APPENDIX A
Trip Diversion Memorandum

COREX10
renewal, enhancement, expansion
Baton Rouge

Submittal Form

H.004100 I-10 (LA 415 to Essen Lane on I-10 and I-12), WBR and EBR Parishes

Submittal Code: Trip Diversion Memo

Title: Dynamic Traffic Assignment Alternative Routes and Off-Site Mitigation

Submittal Date: December 3, 2024

This submittal consists of a review and analysis of the four primary mitigation measures that have been proposed and developed to help mitigate impacts to traffic operations on Interstate 10 due to construction on the Segment 1 corridor. These four primary mitigation measures are:

- Statewide advance portable changeable message signs
- Adaptive signal improvements
- Signal retiming improvements
- Off-site intersection improvements

This memorandum presents these mitigation measures and assessments of them with respect to a maintenance of traffic (MOT) plan for the corridor that has continuously evolved over time. Conclusions are summarized below.

CONCLUSIONS

Based on the reassessment of off-site mitigation measures after the change from the four-lane MOT plan to the six-lane MOT plan, the guaranteed maximum price (GMP) Segment 1 plans will reflect the following:

- The advance changeable message sign program will be reduced in scale, and plans/construction will be included in the GMP Segment 1 project.
- The adaptive signal improvements on the primary routes on the east side of the river will remain part of the mitigation plan. The Louisiana Department of Transportation and Development (LADOTD) and/or others will perform these improvements outside of the GMP Segment 1 construction plans.
- The retiming for secondary and local routes on the east side of the river will be assessed by LADOTD and/or East Baton Rouge Parish for need during the outset of construction of Stage 2. If retiming improvements are warranted, these will be performed outside of the GMP Segment 1 construction plans.
- Off-site intersection improvements and temporary signals will not be provided as part of the mitigation plan. The GMP Segment 1 plans will not include any provisions for these improvements.

The goal of this memorandum is to gain a final directive from LADOTD regarding the mitigation measures to be included in the GMP Segment 1 construction plans constructed by the “construction management at risk” contractor. The 60 percent submittal for the Segment 1 GMP plans is scheduled for March 7, 2025.

EXECUTIVE SUMMARY

BACKGROUND

The Louisiana Department of Transportation and Development (LADOTD) has proposed widening Interstate 10 (I-10) from the Louisiana Highway 415 (LA 415) interchange to just east of the I-10/Interstate 12 (I-12) interchange. The goal of widening I-10 is to provide more capacity, reduce peak-hour traffic congestion, and improve mobility and access. The project, I-10: LA 415 to Essen Lane on I-10 and I-12, is located in West and East Baton Rouge Parishes, Louisiana, and is identified as State Project Number H.004100.

The project will be conducted in multiple segments. The first segment, Segment 1, will improve I-10 by widening and reconstructing the mainline from three to four lanes in each direction, along with bridge replacement and rehabilitation, interchange and ramp modifications, and shoulder widening.

Initially, the limits of Segment 1 were from west of Washington Street (east side of the Mississippi River) to the Perkins Road on-/off-ramps. During the "construction management at risk" (CMAR) process, the limits of CMAR Segment 1 were extended east of Acadian Thruway, which was presented to the public at the March 7, 2023, public meeting. In March of 2024, LADOTD decided to revert to the original limits of Segment 1 (west of Washington Street [east of the river] to the Perkins Road on-/off-ramps) for budgetary reasons.

Six-Lane Maintenance of Traffic (MOT) Plan

During the CMAR pre-construction process, a greenfield approach for I-10 was developed to allow new bridges to be built in a single, more simplified manner. I-10 westbound would be temporarily widened, and both I-10 eastbound and I-10 westbound traffic would be shifted to the westbound lanes while the eastbound lanes are being constructed. Once the eastbound lanes are constructed, traffic will be shifted to the new eastbound lanes while the westbound lanes are constructed.

