Right, % | 0% | 55% | 0% | 6% | 0% | 39% | 0% | 15% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 18 | 268 | 108 | 140 | 132 | 247 | 80 | 297 |
| LT Vol | 18 | 0 | 108 | 0 | 132 | 0 | 80 | 0 |
| Through Vol | 0 | 120 | 0 | 132 | 0 | 150 | 0 | 252 |
| RT Vol | 0 | 148 | 0 | 8 | 0 | 97 | 0 | 45 |
| Lane Flow Rate | 25 | 377 | 152 | 197 | 186 | 348 | 113 | 418 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.069 | 0.934 | 0.424 | 0.52 | 0.496 | 0.853 | 0.305 | 1.059 |
| Departure Headway (Hd) | 10.003 | 9.074 | 10.397 | 9.828 | 9.938 | 9.126 | 9.745 | 9.111 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 360 | 404 | 348 | 369 | 364 | 400 | 372 | 402 |
| Service Time | 7.703 | 6.774 | 8.097 | 7.528 | 7.638 | 6.826 | 7.414 | 6.78 |
| HCM Lane V/C Ratio | 0.069 | 0.933 | 0.437 | 0.534 | 0.511 | 0.87 | 0.304 | 1.04 |
| HCM Control Delay | 13.4 | 60.4 | 20.5 | 22.7 | 22 | 46.6 | 16.6 | 92.2 |
| HCM Lane LOS | B | F | C | C | C | E | C | F |
| HCM 95th-tile Q | 0.2 | 10.3 | 2 | 2.9 | 2.6 | 8.2 | 1.3 | 14.1 |









| Intersection | | | | | | |
|--------------------------|---|---|---|------|---|---|
| Int Delay, s/veh | 4 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 124 | 247 | 229 | 65 | 46 | 104 |
| Future Vol, veh/h | 124 | 247 | 229 | 65 | 46 | 104 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 2 | 3 | 8 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 182 | 363 | 337 | 96 | 68 | 153 |
| Major/Minor | Major1 | Major2 | Minor2 | | | |
| Conflicting Flow All | 435 | 0 | - | 0 | 1117 | 395 |
| Stage 1 | - | - | - | - | 387 | - |
| Stage 2 | - | - | - | - | 730 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.43 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | 2.227 | - | - | - | 3.527 | 3.327 |
| Pot Cap-1 Maneuver | 1119 | - | - | - | 228 | 652 |
| Stage 1 | - | - | - | - | 684 | - |
| Stage 2 | - | - | - | - | 475 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1117 | - | - | - | 190 | 646 |
| Mov Cap-2 Maneuver | - | - | - | - | 322 | - |
| Stage 1 | - | - | - | - | 571 | - |
| Stage 2 | - | - | - | - | 474 | - |
| Approach | EB | WB | | SB | | |
| HCM Control Delay, s | 3 | 0 | | 14.4 | | |
| HCM LOS | | | | B | | |
| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
| Capacity (veh/h) | 1117 | - | - | - | 322 | 646 |
| HCM Lane V/C Ratio | 0.163 | - | - | - | 0.21 | 0.237 |
| HCM Control Delay (s) | 8.9 | - | - | - | 19.1 | 12.3 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.6 | - | - | - | 0.8 | 0.9 |

| Intersection | | | | | | | |
|--------------------------|---|------|---|---|---|--|-----|
| Int Delay, s/veh | 3.9 | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | |
| Lane Configurations |  | |  |  |  |  | |
| Traffic Vol, veh/h | 339 | 43 | 103 | 178 | 42 | 157 | |
| Future Vol, veh/h | 339 | 43 | 103 | 178 | 42 | 157 | |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | |
| RT Channelized | - | None | - | None | - | None | |
| Storage Length | - | - | 250 | - | 245 | 0 | |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - | |
| Grade, % | 0 | - | - | 0 | 0 | - | |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | |
| Mvmt Flow | 357 | 45 | 108 | 187 | 44 | 165 | |
| | | | | | | | |
| Major/Minor | Major1 | | Major2 | | Minor1 | | |
| Conflicting Flow All | 0 | 0 | 403 | 0 | 784 | 381 | |
| Stage 1 | - | - | - | - | 381 | - | |
| Stage 2 | - | - | - | - | 403 | - | |
| Critical Hdwy | - | - | 4.13 | - | 6.43 | 6.23 | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - | |
| Follow-up Hdwy | - | - | 2.227 | - | 3.527 | 3.327 | |
| Pot Cap-1 Maneuver | - | - | 1150 | - | 361 | 664 | |
| Stage 1 | - | - | - | - | 688 | - | |
| Stage 2 | - | - | - | - | 673 | - | |
| Platoon blocked, % | - | - | | - | | | |
| Mov Cap-1 Maneuver | - | - | 1149 | - | 327 | 663 | |
| Mov Cap-2 Maneuver | - | - | - | - | 443 | - | |
| Stage 1 | - | - | - | - | 687 | - | |
| Stage 2 | - | - | - | - | 610 | - | |
| | | | | | | | |
| | | | | | | | |
| Approach | EB | | WB | | NB | | |
| HCM Control Delay, s | 0 | | 3.1 | | 12.6 | | |
| HCM LOS | B | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Minor Lane/Major Mvmt | NBLn1 | | NBLn2 | EBT | EBR | WBL | WBT |
| Capacity (veh/h) | 443 | | 663 | - | - | 1149 | - |
| HCM Lane V/C Ratio | 0.1 | | 0.249 | - | - | 0.094 | - |
| HCM Control Delay (s) | 14 | | 12.2 | - | - | 8.5 | - |
| HCM Lane LOS | B | | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | | 1 | - | - | 0.3 | - |

HCM 6th TWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Existing plus Project PM Peak




08/08/2019




| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 2.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 26 | 443 | 42 | 29 | 271 | 8 | 3 | 8 | 19 | 16 | 25 | 36 |
| Future Vol, veh/h | 26 | 443 | 42 | 29 | 271 | 8 | 3 | 8 | 19 | 16 | 25 | 36 |
| Conflicting Peds, #/hr | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 27 | 461 | 44 | 30 | 282 | 8 | 3 | 8 | 20 | 17 | 26 | 38 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 290 | 0 | 0 | 512 | 0 | 0 | 922 | 894 | 491 | 898 | 912 | 286 |
| Stage 1 | - | - | - | - | - | - | 544 | 544 | - | 346 | 346 | - |
| Stage 2 | - | - | - | - | - | - | 378 | 350 | - | 552 | 566 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1266 | - | - | 1048 | - | - | 250 | 279 | 575 | 259 | 273 | 751 |
| Stage 1 | - | - | - | - | - | - | 521 | 517 | - | 668 | 634 | - |
| Stage 2 | - | - | - | - | - | - | 642 | 631 | - | 516 | 506 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1266 | - | - | 1041 | - | - | 210 | 263 | 571 | 235 | 258 | 751 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 210 | 263 | - | 235 | 258 | - |
| Stage 1 | - | - | - | - | - | - | 506 | 503 | - | 654 | 616 | - |
| Stage 2 | - | - | - | - | - | - | 567 | 613 | - | 479 | 492 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 0.4 | | | 0.8 | | | 14.9 | | | 16.4 | | |
| HCM LOS | | | | | | | B | | | C | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 210 | 424 | 1266 | - | - | 1041 | - | - | 235 | 421 | | |
| HCM Lane V/C Ratio | 0.015 | 0.066 | 0.021 | - | - | 0.029 | - | - | 0.071 | 0.151 | | |
| HCM Control Delay (s) | 22.4 | 14.1 | 7.9 | - | - | 8.6 | - | - | 21.5 | 15.1 | | |
| HCM Lane LOS | C | B | A | - | - | A | - | - | C | C | | |
| HCM 95th %tile Q(veh) | 0 | 0.2 | 0.1 | - | - | 0.1 | - | - | 0.2 | 0.5 | | |

HCM 6th TWSC
3: 19th Avenue & Project Driveway 1









Existing plus Project PM Peak

08/08/2019

| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 0.7 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 4 | 0 | 31 | 244 | 167 | 21 |
| Future Vol, veh/h | 4 | 0 | 31 | 244 | 167 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 6 | 0 | 44 | 344 | 235 | 30 |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 682 | - | 265 | 0 | - | 0 |
| Stage 1 | 250 | - | - | - | - | - |
| Stage 2 | 432 | - | - | - | - | - |
| Critical Hdwy | 6.43 | - | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | - | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 414 | 0 | 1293 | - | - | - |
| Stage 1 | 789 | 0 | - | - | - | - |
| Stage 2 | 652 | 0 | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 397 | - | 1293 | - | - | - |
| Mov Cap-2 Maneuver | 397 | - | - | - | - | - |
| Stage 1 | 756 | - | - | - | - | - |
| Stage 2 | 652 | - | - | - | - | - |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 14.2 | 0.9 | | 0 | | |
| HCM LOS | B | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1293 | - | 397 | - | - | |
| HCM Lane V/C Ratio | 0.034 | - | 0.014 | - | - | |
| HCM Control Delay (s) | 7.9 | 0 | 14.2 | - | - | |
| HCM Lane LOS | A | A | B | - | - | |
| HCM 95th %tile Q(veh) | 0.1 | - | 0 | - | - | |






| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 1.5 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 24 | 35 | 5 | 253 | 168 | 0 |
| Future Vol, veh/h | 24 | 35 | 5 | 253 | 168 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 34 | 49 | 7 | 356 | 237 | 0 |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 607 | 237 | 237 | 0 | - | 0 |
| Stage 1 | 237 | - | - | - | - | - |
| Stage 2 | 370 | - | - | - | - | - |
| Critical Hdwy | 6.43 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | 3.327 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 458 | 800 | 1324 | - | - | - |
| Stage 1 | 800 | - | - | - | - | - |
| Stage 2 | 696 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 455 | 800 | 1324 | - | - | - |
| Mov Cap-2 Maneuver | 455 | - | - | - | - | - |
| Stage 1 | 794 | - | - | - | - | - |
| Stage 2 | 696 | - | - | - | - | - |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 11.8 | 0.1 | | 0 | | |
| HCM LOS | B | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1324 | - | 611 | - | - | |
| HCM Lane V/C Ratio | 0.005 | - | 0.136 | - | - | |
| HCM Control Delay (s) | 7.7 | 0 | 11.8 | - | - | |
| HCM Lane LOS | A | A | B | - | - | |
| HCM 95th %tile Q(veh) | 0 | - | 0.5 | - | - | |

| Intersection | |
|---------------------------|----|
| Intersection Delay, s/veh | 25 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 47 | 129 | 42 | 99 | 119 | 57 | 48 | 156 | 184 | 39 | 135 | 29 |
| Future Vol, veh/h | 47 | 129 | 42 | 99 | 119 | 57 | 48 | 156 | 184 | 39 | 135 | 29 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 62 | 170 | 55 | 130 | 157 | 75 | 63 | 205 | 242 | 51 | 178 | 38 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 17.2 | 16.9 | 39.4 | 16.7 |
| HCM LOS | C | C | E | C |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 46% | 0% | 75% | 0% | 68% | 0% | 82% |
| Vol Right, % | 0% | 54% | 0% | 25% | 0% | 32% | 0% | 18% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 48 | 340 | 47 | 171 | 99 | 176 | 39 | 164 |
| LT Vol | 48 | 0 | 47 | 0 | 99 | 0 | 39 | 0 |
| Through Vol | 0 | 156 | 0 | 129 | 0 | 119 | 0 | 135 |
| RT Vol | 0 | 184 | 0 | 42 | 0 | 57 | 0 | 29 |
| Lane Flow Rate | 63 | 447 | 62 | 225 | 130 | 232 | 51 | 216 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.141 | 0.884 | 0.148 | 0.496 | 0.307 | 0.497 | 0.122 | 0.474 |
| Departure Headway (Hd) | 8.014 | 7.112 | 8.629 | 7.935 | 8.478 | 7.728 | 8.547 | 7.902 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 446 | 506 | 414 | 452 | 422 | 463 | 417 | 453 |
| Service Time | 5.794 | 4.891 | 6.427 | 5.731 | 6.273 | 5.522 | 6.345 | 5.7 |
| HCM Lane V/C Ratio | 0.141 | 0.883 | 0.15 | 0.498 | 0.308 | 0.501 | 0.122 | 0.477 |
| HCM Control Delay | 12.1 | 43.3 | 12.9 | 18.4 | 15 | 18 | 12.5 | 17.7 |
| HCM Lane LOS | B | E | B | C | B | C | B | C |
| HCM 95th-tile Q | 0.5 | 9.8 | 0.5 | 2.7 | 1.3 | 2.7 | 0.4 | 2.5 |












| Intersection | | | | | | |
|--------------------------|---|---|---|------|---|---|
| Int Delay, s/veh | 1.7 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 47 | 266 | 235 | 36 | 39 | 26 |
| Future Vol, veh/h | 47 | 266 | 235 | 36 | 39 | 26 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 3 | 4 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 51 | 286 | 253 | 39 | 42 | 28 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 293 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.13 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 2.227 | - | - |
| Pot Cap-1 Maneuver | 1263 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1262 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.2 | 0 | 11.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1262 | - | - | - | 508 | 754 |
| HCM Lane V/C Ratio | 0.04 | - | - | - | 0.083 | 0.037 |
| HCM Control Delay (s) | 8 | - | - | - | 12.7 | 10 |
| HCM Lane LOS | A | - | - | - | B | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.3 | 0.1 |












| Intersection | | | | | | | | | | | | |
|---------------------------|----|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 33 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|---|---|---|---|---|---|---|
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Traffic Vol, veh/h | 108 | 132 | 8 | 132 | 150 | 97 | 18 | 120 | 148 | 80 | 252 | 45 |
| Future Vol, veh/h | 108 | 132 | 8 | 132 | 150 | 97 | 18 | 120 | 148 | 80 | 252 | 45 |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 152 | 186 | 11 | 186 | 211 | 137 | 25 | 169 | 208 | 113 | 355 | 63 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 23.6 | 23.5 | 23.3 | 56.1 |
| HCM LOS | C | C | C | F |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|------------------------|--------|--------|-------|--------|--------|--------|--------|-------|--------|-------|-------|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 0% | 94% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 100% | 0% | 6% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 18 | 120 | 148 | 108 | 140 | 132 | 150 | 97 | 80 | 252 | 45 |
| LT Vol | 18 | 0 | 0 | 108 | 0 | 132 | 0 | 0 | 80 | 0 | 0 |
| Through Vol | 0 | 120 | 0 | 0 | 132 | 0 | 150 | 0 | 0 | 252 | 0 |
| RT Vol | 0 | 0 | 148 | 0 | 8 | 0 | 0 | 97 | 0 | 0 | 45 |
| Lane Flow Rate | 25 | 169 | 208 | 152 | 197 | 186 | 211 | 137 | 113 | 355 | 63 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.077 | 0.492 | 0.564 | 0.451 | 0.555 | 0.543 | 0.588 | 0.353 | 0.328 | 0.983 | 0.163 |
| Departure Headway (Hd) | 10.993 | 10.475 | 9.749 | 10.667 | 10.127 | 10.524 | 10.012 | 9.294 | 10.489 | 9.973 | 9.25 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 326 | 345 | 371 | 338 | 357 | 344 | 361 | 387 | 344 | 366 | 388 |
| Service Time | 8.749 | 8.23 | 7.504 | 8.417 | 7.877 | 8.276 | 7.763 | 7.045 | 8.24 | 7.724 | 7 |
| HCM Lane V/C Ratio | 0.077 | 0.49 | 0.561 | 0.45 | 0.552 | 0.541 | 0.584 | 0.354 | 0.328 | 0.97 | 0.162 |
| HCM Control Delay | 14.7 | 23 | 24.5 | 21.9 | 24.9 | 25.2 | 26.2 | 17.1 | 18.3 | 75.6 | 13.8 |
| HCM Lane LOS | B | C | C | C | C | D | D | C | C | F | B |
| HCM 95th-tile Q | 0.2 | 2.6 | 3.3 | 2.2 | 3.2 | 3.1 | 3.6 | 1.6 | 1.4 | 11.1 | 0.6 |

| Intersection | | | | | | | | | | | | |
|---------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 16.1 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|---|---|---|---|---|---|---|
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Traffic Vol, veh/h | 47 | 129 | 42 | 99 | 119 | 57 | 48 | 156 | 184 | 39 | 135 | 29 |
| Future Vol, veh/h | 47 | 129 | 42 | 99 | 119 | 57 | 48 | 156 | 184 | 39 | 135 | 29 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 62 | 170 | 55 | 130 | 157 | 75 | 63 | 205 | 242 | 51 | 178 | 38 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 17.6 | 14.8 | 16.4 | 15.7 |
| HCM LOS | C | B | C | C |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 0% | 75% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 100% | 0% | 25% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 48 | 156 | 184 | 47 | 171 | 99 | 119 | 57 | 39 | 135 | 29 |
| LT Vol | 48 | 0 | 0 | 47 | 0 | 99 | 0 | 0 | 39 | 0 | 0 |
| Through Vol | 0 | 156 | 0 | 0 | 129 | 0 | 119 | 0 | 0 | 135 | 0 |
| RT Vol | 0 | 0 | 184 | 0 | 42 | 0 | 0 | 57 | 0 | 0 | 29 |
| Lane Flow Rate | 63 | 205 | 242 | 62 | 225 | 130 | 157 | 75 | 51 | 178 | 38 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.148 | 0.453 | 0.486 | 0.15 | 0.503 | 0.316 | 0.358 | 0.157 | 0.129 | 0.42 | 0.083 |
| Departure Headway (Hd) | 8.457 | 7.948 | 7.234 | 8.721 | 8.049 | 8.728 | 8.222 | 7.513 | 9.016 | 8.504 | 7.789 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 423 | 452 | 496 | 409 | 446 | 410 | 435 | 475 | 396 | 421 | 457 |
| Service Time | 6.245 | 5.735 | 5.021 | 6.509 | 5.837 | 6.519 | 6.013 | 5.304 | 6.812 | 6.301 | 5.585 |
| HCM Lane V/C Ratio | 0.149 | 0.454 | 0.488 | 0.152 | 0.504 | 0.317 | 0.361 | 0.158 | 0.129 | 0.423 | 0.083 |
| HCM Control Delay | 12.7 | 17.2 | 16.7 | 13.1 | 18.8 | 15.5 | 15.6 | 11.7 | 13.2 | 17.4 | 11.3 |
| HCM Lane LOS | B | C | C | B | C | C | C | B | B | C | B |
| HCM 95th-tile Q | 0.5 | 2.3 | 2.6 | 0.5 | 2.8 | 1.3 | 1.6 | 0.6 | 0.4 | 2 | 0.3 |

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | WB | NB | NB |
|-----------------------|-----|-----|-----|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 73 | 78 | 75 |
| Average Queue (ft) | 23 | 36 | 45 |
| 95th Queue (ft) | 57 | 63 | 68 |
| Link Distance (ft) | | | 947 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 250 | 245 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|-----|------|----|------|
| Directions Served | L | TR | L | L | TR | L | TR |
| Maximum Queue (ft) | 52 | 22 | 110 | 71 | 72 | 50 | 76 |
| Average Queue (ft) | 12 | 1 | 15 | 13 | 31 | 16 | 24 |
| 95th Queue (ft) | 41 | 7 | 54 | 39 | 51 | 42 | 55 |
| Link Distance (ft) | | 1257 | | | 2741 | | 2631 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 135 | | 190 | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | 1 | 1 |
| Queuing Penalty (veh) | | | | | | 0 | 0 |

Intersection: 3: 19th Avenue & Project Driveway 1

| Movement | EB | NB | SB |
|-----------------------|-----|-----|-----|
| Directions Served | L | LT | TR |
| Maximum Queue (ft) | 31 | 115 | 20 |
| Average Queue (ft) | 13 | 36 | 1 |
| 95th Queue (ft) | 37 | 78 | 7 |
| Link Distance (ft) | 181 | 283 | 677 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 4: 19th Avenue & Project Driveway 2

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 106 | 68 |
| Average Queue (ft) | 61 | 6 |
| 95th Queue (ft) | 95 | 32 |
| Link Distance (ft) | 193 | 362 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|------|-----|-----|------|-----|-----|-----|-----|
| Directions Served | L | TR | L | T | R | L | T | R | L | T | R |
| Maximum Queue (ft) | 91 | 64 | 70 | 71 | 68 | 65 | 76 | 112 | 66 | 166 | 42 |
| Average Queue (ft) | 40 | 34 | 35 | 37 | 28 | 14 | 42 | 44 | 31 | 61 | 14 |
| 95th Queue (ft) | 71 | 62 | 63 | 64 | 56 | 45 | 68 | 74 | 57 | 110 | 36 |
| Link Distance (ft) | | 2524 | | 1242 | | | 1008 | | | 362 | |
| Upstream Blk Time (%) | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 250 | 100 | | 250 | 100 | | 250 |
| Storage Blk Time (%) | 0 | | | | | | | | | 2 | |
| Queuing Penalty (veh) | 0 | | | | | | | | | 3 | |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | WB | SB | SB |
|-----------------------|-----|------|-----|------|
| Directions Served | L | TR | L | R |
| Maximum Queue (ft) | 54 | 54 | 87 | 76 |
| Average Queue (ft) | 23 | 4 | 26 | 34 |
| 95th Queue (ft) | 54 | 22 | 57 | 53 |
| Link Distance (ft) | | 1125 | | 2741 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 100 | | 115 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Network Summary

Network wide Queuing Penalty: 3

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | WB | NB | NB |
|-----------------------|-----|-----|-----|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 116 | 77 | 79 |
| Average Queue (ft) | 34 | 26 | 42 |
| 95th Queue (ft) | 73 | 60 | 64 |
| Link Distance (ft) | | | 947 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 250 | 245 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|-----|------|----|------|
| Directions Served | L | TR | L | L | TR | L | TR |
| Maximum Queue (ft) | 31 | 54 | 54 | 25 | 29 | 53 | 71 |
| Average Queue (ft) | 7 | 2 | 8 | 2 | 12 | 12 | 30 |
| 95th Queue (ft) | 26 | 18 | 32 | 14 | 34 | 36 | 58 |
| Link Distance (ft) | | 1257 | | | 2748 | | 2626 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 135 | | 190 | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | 0 | 1 |
| Queuing Penalty (veh) | | | | | | 0 | 0 |

Intersection: 3: 19th Avenue & Project Driveway 1

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | L | LT |
| Maximum Queue (ft) | 31 | 53 |
| Average Queue (ft) | 4 | 5 |
| 95th Queue (ft) | 21 | 27 |
| Link Distance (ft) | 181 | 288 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 4: 19th Avenue & Project Driveway 2

| | |
|-----------------------|-----|
| Movement | EB |
| Directions Served | LR |
| Maximum Queue (ft) | 58 |
| Average Queue (ft) | 32 |
| 95th Queue (ft) | 53 |
| Link Distance (ft) | 196 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|------|----|------|----|------|-----|-----|-----|-----|----|-----|
| Directions Served | L | TR | L | T | R | L | T | R | L | T | R |
| Maximum Queue (ft) | 45 | 84 | 50 | 66 | 44 | 75 | 91 | 122 | 52 | 74 | 38 |
| Average Queue (ft) | 19 | 39 | 31 | 36 | 15 | 24 | 44 | 55 | 24 | 44 | 15 |
| 95th Queue (ft) | 36 | 71 | 48 | 64 | 32 | 53 | 69 | 90 | 45 | 71 | 32 |
| Link Distance (ft) | 2529 | | 1233 | | 1006 | | 359 | | | | |
| Upstream Blk Time (%) | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 250 | 100 | | 250 | 100 | | 250 |
| Storage Blk Time (%) | 0 | | | | | | 0 | | | | |
| Queuing Penalty (veh) | 0 | | | | | | 0 | | | | |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | WB | SB | SB |
|-----------------------|------|-----|------|----|
| Directions Served | L | TR | L | R |
| Maximum Queue (ft) | 70 | 22 | 54 | 30 |
| Average Queue (ft) | 15 | 1 | 23 | 18 |
| 95th Queue (ft) | 45 | 7 | 45 | 40 |
| Link Distance (ft) | 1129 | | 2748 | |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 100 | 115 | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Network Summary

| |
|---------------------------------|
| Network wide Queuing Penalty: 0 |
|---------------------------------|

Appendix G: Near Term Year 2023 plus Project Traffic Conditions








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516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

Page | G

Intersection

Int Delay, s/veh 5

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|--------------------------|---|------|---|---|---|---|
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 272 | 76 | 128 | 328 | 89 | 196 |
| Future Vol, veh/h | 272 | 76 | 128 | 328 | 89 | 196 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 316 | 88 | 149 | 381 | 103 | 228 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 404 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 1149 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1149 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |









| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.4 | 15.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|------|-----|
| Capacity (veh/h) | 338 | 682 | - | - | 1149 | - |
| HCM Lane V/C Ratio | 0.306 | 0.334 | - | - | 0.13 | - |
| HCM Control Delay (s) | 20.3 | 12.9 | - | - | 8.6 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 1.3 | 1.5 | - | - | 0.4 | - |