The construction of I-10 CMAR Segment 1 is planned in five stages. The original design provides that all five stages of construction will maintain three lanes in each direction (six-lane MOT) on I-10 within the construction limits. This concept was presented to the public at the November 2019 public hearing.

Four-Lane MOT Plan

As the design progressed, LADOTD considered maintaining two lanes in each direction (four-lane MOT) on I-10 within the construction limits for 12 to 14 months of the construction period (Stage 2) to reduce time on the overall construction schedule and save cost. All other stages of construction would maintain the six-lane MOT plan.

Because two lanes in each direction (four-lane MOT) on I-10 would be maintained within the construction limits during Stage 2 construction, the I-10 commuters would be expected to experience heavy delays in peak hours. To avoid these heavy delays, it is anticipated that a portion of I-10 traffic would use local roadways as alternative routes to reach their desired destinations. These alternative routes were categorized into primary, secondary, and local in collaboration with LADOTD and the City of Baton Rouge based on local knowledge of traffic movements and the amount of traffic predicted to divert.

Off-Site Mitigations for Four-Lane MOT Plan

Because lanes on I-10 eastbound and westbound would have been reduced by one during Stage 2 construction, LADOTD proposed the following mitigation measures as a plan of action to make alternative routes more compelling for travelers approaching the work zone and to improve I-10 traffic flow.

Statewide Advance Portable Changeable Message Signs (PCMS)

Based on the assessed impacts of reduced travel lanes, congestion near the work zone is expected to be significantly elevated. For this reason, the proposed system consists of 35 temporary queue-detection PCMS to provide advance work-zone construction information to travelers approaching the work zone. Traffic approaching the work zone from as far as Louisiana state lines would be alerted about delays resulting from work-zone traffic congestion, incidents, and construction activities. The statewide PCMS locations are selected to provide alternative route information at strategic decision points to help divert traffic. The PCMS locations are proposed on major routes and interchanges, including I-10, I-12, Interstate 20 (I-20), Interstate 49 (I-49), Louisiana Highway 1 (LA 1), and US Route 190 (US 190). A summary of proposed PCMS locations is provided below.

- I-10 eastbound locations: the Texas state line, Lake Charles, Jennings, Crowley, the I-49 interchange (Lafayette), LA 415, and LA 1.
- I-12 westbound locations: Covington, Hammond, Livingston, and the I-12/U.S. Route 61 (US 61) interchange.
- I-10 westbound locations: Slidell, Louisiana Highway 22 (LA 22), US 61, and the Interstate 310 (I-310) interchange.
- I-20 eastbound locations: the Texas state line, Shreveport.
- I-49 southbound locations: the I-49 interchange, the US 190 interchange, Whiteville, Cheneyville, and Alexandria.
- Other key locations: Interstate 110 (I-110) southbound at Scotlandville, LA 1 northbound, US 190 eastbound in Westover, and I-49 northbound at Sunset.

The main goal of providing advance traveler information at these key locations is to recommend alternative routes for travelers and actively manage congestion in and around the work-zone area.

Adaptive Signal Improvements and Signal Retiming Improvements

Trips diverting on the east side of the Mississippi River would have access to a typical grid network of roadways and streets. The traffic impacts caused by diverted traffic on these roadways would be improved through a combination of adaptive traffic signals and signal retiming depending on the particular roadway.

Off-Site Intersection Improvements

Trips diverting on the west side of the Mississippi River would typically use LA 1, LA 415, and US 190 as alternative corridors. The peak-hour traffic delays at the LA 415 and Plantation Avenue, LA 415 and I-10 eastbound exit ramp, US 190 and LA 1 connector, and US 190 and West Service Road intersections are expected to increase due to increased traffic demand during Stage 2 construction. Temporary signal, signing, and marking improvements at those four identified intersections are proposed to mitigate the

impacts of diverted traffic. These proposed improvements are included in the 98 percent design plans of EWP 3R.