HCM 6th TWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Near Term plus Project AM Peak

08/19/2019

| Intersection | | | | | | | | | | | | |
|----------------------------|---|---|-------|---|---|-------|---|---|--------------------------------|---|---|-------|
| Int Delay, s/veh | 16.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 72 | 428 | 21 | 38 | 362 | 32 | 19 | 14 | 96 | 58 | 31 | 71 |
| Future Vol, veh/h | 72 | 428 | 21 | 38 | 362 | 32 | 19 | 14 | 96 | 58 | 31 | 71 |
| Conflicting Peds, #/hr | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 92 | 549 | 27 | 49 | 464 | 41 | 24 | 18 | 123 | 74 | 40 | 91 |
| | | | | | | | | | | | | |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 505 | 0 | 0 | 577 | 0 | 0 | 1396 | 1351 | 564 | 1400 | 1344 | 485 |
| Stage 1 | - | - | - | - | - | - | 748 | 748 | - | 583 | 583 | - |
| Stage 2 | - | - | - | - | - | - | 648 | 603 | - | 817 | 761 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1055 | - | - | 992 | - | - | 118 | 150 | 523 | 117 | 151 | 580 |
| Stage 1 | - | - | - | - | - | - | 403 | 418 | - | 496 | 497 | - |
| Stage 2 | - | - | - | - | - | - | 457 | 487 | - | 369 | 413 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1055 | - | - | 991 | - | - | 69 | 130 | 523 | ~ 72 | 131 | 580 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 69 | 130 | - | ~ 72 | 131 | - |
| Stage 1 | - | - | - | - | - | - | 368 | 381 | - | 453 | 473 | - |
| Stage 2 | - | - | - | - | - | - | 335 | 463 | - | 245 | 377 | - |
| | | | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 1.2 | | | 0.8 | | | 29.4 | | | 95.9 | | |
| HCM LOS | | | | | | | D | | | F | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBLn1 NBLn2 | | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 69 | 378 | 1055 | - | - | 991 | - | - | 72 | 284 | | |
| HCM Lane V/C Ratio | 0.353 | 0.373 | 0.087 | - | - | 0.049 | - | - | 1.033 | 0.46 | | |
| HCM Control Delay (s) | 83.3 | 20.1 | 8.7 | - | - | 8.8 | - | - | 215 | 28.1 | | |
| HCM Lane LOS | F | C | A | - | - | A | - | - | F | D | | |
| HCM 95th %tile Q(veh) | 1.3 | 1.7 | 0.3 | - | - | 0.2 | - | - | 5.4 | 2.3 | | |
| Notes | | | | | | | | | | | | |
| ~: Volume exceeds capacity | | \$: Delay exceeds 300s | | | +: Computation Not Defined | | | | *: All major volume in platoon | | | |




HCM 6th TWSC
3: 19th Avenue & Project Driveway 1

Near Term plus Project AM Peak

08/19/2019

Intersection




Int Delay, s/veh 2.2

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|--------------------------|---|------|------|---|---|------|
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 13 | 0 | 142 | 276 | 299 | 86 |
| Future Vol, veh/h | 13 | 0 | 142 | 276 | 299 | 86 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 18 | 0 | 200 | 389 | 421 | 121 |









| Major/Minor | Minor2 | Major1 | Major2 |
|----------------------|--------|---------|--------|
| Conflicting Flow All | 1271 | - 542 | 0 - 0 |
| Stage 1 | 482 | - - | - - - |
| Stage 2 | 789 | - - | - - - |
| Critical Hdwy | 6.43 | - 4.13 | - - - |
| Critical Hdwy Stg 1 | 5.43 | - - | - - - |
| Critical Hdwy Stg 2 | 5.43 | - - | - - - |
| Follow-up Hdwy | 3.527 | - 2.227 | - - - |
| Pot Cap-1 Maneuver | 184 | 0 1022 | - - - |
| Stage 1 | 619 | 0 - | - - - |
| Stage 2 | 446 | 0 - | - - - |
| Platoon blocked, % | | | - - - |
| Mov Cap-1 Maneuver | 138 | - 1022 | - - - |
| Mov Cap-2 Maneuver | 138 | - - | - - - |
| Stage 1 | 464 | - - | - - - |
| Stage 2 | 446 | - - | - - - |

| Approach | EB | NB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 35 | 3.2 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT EBLn1 | SBT | SBR |
|-----------------------|-------|-----------|-----|-----|
| Capacity (veh/h) | 1022 | - 138 | - - | - |
| HCM Lane V/C Ratio | 0.196 | - 0.133 | - - | - |
| HCM Control Delay (s) | 9.4 | 0 35 | - - | - |
| HCM Lane LOS | A | A E | - - | - |
| HCM 95th %tile Q(veh) | 0.7 | - 0.4 | - - | - |

| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 7.8 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 82 | 121 | 25 | 337 | 301 | 0 |
| Future Vol, veh/h | 82 | 121 | 25 | 337 | 301 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 115 | 170 | 35 | 475 | 424 | 0 |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 969 | 424 | 424 | 0 | - | 0 |
| Stage 1 | 424 | - | - | - | - | - |
| Stage 2 | 545 | - | - | - | - | - |
| Critical Hdwy | 6.43 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | 3.327 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 280 | 628 | 1130 | - | - | - |
| Stage 1 | 658 | - | - | - | - | - |
| Stage 2 | 579 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 268 | 628 | 1130 | - | - | - |
| Mov Cap-2 Maneuver | 268 | - | - | - | - | - |
| Stage 1 | 630 | - | - | - | - | - |
| Stage 2 | 579 | - | - | - | - | - |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 32.2 | 0.6 | | 0 | | |
| HCM LOS | D | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1130 | - | 407 | - | - | |
| HCM Lane V/C Ratio | 0.031 | - | 0.702 | - | - | |
| HCM Control Delay (s) | 8.3 | 0 | 32.2 | - | - | |
| HCM Lane LOS | A | A | D | - | - | |
| HCM 95th %tile Q(veh) | 0.1 | - | 5.3 | - | - | |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 69.1 |
| Intersection LOS | F |






| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 117 | 137 | 10 | 138 | 152 | 107 | 19 | 139 | 151 | 90 | 277 | 57 |
| Future Vol, veh/h | 117 | 137 | 10 | 138 | 152 | 107 | 19 | 139 | 151 | 90 | 277 | 57 |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 165 | 193 | 14 | 194 | 214 | 151 | 27 | 196 | 213 | 127 | 390 | 80 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|-----|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 23.9 | 45.7 | 77.4 | 113 |
| HCM LOS | C | E | F | F |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|--------|-------|--------|--------|--------|-------|--------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 48% | 0% | 93% | 0% | 59% | 0% | 83% |
| Vol Right, % | 0% | 52% | 0% | 7% | 0% | 41% | 0% | 17% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 19 | 290 | 117 | 147 | 138 | 259 | 90 | 334 |
| LT Vol | 19 | 0 | 117 | 0 | 138 | 0 | 90 | 0 |
| Through Vol | 0 | 139 | 0 | 137 | 0 | 152 | 0 | 277 |
| RT Vol | 0 | 151 | 0 | 10 | 0 | 107 | 0 | 57 |
| Lane Flow Rate | 27 | 408 | 165 | 207 | 194 | 365 | 127 | 470 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.073 | 1.016 | 0.466 | 0.554 | 0.526 | 0.908 | 0.343 | 1.193 |
| Departure Headway (Hd) | 10.365 | 9.456 | 10.813 | 10.233 | 10.345 | 9.514 | 10.014 | 9.364 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 348 | 388 | 336 | 354 | 352 | 383 | 361 | 390 |
| Service Time | 8.065 | 7.156 | 8.513 | 7.933 | 8.045 | 7.214 | 7.714 | 7.064 |
| HCM Lane V/C Ratio | 0.078 | 1.052 | 0.491 | 0.585 | 0.551 | 0.953 | 0.352 | 1.205 |
| HCM Control Delay | 13.9 | 81.6 | 22.6 | 24.9 | 24 | 57.2 | 17.9 | 138.6 |
| HCM Lane LOS | B | F | C | C | C | F | C | F |
| HCM 95th-tile Q | 0.2 | 12.4 | 2.4 | 3.2 | 2.9 | 9.4 | 1.5 | 18.5 |

Intersection

Int Delay, s/veh 4

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|---|---|---|------|---|---|
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 126 | 263 | 241 | 65 | 46 | 110 |
| Future Vol, veh/h | 126 | 263 | 241 | 65 | 46 | 110 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 2 | 3 | 8 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 185 | 387 | 354 | 96 | 68 | 162 |






| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|-----------------|
| Conflicting Flow All | 452 | 0 | 0 1164 412 |
| Stage 1 | - | - | - - 404 - |
| Stage 2 | - | - | - - 760 - |
| Critical Hdwy | 4.13 | - | - - 6.43 6.23 |
| Critical Hdwy Stg 1 | - | - | - - 5.43 - |
| Critical Hdwy Stg 2 | - | - | - - 5.43 - |
| Follow-up Hdwy | 2.227 | - | - - 3.527 3.327 |
| Pot Cap-1 Maneuver | 1103 | - | - - 214 638 |
| Stage 1 | - | - | - - 672 - |
| Stage 2 | - | - | - - 460 - |
| Platoon blocked, % | | - | - - |
| Mov Cap-1 Maneuver | 1101 | - | - - 177 632 |
| Mov Cap-2 Maneuver | - | - | - - 309 - |
| Stage 1 | - | - | - - 558 - |
| Stage 2 | - | - | - - 459 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 2.9 | 0 | 14.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1101 | - | - | - | 309 | 632 |
| HCM Lane V/C Ratio | 0.168 | - | - | - | 0.219 | 0.256 |
| HCM Control Delay (s) | 8.9 | - | - | - | 19.9 | 12.6 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.6 | - | - | - | 0.8 | 1 |

Intersection

Int Delay, s/veh 4.6

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|--------------------------|---|------|---|---|---|---|
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 429 | 75 | 124 | 258 | 75 | 190 |
| Future Vol, veh/h | 429 | 75 | 124 | 258 | 75 | 190 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 452 | 79 | 131 | 272 | 79 | 200 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 532 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 1030 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1029 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |









| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.9 | 15.6 |
| HCM LOS | | | C |




| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 356 | 573 | - | - | 1029 | - |
| HCM Lane V/C Ratio | 0.222 | 0.349 | - | - | 0.127 | - |
| HCM Control Delay (s) | 18 | 14.6 | - | - | 9 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.8 | 1.6 | - | - | 0.4 | - |

HCM 6th TWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Near Term plus Project PM Peak

08/19/2019

| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 4.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 81 | 511 | 42 | 29 | 340 | 51 | 3 | 19 | 19 | 42 | 31 | 68 |
| Future Vol, veh/h | 81 | 511 | 42 | 29 | 340 | 51 | 3 | 19 | 19 | 42 | 31 | 68 |
| Conflicting Peds, #/hr | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 84 | 532 | 44 | 30 | 354 | 53 | 3 | 20 | 20 | 44 | 32 | 71 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 407 | 0 | 0 | 583 | 0 | 0 | 1221 | 1196 | 562 | 1184 | 1192 | 381 |
| Stage 1 | - | - | - | - | - | - | 729 | 729 | - | 441 | 441 | - |
| Stage 2 | - | - | - | - | - | - | 492 | 467 | - | 743 | 751 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1146 | - | - | 986 | - | - | 156 | 185 | 525 | 165 | 186 | 664 |
| Stage 1 | - | - | - | - | - | - | 413 | 427 | - | 593 | 575 | - |
| Stage 2 | - | - | - | - | - | - | 557 | 560 | - | 405 | 417 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1146 | - | - | 979 | - | - | 109 | 165 | 521 | 133 | 166 | 664 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 109 | 165 | - | 133 | 166 | - |
| Stage 1 | - | - | - | - | - | - | 380 | 393 | - | 550 | 557 | - |
| Stage 2 | - | - | - | - | - | - | 454 | 543 | - | 343 | 384 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 1.1 | | | 0.6 | | | 23.2 | | | 27.4 | | |
| HCM LOS | | | | | | | C | | | D | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 109 | 251 | 1146 | - | - | 979 | - | - | 133 | 342 | | |
| HCM Lane V/C Ratio | 0.029 | 0.158 | 0.074 | - | - | 0.031 | - | - | 0.329 | 0.302 | | |
| HCM Control Delay (s) | 39 | 22 | 8.4 | - | - | 8.8 | - | - | 44.8 | 20 | | |
| HCM Lane LOS | E | C | A | - | - | A | - | - | E | C | | |
| HCM 95th %tile Q(veh) | 0.1 | 0.6 | 0.2 | - | - | 0.1 | - | - | 1.3 | 1.2 | | |

| Intersection | | | | | | |
|--------------------------|---|------|------|---|---|------|
| Int Delay, s/veh | 0.6 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 4 | 0 | 31 | 298 | 220 | 21 |
| Future Vol, veh/h | 4 | 0 | 31 | 298 | 220 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 6 | 0 | 44 | 420 | 310 | 30 |




| Major/Minor | Minor2 | Major1 | Major2 |
|----------------------|--------|---------|--------|
| Conflicting Flow All | 833 | - 340 | 0 - 0 |
| Stage 1 | 325 | - - | - - - |
| Stage 2 | 508 | - - | - - - |
| Critical Hdwy | 6.43 | - 4.13 | - - - |
| Critical Hdwy Stg 1 | 5.43 | - - | - - - |
| Critical Hdwy Stg 2 | 5.43 | - - | - - - |
| Follow-up Hdwy | 3.527 | - 2.227 | - - - |
| Pot Cap-1 Maneuver | 337 | 0 1214 | - - - |
| Stage 1 | 730 | 0 - | - - - |
| Stage 2 | 602 | 0 - | - - - |
| Platoon blocked, % | | | - - - |
| Mov Cap-1 Maneuver | 321 | - 1214 | - - - |
| Mov Cap-2 Maneuver | 321 | - - | - - - |
| Stage 1 | 696 | - - | - - - |
| Stage 2 | 602 | - - | - - - |

| Approach | EB | NB | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 16.4 | 0.8 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1214 | - | 321 | - | - |
| HCM Lane V/C Ratio | 0.036 | - | 0.018 | - | - |
| HCM Control Delay (s) | 8.1 | 0 | 16.4 | - | - |
| HCM Lane LOS | A | A | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.1 | - | - |

Intersection

Int Delay, s/veh 1.4









| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|--------------------------|---|------|------|---|---|------|
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 24 | 35 | 5 | 307 | 221 | 0 |
| Future Vol, veh/h | 24 | 35 | 5 | 307 | 221 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 34 | 49 | 7 | 432 | 311 | 0 |

| Major/Minor | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 757 | 311 | 311 |
| Stage 1 | 311 | - | - |
| Stage 2 | 446 | - | - |
| Critical Hdwy | 6.43 | 6.23 | 4.13 |
| Critical Hdwy Stg 1 | 5.43 | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - |
| Follow-up Hdwy | 3.527 | 3.327 | 2.227 |
| Pot Cap-1 Maneuver | 374 | 727 | 1244 |
| Stage 1 | 741 | - | - |
| Stage 2 | 643 | - | - |
| Platoon blocked, % | | | |
| Mov Cap-1 Maneuver | 371 | 727 | 1244 |
| Mov Cap-2 Maneuver | 371 | - | - |
| Stage 1 | 736 | - | - |
| Stage 2 | 643 | - | - |

| Approach | EB | NB | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 13.2 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1244 | - | 523 | - | - |
| HCM Lane V/C Ratio | 0.006 | - | 0.159 | - | - |
| HCM Control Delay (s) | 7.9 | 0 | 13.2 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.6 | - | - |

| Intersection | | | | | | | | | | | | |
|---------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 41.7 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |






| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 61 | 132 | 44 | 105 | 127 | 66 | 52 | 187 | 193 | 51 | 165 | 40 |
| Future Vol, veh/h | 61 | 132 | 44 | 105 | 127 | 66 | 52 | 187 | 193 | 51 | 165 | 40 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 80 | 174 | 58 | 138 | 167 | 87 | 68 | 246 | 254 | 67 | 217 | 53 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 19.5 | 20.1 | 80.3 | 22.2 |
| HCM LOS | C | C | F | C |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 49% | 0% | 75% | 0% | 66% | 0% | 80% |
| Vol Right, % | 0% | 51% | 0% | 25% | 0% | 34% | 0% | 20% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 52 | 380 | 61 | 176 | 105 | 193 | 51 | 205 |
| LT Vol | 52 | 0 | 61 | 0 | 105 | 0 | 51 | 0 |
| Through Vol | 0 | 187 | 0 | 132 | 0 | 127 | 0 | 165 |
| RT Vol | 0 | 193 | 0 | 44 | 0 | 66 | 0 | 40 |
| Lane Flow Rate | 68 | 500 | 80 | 232 | 138 | 254 | 67 | 270 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.163 | 1.071 | 0.202 | 0.538 | 0.341 | 0.573 | 0.165 | 0.621 |
| Departure Headway (Hd) | 8.595 | 7.711 | 9.473 | 8.769 | 9.292 | 8.522 | 9.21 | 8.547 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 419 | 475 | 381 | 415 | 390 | 427 | 392 | 426 |
| Service Time | 6.307 | 5.423 | 7.173 | 6.469 | 6.992 | 6.222 | 6.91 | 6.247 |
| HCM Lane V/C Ratio | 0.162 | 1.053 | 0.21 | 0.559 | 0.354 | 0.595 | 0.171 | 0.634 |
| HCM Control Delay | 13 | 89.5 | 14.6 | 21.2 | 16.7 | 22 | 13.7 | 24.3 |
| HCM Lane LOS | B | F | B | C | C | C | B | C |
| HCM 95th-tile Q | 0.6 | 15.9 | 0.7 | 3.1 | 1.5 | 3.5 | 0.6 | 4.1 |

Intersection

Int Delay, s/veh 1.8

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|---|---|---|------|---|---|
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 54 | 283 | 254 | 36 | 39 | 30 |
| Future Vol, veh/h | 54 | 283 | 254 | 36 | 39 | 30 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 3 | 4 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 58 | 304 | 273 | 39 | 42 | 32 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|---------------|
| Conflicting Flow All | 313 | 0 | 0 717 298 |
| Stage 1 | - | - | - 294 - |
| Stage 2 | - | - | - 423 - |
| Critical Hdwy | 4.13 | - | - 6.43 6.23 |
| Critical Hdwy Stg 1 | - | - | - 5.43 - |
| Critical Hdwy Stg 2 | - | - | - 5.43 - |
| Follow-up Hdwy | 2.227 | - | - 3.527 3.327 |
| Pot Cap-1 Maneuver | 1242 | - | - 395 739 |
| Stage 1 | - | - | - 754 - |
| Stage 2 | - | - | - 659 - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1241 | - | - 376 735 |
| Mov Cap-2 Maneuver | - | - | - 484 - |
| Stage 1 | - | - | - 718 - |
| Stage 2 | - | - | - 658 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.3 | 0 | 11.8 |
| HCM LOS | | | B |











| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1241 | - | - | - | 484 | 735 |
| HCM Lane V/C Ratio | 0.047 | - | - | - | 0.087 | 0.044 |
| HCM Control Delay (s) | 8 | - | - | - | 13.1 | 10.1 |
| HCM Lane LOS | A | - | - | - | B | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.3 | 0.1 |

HCM 6th AWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Near Term plus Project AM Peak

08/20/2019

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 34.1 |
| Intersection LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|--|---|---|---|---|---|---|
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  | |
| Traffic Vol, veh/h | 72 | 428 | 21 | 38 | 362 | 32 | 19 | 14 | 96 | 58 | 31 | 71 |
| Future Vol, veh/h | 72 | 428 | 21 | 38 | 362 | 32 | 19 | 14 | 96 | 58 | 31 | 71 |
| Peak Hour Factor | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 92 | 549 | 27 | 49 | 464 | 41 | 24 | 18 | 123 | 74 | 40 | 91 |
| Number of Lanes | 1 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |





| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 3 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 3 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 3 |
| HCM Control Delay | 24.4 | 59.4 | 13.9 | 13.4 |
| HCM LOS | C | F | B | B |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 0% | 100% | 87% | 0% | 100% | 0% | 0% | 100% |
| Vol Right, % | 0% | 0% | 100% | 0% | 0% | 13% | 0% | 0% | 100% | 0% | 0% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 19 | 14 | 96 | 72 | 285 | 164 | 38 | 362 | 32 | 58 | 31 |
| LT Vol | 19 | 0 | 0 | 72 | 0 | 0 | 38 | 0 | 0 | 58 | 0 |
| Through Vol | 0 | 14 | 0 | 0 | 285 | 143 | 0 | 362 | 0 | 0 | 31 |
| RT Vol | 0 | 0 | 96 | 0 | 0 | 21 | 0 | 0 | 32 | 0 | 0 |
| Lane Flow Rate | 24 | 18 | 123 | 92 | 366 | 210 | 49 | 464 | 41 | 74 | 40 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.064 | 0.045 | 0.283 | 0.208 | 0.773 | 0.438 | 0.111 | 0.996 | 0.08 | 0.193 | 0.098 |
| Departure Headway (Hd) | 9.476 | 8.976 | 8.276 | 8.109 | 7.609 | 7.519 | 8.225 | 7.725 | 7.025 | 9.34 | 8.84 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 377 | 397 | 432 | 441 | 476 | 478 | 435 | 469 | 508 | 383 | 404 |
| Service Time | 7.265 | 6.765 | 6.065 | 5.88 | 5.38 | 5.29 | 5.994 | 5.494 | 4.794 | 7.124 | 6.624 |
| HCM Lane V/C Ratio | 0.064 | 0.045 | 0.285 | 0.209 | 0.769 | 0.439 | 0.113 | 0.989 | 0.081 | 0.193 | 0.099 |
| HCM Control Delay | 12.9 | 12.2 | 14.3 | 13 | 32 | 16.1 | 12 | 68.7 | 10.4 | 14.4 | 12.6 |
| HCM Lane LOS | B | B | B | B | D | C | B | F | B | B | B |
| HCM 95th-tile Q | 0.2 | 0.1 | 1.1 | 0.8 | 6.8 | 2.2 | 0.4 | 13 | 0.3 | 0.7 | 0.3 |

HCM 6th TWSC
3: 19th Avenue & Project Driveway 1

Near Term plus Project AM Peak

08/20/2019





















| Intersection | | | | | | |
|--------------------------|---|--------|---|---|---|------|
| Int Delay, s/veh | 2.2 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | |  |  |  | |
| Traffic Vol, veh/h | 13 | 0 | 142 | 276 | 299 | 86 |
| Future Vol, veh/h | 13 | 0 | 142 | 276 | 299 | 86 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 250 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 71 | 71 | 71 | 71 | 71 | 71 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 18 | 0 | 200 | 389 | 421 | 121 |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 1271 | - | 542 | 0 | - | 0 |
| Stage 1 | 482 | - | - | - | - | - |
| Stage 2 | 789 | - | - | - | - | - |
| Critical Hdwy | 6.43 | - | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | - | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 184 | 0 | 1022 | - | - | - |
| Stage 1 | 619 | 0 | - | - | - | - |
| Stage 2 | 446 | 0 | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 148 | - | 1022 | - | - | - |
| Mov Cap-2 Maneuver | 148 | - | - | - | - | - |
| Stage 1 | 498 | - | - | - | - | - |
| Stage 2 | 446 | - | - | - | - | - |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 32.7 | 3.2 | | 0 | | |
| HCM LOS | D | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1022 | - | 148 | - | - | |
| HCM Lane V/C Ratio | 0.196 | - | 0.124 | - | - | |
| HCM Control Delay (s) | 9.4 | - | 32.7 | - | - | |
| HCM Lane LOS | A | - | D | - | - | |
| HCM 95th %tile Q(veh) | 0.7 | - | 0.4 | - | - | |