The National Environmental Policy Act reevaluation document dated February 2021 includes constructability considerations in Appendix A (Line and Grade Report) of maintaining three lanes of traffic in each direction (six-lane MOT) on I-10 for all stages of construction. At a public-meeting open house held on March 7, 2023, the concept of maintaining two lanes of traffic in each direction (four-lane MOT) on I-10 during Stage 2 construction was presented for public feedback. Based on public feedback from that followup meeting, LADOTD decided not to pursue the four-lane MOT plan during Stage 2 and instead maintain three lanes of traffic in each direction (six-lane MOT) on I-10 during all stages of construction. Stage 2 of construction is anticipated to begin in 2026 and last approximately 24 months.

Revised MOT Plan (Return to Six-Lane MOT Plan for Stage 2)

Three lanes in each direction (six-lane MOT) will therefore be maintained on I-10 within the construction limits of Stage 2, except at the I-10/I-110 interchange, where one lane will be provided on I-10 eastbound (using the westbound flyover), which is similar to the existing conditions of an I-10 eastbound drop lane at the Washington exit ramp. On I-10 westbound, because the Washington entrance ramp auxiliary lane will be closed for construction, only three lanes will be approaching the I-10/I-110 interchange (reduction from four lanes). For lane balance, on the far side of the split, there will be two lanes proceeding on I-10 westbound and two lanes proceeding on I-110 northbound. In addition, six access points will be closed within the construction limits of I-10 CMAR Segment 1. As described in **Section 3** of this memorandum, due to work-zone capacity constraints, a lane reduction at the I-10/I-110 interchange, and the access-point closures during Stage 2 construction, the dynamic traffic assignment (DTA) model predicts a portion of I-10 traffic will be diverted to alternative routes to avoid work-zone congestion on I-10.

Reconsideration of Off-Site Intersection Improvements for Six-Lane MOT Plan

Because six lanes will be maintained through the corridor, LADOTD decided to reassess the need for some or all of the four primary off-site mitigation measures that had been adopted for the four-lane MOT plan.

With only one accessible lane on I-10 eastbound at the I-10/I-110 interchange, access-point closures, and work-zone capacity constraints, some of the I-10 eastbound traffic on the west side of the Mississippi River will be influenced to divert onto LA 415, LA 1, and US 190. The DTA model predicts an increase in traffic demand at the LA 415 and Plantation Avenue, LA 415 and I-10 eastbound exit ramp, US 190 and LA 1 connector, and US 190 and West Service Road intersections during peak hours. Temporary traffic signals were proposed for the four-lane MOT plan to improve traffic operations at these four intersections. The four off-site improvement intersections are shown on **Figure A** below.

LADOTD advised performing a signal warrant analysis at these four intersections to determine if temporary traffic signals should still be included in the six-lane MOT plan. Accordingly, capacity (Synchro 11) and signal warrant (Highway Capacity Software [HCS]) analyses were performed. The capacity analysis results summary indicates that temporary traffic signals during Stage 2 construction at the study intersections will improve traffic operations over the existing and no-build (without temporary traffic signals) conditions. The signal warrant analysis indicates that the Manual on Uniform Traffic Control Devices Traffic Signal Warrant 2 (4-hour vehicular volumes) and Warrant 3 (peak-hour vehicular

volumes) were met for both existing and six-lane MOT plan traffic volumes. However, the requirements set by Engineering Directives and Standards Manual (EDSM) VI-1-1-2 did not warrant a traffic signal at the study intersection because it does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent or Warrant 7. **Section 4.3** of this memorandum provides the details of the capacity and signal warrant analysis results.

Figure A: Off-Site Improvement Intersections

OFF-SITE MITIGATION OPTIONS AND RECOMMENDATIONS

Each of the four primary off-site mitigation measures is assessed below in consideration of the readopted six-lane MOT plan.