HCM 6th Signalized Intersection Summary

5: 19th Avenue & Cinnamon Drive

Near Term plus Project AM Peak

08/20/2019

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (veh/h) | 117 | 137 | 10 | 138 | 152 | 107 | 19 | 139 | 151 | 90 | 277 | 57 |
| Future Volume (veh/h) | 117 | 137 | 10 | 138 | 152 | 107 | 19 | 139 | 151 | 90 | 277 | 57 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 165 | 193 | 14 | 194 | 214 | 151 | 27 | 196 | 213 | 127 | 390 | 80 |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 205 | 420 | 30 | 237 | 266 | 188 | 51 | 231 | 252 | 161 | 518 | 106 |
| Arrive On Green | 0.12 | 0.25 | 0.25 | 0.13 | 0.26 | 0.26 | 0.03 | 0.28 | 0.28 | 0.09 | 0.35 | 0.35 |
| Sat Flow, veh/h | 1767 | 1708 | 124 | 1767 | 1007 | 711 | 1767 | 813 | 884 | 1767 | 1491 | 306 |
| Grp Volume(v), veh/h | 165 | 0 | 207 | 194 | 0 | 365 | 27 | 0 | 409 | 127 | 0 | 470 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 0 | 1832 | 1767 | 0 | 1718 | 1767 | 0 | 1697 | 1767 | 0 | 1797 |
| Q Serve(g_s), s | 6.6 | 0.0 | 6.9 | 7.7 | 0.0 | 14.3 | 1.1 | 0.0 | 16.4 | 5.1 | 0.0 | 16.7 |
| Cycle Q Clear(g_c), s | 6.6 | 0.0 | 6.9 | 7.7 | 0.0 | 14.3 | 1.1 | 0.0 | 16.4 | 5.1 | 0.0 | 16.7 |
| Prop In Lane | 1.00 | | 0.07 | 1.00 | | 0.41 | 1.00 | | 0.52 | 1.00 | | 0.17 |
| Lane Grp Cap(c), veh/h | 205 | 0 | 450 | 237 | 0 | 454 | 51 | 0 | 483 | 161 | 0 | 624 |
| V/C Ratio(X) | 0.80 | 0.00 | 0.46 | 0.82 | 0.00 | 0.80 | 0.53 | 0.00 | 0.85 | 0.79 | 0.00 | 0.75 |
| Avail Cap(c_a), veh/h | 289 | 0 | 686 | 338 | 0 | 690 | 122 | 0 | 653 | 240 | 0 | 812 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 31.1 | 0.0 | 23.1 | 30.4 | 0.0 | 24.8 | 34.6 | 0.0 | 24.3 | 32.1 | 0.0 | 20.8 |
| Incr Delay (d2), s/veh | 10.6 | 0.0 | 0.7 | 10.1 | 0.0 | 4.1 | 8.2 | 0.0 | 7.7 | 9.8 | 0.0 | 2.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.3 | 0.0 | 2.9 | 3.8 | 0.0 | 5.9 | 0.6 | 0.0 | 7.1 | 2.5 | 0.0 | 6.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 41.7 | 0.0 | 23.9 | 40.4 | 0.0 | 28.9 | 42.7 | 0.0 | 32.0 | 41.9 | 0.0 | 23.8 |
| LnGrp LOS | D | A | C | D | A | C | D | A | C | D | A | C |
| Approach Vol, veh/h | 372 | | 559 | | | | 436 | | 597 | | | |
| Approach Delay, s/veh | 31.8 | | 32.9 | | | | 32.7 | | 27.6 | | | |
| Approach LOS | C | | C | | | | C | | C | | | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 10.8 | 25.1 | 13.9 | 22.3 | 6.3 | 29.6 | 12.6 | 23.7 | | | | |
| Change Period (Y+Rc), s | * 4.2 | 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | | | | |
| Max Green Setting (Gmax), s | * 9.8 | 27.8 | * 14 | 27.0 | * 5 | 32.6 | * 12 | 29.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 7.1 | 18.4 | 9.7 | 8.9 | 3.1 | 18.7 | 8.6 | 16.3 | | | | |
| Green Ext Time (p_c), s | 0.1 | 1.7 | 0.2 | 1.0 | 0.0 | 2.5 | 0.1 | 1.8 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | 31.0 | | | | | | | | | | | |
| HCM 6th LOS | C | | | | | | | | | | | |
| Notes | | | | | | | | | | | | |












* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th AWSC
2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

Near Term plus Project PM Peak

08/20/2019

| Intersection | | | | | | | | | | | | |
|---------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 16.2 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|---|---|---|---|---|---|---|
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Traffic Vol, veh/h | 81 | 511 | 42 | 29 | 340 | 51 | 3 | 19 | 19 | 42 | 31 | 68 |
| Future Vol, veh/h | 81 | 511 | 42 | 29 | 340 | 51 | 3 | 19 | 19 | 42 | 31 | 68 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 84 | 532 | 44 | 30 | 354 | 53 | 3 | 20 | 20 | 44 | 32 | 71 |
| Number of Lanes | 1 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|----|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 3 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 3 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 3 |
| HCM Control Delay | 15.9 | 19 | 10.7 | 11.1 |
| HCM LOS | C | C | B | B |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 0% | 100% | 80% | 0% | 100% | 0% | 0% | 100% |
| Vol Right, % | 0% | 0% | 100% | 0% | 0% | 20% | 0% | 0% | 100% | 0% | 0% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 3 | 19 | 19 | 81 | 341 | 212 | 29 | 340 | 51 | 42 | 31 |
| LT Vol | 3 | 0 | 0 | 81 | 0 | 0 | 29 | 0 | 0 | 42 | 0 |
| Through Vol | 0 | 19 | 0 | 0 | 341 | 170 | 0 | 340 | 0 | 0 | 31 |
| RT Vol | 0 | 0 | 19 | 0 | 0 | 42 | 0 | 0 | 51 | 0 | 0 |
| Lane Flow Rate | 3 | 20 | 20 | 84 | 355 | 221 | 30 | 354 | 53 | 44 | 32 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.007 | 0.043 | 0.04 | 0.16 | 0.623 | 0.38 | 0.06 | 0.654 | 0.088 | 0.098 | 0.068 |
| Departure Headway (Hd) | 8.39 | 7.89 | 7.19 | 6.817 | 6.317 | 6.178 | 7.151 | 6.651 | 5.951 | 8.093 | 7.593 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 424 | 451 | 494 | 525 | 571 | 579 | 499 | 542 | 599 | 441 | 470 |
| Service Time | 6.187 | 5.687 | 4.987 | 4.576 | 4.076 | 3.937 | 4.915 | 4.415 | 3.715 | 5.877 | 5.377 |
| HCM Lane V/C Ratio | 0.007 | 0.044 | 0.04 | 0.16 | 0.622 | 0.382 | 0.06 | 0.653 | 0.088 | 0.1 | 0.068 |
| HCM Control Delay | 11.2 | 11 | 10.3 | 10.9 | 19 | 12.7 | 10.4 | 21.2 | 9.3 | 11.8 | 10.9 |
| HCM Lane LOS | B | B | B | B | C | B | B | C | A | B | B |
| HCM 95th-tile Q | 0 | 0.1 | 0.1 | 0.6 | 4.3 | 1.8 | 0.2 | 4.7 | 0.3 | 0.3 | 0.2 |

Intersection

Int Delay, s/veh 0.6

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|--------------------------|---|------|---|---|---|------|
| Lane Configurations |  | |  |  |  | |
| Traffic Vol, veh/h | 4 | 0 | 31 | 298 | 220 | 21 |
| Future Vol, veh/h | 4 | 0 | 31 | 298 | 220 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 250 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 6 | 0 | 44 | 420 | 310 | 30 |

| Major/Minor | Minor2 | Major1 | Major2 |
|----------------------|--------|---------|--------|
| Conflicting Flow All | 833 | - 340 | 0 - 0 |
| Stage 1 | 325 | - - | - - - |
| Stage 2 | 508 | - - | - - - |
| Critical Hdwy | 6.43 | - 4.13 | - - - |
| Critical Hdwy Stg 1 | 5.43 | - - | - - - |
| Critical Hdwy Stg 2 | 5.43 | - - | - - - |
| Follow-up Hdwy | 3.527 | - 2.227 | - - - |
| Pot Cap-1 Maneuver | 337 | 0 1214 | - - - |
| Stage 1 | 730 | 0 - | - - - |
| Stage 2 | 602 | 0 - | - - - |
| Platoon blocked, % | | | - - - |
| Mov Cap-1 Maneuver | 325 | - 1214 | - - - |
| Mov Cap-2 Maneuver | 325 | - - | - - - |
| Stage 1 | 704 | - - | - - - |
| Stage 2 | 602 | - - | - - - |

| Approach | EB | NB | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 16.3 | 0.8 | 0 |
| HCM LOS | C | | |





















| Minor Lane/Major Mvmt | NBL | NBT EBLn1 | SBT | SBR |
|-----------------------|-------|-----------|-----|-----|
| Capacity (veh/h) | 1214 | - 325 | - - | |
| HCM Lane V/C Ratio | 0.036 | - 0.017 | - - | |
| HCM Control Delay (s) | 8.1 | - 16.3 | - - | |
| HCM Lane LOS | A | - C | - - | |
| HCM 95th %tile Q(veh) | 0.1 | - 0.1 | - - | |

HCM 6th Signalized Intersection Summary

5: 19th Avenue & Cinnamon Drive

Near Term plus Project PM Peak

08/20/2019

| |  |  |  |  |  |  |  |  |  |  |  |  |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (veh/h) | 61 | 132 | 44 | 105 | 127 | 66 | 52 | 187 | 193 | 51 | 165 | 40 |
| Future Volume (veh/h) | 61 | 132 | 44 | 105 | 127 | 66 | 52 | 187 | 193 | 51 | 165 | 40 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 80 | 174 | 58 | 138 | 167 | 87 | 68 | 246 | 254 | 67 | 217 | 53 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 111 | 249 | 83 | 176 | 257 | 134 | 102 | 292 | 301 | 101 | 502 | 123 |
| Arrive On Green | 0.06 | 0.19 | 0.19 | 0.10 | 0.22 | 0.22 | 0.06 | 0.35 | 0.35 | 0.06 | 0.35 | 0.35 |
| Sat Flow, veh/h | 1767 | 1329 | 443 | 1767 | 1148 | 598 | 1767 | 836 | 863 | 1767 | 1440 | 352 |
| Grp Volume(v), veh/h | 80 | 0 | 232 | 138 | 0 | 254 | 68 | 0 | 500 | 67 | 0 | 270 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 0 | 1772 | 1767 | 0 | 1746 | 1767 | 0 | 1699 | 1767 | 0 | 1792 |
| Q Serve(g_s), s | 2.5 | 0.0 | 7.0 | 4.4 | 0.0 | 7.6 | 2.2 | 0.0 | 15.6 | 2.1 | 0.0 | 6.6 |
| Cycle Q Clear(g_c), s | 2.5 | 0.0 | 7.0 | 4.4 | 0.0 | 7.6 | 2.2 | 0.0 | 15.6 | 2.1 | 0.0 | 6.6 |
| Prop In Lane | 1.00 | | 0.25 | 1.00 | | 0.34 | 1.00 | | 0.51 | 1.00 | | 0.20 |
| Lane Grp Cap(c), veh/h | 111 | 0 | 331 | 176 | 0 | 391 | 102 | 0 | 593 | 101 | 0 | 624 |
| V/C Ratio(X) | 0.72 | 0.00 | 0.70 | 0.78 | 0.00 | 0.65 | 0.67 | 0.00 | 0.84 | 0.66 | 0.00 | 0.43 |
| Avail Cap(c_a), veh/h | 154 | 0 | 835 | 241 | 0 | 908 | 154 | 0 | 818 | 154 | 0 | 863 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.4 | 0.0 | 21.8 | 25.2 | 0.0 | 20.2 | 26.5 | 0.0 | 17.2 | 26.5 | 0.0 | 14.3 |
| Incr Delay (d2), s/veh | 9.5 | 0.0 | 2.7 | 11.1 | 0.0 | 1.8 | 7.3 | 0.0 | 5.9 | 7.2 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.3 | 0.0 | 2.9 | 2.2 | 0.0 | 2.9 | 1.0 | 0.0 | 6.1 | 1.0 | 0.0 | 2.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 35.9 | 0.0 | 24.5 | 36.3 | 0.0 | 22.0 | 33.7 | 0.0 | 23.1 | 33.7 | 0.0 | 14.8 |
| LnGrp LOS | D | A | C | D | A | C | C | A | C | C | A | B |
| Approach Vol, veh/h | | 312 | | | 392 | | | 568 | | | 337 | |
| Approach Delay, s/veh | | 27.4 | | | 27.0 | | | 24.4 | | | 18.5 | |
| Approach LOS | | C | | | C | | | C | | | B | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 7.5 | 24.6 | 9.9 | 15.3 | 7.5 | 24.6 | 7.8 | 17.4 | | | | |
| Change Period (Y+Rc), s | * 4.2 | 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | | | | |
| Max Green Setting (Gmax), s | * 5 | 27.6 | * 7.8 | 27.0 | * 5 | 27.6 | * 5 | 29.8 | | | | |
| Max Q Clear Time (g_c+I1), s | 4.1 | 17.6 | 6.4 | 9.0 | 4.2 | 8.6 | 4.5 | 9.6 | | | | |
| Green Ext Time (p_c), s | 0.0 | 2.3 | 0.0 | 1.2 | 0.0 | 1.4 | 0.0 | 1.4 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 24.4 | | | | | | | | | |
| HCM 6th LOS | | | C | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. | | | | | | | | | | | | |

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | WB | NB | NB |
|-----------------------|-----|-----|-----|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 54 | 105 | 74 |
| Average Queue (ft) | 31 | 43 | 47 |
| 95th Queue (ft) | 60 | 83 | 72 |
| Link Distance (ft) | | | 934 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 250 | 245 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|------|-----|-----|------|-----|----|------|-----|
| Directions Served | L | T | TR | L | T | R | L | T | R | L | T | R |
| Maximum Queue (ft) | 51 | 72 | 93 | 62 | 112 | 57 | 53 | 31 | 89 | 26 | 39 | 65 |
| Average Queue (ft) | 29 | 43 | 44 | 21 | 68 | 14 | 20 | 9 | 37 | 18 | 13 | 19 |
| 95th Queue (ft) | 45 | 66 | 77 | 47 | 101 | 33 | 46 | 32 | 63 | 32 | 31 | 38 |
| Link Distance (ft) | | 1245 | 1245 | | 1585 | | | 2742 | | | 2619 | |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 135 | | | 190 | | 250 | 185 | | 250 | 55 | | 250 |
| Storage Blk Time (%) | | | | | | | | | | | | 0 |
| Queuing Penalty (veh) | | | | | | | | | | | | 0 |

Intersection: 3: 19th Avenue & Project Driveway 1

| Movement | EB | NB | SB |
|-----------------------|-----|-----|-----|
| Directions Served | L | L | TR |
| Maximum Queue (ft) | 31 | 75 | 22 |
| Average Queue (ft) | 12 | 30 | 1 |
| 95th Queue (ft) | 37 | 66 | 7 |
| Link Distance (ft) | 175 | | 677 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | 250 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 4: 19th Avenue & Project Driveway 2

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 163 | 51 |
| Average Queue (ft) | 68 | 5 |
| 95th Queue (ft) | 121 | 25 |
| Link Distance (ft) | 187 | 368 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|------|-----|------|-----|-----|
| Directions Served | L | TR | L | TR | L | TR | L | TR |
| Maximum Queue (ft) | 164 | 185 | 200 | 232 | 68 | 273 | 180 | 222 |
| Average Queue (ft) | 79 | 89 | 78 | 110 | 18 | 109 | 66 | 123 |
| 95th Queue (ft) | 135 | 153 | 137 | 199 | 50 | 203 | 119 | 202 |
| Link Distance (ft) | | 2562 | | 1250 | | 1014 | | 368 |
| Upstream Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 100 | | 100 | |
| Storage Blk Time (%) | 2 | 4 | 3 | 11 | | 10 | 1 | 14 |
| Queuing Penalty (veh) | 4 | 5 | 9 | 15 | | 2 | 4 | 13 |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | WB | SB | SB |
|-----------------------|-----|------|-----|------|
| Directions Served | L | TR | L | R |
| Maximum Queue (ft) | 78 | 22 | 79 | 72 |
| Average Queue (ft) | 29 | 1 | 26 | 36 |
| 95th Queue (ft) | 59 | 7 | 59 | 56 |
| Link Distance (ft) | | 1125 | | 2742 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 100 | | 115 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Network Summary

Network wide Queuing Penalty: 51

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB |
|-----------------------|------|-----|-----|-----|
| Directions Served | TR | L | L | R |
| Maximum Queue (ft) | 22 | 96 | 91 | 75 |
| Average Queue (ft) | 1 | 36 | 38 | 44 |
| 95th Queue (ft) | 10 | 70 | 65 | 72 |
| Link Distance (ft) | 1526 | | | 934 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 250 | 245 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|------|-----|-----|------|-----|----|------|-----|
| Directions Served | L | T | TR | L | T | R | L | T | R | L | T | R |
| Maximum Queue (ft) | 62 | 68 | 68 | 50 | 133 | 44 | 30 | 55 | 74 | 50 | 42 | 44 |
| Average Queue (ft) | 27 | 43 | 48 | 18 | 67 | 18 | 4 | 16 | 15 | 22 | 17 | 18 |
| 95th Queue (ft) | 51 | 64 | 70 | 41 | 113 | 38 | 20 | 43 | 47 | 43 | 34 | 35 |
| Link Distance (ft) | | 1245 | 1245 | | 1583 | | | 2748 | | | 2614 | |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 135 | | | 190 | | 250 | 185 | | 250 | 55 | | 250 |
| Storage Blk Time (%) | | | | | | | | | | 0 | 0 | |
| Queuing Penalty (veh) | | | | | | | | | | 0 | 0 | |

Intersection: 3: 19th Avenue & Project Driveway 1

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | L | L |
| Maximum Queue (ft) | 31 | 31 |
| Average Queue (ft) | 5 | 6 |
| 95th Queue (ft) | 24 | 26 |
| Link Distance (ft) | 175 | |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | 250 |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 4: 19th Avenue & Project Driveway 2

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 74 | 31 |
| Average Queue (ft) | 30 | 1 |
| 95th Queue (ft) | 47 | 10 |
| Link Distance (ft) | 190 | 369 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|------|-----|------|-----|-----|
| Directions Served | L | TR | L | TR | L | TR | L | TR |
| Maximum Queue (ft) | 159 | 182 | 199 | 268 | 174 | 283 | 130 | 142 |
| Average Queue (ft) | 44 | 79 | 57 | 79 | 51 | 129 | 42 | 69 |
| 95th Queue (ft) | 102 | 144 | 111 | 155 | 125 | 232 | 82 | 114 |
| Link Distance (ft) | | 2542 | | 1246 | | 1006 | | 369 |
| Upstream Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 100 | | 100 | |
| Storage Blk Time (%) | 0 | 4 | 0 | 5 | 0 | 15 | 0 | 2 |
| Queuing Penalty (veh) | 1 | 2 | 0 | 5 | 0 | 8 | 0 | 1 |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|------|-----|------|
| Directions Served | L | T | TR | L | R |
| Maximum Queue (ft) | 31 | 31 | 29 | 53 | 31 |
| Average Queue (ft) | 8 | 2 | 1 | 22 | 18 |
| 95th Queue (ft) | 30 | 12 | 10 | 46 | 40 |
| Link Distance (ft) | | 1246 | 1129 | | 2748 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | 115 | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

Network Summary

Network wide Queuing Penalty: 18






Appendix H: Cumulative Year 2040 No Project Traffic Conditions



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Page | H

| Intersection | | | | | | |
|--------------------------|---|------|---|---|---|--|
| Int Delay, s/veh | 4.2 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 307 | 73 | 146 | 370 | 67 | 178 |
| Future Vol, veh/h | 307 | 73 | 146 | 370 | 67 | 178 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 334 | 79 | 159 | 402 | 73 | 193 |









| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 413 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 1141 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1141 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.5 | 14.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 319 | 670 | - | - | 1141 | - |
| HCM Lane V/C Ratio | 0.228 | 0.289 | - | - | 0.139 | - |
| HCM Control Delay (s) | 19.6 | 12.5 | - | - | 8.7 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.9 | 1.2 | - | - | 0.5 | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 14 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 83 | 450 | 31 | 56 | 448 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Future Vol, veh/h | 83 | 450 | 31 | 56 | 448 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Conflicting Peds, #/hr | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 90 | 489 | 34 | 61 | 487 | 35 | 30 | 17 | 155 | 63 | 34 | 77 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 522 | 0 | 0 | 524 | 0 | 0 | 1369 | 1331 | 507 | 1399 | 1331 | 505 |
| Stage 1 | - | - | - | - | - | - | 687 | 687 | - | 627 | 627 | - |
| Stage 2 | - | - | - | - | - | - | 682 | 644 | - | 772 | 704 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1039 | - | - | 1038 | - | - | 123 | 154 | 564 | 117 | 154 | 565 |
| Stage 1 | - | - | - | - | - | - | 435 | 446 | - | 470 | 475 | - |
| Stage 2 | - | - | - | - | - | - | 438 | 466 | - | 391 | 438 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1039 | - | - | 1037 | - | - | 76 | 132 | 563 | 68 | 132 | 565 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 76 | 132 | - | 68 | 132 | - |
| Stage 1 | - | - | - | - | - | - | 397 | 407 | - | 429 | 447 | - |
| Stage 2 | - | - | - | - | - | - | 329 | 439 | - | 247 | 399 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 1.3 | | | 0.9 | | | 28.5 | | | 85.7 | | |
| HCM LOS | | | | | | | D | | | F | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 76 | 424 | 1039 | - | - | 1037 | - | - | 68 | 283 | | |
| HCM Lane V/C Ratio | 0.4 | 0.408 | 0.087 | - | - | 0.059 | - | - | 0.927 | 0.392 | | |
| HCM Control Delay (s) | 81 | 19.2 | 8.8 | - | - | 8.7 | - | - | 191.1 | 25.7 | | |
| HCM Lane LOS | F | C | A | - | - | A | - | - | F | D | | |
| HCM 95th %tile Q(veh) | 1.6 | 1.9 | 0.3 | - | - | 0.2 | - | - | 4.6 | 1.8 | | |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 51.6 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 19 | 196 | 12 | 196 | 223 | 46 | 27 | 174 | 220 | 61 | 285 | 35 |
| Future Vol, veh/h | 19 | 196 | 12 | 196 | 223 | 46 | 27 | 174 | 220 | 61 | 285 | 35 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 22 | 228 | 14 | 228 | 259 | 53 | 31 | 202 | 256 | 71 | 331 | 41 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 26.3 | 31.2 | 90.9 | 48.3 |
| HCM LOS | D | D | F | E |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|--------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 44% | 0% | 94% | 0% | 83% | 0% | 89% |
| Vol Right, % | 0% | 56% | 0% | 6% | 0% | 17% | 0% | 11% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 27 | 394 | 19 | 208 | 196 | 269 | 61 | 320 |
| LT Vol | 27 | 0 | 19 | 0 | 196 | 0 | 61 | 0 |
| Through Vol | 0 | 174 | 0 | 196 | 0 | 223 | 0 | 285 |
| RT Vol | 0 | 220 | 0 | 12 | 0 | 46 | 0 | 35 |
| Lane Flow Rate | 31 | 458 | 22 | 242 | 228 | 313 | 71 | 372 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.082 | 1.08 | 0.061 | 0.627 | 0.591 | 0.757 | 0.184 | 0.904 |
| Departure Headway (Hd) | 9.414 | 8.486 | 10.342 | 9.773 | 9.764 | 9.115 | 9.697 | 9.094 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 380 | 426 | 348 | 372 | 371 | 400 | 372 | 402 |
| Service Time | 7.177 | 6.248 | 8.042 | 7.473 | 7.464 | 6.815 | 7.397 | 6.794 |
| HCM Lane V/C Ratio | 0.082 | 1.075 | 0.063 | 0.651 | 0.615 | 0.782 | 0.191 | 0.925 |
| HCM Control Delay | 13 | 96.2 | 13.7 | 27.5 | 25.6 | 35.2 | 14.6 | 54.7 |
| HCM Lane LOS | B | F | B | D | D | E | B | F |
| HCM 95th-tile Q | 0.3 | 15.3 | 0.2 | 4.1 | 3.6 | 6.2 | 0.7 | 9.5 |