Statewide Advance PCMS – The existing lane configuration generally will be maintained for all construction stages within the work-zone limits of the six-lane MOT plan. For this reason, the traffic queues on the I-10 mainline during peak hours are expected to be less in the six-lane MOT plan scenario compared to the four-lane MOT plan. The Intelligent Transportation System (ITS) Statewide Advance Signing Plan was revisited. PCMS located at the Texas state line were removed from the ITS Statewide Advance Signing Plan in the four-lane MOT plan. **Figure 5** of this technical memorandum shows the removed PCMS locations for the four-lane MOT plan. The proposed ITS Statewide Advance Signing Plan consists of approximately 26 temporary queue-detection PCMS to provide advance work-zone construction information to travelers approaching the work zone. The statewide PCMS locations are selected to provide alternative-route information at strategic decision points. Travelers approaching the work zone would be alerted regarding potential delays such as construction activities or incidents. The PCMS locations are proposed on major routes and interchanges, including I-10, I-12, I-49, LA 1, and US 190. A summary of proposed PCMS locations is provided below.

- I-10 eastbound locations: Crowley, the I-49 interchange (Lafayette), LA 415, and LA 1.
- I-12 westbound locations: Covington, Hammond, Livingston, and the I-12/US 61 interchange.

- I-10 westbound locations: LA 22, US 61, and I-310.
- I-49 southbound locations: the I-49 interchange, the US 190 interchange, Whiteville, Cheneyville, and Alexandria.
- Other key locations: I-110 southbound at Scotlandville, LA 1 northbound, US 190 eastbound in Westover, and I-49 northbound at Sunset.

The goal of providing advance traveler information at these key locations is to recommend alternative routes for travelers and actively manage the congestion in and around the work-zone area.

Adaptive Signal Improvements – Conditions in the I-10 construction zone will increase traffic demand during peak hours on the major roadways located on the east side of the river. Commuters traveling I-10 westbound on the east side of the Mississippi River will have the option to access a grid network of roadways and streets to reach their desired destinations. All intersections on the primary alternative routes identified in the four-lane MOT plan will also see increased traffic demand in the six-lane MOT plan. Therefore, to accommodate increased traffic demand at the primary alternative-route intersections, the adaptive signal improvements proposed as part of the four-lane MOT plan would still apply to the six-lane MOT plan. An adaptive traffic signal system would adjust the traffic signal timing depending on unpredictable fluctuations in traffic flow due to I-10 CMAR construction and incidents on I-10.

Signal Retiming Improvements – Similar to signalized intersections on the primary alternative routes, signalized intersections on secondary and local alternative routes identified in the four-lane MOT plan would also experience an increase in traffic demand in the six-lane MOT plan. However, the peak-hour traffic estimates from the meso model can vary due to the unpredictable nature of driver behavior during I-10 CMAR construction activities. To ensure more accurate and effective traffic management, the signal retiming improvements on secondary and local alternative routes should be implemented after Stage 2 construction begins, allowing LADOTD to observe and measure real-time traffic patterns. Traffic counts could be conducted at critical locations on secondary and local alternative routes to quantify volume increases. These data would provide a more realistic picture of traffic impacts from Stage 2 construction. LADOTD will be responsible for collecting the traffic counts and implementing signal retiming improvements at the signalized intersections of secondary and local alternative routes. Also, LADOTD will be responsible for collaborating with the City of Baton Rouge to assist them in optimizing signal timing plans for the affected intersections. Adjusting the traffic signal timing will improve the peak-hour traffic operations along the study corridors. Given the extended duration of Stage 2 construction (over 2 years), the investment in traffic signal retiming is justified. **Section 4.2** of this memorandum details adaptive signal and signal retiming mitigation measures.

Off-Site Intersection Improvements – Based on the estimations of the DTA model, a capacity and signal warrant analysis was conducted to determine the need for temporary traffic signals during Stage 2 construction for the six-lane MOT plan (discussed previously in this memorandum). The analysis results indicate that study intersections fail to meet the EDSM VI-1-1-2 criteria for signal warrant. Therefore, temporary traffic signals and associated lane configuration changes at the off-site intersections are not justified based solely on the traffic engineering analysis (EDSM VI-1-1-2) criteria. However, the peak-hour traffic demand is expected to increase, and traffic operations of these four study intersections should be closely monitored during Stage 2 construction. Temporary traffic signals or other

mitigation measurements should be considered if the traffic at these intersections experiences heavy delays during peak hours.

The below attachments are included with this technical memorandum:

A. Attachment A – Hourly Demand Data
B. Attachment B – Safety Data
C. Attachment C – HCS Warrant Analysis Reports
D. Attachment D – Synchro and SimTraffic Reports
E. Attachment E – Off-Site Improvement PowerPoint Presentation

1. INTRODUCTION AND PURPOSE OF THIS TECHNICAL MEMORANDUM

The Louisiana Department of Transportation and Development (LADOTD) has contracted the COREX10 team to perform engineering and related services for a "construction management at risk" (CMAR) study for the Interstate 10 (I-10): Louisiana Highway 415 (LA 415) to Essen Lane on I-10 and Interstate 12 (I-12) project.

Current heavily congested traffic conditions on I-10 in Downtown Baton Rouge are the result of inadequate, aging infrastructure, closely spaced interchanges, and increased travel demand. The purpose of this project is to improve the overall system operation of I-10 through the Baton Rouge area. Specifically, the objective is to provide more capacity to I-10 by adding a lane in each direction, increasing interchange spacing, and improving the geometry of entrance ramps.

The project will be conducted in multiple segments. The first segment, Segment 1, will improve I-10 through widening and reconstruction of the mainline from three to four lanes in each direction, along with bridge replacement and rehabilitation, interchange and ramp modifications, and shoulder widening from Nicholson Drive to Perkins Road.

Segment 1 will be constructed in multiple stages. During the construction of Segment 1, traffic on I-10 is expected to divert from I-10 to alternative routes to avoid construction activities. This diversion is anticipated to be most significant during Stage 2 of construction. The alternative routes drivers may take to avoid construction were predicted by a calibrated regional-scale dynamic traffic assignment (DTA) model. The alternative routes were categorized into primary, secondary, and local alternative routes in collaboration with LADOTD and the City of Baton Rouge based on local knowledge of traffic movements and the amount of traffic predicted to divert.

This technical memorandum quantifies the amount of traffic predicted to divert from I-10 to alternative routes during construction, summarizes the alternative routes anticipated to be chosen by diverted traffic, and discusses potential improvements along the alternative routes to maintain safe and efficient traffic flow during construction. The results are separated by diversion from I-10 westbound and diversion from I-10 eastbound.

2. STAGE 2 CONSTRUCTION PHASING

Segment 1 of the I-10: LA 415 to Essen Lane on I-10 and I-12 project will be constructed in multiple stages. This technical memorandum focuses on Stage 2 of construction as it is anticipated to most impact traffic. **Figure 1** illustrates Stage 2 construction phasing.