HCM 6th TWSC
6: Cinnamon Drive & Liberty Drive

Cumulative Year 2040 No Project AM Peak

08/21/2019

Intersection






Int Delay, s/veh 4

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|---|---|---|------|---|---|
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 178 | 315 | 303 | 97 | 68 | 117 |
| Future Vol, veh/h | 178 | 315 | 303 | 97 | 68 | 117 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 2 | 3 | 8 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 193 | 342 | 329 | 105 | 74 | 127 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|-----------------|
| Conflicting Flow All | 436 | 0 | 0 1115 392 |
| Stage 1 | - | - | - - 384 - |
| Stage 2 | - | - | - - 731 - |
| Critical Hdwy | 4.13 | - | - - 6.43 6.23 |
| Critical Hdwy Stg 1 | - | - | - - 5.43 - |
| Critical Hdwy Stg 2 | - | - | - - 5.43 - |
| Follow-up Hdwy | 2.227 | - | - - 3.527 3.327 |
| Pot Cap-1 Maneuver | 1118 | - | - - 229 655 |
| Stage 1 | - | - | - - 686 - |
| Stage 2 | - | - | - - 475 - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1116 | - | - - 189 649 |
| Mov Cap-2 Maneuver | - | - | - - 321 - |
| Stage 1 | - | - | - - 566 - |
| Stage 2 | - | - | - - 474 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 3.2 | 0 | 14.7 |
| HCM LOS | | | B |









| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1116 | - | - | - | 321 | 649 |
| HCM Lane V/C Ratio | 0.173 | - | - | - | 0.23 | 0.196 |
| HCM Control Delay (s) | 8.9 | - | - | - | 19.5 | 11.9 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.6 | - | - | - | 0.9 | 0.7 |

| Intersection | | | | | | |
|--------------------------|---|------|---|---|---|--|
| Int Delay, s/veh | 4.9 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 503 | 74 | 151 | 264 | 69 | 205 |
| Future Vol, veh/h | 503 | 74 | 151 | 264 | 69 | 205 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 529 | 78 | 159 | 278 | 73 | 216 |









| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 608 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 966 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 965 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 3.4 | 17.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 310 | 520 | - | - | 965 | - |
| HCM Lane V/C Ratio | 0.234 | 0.415 | - | - | 0.165 | - |
| HCM Control Delay (s) | 20.1 | 16.7 | - | - | 9.5 | - |
| HCM Lane LOS | C | C | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.9 | 2 | - | - | 0.6 | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 6.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 81 | 630 | 62 | 43 | 401 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Future Vol, veh/h | 81 | 630 | 62 | 43 | 401 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Conflicting Peds, #/hr | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 84 | 656 | 65 | 45 | 418 | 53 | 4 | 20 | 29 | 44 | 39 | 71 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 471 | 0 | 0 | 728 | 0 | 0 | 1454 | 1425 | 697 | 1417 | 1431 | 445 |
| Stage 1 | - | - | - | - | - | - | 864 | 864 | - | 535 | 535 | - |
| Stage 2 | - | - | - | - | - | - | 590 | 561 | - | 882 | 896 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1086 | - | - | 871 | - | - | 108 | 135 | 439 | 114 | 134 | 611 |
| Stage 1 | - | - | - | - | - | - | 347 | 370 | - | 527 | 522 | - |
| Stage 2 | - | - | - | - | - | - | 492 | 508 | - | 340 | 357 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1086 | - | - | 865 | - | - | 64 | 117 | 436 | 84 | 116 | 611 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 64 | 117 | - | 84 | 116 | - |
| Stage 1 | - | - | - | - | - | - | 318 | 339 | - | 486 | 495 | - |
| Stage 2 | - | - | - | - | - | - | 380 | 482 | - | 275 | 327 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 0.9 | | | 0.8 | | | 30.6 | | | 47.2 | | |
| HCM LOS | | | | | | | D | | | E | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 64 | 207 | 1086 | - | - | 865 | - | - | 84 | 244 | | |
| HCM Lane V/C Ratio | 0.065 | 0.237 | 0.078 | - | - | 0.052 | - | - | 0.521 | 0.448 | | |
| HCM Control Delay (s) | 65.1 | 27.7 | 8.6 | - | - | 9.4 | - | - | 87.2 | 31.2 | | |
| HCM Lane LOS | F | D | A | - | - | A | - | - | F | D | | |
| HCM 95th %tile Q(veh) | 0.2 | 0.9 | 0.3 | - | - | 0.2 | - | - | 2.3 | 2.2 | | |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 59.4 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 41 | 192 | 62 | 147 | 177 | 62 | 71 | 230 | 273 | 42 | 175 | 34 |
| Future Vol, veh/h | 41 | 192 | 62 | 147 | 177 | 62 | 71 | 230 | 273 | 42 | 175 | 34 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 46 | 213 | 69 | 163 | 197 | 69 | 79 | 256 | 303 | 47 | 194 | 38 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|-------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 25.2 | 21.9 | 119.1 | 20.7 |
| HCM LOS | D | C | F | C |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 46% | 0% | 76% | 0% | 74% | 0% | 84% |
| Vol Right, % | 0% | 54% | 0% | 24% | 0% | 26% | 0% | 16% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 71 | 503 | 41 | 254 | 147 | 239 | 42 | 209 |
| LT Vol | 71 | 0 | 41 | 0 | 147 | 0 | 42 | 0 |
| Through Vol | 0 | 230 | 0 | 192 | 0 | 177 | 0 | 175 |
| RT Vol | 0 | 273 | 0 | 62 | 0 | 62 | 0 | 34 |
| Lane Flow Rate | 79 | 559 | 46 | 282 | 163 | 266 | 47 | 232 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.189 | 1.199 | 0.114 | 0.656 | 0.403 | 0.605 | 0.118 | 0.549 |
| Departure Headway (Hd) | 8.633 | 7.724 | 9.637 | 8.936 | 9.479 | 8.769 | 9.648 | 9.005 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 416 | 469 | 374 | 406 | 382 | 414 | 374 | 404 |
| Service Time | 6.381 | 5.471 | 7.337 | 6.636 | 7.179 | 6.469 | 7.348 | 6.705 |
| HCM Lane V/C Ratio | 0.19 | 1.192 | 0.123 | 0.695 | 0.427 | 0.643 | 0.126 | 0.574 |
| HCM Control Delay | 13.4 | 134 | 13.6 | 27.1 | 18.4 | 24 | 13.6 | 22.1 |
| HCM Lane LOS | B | F | B | D | C | C | B | C |
| HCM 95th-tile Q | 0.7 | 21.3 | 0.4 | 4.5 | 1.9 | 3.9 | 0.4 | 3.2 |






HCM 6th TWSC
6: Cinnamon Drive & Liberty Drive

Cumulative Year 2040 No Project PM Peak

08/21/2019

Intersection

Int Delay, s/veh 2









| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|---|---|---|------|---|---|
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 68 | 380 | 340 | 53 | 58 | 30 |
| Future Vol, veh/h | 68 | 380 | 340 | 53 | 58 | 30 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 3 | 4 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 73 | 409 | 366 | 57 | 62 | 32 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 424 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.13 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 2.227 | - | - |
| Pot Cap-1 Maneuver | 1130 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1129 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.3 | 0 | 14.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1129 | - | - | - | 395 | 645 |
| HCM Lane V/C Ratio | 0.065 | - | - | - | 0.158 | 0.05 |
| HCM Control Delay (s) | 8.4 | - | - | - | 15.8 | 10.9 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 0.6 | 0.2 |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 21.6 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 83 | 450 | 31 | 56 | 448 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Future Vol, veh/h | 83 | 450 | 31 | 56 | 448 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 90 | 489 | 34 | 61 | 487 | 35 | 30 | 17 | 155 | 63 | 34 | 77 |
| Number of Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |












| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 3 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 3 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 3 | 3 |
| HCM Control Delay | 23.2 | 23.8 | 16.5 | 14.7 |
| HCM LOS | C | C | C | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 10% | 0% | 100% | 83% | 0% | 100% | 82% | 0% | 30% |
| Vol Right, % | 0% | 90% | 0% | 0% | 17% | 0% | 0% | 18% | 0% | 70% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 28 | 159 | 83 | 300 | 181 | 56 | 299 | 181 | 58 | 102 |
| LT Vol | 28 | 0 | 83 | 0 | 0 | 56 | 0 | 0 | 58 | 0 |
| Through Vol | 0 | 16 | 0 | 300 | 150 | 0 | 299 | 149 | 0 | 31 |
| RT Vol | 0 | 143 | 0 | 0 | 31 | 0 | 0 | 32 | 0 | 71 |
| Lane Flow Rate | 30 | 173 | 90 | 326 | 197 | 61 | 325 | 197 | 63 | 111 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.082 | 0.41 | 0.215 | 0.731 | 0.435 | 0.146 | 0.733 | 0.438 | 0.171 | 0.271 |
| Departure Headway (Hd) | 9.683 | 8.535 | 8.588 | 8.075 | 7.952 | 8.644 | 8.131 | 8.004 | 9.792 | 8.788 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 370 | 422 | 420 | 450 | 454 | 416 | 448 | 451 | 366 | 408 |
| Service Time | 7.442 | 6.294 | 6.309 | 5.796 | 5.673 | 6.366 | 5.853 | 5.726 | 7.554 | 6.549 |
| HCM Lane V/C Ratio | 0.081 | 0.41 | 0.214 | 0.724 | 0.434 | 0.147 | 0.725 | 0.437 | 0.172 | 0.272 |
| HCM Control Delay | 13.3 | 17.1 | 13.7 | 29.8 | 16.7 | 12.8 | 30.1 | 16.8 | 14.6 | 14.8 |
| HCM Lane LOS | B | C | B | D | C | B | D | C | B | B |
| HCM 95th-tile Q | 0.3 | 2 | 0.8 | 5.9 | 2.2 | 0.5 | 5.9 | 2.2 | 0.6 | 1.1 |

Intersection

Intersection Delay, s/veh33.1









Intersection LOS D

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|---|---|---|---|---|---|---|
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Traffic Vol, veh/h | 19 | 196 | 12 | 196 | 223 | 46 | 27 | 174 | 220 | 61 | 285 | 35 |
| Future Vol, veh/h | 19 | 196 | 12 | 196 | 223 | 46 | 27 | 174 | 220 | 61 | 285 | 35 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 22 | 228 | 14 | 228 | 259 | 53 | 31 | 202 | 256 | 71 | 331 | 41 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|-------------------------------|----|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left SB | | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right NB | | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 30 | 29.1 | 25.5 | 48.2 |
| HCM LOS | D | D | D | E |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|------------------------|--------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 0% | 94% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 100% | 0% | 6% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 27 | 174 | 220 | 19 | 208 | 196 | 223 | 46 | 61 | 285 | 35 |
| LT Vol | 27 | 0 | 0 | 19 | 0 | 196 | 0 | 0 | 61 | 0 | 0 |
| Through Vol | 0 | 174 | 0 | 0 | 196 | 0 | 223 | 0 | 0 | 285 | 0 |
| RT Vol | 0 | 0 | 220 | 0 | 12 | 0 | 0 | 46 | 0 | 0 | 35 |
| Lane Flow Rate | 31 | 202 | 256 | 22 | 242 | 228 | 259 | 53 | 71 | 331 | 41 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.091 | 0.557 | 0.652 | 0.065 | 0.675 | 0.644 | 0.696 | 0.133 | 0.205 | 0.911 | 0.104 |
| Departure Headway (Hd) | 10.423 | 9.906 | 9.181 | 10.59 | 10.05 | 10.169 | 9.657 | 8.941 | 10.409 | 9.892 | 9.22 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 344 | 364 | 394 | 339 | 360 | 356 | 376 | 401 | 345 | 368 | 391 |
| Service Time | 8.178 | 7.66 | 6.935 | 8.342 | 7.802 | 7.92 | 7.408 | 6.691 | 8.161 | 7.644 | 6.92 |
| HCM Lane V/C Ratio | 0.09 | 0.555 | 0.65 | 0.065 | 0.672 | 0.64 | 0.689 | 0.132 | 0.206 | 0.899 | 0.105 |
| HCM Control Delay | 14.2 | 24.5 | 27.7 | 14.1 | 31.4 | 29.7 | 31.9 | 13.1 | 15.8 | 59.5 | 13 |
| HCM Lane LOS | B | C | D | B | D | D | D | B | C | F | B |
| HCM 95th-tile Q | 0.3 | 3.2 | 4.5 | 0.2 | 4.7 | 4.3 | 5.1 | 0.5 | 0.8 | 9.3 | 0.3 |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 21.2 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 81 | 630 | 62 | 43 | 401 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Future Vol, veh/h | 81 | 630 | 62 | 43 | 401 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 84 | 656 | 65 | 45 | 418 | 53 | 4 | 20 | 29 | 44 | 39 | 71 |
| Number of Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |












| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 3 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 3 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 3 | 3 |
| HCM Control Delay | 26.2 | 16.8 | 12.3 | 13.2 |
| HCM LOS | D | C | B | B |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 40% | 0% | 100% | 77% | 0% | 100% | 72% | 0% | 35% |
| Vol Right, % | 0% | 60% | 0% | 0% | 23% | 0% | 0% | 28% | 0% | 65% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 4 | 47 | 81 | 420 | 272 | 43 | 267 | 185 | 42 | 105 |
| LT Vol | 4 | 0 | 81 | 0 | 0 | 43 | 0 | 0 | 42 | 0 |
| Through Vol | 0 | 19 | 0 | 420 | 210 | 0 | 267 | 134 | 0 | 37 |
| RT Vol | 0 | 28 | 0 | 0 | 62 | 0 | 0 | 51 | 0 | 68 |
| Lane Flow Rate | 4 | 49 | 84 | 438 | 283 | 45 | 278 | 192 | 44 | 109 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.011 | 0.115 | 0.173 | 0.833 | 0.527 | 0.098 | 0.568 | 0.382 | 0.109 | 0.243 |
| Departure Headway (Hd) | 9.359 | 8.429 | 7.362 | 6.855 | 6.694 | 7.856 | 7.349 | 7.153 | 8.955 | 7.993 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 382 | 425 | 488 | 529 | 538 | 456 | 490 | 504 | 400 | 450 |
| Service Time | 7.12 | 6.19 | 5.101 | 4.594 | 4.433 | 5.599 | 5.092 | 4.896 | 6.708 | 5.745 |
| HCM Lane V/C Ratio | 0.01 | 0.115 | 0.172 | 0.828 | 0.526 | 0.099 | 0.567 | 0.381 | 0.11 | 0.242 |
| HCM Control Delay | 12.2 | 12.3 | 11.6 | 35.2 | 16.7 | 11.5 | 19.4 | 14.3 | 12.8 | 13.3 |
| HCM Lane LOS | B | B | B | E | C | B | C | B | B | B |
| HCM 95th-tile Q | 0 | 0.4 | 0.6 | 8.4 | 3 | 0.3 | 3.5 | 1.8 | 0.4 | 0.9 |

Intersection

Intersection Delay, s/veh 23.6

Intersection LOS C

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|---|---|---|---|---|---|---|
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Traffic Vol, veh/h | 41 | 192 | 62 | 147 | 177 | 62 | 71 | 230 | 273 | 42 | 175 | 34 |
| Future Vol, veh/h | 41 | 192 | 62 | 147 | 177 | 62 | 71 | 230 | 273 | 42 | 175 | 34 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 46 | 213 | 69 | 163 | 197 | 69 | 79 | 256 | 303 | 47 | 194 | 38 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|-------------------------------|------|------|----|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left SB | | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right NB | | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 29.1 | 19.5 | 25 | 20.3 |
| HCM LOS | D | C | C | C |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 0% | 76% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 100% | 0% | 24% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 71 | 230 | 273 | 41 | 254 | 147 | 177 | 62 | 42 | 175 | 34 |
| LT Vol | 71 | 0 | 0 | 41 | 0 | 147 | 0 | 0 | 42 | 0 | 0 |
| Through Vol | 0 | 230 | 0 | 0 | 192 | 0 | 177 | 0 | 0 | 175 | 0 |
| RT Vol | 0 | 0 | 273 | 0 | 62 | 0 | 0 | 62 | 0 | 0 | 34 |
| Lane Flow Rate | 79 | 256 | 303 | 46 | 282 | 163 | 197 | 69 | 47 | 194 | 38 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.206 | 0.63 | 0.687 | 0.123 | 0.712 | 0.444 | 0.506 | 0.164 | 0.134 | 0.528 | 0.095 |
| Departure Headway (Hd) | 9.385 | 8.872 | 8.153 | 9.752 | 9.081 | 9.781 | 9.271 | 8.557 | 10.299 | 9.783 | 9.06 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 382 | 406 | 443 | 367 | 398 | 367 | 387 | 418 | 348 | 368 | 394 |
| Service Time | 7.154 | 6.64 | 5.921 | 7.524 | 6.853 | 7.557 | 7.047 | 6.333 | 8.082 | 7.565 | 6.842 |
| HCM Lane V/C Ratio | 0.207 | 0.631 | 0.684 | 0.125 | 0.709 | 0.444 | 0.509 | 0.165 | 0.135 | 0.527 | 0.096 |
| HCM Control Delay | 14.6 | 25.7 | 27.1 | 13.9 | 31.5 | 20.2 | 21.2 | 13 | 14.7 | 23.1 | 12.8 |
| HCM Lane LOS | B | D | D | B | D | C | C | B | B | C | B |
| HCM 95th-tile Q | 0.8 | 4.2 | 5.1 | 0.4 | 5.4 | 2.2 | 2.8 | 0.6 | 0.5 | 3 | 0.3 |

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB |
|-----------------------|------|-----|-----|-----|
| Directions Served | TR | L | L | R |
| Maximum Queue (ft) | 22 | 73 | 69 | 72 |
| Average Queue (ft) | 1 | 30 | 30 | 39 |
| 95th Queue (ft) | 10 | 63 | 50 | 61 |
| Link Distance (ft) | 1513 | | | 934 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 250 | 245 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|-----|------|----|------|
| Directions Served | L | T | TR | L | T | TR | L | TR | L | TR |
| Maximum Queue (ft) | 75 | 89 | 102 | 73 | 122 | 103 | 53 | 56 | 72 | 55 |
| Average Queue (ft) | 34 | 49 | 46 | 31 | 66 | 37 | 17 | 42 | 27 | 31 |
| 95th Queue (ft) | 58 | 75 | 72 | 63 | 94 | 73 | 46 | 61 | 52 | 49 |
| Link Distance (ft) | | 649 | 649 | | 1597 | 1597 | | 2742 | | 2619 |
| Upstream Blk Time (%) | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | |
| Storage Bay Dist (ft) | 135 | | | 190 | | | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | | | | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | | 0 | 0 |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | TR | L | T | R | L | T | R | L | T | R |
| Maximum Queue (ft) | 49 | 126 | 136 | 132 | 42 | 52 | 136 | 112 | 72 | 152 | 42 |
| Average Queue (ft) | 14 | 54 | 59 | 57 | 15 | 18 | 58 | 58 | 30 | 70 | 14 |
| 95th Queue (ft) | 36 | 94 | 100 | 106 | 32 | 46 | 98 | 94 | 57 | 117 | 34 |
| Link Distance (ft) | | 2524 | | 1243 | | | 997 | | | 374 | 374 |
| Upstream Blk Time (%) | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 250 | 100 | | 250 | 100 | | |
| Storage Blk Time (%) | | 1 | 2 | 2 | | | 1 | | | 4 | |
| Queuing Penalty (veh) | | 0 | 4 | 4 | | | 2 | | | 2 | |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|------|-----|------|
| Directions Served | L | T | TR | L | R |
| Maximum Queue (ft) | 75 | 30 | 53 | 75 | 74 |
| Average Queue (ft) | 39 | 1 | 3 | 38 | 41 |
| 95th Queue (ft) | 64 | 10 | 21 | 61 | 67 |
| Link Distance (ft) | | 1243 | 1125 | | 2742 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | 115 | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

Zone Summary

Zone wide Queuing Penalty: 14

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB |
|-----------------------|------|-----|-----|-----|
| Directions Served | TR | L | L | R |
| Maximum Queue (ft) | 22 | 74 | 71 | 73 |
| Average Queue (ft) | 1 | 36 | 26 | 41 |
| 95th Queue (ft) | 7 | 64 | 50 | 64 |
| Link Distance (ft) | 1526 | | | 934 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 250 | 245 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|-----|------|----|------|
| Directions Served | L | T | TR | L | T | TR | L | TR | L | TR |
| Maximum Queue (ft) | 78 | 79 | 117 | 55 | 108 | 75 | 30 | 67 | 55 | 61 |
| Average Queue (ft) | 34 | 57 | 63 | 26 | 67 | 34 | 3 | 29 | 25 | 35 |
| 95th Queue (ft) | 54 | 77 | 93 | 53 | 95 | 57 | 18 | 54 | 52 | 51 |
| Link Distance (ft) | | 610 | 610 | | 1595 | 1595 | | 2748 | | 2614 |
| Upstream Blk Time (%) | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | |
| Storage Bay Dist (ft) | 135 | | | 190 | | | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | | | | 0 | 1 |
| Queuing Penalty (veh) | | | | | | | | | 0 | 0 |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|------|-----|-----|------|-----|-----|-----|-----|
| Directions Served | L | TR | L | T | R | L | T | R | L | T | R |
| Maximum Queue (ft) | 48 | 127 | 97 | 113 | 56 | 92 | 143 | 122 | 53 | 108 | 47 |
| Average Queue (ft) | 22 | 58 | 45 | 44 | 18 | 38 | 64 | 68 | 23 | 48 | 20 |
| 95th Queue (ft) | 42 | 100 | 81 | 79 | 38 | 69 | 109 | 112 | 46 | 83 | 41 |
| Link Distance (ft) | | 2529 | | 1233 | | | 1006 | | | 359 | |
| Upstream Blk Time (%) | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 250 | 100 | | 250 | 100 | | 250 |
| Storage Blk Time (%) | | 1 | 0 | 0 | | 0 | 1 | | | 0 | |
| Queuing Penalty (veh) | | 0 | 0 | 1 | | 0 | 4 | | | 0 | |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | WB | SB | SB |
|-----------------------|-----|------|-----|------|
| Directions Served | L | TR | L | R |
| Maximum Queue (ft) | 53 | 31 | 79 | 54 |
| Average Queue (ft) | 18 | 1 | 27 | 19 |
| 95th Queue (ft) | 47 | 10 | 60 | 46 |
| Link Distance (ft) | | 1129 | | 2748 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 100 | | 115 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Zone Summary

| |
|------------------------------|
| Zone wide Queuing Penalty: 6 |
|------------------------------|






Appendix I: Cumulative Year 2040 plus Project Traffic Conditions











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| Intersection | | | | | | | | |
|--------------------------|---|------|---|---|---|---|-------|-----|
| Int Delay, s/veh | 5.3 | | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | | |
| Lane Configurations |  | |  |  |  |  | | |
| Traffic Vol, veh/h | 307 | 76 | 149 | 370 | 89 | 243 | | |
| Future Vol, veh/h | 307 | 76 | 149 | 370 | 89 | 243 | | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | | |
| RT Channelized | - | None | - | None | - | None | | |
| Storage Length | - | - | 250 | - | 245 | 0 | | |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - | | |
| Grade, % | 0 | - | - | 0 | 0 | - | | |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | | |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | | |
| Mvmt Flow | 334 | 83 | 162 | 402 | 97 | 264 | | |
| | | | | | | | | |
| Major/Minor | Major1 | | Major2 | | Minor1 | | | |
| Conflicting Flow All | 0 | 0 | 417 | 0 | 1102 | 376 | | |
| Stage 1 | - | - | - | - | 376 | - | | |
| Stage 2 | - | - | - | - | 726 | - | | |
| Critical Hdwy | - | - | 4.13 | - | 6.43 | 6.23 | | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - | | |
| Follow-up Hdwy | - | - | 2.227 | - | 3.527 | 3.327 | | |
| Pot Cap-1 Maneuver | - | - | 1137 | - | 233 | 668 | | |
| Stage 1 | - | - | - | - | 692 | - | | |
| Stage 2 | - | - | - | - | 477 | - | | |
| Platoon blocked, % | - | - | | - | | | | |
| Mov Cap-1 Maneuver | - | - | 1137 | - | 200 | 668 | | |
| Mov Cap-2 Maneuver | - | - | - | - | 316 | - | | |
| Stage 1 | - | - | - | - | 692 | - | | |
| Stage 2 | - | - | - | - | 409 | - | | |
| | | | | | | | | |
| | | | | | | | | |
| Approach | EB | | WB | | NB | | | |
| HCM Control Delay, s | 0 | | 2.5 | | 15.9 | | | |
| HCM LOS | C | | | | | | | |
| | | | | | | | | |
| Minor Lane/Major Mvmt | NBLn1 | | NBLn2 | | EBT | EBR | WBL | WBT |
| Capacity (veh/h) | 316 | | 668 | | - | - | 1137 | - |
| HCM Lane V/C Ratio | 0.306 | | 0.395 | | - | - | 0.142 | - |
| HCM Control Delay (s) | 21.3 | | 13.9 | | - | - | 8.7 | - |
| HCM Lane LOS | C | | B | | - | - | A | - |
| HCM 95th %tile Q(veh) | 1.3 | | 1.9 | | - | - | 0.5 | - |

| Intersection | | | | | | | | | | | | |
|----------------------------|---|---|-------|---|---|----------------------------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 16.9 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 83 | 515 | 31 | 56 | 451 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Future Vol, veh/h | 83 | 515 | 31 | 56 | 451 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Conflicting Peds, #/hr | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 90 | 560 | 34 | 61 | 490 | 35 | 30 | 17 | 155 | 63 | 34 | 77 |
| | | | | | | | | | | | | |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 525 | 0 | 0 | 595 | 0 | 0 | 1443 | 1405 | 578 | 1473 | 1405 | 508 |
| Stage 1 | - | - | - | - | - | - | 758 | 758 | - | 630 | 630 | - |
| Stage 2 | - | - | - | - | - | - | 685 | 647 | - | 843 | 775 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1037 | - | - | 976 | - | - | 109 | 139 | 514 | 104 | 139 | 563 |
| Stage 1 | - | - | - | - | - | - | 398 | 414 | - | 468 | 473 | - |
| Stage 2 | - | - | - | - | - | - | 436 | 465 | - | 357 | 406 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1037 | - | - | 975 | - | - | 66 | 119 | 514 | ~ 58 | 119 | 563 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 66 | 119 | - | ~ 58 | 119 | - |
| Stage 1 | - | - | - | - | - | - | 363 | 378 | - | 427 | 443 | - |
| Stage 2 | - | - | - | - | - | - | 326 | 436 | - | 217 | 370 | - |
| | | | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 1.2 | | | 0.9 | | | 33.4 | | | 113 | | |
| HCM LOS | | | | | | | D | | | F | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBLn1 NBLn2 | | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 66 | 385 | 1037 | - | - | 975 | - | - | 58 | 264 | | |
| HCM Lane V/C Ratio | 0.461 | 0.449 | 0.087 | - | - | 0.062 | - | - | 1.087 | 0.42 | | |
| HCM Control Delay (s) | 99.6 | 21.7 | 8.8 | - | - | 8.9 | - | - | 262 | 28.2 | | |
| HCM Lane LOS | F | C | A | - | - | A | - | - | F | D | | |
| HCM 95th %tile Q(veh) | 1.8 | 2.3 | 0.3 | - | - | 0.2 | - | - | 5.2 | 2 | | |
| Notes | | | | | | | | | | | | |
| ~: Volume exceeds capacity | | \$: Delay exceeds 300s | | | | +: Computation Not Defined | | | | *: All major volume in platoon | | |