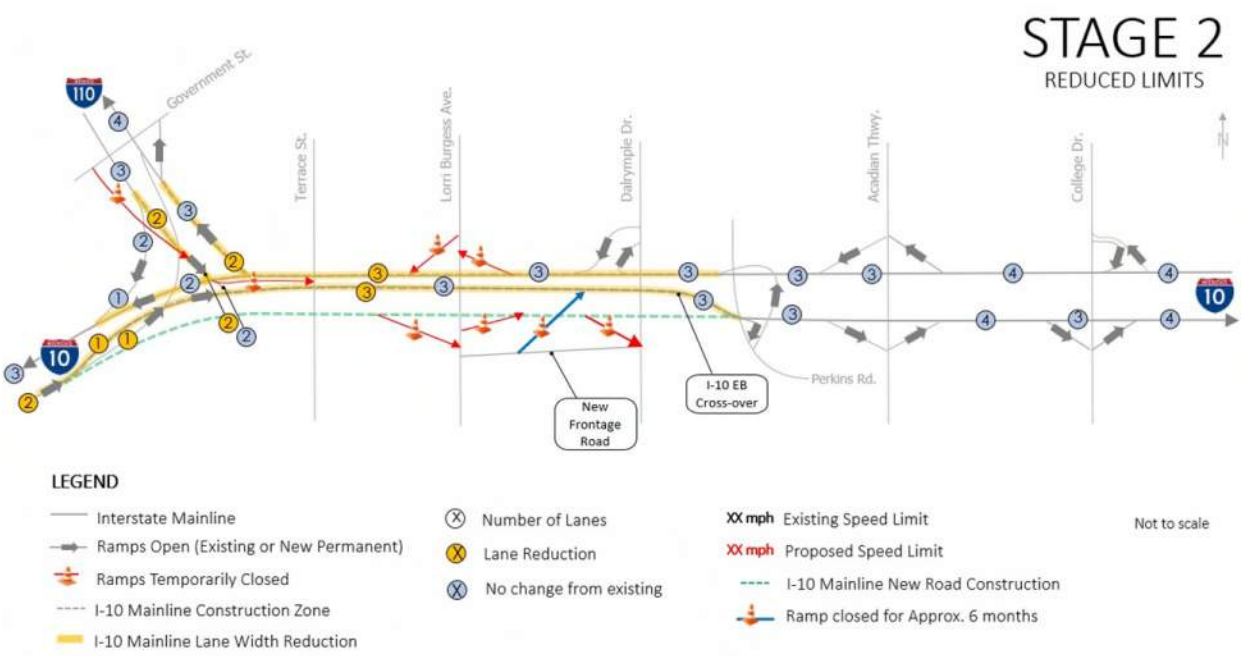

Figure 1: Stage 2 Construction Phasing (as of July 2024)

During Stage 2 construction, traffic on I-10 eastbound will have one lane (on the westbound flyover) through the I-10/Interstate 110 (I-110) interchange, through traffic on I-10 westbound will maintain three lanes up to the I-110 interchange but will not have the added lane from the Washington westbound entrance ramp as it will be closed (resulting in two available lanes at the I-10/I-110 interchange), and the following access points will be closed:

- I-10 Eastbound
  - Exit to Lorri Burgess Avenue
  - Entrance from Lorri Burgess Avenue
  - Exit to Dalrymple Drive
- I-110 Southbound
  - Exit to Terrace Street
  - Entrance from Government Street
- I-10 Westbound
  - Exit to Lorri Burgess Avenue
  - Entrance from Lorri Burgess Avenue

There are no plans to designate a primary detour route because the existing lane configuration will be maintained for most of the construction zone on I-10 in each direction during Stage 2. However, the presence of the work zone, a lane reduction at the I-10/I-110 interchange, and the access-point closures may impact the route choices for drivers within the project limits.

The presence of the construction zone is predicted to cause traffic congestion because the speed limit on I-10 will be reduced and the shoulders and travel lanes will be narrower compared to existing conditions. The access-point closures and capacity constraints due to lane reduction at the I-10/I-110 interchange will be the primary cause for traffic avoiding I-10 and using alternative routes to reach their destinations.

3. ALTERNATIVE ROUTES DURING CONSTRUCTION

The alternative routes drivers may take to avoid the Stage 2 construction zone were predicted by a calibrated regional-scale DTA model developed as part of the Traffic Management Plan associated with the I-10: LA 415 to Essen Lane on I-10 and I-12 project. The Stage 2 construction phasing (as of July 2024) was coded into the DTA model. The DTA model follows the behavioral assumption that drivers will make route choices based on available routes with the least travel time between their origins and destinations and adapt to changing travel conditions.

The routes predicted by the DTA model to receive diverted traffic during Stage 2 construction were identified, in collaboration with LADOTD and the City of Baton Rouge, as the alternative routes.