HCM 6th TWSC
3: 19th Avenue & Project Driveway 1

Cumulative Year 2040 plus Project AM Peak




08/22/2019

| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 1.8 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 13 | 0 | 142 | 314 | 374 | 86 |
| Future Vol, veh/h | 13 | 0 | 142 | 314 | 374 | 86 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 15 | 0 | 165 | 365 | 435 | 100 |
| | | | | | | |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 1180 | - | 535 | 0 | - | 0 |
| Stage 1 | 485 | - | - | - | - | - |
| Stage 2 | 695 | - | - | - | - | - |
| Critical Hdwy | 6.43 | - | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | - | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 209 | 0 | 1028 | - | - | - |
| Stage 1 | 617 | 0 | - | - | - | - |
| Stage 2 | 493 | 0 | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 167 | - | 1028 | - | - | - |
| Mov Cap-2 Maneuver | 167 | - | - | - | - | - |
| Stage 1 | 493 | - | - | - | - | - |
| Stage 2 | 493 | - | - | - | - | - |
| | | | | | | |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 28.7 | 2.9 | | 0 | | |
| HCM LOS | D | | | | | |
| | | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1028 | - | 167 | - | - | |
| HCM Lane V/C Ratio | 0.161 | - | 0.091 | - | - | |
| HCM Control Delay (s) | 9.2 | 0 | 28.7 | - | - | |
| HCM Lane LOS | A | A | D | - | - | |
| HCM 95th %tile Q(veh) | 0.6 | - | 0.3 | - | - | |









HCM 6th TWSC
4: 19th Avenue & Project Driveway 2

Cumulative Year 2040 plus Project AM Peak

08/22/2019






| Intersection | | | | | | |
|--------------------------|---|--------|-------|---|---|------|
| Int Delay, s/veh | 5.2 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 82 | 121 | 25 | 375 | 377 | 0 |
| Future Vol, veh/h | 82 | 121 | 25 | 375 | 377 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 95 | 141 | 29 | 436 | 438 | 0 |
| Major/Minor | Minor2 | Major1 | | Major2 | | |
| Conflicting Flow All | 932 | 438 | 438 | 0 | - | 0 |
| Stage 1 | 438 | - | - | - | - | - |
| Stage 2 | 494 | - | - | - | - | - |
| Critical Hdwy | 6.43 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | 3.327 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | 295 | 617 | 1117 | - | - | - |
| Stage 1 | 648 | - | - | - | - | - |
| Stage 2 | 611 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 285 | 617 | 1117 | - | - | - |
| Mov Cap-2 Maneuver | 285 | - | - | - | - | - |
| Stage 1 | 626 | - | - | - | - | - |
| Stage 2 | 611 | - | - | - | - | - |
| Approach | EB | NB | | SB | | |
| HCM Control Delay, s | 24 | 0.5 | | 0 | | |
| HCM LOS | C | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR | |
| Capacity (veh/h) | 1117 | - | 420 | - | - | |
| HCM Lane V/C Ratio | 0.026 | - | 0.562 | - | - | |
| HCM Control Delay (s) | 8.3 | 0 | 24 | - | - | |
| HCM Lane LOS | A | A | C | - | - | |
| HCM 95th %tile Q(veh) | 0.1 | - | 3.4 | - | - | |

| Intersection | | | | | | | | | | | | |
|---------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Delay, s/veh | 85.4 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 117 | 196 | 12 | 196 | 223 | 112 | 27 | 177 | 220 | 100 | 345 | 57 |
| Future Vol, veh/h | 117 | 196 | 12 | 196 | 223 | 112 | 27 | 177 | 220 | 100 | 345 | 57 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 136 | 228 | 14 | 228 | 259 | 130 | 31 | 206 | 256 | 116 | 401 | 66 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |






| Approach | EB | WB | NB | SB |
|----------------------------|------|----|-------|-------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 27.4 | 57 | 124.2 | 120.2 |
| HCM LOS | D | F | F | F |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|--------|-------|--------|--------|--------|-------|--------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 45% | 0% | 94% | 0% | 67% | 0% | 86% |
| Vol Right, % | 0% | 55% | 0% | 6% | 0% | 33% | 0% | 14% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 27 | 397 | 117 | 208 | 196 | 335 | 100 | 402 |
| LT Vol | 27 | 0 | 117 | 0 | 196 | 0 | 100 | 0 |
| Through Vol | 0 | 177 | 0 | 196 | 0 | 223 | 0 | 345 |
| RT Vol | 0 | 220 | 0 | 12 | 0 | 112 | 0 | 57 |
| Lane Flow Rate | 31 | 462 | 136 | 242 | 228 | 390 | 116 | 467 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.087 | 1.171 | 0.386 | 0.65 | 0.617 | 0.976 | 0.32 | 1.207 |
| Departure Headway (Hd) | 10.539 | 9.604 | 11.205 | 10.631 | 10.677 | 9.901 | 10.414 | 9.783 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 342 | 383 | 324 | 343 | 340 | 370 | 348 | 374 |
| Service Time | 8.239 | 7.304 | 8.905 | 8.331 | 8.377 | 7.601 | 8.114 | 7.483 |
| HCM Lane V/C Ratio | 0.091 | 1.206 | 0.42 | 0.706 | 0.671 | 1.054 | 0.333 | 1.249 |
| HCM Control Delay | 14.2 | 131.7 | 20.8 | 31.1 | 29.1 | 73.4 | 17.9 | 145.6 |
| HCM Lane LOS | B | F | C | D | D | F | C | F |
| HCM 95th-tile Q | 0.3 | 17.4 | 1.8 | 4.3 | 3.9 | 11 | 1.3 | 18.5 |

| Intersection | | | | | | |
|--------------------------|---|---|---|--------|---|---|
| Int Delay, s/veh | 4.2 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 182 | 350 | 328 | 97 | 68 | 142 |
| Future Vol, veh/h | 182 | 350 | 328 | 97 | 68 | 142 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 2 | 3 | 8 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 198 | 380 | 357 | 105 | 74 | 154 |
| | | | | | | |
| Major/Minor | Major1 | Major2 | | Minor2 | | |
| Conflicting Flow All | 464 | 0 | - | 0 | 1191 | 420 |
| Stage 1 | - | - | - | - | 412 | - |
| Stage 2 | - | - | - | - | 779 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.43 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | 2.227 | - | - | - | 3.527 | 3.327 |
| Pot Cap-1 Maneuver | 1092 | - | - | - | 206 | 631 |
| Stage 1 | - | - | - | - | 666 | - |
| Stage 2 | - | - | - | - | 451 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1090 | - | - | - | 168 | 625 |
| Mov Cap-2 Maneuver | - | - | - | - | 300 | - |
| Stage 1 | - | - | - | - | 543 | - |
| Stage 2 | - | - | - | - | 450 | - |
| | | | | | | |
| | | | | | | |
| Approach | EB | WB | | SB | | |
| HCM Control Delay, s | 3.1 | 0 | | 15.3 | | |
| HCM LOS | C | | | | | |
| | | | | | | |
| | | | | | | |
| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
| Capacity (veh/h) | 1090 | - | - | - | 300 | 625 |
| HCM Lane V/C Ratio | 0.181 | - | - | - | 0.246 | 0.247 |
| HCM Control Delay (s) | 9 | - | - | - | 20.9 | 12.6 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.7 | - | - | - | 0.9 | 1 |

Intersection









Int Delay, s/veh 5.4

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|--------------------------|---|------|---|---|---|--|
| Lane Configurations |  | |  |  |  |  |
| Traffic Vol, veh/h | 503 | 75 | 152 | 264 | 75 | 224 |
| Future Vol, veh/h | 503 | 75 | 152 | 264 | 75 | 224 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 250 | - | 245 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 529 | 79 | 160 | 278 | 79 | 236 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 609 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | - | 4.13 |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | - | 2.227 |
| Pot Cap-1 Maneuver | - | - | 965 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | - | 964 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 3.5 | 18.4 |
| HCM LOS | | | C |




| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 309 | 519 | - | - | 964 | - |
| HCM Lane V/C Ratio | 0.255 | 0.454 | - | - | 0.166 | - |
| HCM Control Delay (s) | 20.6 | 17.6 | - | - | 9.5 | - |
| HCM Lane LOS | C | C | - | - | A | - |
| HCM 95th %tile Q(veh) | 1 | 2.3 | - | - | 0.6 | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|---|---|-------|---|---|-------|---|---|-------|---|---|-------|
| Int Delay, s/veh | 6.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 81 | 649 | 62 | 43 | 402 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Future Vol, veh/h | 81 | 649 | 62 | 43 | 402 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Conflicting Peds, #/hr | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 135 | - | - | 190 | - | - | 185 | - | - | 55 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 84 | 676 | 65 | 45 | 419 | 53 | 4 | 20 | 29 | 44 | 39 | 71 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 472 | 0 | 0 | 748 | 0 | 0 | 1475 | 1446 | 717 | 1438 | 1452 | 446 |
| Stage 1 | - | - | - | - | - | - | 884 | 884 | - | 536 | 536 | - |
| Stage 2 | - | - | - | - | - | - | 591 | 562 | - | 902 | 916 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 1085 | - | - | 856 | - | - | 104 | 131 | 428 | 110 | 130 | 610 |
| Stage 1 | - | - | - | - | - | - | 339 | 362 | - | 527 | 522 | - |
| Stage 2 | - | - | - | - | - | - | 492 | 508 | - | 331 | 350 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1085 | - | - | 850 | - | - | 61 | 114 | 425 | 80 | 113 | 610 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 61 | 114 | - | 80 | 113 | - |
| Stage 1 | - | - | - | - | - | - | 311 | 332 | - | 486 | 494 | - |
| Stage 2 | - | - | - | - | - | - | 380 | 481 | - | 267 | 321 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 0.9 | | | 0.8 | | | 31.5 | | | 50 | | |
| HCM LOS | | | | | | | D | | | F | | |
| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 | | |
| Capacity (veh/h) | 61 | 202 | 1085 | - | - | 850 | - | - | 80 | 239 | | |
| HCM Lane V/C Ratio | 0.068 | 0.242 | 0.078 | - | - | 0.053 | - | - | 0.547 | 0.458 | | |
| HCM Control Delay (s) | 68.3 | 28.4 | 8.6 | - | - | 9.5 | - | - | 94.6 | 32.2 | | |
| HCM Lane LOS | F | D | A | - | - | A | - | - | F | D | | |
| HCM 95th %tile Q(veh) | 0.2 | 0.9 | 0.3 | - | - | 0.2 | - | - | 2.4 | 2.2 | | |

HCM 6th TWSC
3: 19th Avenue & Project Driveway 1

Cumulative Year 2040 plus Project PM Peak

08/22/2019

| Intersection | | | | | | |
|--------------------------|---|------|------|---|---|------|
| Int Delay, s/veh | 0.4 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 4 | 0 | 31 | 351 | 248 | 21 |
| Future Vol, veh/h | 4 | 0 | 31 | 351 | 248 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 4 | 0 | 34 | 390 | 276 | 23 |

| Major/Minor | Minor2 | Major1 | Major2 |
|----------------------|--------|---------|--------|
| Conflicting Flow All | 746 | - 299 | 0 - 0 |
| Stage 1 | 288 | - - | - - - |
| Stage 2 | 458 | - - | - - - |
| Critical Hdwy | 6.43 | - 4.13 | - - - |
| Critical Hdwy Stg 1 | 5.43 | - - | - - - |
| Critical Hdwy Stg 2 | 5.43 | - - | - - - |
| Follow-up Hdwy | 3.527 | - 2.227 | - - - |
| Pot Cap-1 Maneuver | 380 | 0 1256 | - - - |
| Stage 1 | 759 | 0 - | - - - |
| Stage 2 | 635 | 0 - | - - - |
| Platoon blocked, % | | | - - - |
| Mov Cap-1 Maneuver | 367 | - 1256 | - - - |
| Mov Cap-2 Maneuver | 367 | - - | - - - |
| Stage 1 | 732 | - - | - - - |
| Stage 2 | 635 | - - | - - - |

| Approach | EB | NB | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 14.9 | 0.6 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1256 | - | 367 | - | - |
| HCM Lane V/C Ratio | 0.027 | - | 0.012 | - | - |
| HCM Control Delay (s) | 7.9 | 0 | 14.9 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0 | - | - |




HCM 6th TWSC
4: 19th Avenue & Project Driveway 2

Cumulative Year 2040 plus Project PM Peak

08/22/2019

Intersection

Int Delay, s/veh 1.1

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|--------------------------|---|------|------|---|---|------|
| Lane Configurations |  | | |  |  | |
| Traffic Vol, veh/h | 24 | 35 | 5 | 361 | 249 | 0 |
| Future Vol, veh/h | 24 | 35 | 5 | 361 | 249 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 27 | 39 | 6 | 401 | 277 | 0 |

| Major/Minor | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 690 | 277 | 277 |
| Stage 1 | 277 | - | - |
| Stage 2 | 413 | - | - |
| Critical Hdwy | 6.43 | 6.23 | 4.13 |
| Critical Hdwy Stg 1 | 5.43 | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - |
| Follow-up Hdwy | 3.527 | 3.327 | 2.227 |
| Pot Cap-1 Maneuver | 409 | 759 | 1280 |
| Stage 1 | 767 | - | - |
| Stage 2 | 666 | - | - |
| Platoon blocked, % | | | |
| Mov Cap-1 Maneuver | 407 | 759 | 1280 |
| Mov Cap-2 Maneuver | 407 | - | - |
| Stage 1 | 762 | - | - |
| Stage 2 | 666 | - | - |









| Approach | EB | NB | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 12.3 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1280 | - | 561 | - | - |
| HCM Lane V/C Ratio | 0.004 | - | 0.117 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | 12.3 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.4 | - | - |

Intersection






Intersection Delay, s/veh 65.1

Intersection LOS F









| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 61 | 192 | 62 | 147 | 177 | 77 | 71 | 231 | 273 | 53 | 192 | 40 |
| Future Vol, veh/h | 61 | 192 | 62 | 147 | 177 | 77 | 71 | 231 | 273 | 53 | 192 | 40 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 68 | 213 | 69 | 163 | 197 | 86 | 79 | 257 | 303 | 59 | 213 | 44 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|-------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 2 | 2 |
| HCM Control Delay | 26.2 | 24.4 | 135.3 | 23.7 |
| HCM LOS | D | C | F | C |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 100% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 46% | 0% | 76% | 0% | 70% | 0% | 83% |
| Vol Right, % | 0% | 54% | 0% | 24% | 0% | 30% | 0% | 17% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 71 | 504 | 61 | 254 | 147 | 254 | 53 | 232 |
| LT Vol | 71 | 0 | 61 | 0 | 147 | 0 | 53 | 0 |
| Through Vol | 0 | 231 | 0 | 192 | 0 | 177 | 0 | 192 |
| RT Vol | 0 | 273 | 0 | 62 | 0 | 77 | 0 | 40 |
| Lane Flow Rate | 79 | 560 | 68 | 282 | 163 | 282 | 59 | 258 |
| Geometry Grp | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Degree of Util (X) | 0.195 | 1.244 | 0.174 | 0.672 | 0.412 | 0.657 | 0.152 | 0.62 |
| Departure Headway (Hd) | 8.912 | 8 | 9.927 | 9.224 | 9.768 | 9.023 | 9.884 | 9.234 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 402 | 454 | 364 | 395 | 371 | 404 | 365 | 394 |
| Service Time | 6.669 | 5.757 | 7.627 | 6.924 | 7.468 | 6.723 | 7.584 | 6.934 |
| HCM Lane V/C Ratio | 0.197 | 1.233 | 0.187 | 0.714 | 0.439 | 0.698 | 0.162 | 0.655 |
| HCM Control Delay | 13.8 | 152.4 | 14.7 | 28.9 | 19.1 | 27.4 | 14.3 | 25.9 |
| HCM Lane LOS | B | F | B | D | C | D | B | D |
| HCM 95th-tile Q | 0.7 | 22.8 | 0.6 | 4.7 | 2 | 4.5 | 0.5 | 4 |

| Intersection | | | | | | |
|--------------------------|---|---|---|--------|---|---|
| Int Delay, s/veh | 2 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations |  |  |  | |  |  |
| Traffic Vol, veh/h | 69 | 390 | 346 | 53 | 58 | 36 |
| Future Vol, veh/h | 69 | 390 | 346 | 53 | 58 | 36 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 3 | 4 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 100 | - | - | - | 115 | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 74 | 419 | 372 | 57 | 62 | 39 |
| | | | | | | |
| Major/Minor | Major1 | Major2 | | Minor2 | | |
| Conflicting Flow All | 430 | 0 | - | 0 | 972 | 406 |
| Stage 1 | - | - | - | - | 402 | - |
| Stage 2 | - | - | - | - | 570 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.43 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | 2.227 | - | - | - | 3.527 | 3.327 |
| Pot Cap-1 Maneuver | 1124 | - | - | - | 279 | 643 |
| Stage 1 | - | - | - | - | 673 | - |
| Stage 2 | - | - | - | - | 564 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1123 | - | - | - | 260 | 640 |
| Mov Cap-2 Maneuver | - | - | - | - | 389 | - |
| Stage 1 | - | - | - | - | 628 | - |
| Stage 2 | - | - | - | - | 563 | - |
| | | | | | | |
| | | | | | | |
| Approach | EB | WB | | SB | | |
| HCM Control Delay, s | 1.3 | 0 | | 14.1 | | |
| HCM LOS | B | | | | | |
| | | | | | | |
| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
| Capacity (veh/h) | 1123 | - | - | - | 389 | 640 |
| HCM Lane V/C Ratio | 0.066 | - | - | - | 0.16 | 0.06 |
| HCM Control Delay (s) | 8.4 | - | - | - | 16 | 11 |
| HCM Lane LOS | A | - | - | - | C | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 0.6 | 0.2 |

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 25.6 |
| Intersection LOS | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 83 | 515 | 31 | 56 | 451 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Future Vol, veh/h | 83 | 515 | 31 | 56 | 451 | 32 | 28 | 16 | 143 | 58 | 31 | 71 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 90 | 560 | 34 | 61 | 490 | 35 | 30 | 17 | 155 | 63 | 34 | 77 |
| Number of Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 3 | 2 | 2 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 2 | 2 | 3 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 2 | 2 | 3 | 3 |
| HCM Control Delay | 30.6 | 25.7 | 17.3 | 15.3 |
| HCM LOS | D | D | C | C |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 10% | 0% | 100% | 85% | 0% | 100% | 82% | 0% | 30% |
| Vol Right, % | 0% | 90% | 0% | 0% | 15% | 0% | 0% | 18% | 0% | 70% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 28 | 159 | 83 | 343 | 203 | 56 | 301 | 182 | 58 | 102 |
| LT Vol | 28 | 0 | 83 | 0 | 0 | 56 | 0 | 0 | 58 | 0 |
| Through Vol | 0 | 16 | 0 | 343 | 172 | 0 | 301 | 150 | 0 | 31 |
| RT Vol | 0 | 143 | 0 | 0 | 31 | 0 | 0 | 32 | 0 | 71 |
| Lane Flow Rate | 30 | 173 | 90 | 373 | 220 | 61 | 327 | 198 | 63 | 111 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.084 | 0.424 | 0.217 | 0.845 | 0.492 | 0.15 | 0.758 | 0.452 | 0.177 | 0.28 |
| Departure Headway (Hd) | 9.971 | 8.822 | 8.666 | 8.153 | 8.043 | 8.858 | 8.345 | 8.219 | 10.087 | 9.08 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 359 | 408 | 414 | 444 | 447 | 405 | 435 | 438 | 356 | 396 |
| Service Time | 7.729 | 6.579 | 6.415 | 5.902 | 5.792 | 6.609 | 6.095 | 5.969 | 7.845 | 6.838 |
| HCM Lane V/C Ratio | 0.084 | 0.424 | 0.217 | 0.84 | 0.492 | 0.151 | 0.752 | 0.452 | 0.177 | 0.28 |
| HCM Control Delay | 13.6 | 18 | 13.8 | 41.9 | 18.4 | 13.2 | 33 | 17.6 | 15 | 15.4 |
| HCM Lane LOS | B | C | B | E | C | B | D | C | B | C |
| HCM 95th-tile Q | 0.3 | 2.1 | 0.8 | 8.3 | 2.7 | 0.5 | 6.3 | 2.3 | 0.6 | 1.1 |









HCM 6th Signalized Intersection Summary

5: 19th Avenue & Cinnamon Drive

Cumulative Year 2040 plus Project AM Peak

08/23/2019



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|---|---|------|---|---|------|---|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (veh/h) | 117 | 196 | 12 | 196 | 223 | 112 | 27 | 177 | 220 | 100 | 345 | 57 |
| Future Volume (veh/h) | 117 | 196 | 12 | 196 | 223 | 112 | 27 | 177 | 220 | 100 | 345 | 57 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 136 | 228 | 14 | 228 | 259 | 130 | 31 | 206 | 256 | 116 | 401 | 66 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 171 | 324 | 20 | 316 | 319 | 160 | 56 | 235 | 292 | 147 | 568 | 93 |
| Arrive On Green | 0.10 | 0.19 | 0.19 | 0.18 | 0.27 | 0.27 | 0.03 | 0.31 | 0.31 | 0.08 | 0.37 | 0.37 |
| Sat Flow, veh/h | 1767 | 1728 | 106 | 1767 | 1161 | 583 | 1767 | 748 | 930 | 1767 | 1552 | 255 |
| Grp Volume(v), veh/h | 136 | 0 | 242 | 228 | 0 | 389 | 31 | 0 | 462 | 116 | 0 | 467 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 0 | 1834 | 1767 | 0 | 1743 | 1767 | 0 | 1678 | 1767 | 0 | 1807 |
| Q Serve(g_s), s | 5.7 | 0.0 | 9.4 | 9.3 | 0.0 | 15.9 | 1.3 | 0.0 | 19.9 | 4.9 | 0.0 | 16.8 |
| Cycle Q Clear(g_c), s | 5.7 | 0.0 | 9.4 | 9.3 | 0.0 | 15.9 | 1.3 | 0.0 | 19.9 | 4.9 | 0.0 | 16.8 |
| Prop In Lane | 1.00 | | 0.06 | 1.00 | | 0.33 | 1.00 | | 0.55 | 1.00 | | 0.14 |
| Lane Grp Cap(c), veh/h | 171 | 0 | 344 | 316 | 0 | 479 | 56 | 0 | 527 | 147 | 0 | 661 |
| V/C Ratio(X) | 0.79 | 0.00 | 0.70 | 0.72 | 0.00 | 0.81 | 0.56 | 0.00 | 0.88 | 0.79 | 0.00 | 0.71 |
| Avail Cap(c_a), veh/h | 253 | 0 | 650 | 343 | 0 | 707 | 116 | 0 | 634 | 181 | 0 | 750 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 33.7 | 0.0 | 29.0 | 29.5 | 0.0 | 25.8 | 36.4 | 0.0 | 24.7 | 34.3 | 0.0 | 20.7 |
| Incr Delay (d2), s/veh | 10.1 | 0.0 | 2.6 | 6.6 | 0.0 | 4.6 | 8.4 | 0.0 | 11.5 | 17.0 | 0.0 | 2.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.8 | 0.0 | 4.2 | 4.3 | 0.0 | 6.7 | 0.7 | 0.0 | 9.0 | 2.7 | 0.0 | 7.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 43.7 | 0.0 | 31.6 | 36.1 | 0.0 | 30.4 | 44.7 | 0.0 | 36.2 | 51.3 | 0.0 | 23.3 |
| LnGrp LOS | D | A | C | D | A | C | D | A | D | D | A | C |
| Approach Vol, veh/h | 378 | | 617 | | | 493 | | | 583 | | | |
| Approach Delay, s/veh | 36.0 | | 32.5 | | | 36.8 | | | 28.9 | | | |
| Approach LOS | D | | C | | | D | | | C | | | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 28.5 | 28.5 | 18.2 | 18.9 | 6.6 | 32.5 | 11.6 | 25.5 | | | | |
| Change Period (Y+Rc), s | 4.2 | 4.6 | 4.6 | * 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | | | | |
| Max Green Setting (Gmax), s | 28.8 | 28.8 | 14.8 | * 27 | * 5 | 31.6 | * 11 | 30.9 | | | | |
| Max Q Clear Time (g_c+I), s | 10.8 | 21.9 | 11.3 | 11.4 | 3.3 | 18.8 | 7.7 | 17.9 | | | | |
| Green Ext Time (p_c), s | 0.0 | 1.7 | 0.2 | 1.1 | 0.0 | 2.3 | 0.1 | 1.9 | | | | |

Intersection Summary









HCM 6th Ctrl Delay 33.1

HCM 6th LOS C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection | |
|---------------------------|------|
| Intersection Delay, s/veh | 22.5 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------------------------|---|---|------|---|---|------|--|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Vol, veh/h | 81 | 649 | 62 | 43 | 402 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Future Vol, veh/h | 81 | 649 | 62 | 43 | 402 | 51 | 4 | 19 | 28 | 42 | 37 | 68 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 84 | 676 | 65 | 45 | 419 | 53 | 4 | 20 | 29 | 44 | 39 | 71 |
| Number of Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Approach | EB | WB | | NB | | SB | | | | | | |
| Opposing Approach | WB | EB | | SB | | NB | | | | | | |
| Opposing Lanes | 3 | 3 | | 2 | | 2 | | | | | | |
| Conflicting Approach Left | SB | NB | | EB | | WB | | | | | | |
| Conflicting Lanes Left | 2 | 2 | | 3 | | 3 | | | | | | |
| Conflicting Approach Right | NB | SB | | WB | | EB | | | | | | |
| Conflicting Lanes Right | 2 | 2 | | 3 | | 3 | | | | | | |
| HCM Control Delay | 28.3 | 17 | | 12.4 | | 13.3 | | | | | | |
| HCM LOS | D | C | | B | | B | | | | | | |

| Lane | NBLn1 | NBLn2 | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vol Left, % | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Thru, % | 0% | 40% | 0% | 100% | 78% | 0% | 100% | 72% | 0% | 35% |
| Vol Right, % | 0% | 60% | 0% | 0% | 22% | 0% | 0% | 28% | 0% | 65% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 4 | 47 | 81 | 433 | 278 | 43 | 268 | 185 | 42 | 105 |
| LT Vol | 4 | 0 | 81 | 0 | 0 | 43 | 0 | 0 | 42 | 0 |
| Through Vol | 0 | 19 | 0 | 433 | 216 | 0 | 268 | 134 | 0 | 37 |
| RT Vol | 0 | 28 | 0 | 0 | 62 | 0 | 0 | 51 | 0 | 68 |
| Lane Flow Rate | 4 | 49 | 84 | 451 | 290 | 45 | 279 | 193 | 44 | 109 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.011 | 0.115 | 0.173 | 0.86 | 0.541 | 0.098 | 0.574 | 0.385 | 0.11 | 0.245 |
| Departure Headway (Hd) | 9.42 | 8.491 | 7.38 | 6.873 | 6.715 | 7.904 | 7.396 | 7.201 | 9.011 | 8.049 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 380 | 422 | 487 | 527 | 536 | 454 | 489 | 499 | 398 | 446 |
| Service Time | 7.182 | 6.252 | 5.117 | 4.61 | 4.452 | 5.645 | 5.138 | 4.942 | 6.763 | 5.801 |
| HCM Lane V/C Ratio | 0.011 | 0.116 | 0.172 | 0.856 | 0.541 | 0.099 | 0.571 | 0.387 | 0.111 | 0.244 |
| HCM Control Delay | 12.3 | 12.4 | 11.7 | 38.7 | 17.1 | 11.5 | 19.7 | 14.4 | 12.9 | 13.4 |
| HCM Lane LOS | B | B | B | E | C | B | C | B | B | B |
| HCM 95th-tile Q | 0 | 0.4 | 0.6 | 9.2 | 3.2 | 0.3 | 3.6 | 1.8 | 0.4 | 1 |









HCM 6th Signalized Intersection Summary

5: 19th Avenue & Cinnamon Drive

Cumulative Year 2040 plus Project PM Peak

08/23/2019



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|---|---|-------|---|---|------|---|---|------|---|---|------|
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (veh/h) | 61 | 192 | 62 | 147 | 177 | 77 | 71 | 231 | 273 | 53 | 192 | 40 |
| Future Volume (veh/h) | 61 | 192 | 62 | 147 | 177 | 77 | 71 | 231 | 273 | 53 | 192 | 40 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 68 | 213 | 69 | 163 | 197 | 86 | 79 | 257 | 303 | 59 | 213 | 44 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 94 | 282 | 91 | 201 | 331 | 145 | 101 | 283 | 334 | 88 | 534 | 110 |
| Arrive On Green | 0.05 | 0.21 | 0.21 | 0.11 | 0.27 | 0.27 | 0.06 | 0.37 | 0.37 | 0.05 | 0.36 | 0.36 |
| Sat Flow, veh/h | 1767 | 1340 | 434 | 1767 | 1222 | 534 | 1767 | 774 | 913 | 1767 | 1491 | 308 |
| Grp Volume(v), veh/h | 68 | 0 | 282 | 163 | 0 | 283 | 79 | 0 | 560 | 59 | 0 | 257 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 0 | 1774 | 1767 | 0 | 1756 | 1767 | 0 | 1687 | 1767 | 0 | 1799 |
| Q Serve(g_s), s | 2.6 | 0.0 | 10.1 | 6.1 | 0.0 | 9.5 | 3.0 | 0.0 | 21.3 | 2.2 | 0.0 | 7.2 |
| Cycle Q Clear(g_c), s | 2.6 | 0.0 | 10.1 | 6.1 | 0.0 | 9.5 | 3.0 | 0.0 | 21.3 | 2.2 | 0.0 | 7.2 |
| Prop In Lane | 1.00 | | 0.24 | 1.00 | | 0.30 | 1.00 | | 0.54 | 1.00 | | 0.17 |
| Lane Grp Cap(c), veh/h | 94 | 0 | 373 | 201 | 0 | 476 | 101 | 0 | 617 | 88 | 0 | 644 |
| V/C Ratio(X) | 0.72 | 0.00 | 0.76 | 0.81 | 0.00 | 0.59 | 0.78 | 0.00 | 0.91 | 0.67 | 0.00 | 0.40 |
| Avail Cap(c_a), veh/h | 157 | 0 | 709 | 212 | 0 | 756 | 139 | 0 | 674 | 139 | 0 | 719 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 31.5 | 0.0 | 25.1 | 29.2 | 0.0 | 21.4 | 31.4 | 0.0 | 20.3 | 31.6 | 0.0 | 16.2 |
| Incr Delay (d2), s/veh | 9.9 | 0.0 | 3.1 | 19.7 | 0.0 | 1.2 | 17.6 | 0.0 | 15.4 | 8.7 | 0.0 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.3 | 0.0 | 4.3 | 3.5 | 0.0 | 3.7 | 1.7 | 0.0 | 10.0 | 1.1 | 0.0 | 2.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 41.4 | 0.0 | 28.2 | 48.9 | 0.0 | 22.6 | 49.1 | 0.0 | 35.7 | 40.2 | 0.0 | 16.6 |
| LnGrp LOS | D | A | C | D | A | C | D | A | D | D | A | B |
| Approach Vol, veh/h | 350 | | | 446 | | | 639 | | | 316 | | |
| Approach Delay, s/veh | 30.8 | | | 32.2 | | | 37.4 | | | 21.0 | | |
| Approach LOS | C | | | C | | | D | | | C | | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 7.5 | 29.3 | 11.9 | 18.8 | 8.1 | 28.8 | 7.8 | 22.9 | | | | |
| Change Period (Y+Rc), s | 4.2 | 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | * 4.2 | 4.6 | | | | |
| Max Green Setting (Gmax), s | 5.3 | 27.0 | * 8.1 | 27.0 | * 5.3 | 27.0 | * 6 | 29.1 | | | | |
| Max Q Clear Time (g_c+I), s | 11.2 | 23.3 | 8.1 | 12.1 | 5.0 | 9.2 | 4.6 | 11.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 1.3 | 0.0 | 1.4 | 0.0 | 1.3 | 0.0 | 1.5 | | | | |

Intersection Summary

HCM 6th Ctrl Delay 31.8

HCM 6th LOS C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | WB | NB | NB |
|-----------------------|-----|-----|-----|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 74 | 111 | 93 |
| Average Queue (ft) | 31 | 49 | 44 |
| 95th Queue (ft) | 59 | 85 | 72 |
| Link Distance (ft) | | | 934 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 250 | 245 | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|-----|------|----|------|
| Directions Served | L | T | TR | L | T | TR | L | TR | L | TR |
| Maximum Queue (ft) | 56 | 79 | 79 | 68 | 122 | 100 | 32 | 74 | 73 | 54 |
| Average Queue (ft) | 37 | 49 | 55 | 27 | 74 | 37 | 17 | 43 | 27 | 31 |
| 95th Queue (ft) | 54 | 73 | 73 | 56 | 104 | 70 | 41 | 65 | 54 | 51 |
| Link Distance (ft) | | 610 | 610 | | 1597 | 1597 | | 2742 | | 2619 |
| Upstream Blk Time (%) | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | |
| Storage Bay Dist (ft) | 135 | | | 190 | | | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | | | | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | | 0 | 0 |

Intersection: 3: 19th Avenue & Project Driveway 1

| Movement | EB | NB | SB |
|-----------------------|-----|-----|-----|
| Directions Served | L | LT | TR |
| Maximum Queue (ft) | 48 | 129 | 22 |
| Average Queue (ft) | 18 | 41 | 1 |
| 95th Queue (ft) | 43 | 88 | 7 |
| Link Distance (ft) | 181 | 283 | 677 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 4: 19th Avenue & Project Driveway 2

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 134 | 31 |
| Average Queue (ft) | 69 | 8 |
| 95th Queue (ft) | 112 | 30 |
| Link Distance (ft) | 193 | 368 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|------|-----|------|-----|-----|
| Directions Served | L | TR | L | TR | L | TR | L | TR |
| Maximum Queue (ft) | 165 | 248 | 200 | 303 | 174 | 308 | 179 | 260 |
| Average Queue (ft) | 84 | 124 | 114 | 149 | 47 | 167 | 57 | 128 |
| 95th Queue (ft) | 145 | 200 | 191 | 247 | 118 | 266 | 124 | 206 |
| Link Distance (ft) | | 2536 | | 1250 | | 1014 | | 368 |
| Upstream Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 100 | | 100 | |
| Storage Blk Time (%) | 4 | 14 | 11 | 22 | 0 | 26 | 3 | 18 |
| Queuing Penalty (veh) | 9 | 17 | 35 | 43 | 1 | 7 | 13 | 18 |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|------|-----|------|
| Directions Served | L | T | TR | L | R |
| Maximum Queue (ft) | 99 | 48 | 41 | 73 | 97 |
| Average Queue (ft) | 44 | 4 | 3 | 36 | 44 |
| 95th Queue (ft) | 83 | 22 | 21 | 66 | 77 |
| Link Distance (ft) | | 1250 | 1125 | | 2742 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | 115 | |
| Storage Blk Time (%) | 1 | | | | 0 |
| Queuing Penalty (veh) | 3 | | | | 0 |

Network Summary

Network wide Queuing Penalty: 146

Intersection: 1: 19th Avenue & Hanford-Armona Road

| Movement | EB | WB | NB | NB |
|-----------------------|------|-----|-----|-----|
| Directions Served | TR | L | L | R |
| Maximum Queue (ft) | 31 | 94 | 67 | 114 |
| Average Queue (ft) | 3 | 36 | 31 | 56 |
| 95th Queue (ft) | 17 | 63 | 57 | 88 |
| Link Distance (ft) | 1526 | | | 934 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 250 | 245 | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 2: Liberty Drive/18 3/4 Avenue & Hanford-Armona Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|-----|------|----|------|
| Directions Served | L | T | TR | L | T | TR | L | TR | L | TR |
| Maximum Queue (ft) | 68 | 96 | 107 | 73 | 117 | 103 | 31 | 52 | 31 | 53 |
| Average Queue (ft) | 37 | 56 | 67 | 25 | 69 | 44 | 4 | 29 | 20 | 31 |
| 95th Queue (ft) | 59 | 78 | 91 | 52 | 102 | 82 | 20 | 48 | 39 | 51 |
| Link Distance (ft) | | 605 | 605 | | 1595 | 1595 | | 2748 | | 2614 |
| Upstream Blk Time (%) | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | |
| Storage Bay Dist (ft) | 135 | | | 190 | | | 185 | | 55 | |
| Storage Blk Time (%) | | | | | | | | | | 0 |
| Queuing Penalty (veh) | | | | | | | | | | 0 |

Intersection: 3: 19th Avenue & Project Driveway 1

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | L | LT |
| Maximum Queue (ft) | 31 | 76 |
| Average Queue (ft) | 5 | 9 |
| 95th Queue (ft) | 24 | 40 |
| Link Distance (ft) | 181 | 288 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 4: 19th Avenue & Project Driveway 2

| Movement | EB | NB |
|-----------------------|-----|-----|
| Directions Served | LR | LT |
| Maximum Queue (ft) | 78 | 31 |
| Average Queue (ft) | 31 | 2 |
| 95th Queue (ft) | 59 | 14 |
| Link Distance (ft) | 196 | 369 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 5: 19th Avenue & Cinnamon Drive

| Movement | EB | EB | WB | WB | NB | NB | SB | SB |
|-----------------------|-----|------|-----|------|-----|------|-----|-----|
| Directions Served | L | TR | L | TR | L | TR | L | TR |
| Maximum Queue (ft) | 165 | 263 | 199 | 242 | 174 | 320 | 94 | 243 |
| Average Queue (ft) | 49 | 108 | 86 | 102 | 85 | 198 | 46 | 89 |
| 95th Queue (ft) | 101 | 188 | 153 | 172 | 184 | 314 | 85 | 173 |
| Link Distance (ft) | | 2542 | | 1246 | | 1006 | | 369 |
| Upstream Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |
| Storage Bay Dist (ft) | 100 | | 100 | | 100 | | 100 | |
| Storage Blk Time (%) | 2 | 7 | 10 | 8 | 3 | 28 | 0 | 10 |
| Queuing Penalty (veh) | 4 | 4 | 27 | 11 | 14 | 20 | 1 | 5 |

Intersection: 6: Cinnamon Drive & Liberty Drive

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|------|-----|------|
| Directions Served | L | T | TR | L | R |
| Maximum Queue (ft) | 50 | 53 | 53 | 55 | 52 |
| Average Queue (ft) | 16 | 3 | 3 | 29 | 15 |
| 95th Queue (ft) | 42 | 21 | 21 | 56 | 42 |
| Link Distance (ft) | | 1246 | 1129 | | 2748 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | 115 | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

Network Summary

Network wide Queuing Penalty: 87

Appendix J: Signal Warrants



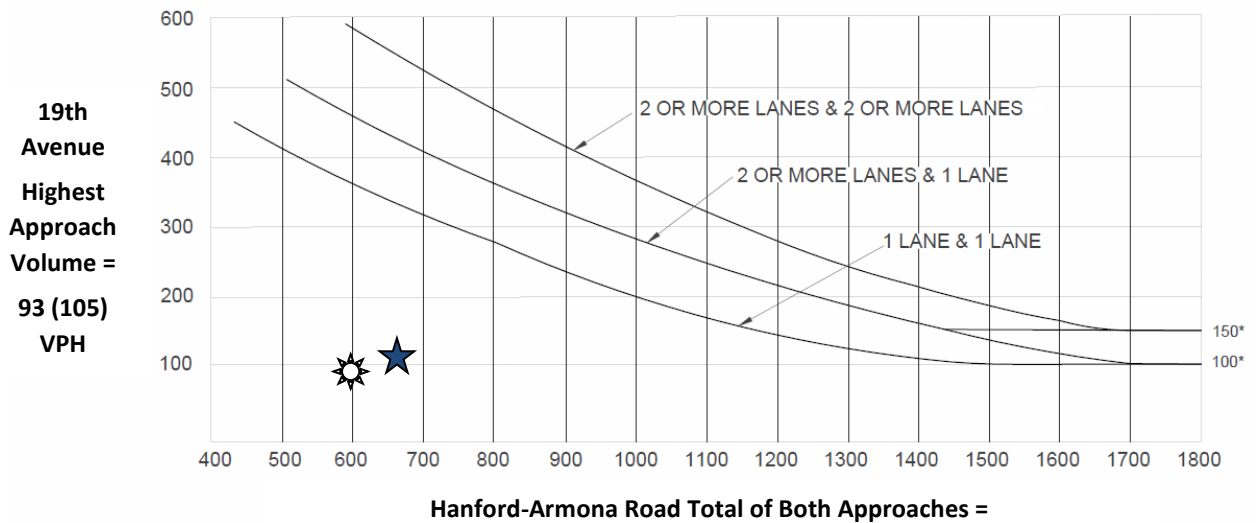
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Page | J

Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions 1. 19th Avenue / Hanford-Armona Road AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met

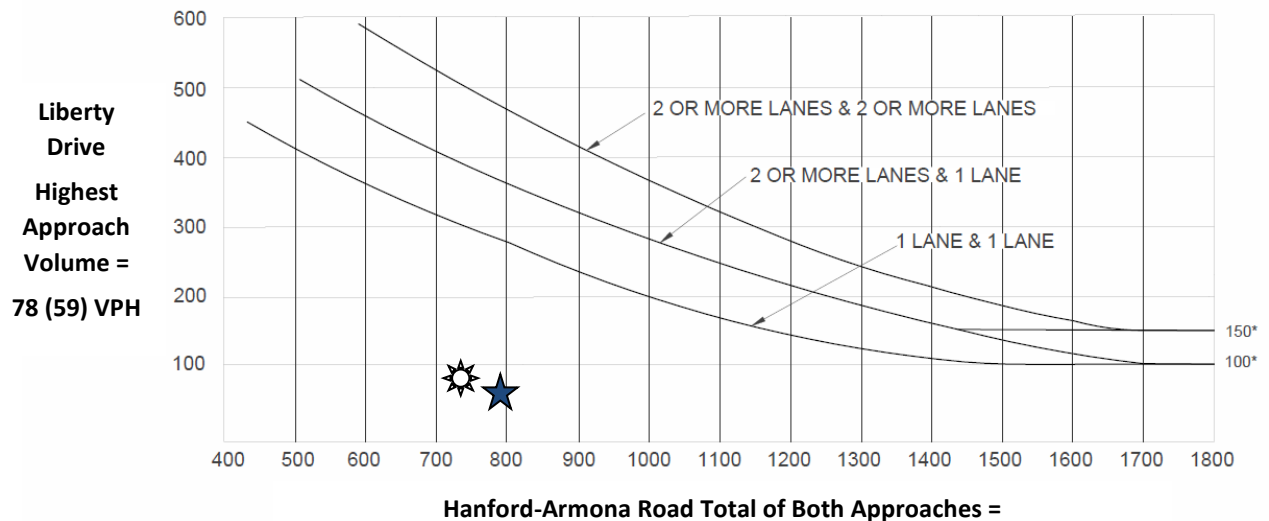


PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions
2. Liberty Drive / Hanford-Armona Road
AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

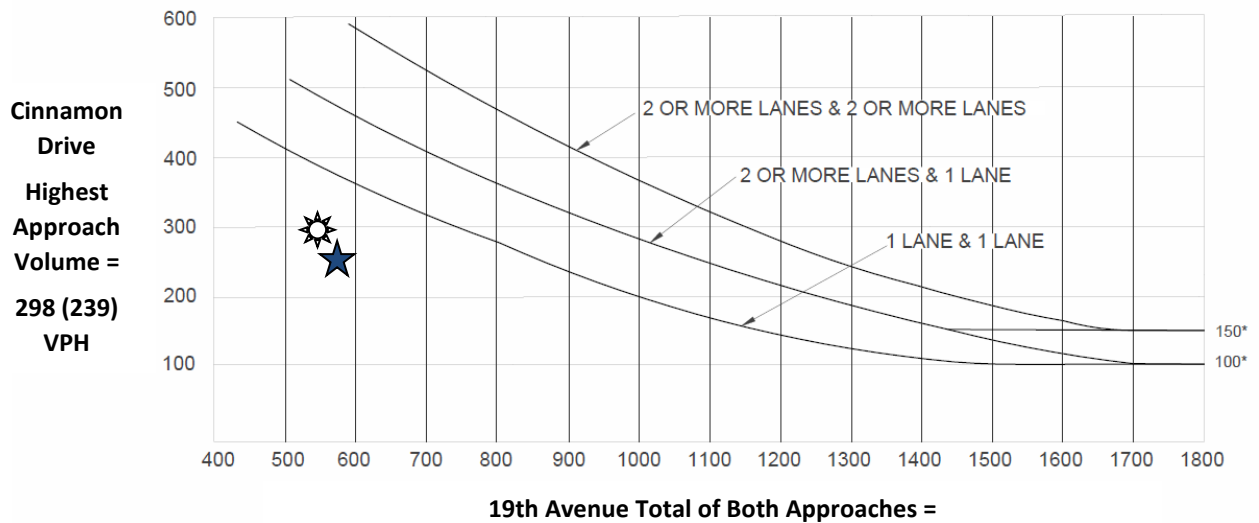


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Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions
5. 19th Avenue / Cinnamon Drive
AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
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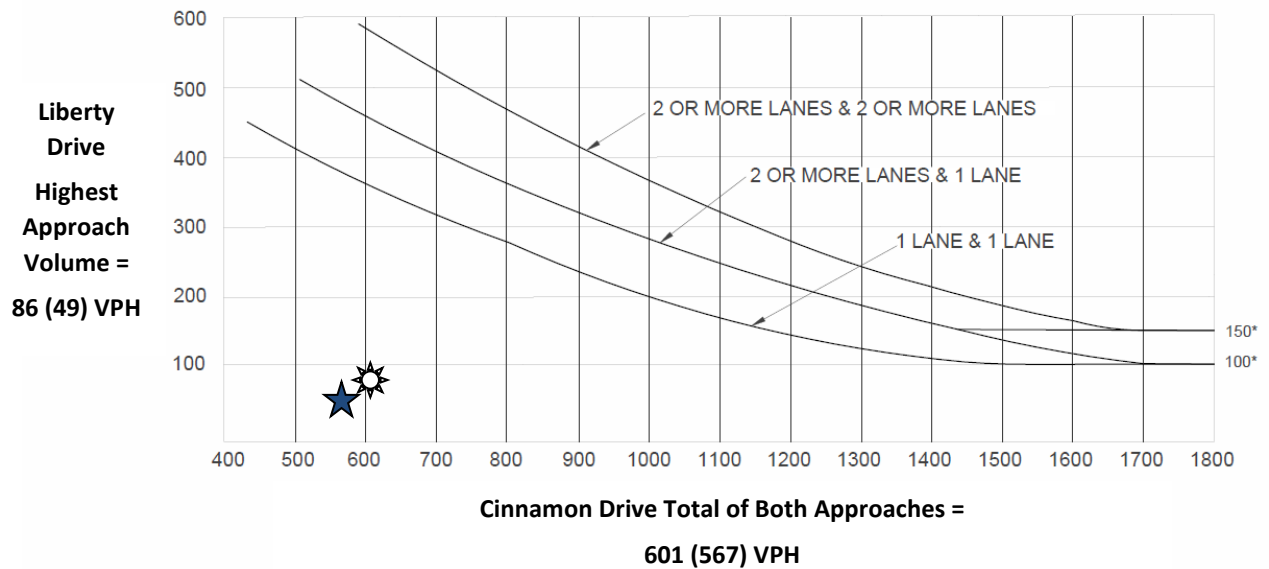


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Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions
6. Liberty Drive / Cinnamon Drive
AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

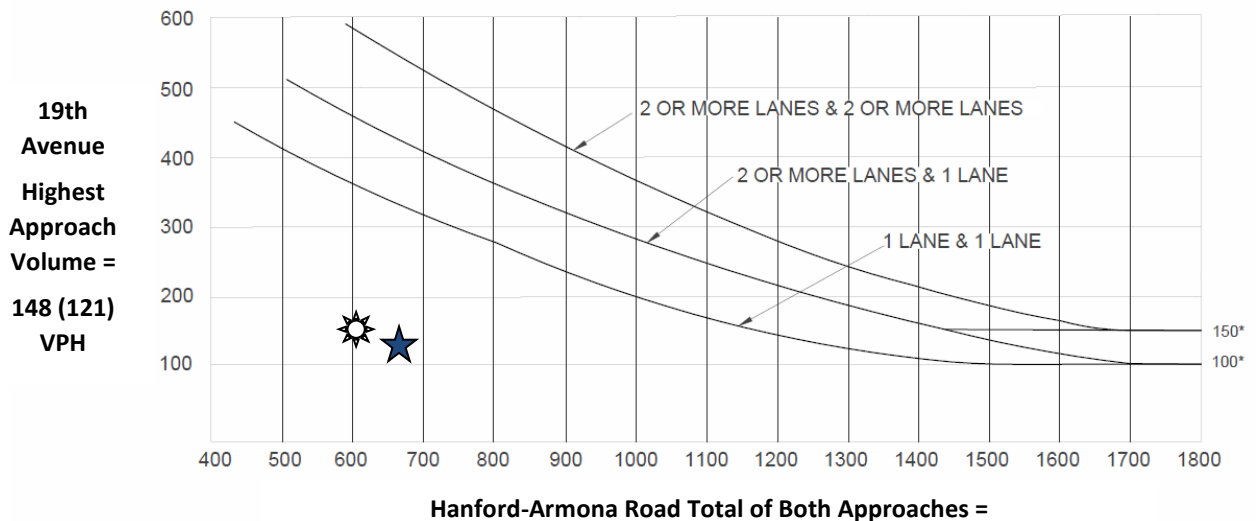
Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

1. 19th Avenue / Hanford-Armona Road

AM (PM) Peak Hour



605 (663) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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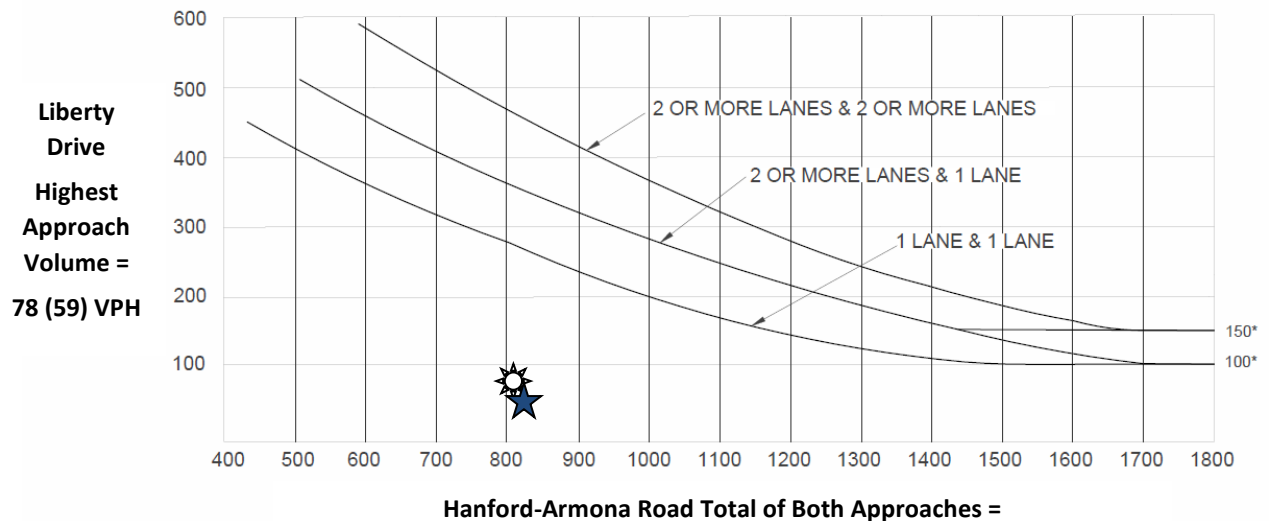
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Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions
2. Liberty Drive / Hanford-Armona Road
AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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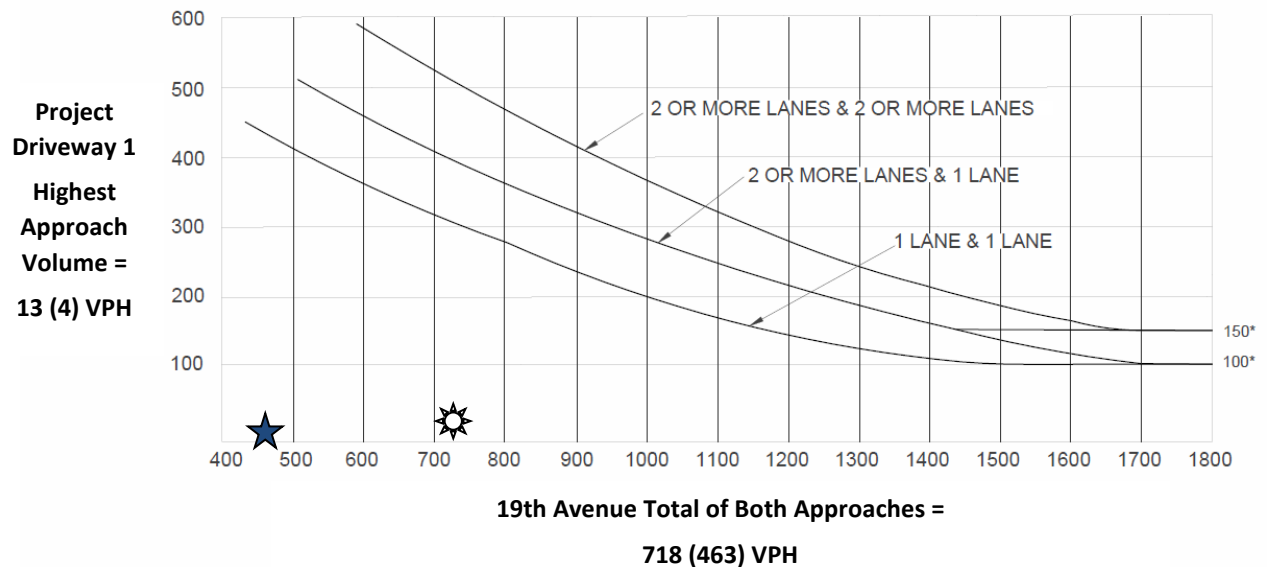
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Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

3. 19th Avenue / Project Driveway 1

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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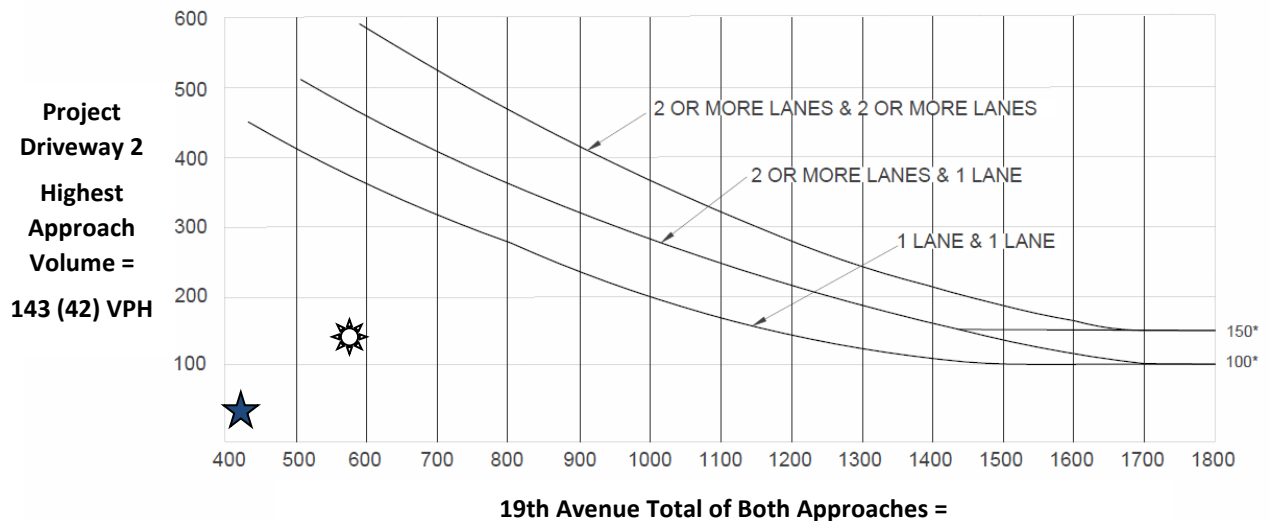
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Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

4. 19th Avenue / Project Driveway 2

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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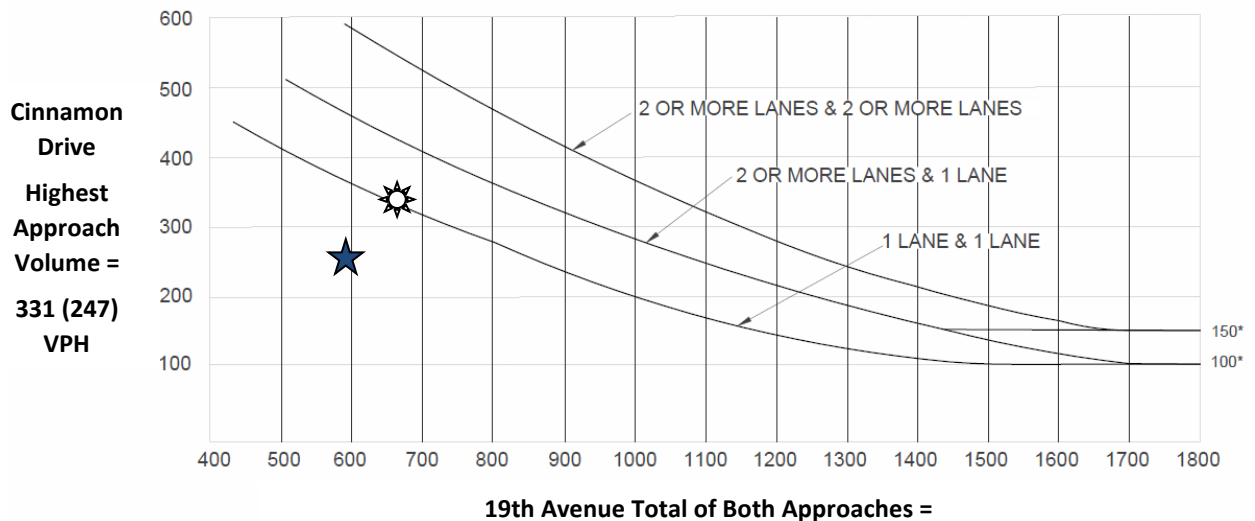
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Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

5. 19th Avenue / Cinnamon Drive

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Met



PM Peak Hour – Signal Warrant is Not Met

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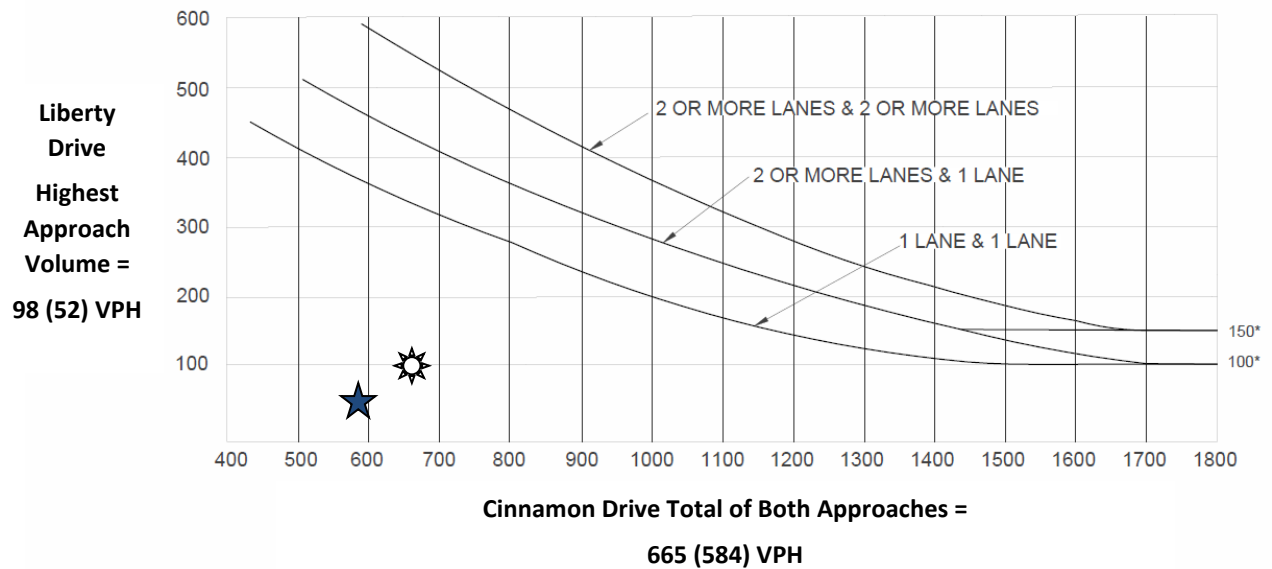
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Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

6. Liberty Drive / Cinnamon Drive

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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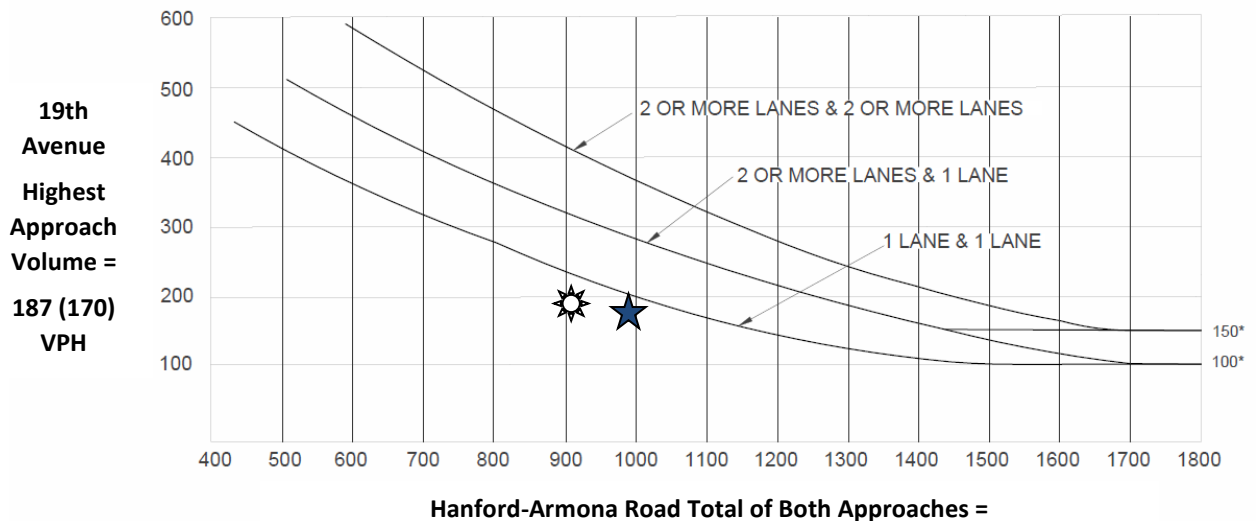
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Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

1. 19th Avenue / Hanford-Armona Road

AM (PM) Peak Hour



804 (886) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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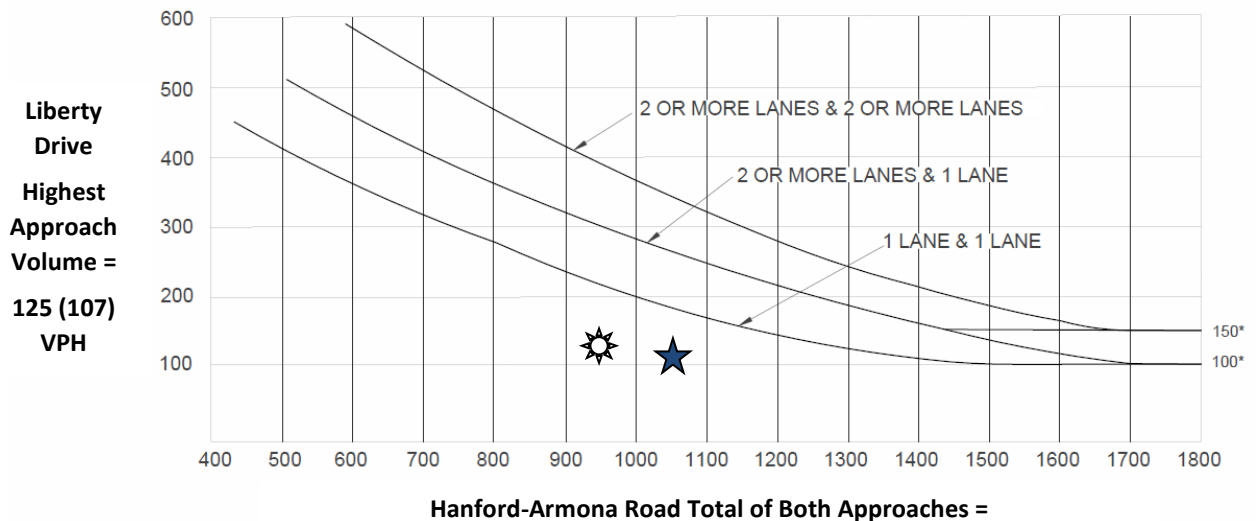
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Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

2. Liberty Drive / Hanford-Armona Road

AM (PM) Peak Hour



953 (1054) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

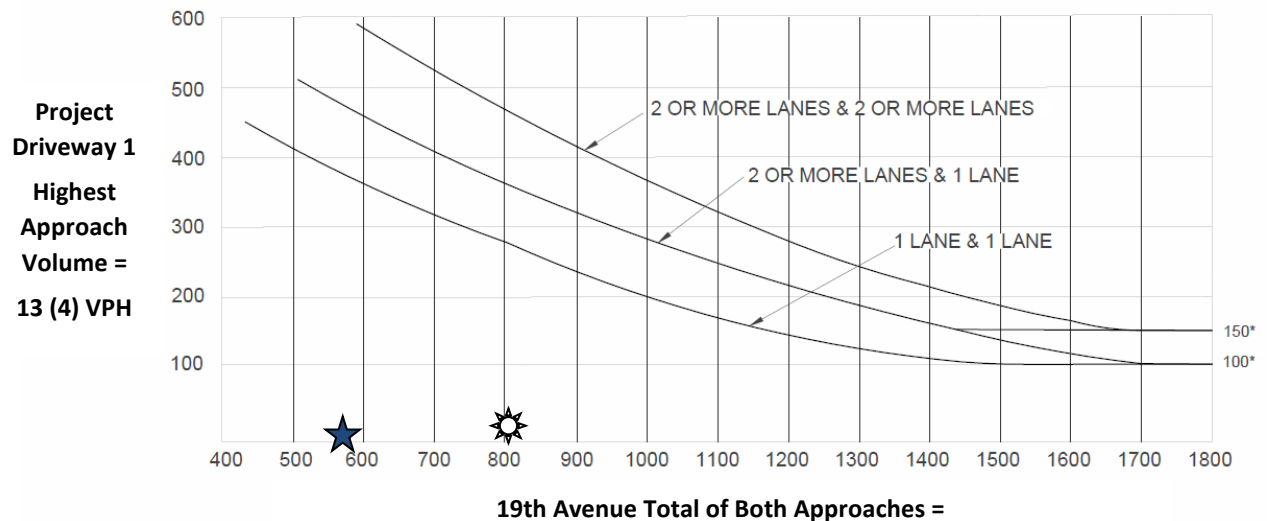
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Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

3. 19th Avenue / Project Driveway 1

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

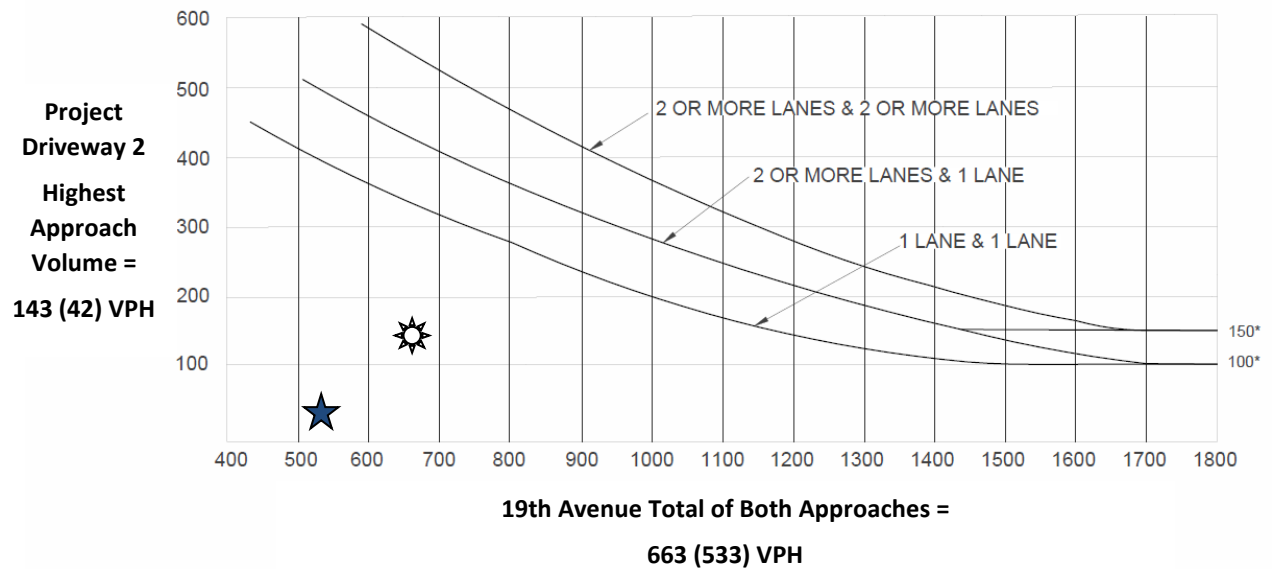
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Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

4. 19th Avenue / Project Driveway 2

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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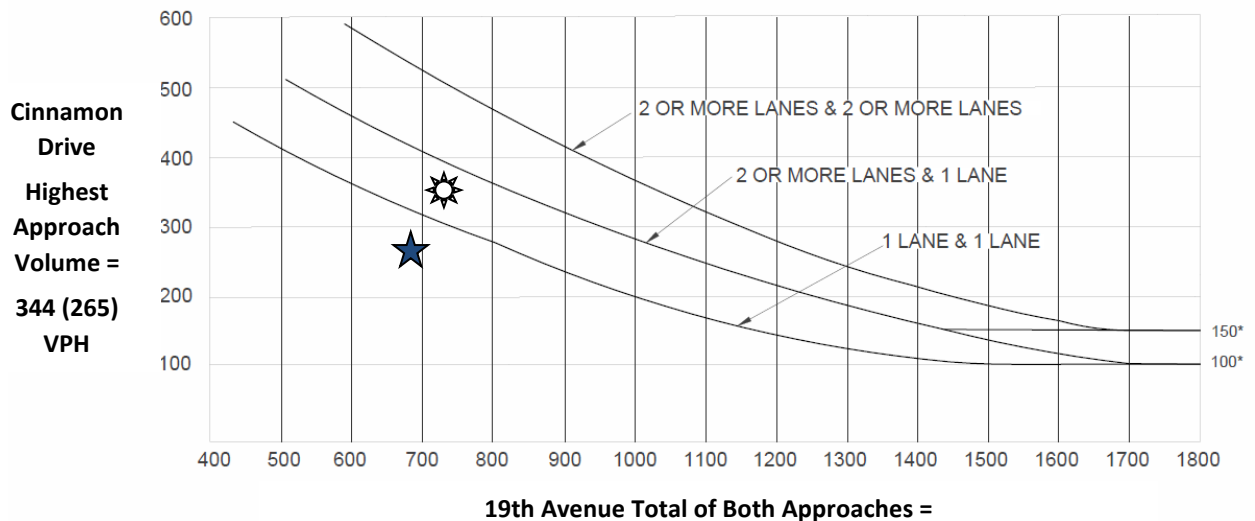
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Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

5. 19th Avenue / Cinnamon Drive

AM (PM) Peak Hour



733 (688) VPH

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



AM Peak Hour – Signal Warrant is Met



PM Peak Hour – Signal Warrant is Not Met

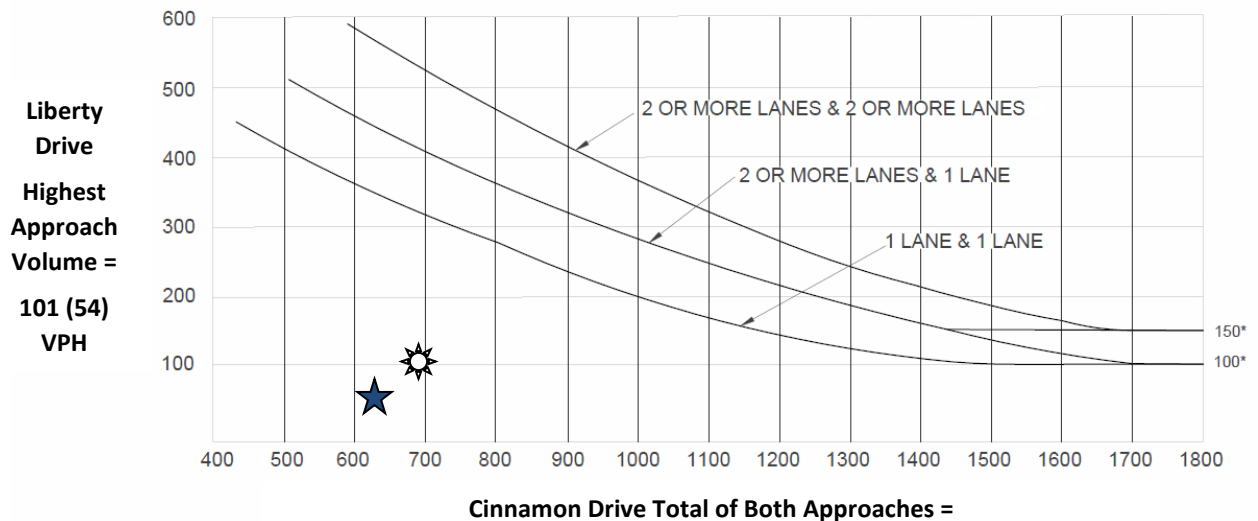
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Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

6. Liberty Drive / Cinnamon Drive

AM (PM) Peak Hour



695 (627) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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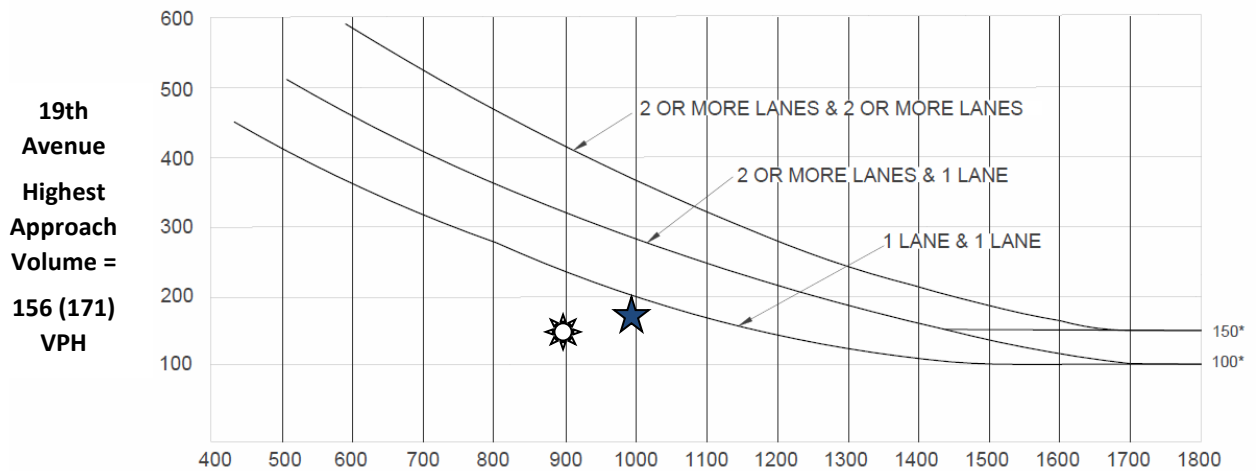
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Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions

1. 19th Avenue / Hanford-Armona Road

AM (PM) Peak Hour



Hanford-Armona Road Total of Both Approaches =

896 (993) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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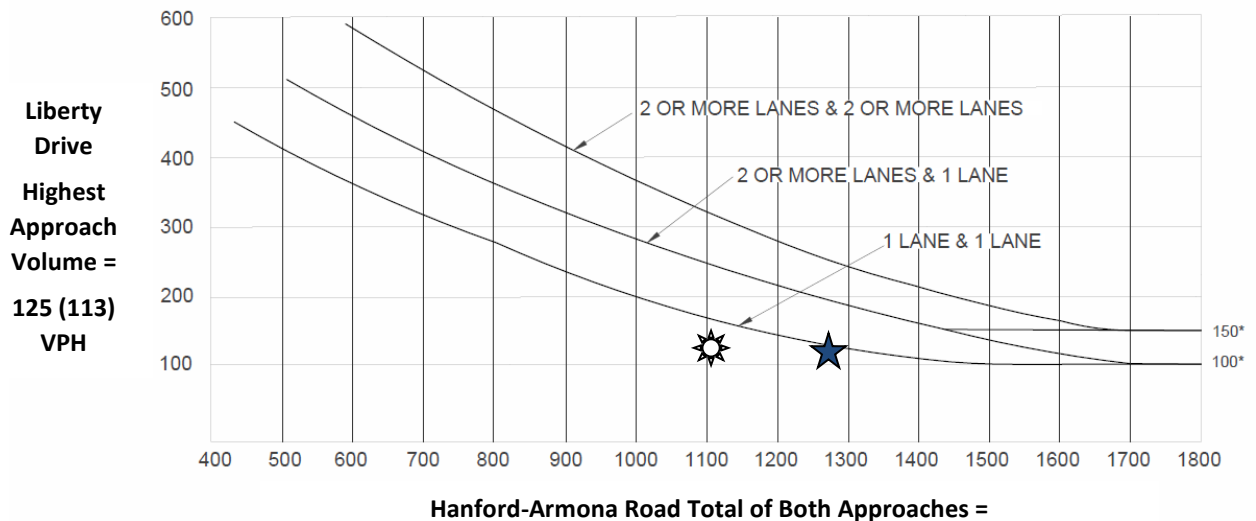
(559) 570-8991

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions

2. Liberty Drive / Hanford-Armona Road

AM (PM) Peak Hour



1101 (1268) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

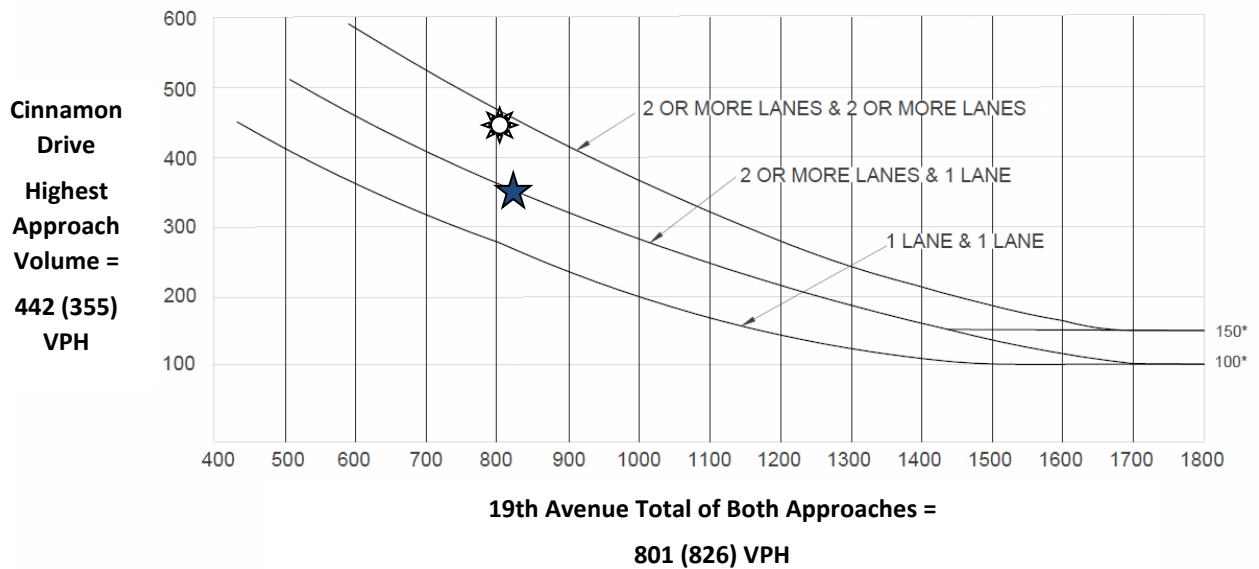


www.JLBtraffic.com
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516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions
5. 19th Avenue / Cinnamon Drive
AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Met



PM Peak Hour – Signal Warrant is Met

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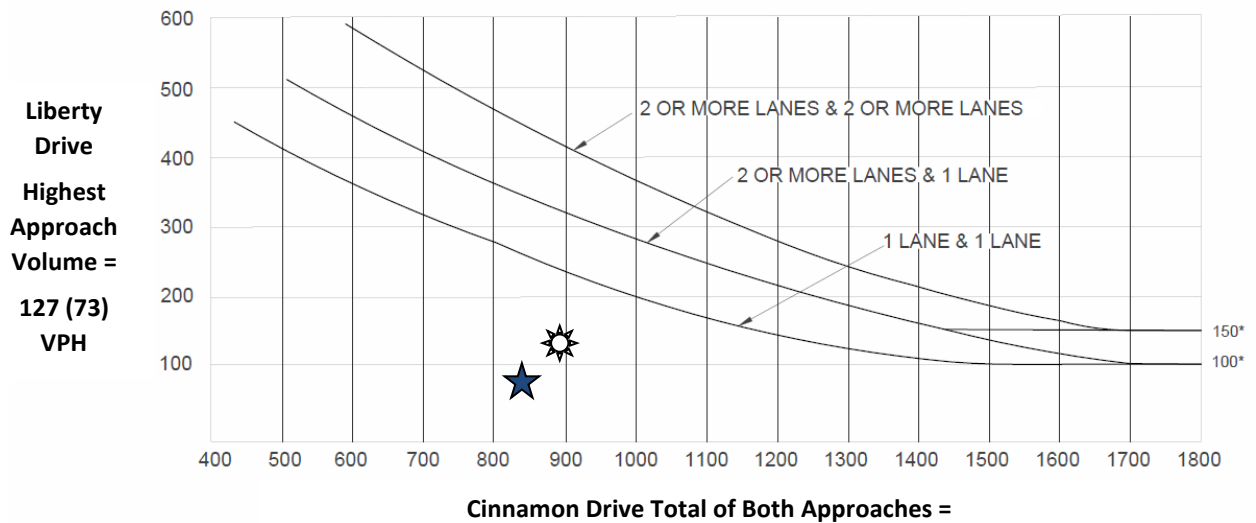
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Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 No Project Traffic Conditions

6. Liberty Drive / Cinnamon Drive

AM (PM) Peak Hour



892 (842) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

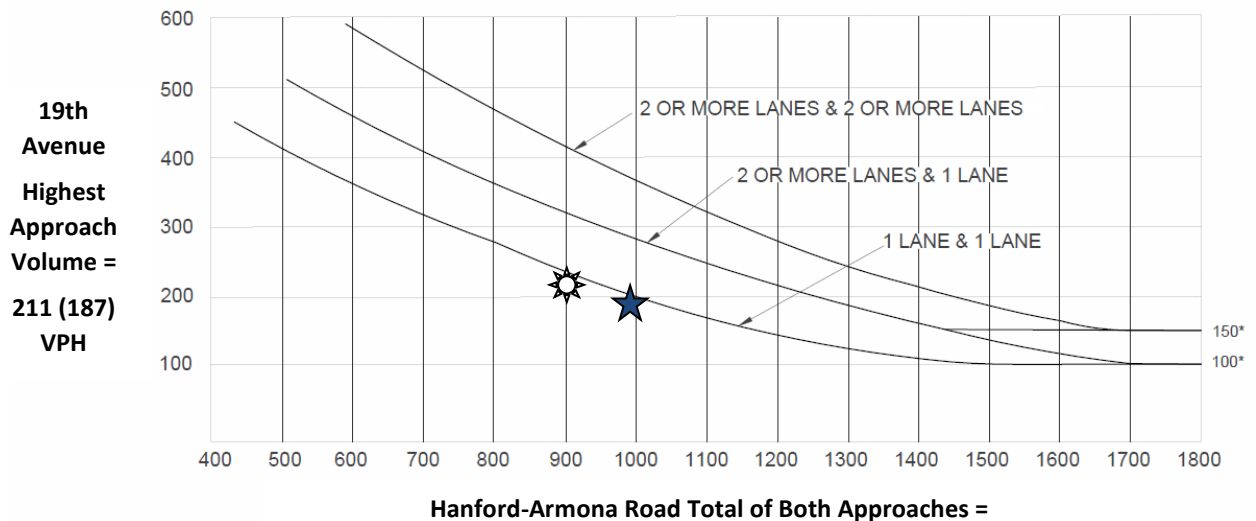
Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
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November 7, 2014

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

1. 19th Avenue / Hanford-Armona Road

AM (PM) Peak Hour



902 (995) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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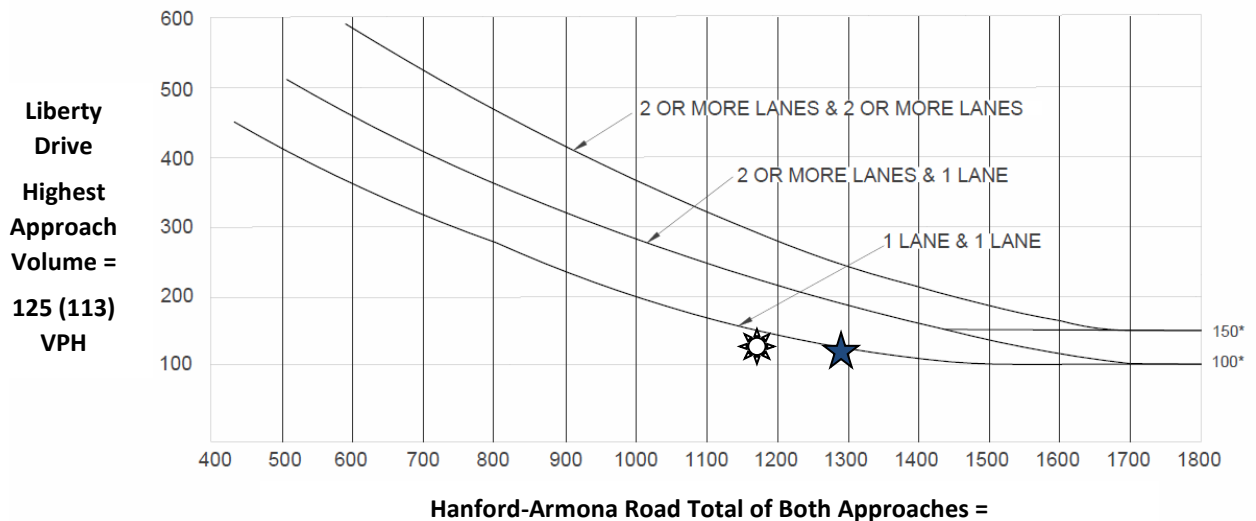
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Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

2. Liberty Drive / Hanford-Armona Road

AM (PM) Peak Hour



1169 (1288) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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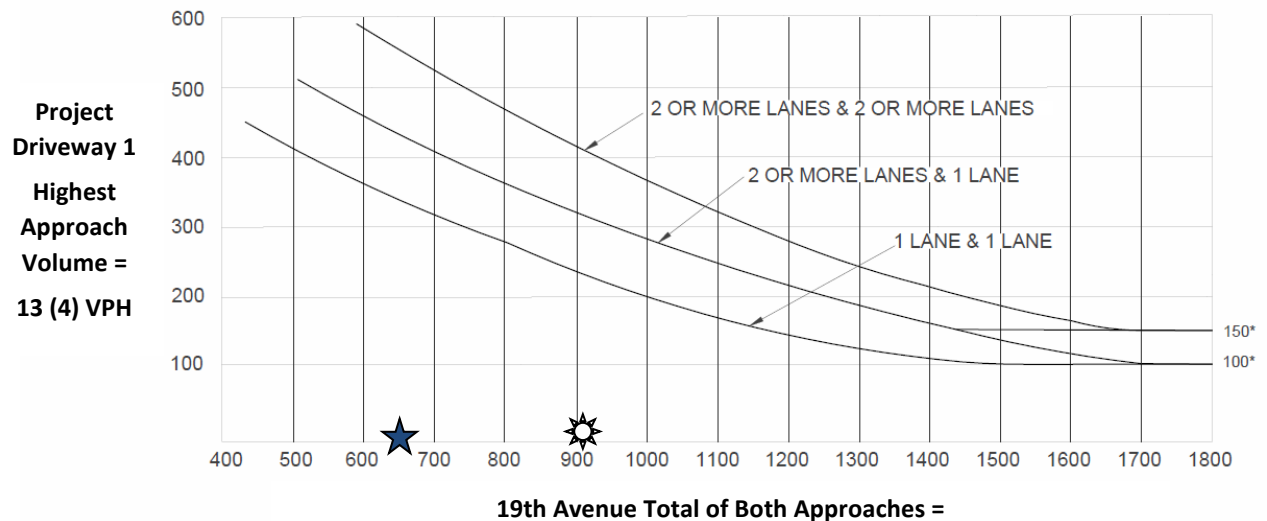
(559) 570-8991

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

3. 19th Avenue / Project Driveway 1

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

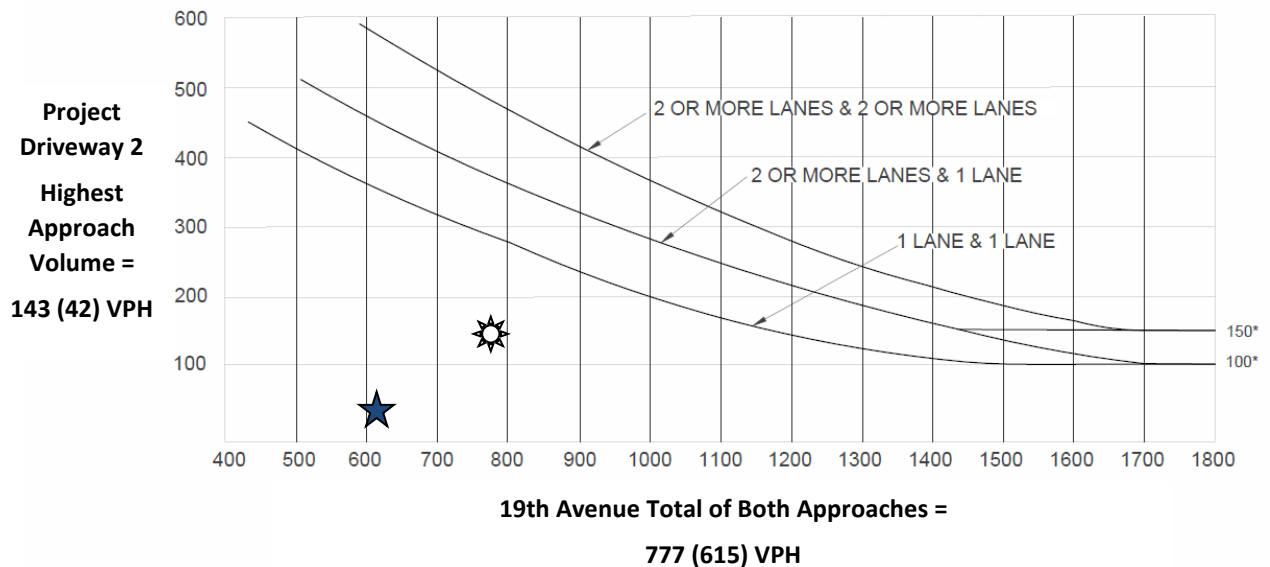
Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
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November 7, 2014

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

4. 19th Avenue / Project Driveway 2

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

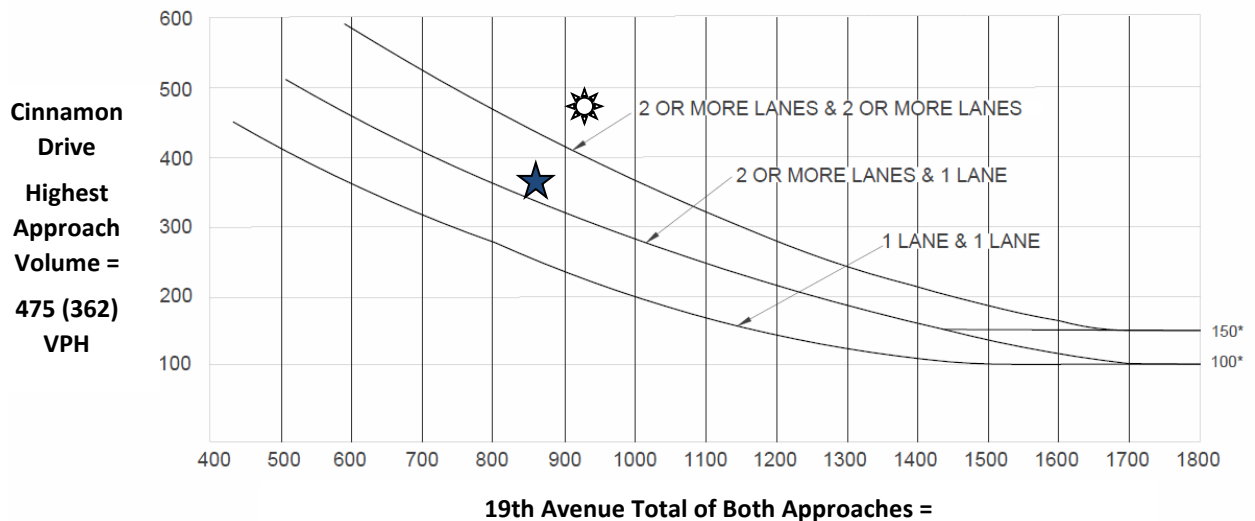
Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
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November 7, 2014

Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

5. 19th Avenue / Cinnamon Drive

AM (PM) Peak Hour



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



AM Peak Hour – Signal Warrant is Met



PM Peak Hour – Signal Warrant is Met

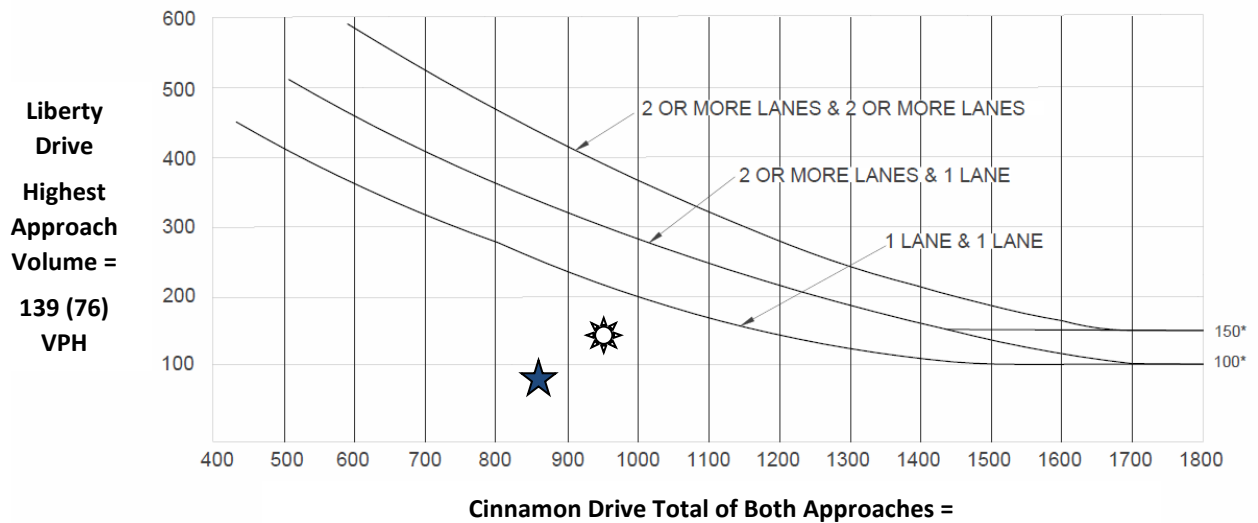
Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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Warrant 3: Peak Hour (Urban)

Cumulative Year 2040 plus Project Traffic Conditions

6. Liberty Drive / Cinnamon Drive

AM (PM) Peak Hour



956 (859) VPH

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



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
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November 7, 2014