The alternative routes were categorized as primary, secondary, or local alternative routes in collaboration with LADOTD and the City of Baton Rouge based on the DTA model results, along with local knowledge of traffic movements. Primary routes were identified as the alternative routes that would carry most of the diverted traffic across the Mississippi River. Secondary routes were identified as the routes that connect the local businesses, neighborhoods, and industries to the primary alternative routes. These alternative routes are critical for providing efficient mobility during I-10 construction. The local routes are identified as the routes that connect neighborhoods and businesses within the city and provide access to the secondary alternative routes.

Figures 2, **3,** and **4** illustrate the primary, secondary, and local alternative routes, respectively. The figures also show the number of vehicles predicted to divert to these routes during Stage 2 construction.

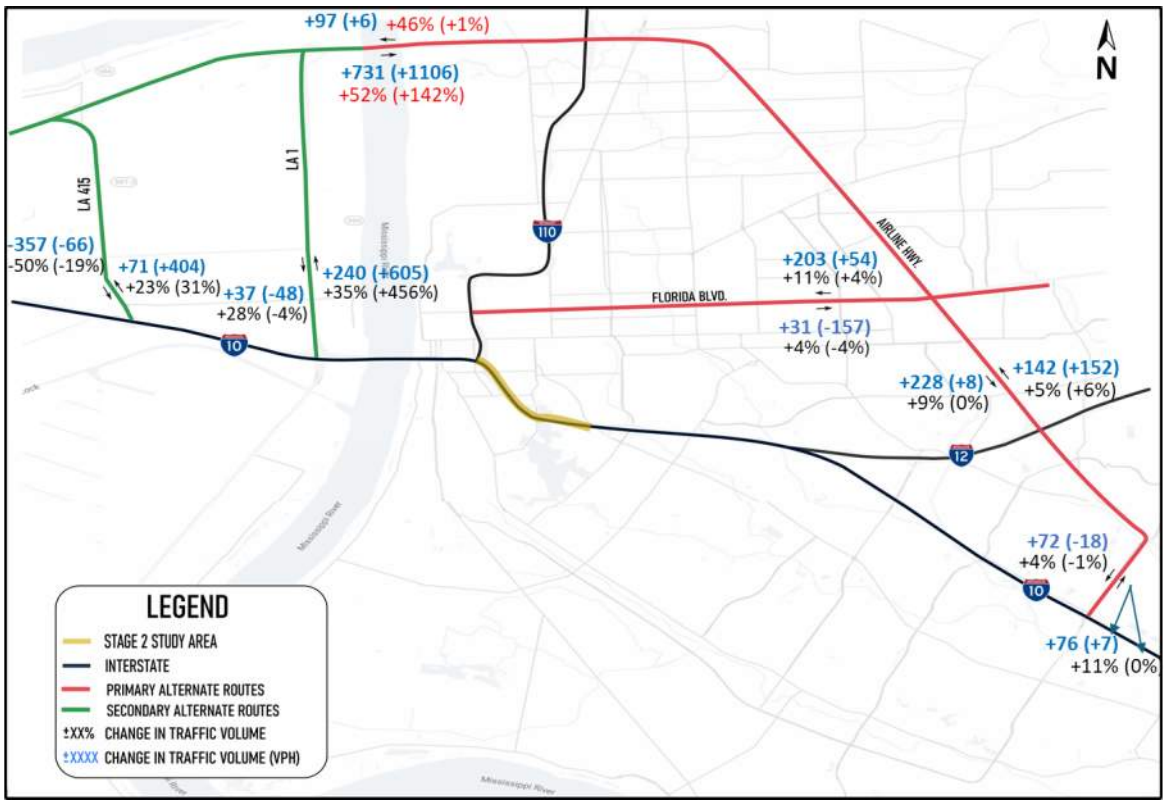

Figure 2: Primary and Secondary Alternative Routes and Predicted Diverted Volumes (West of the Mississippi River)

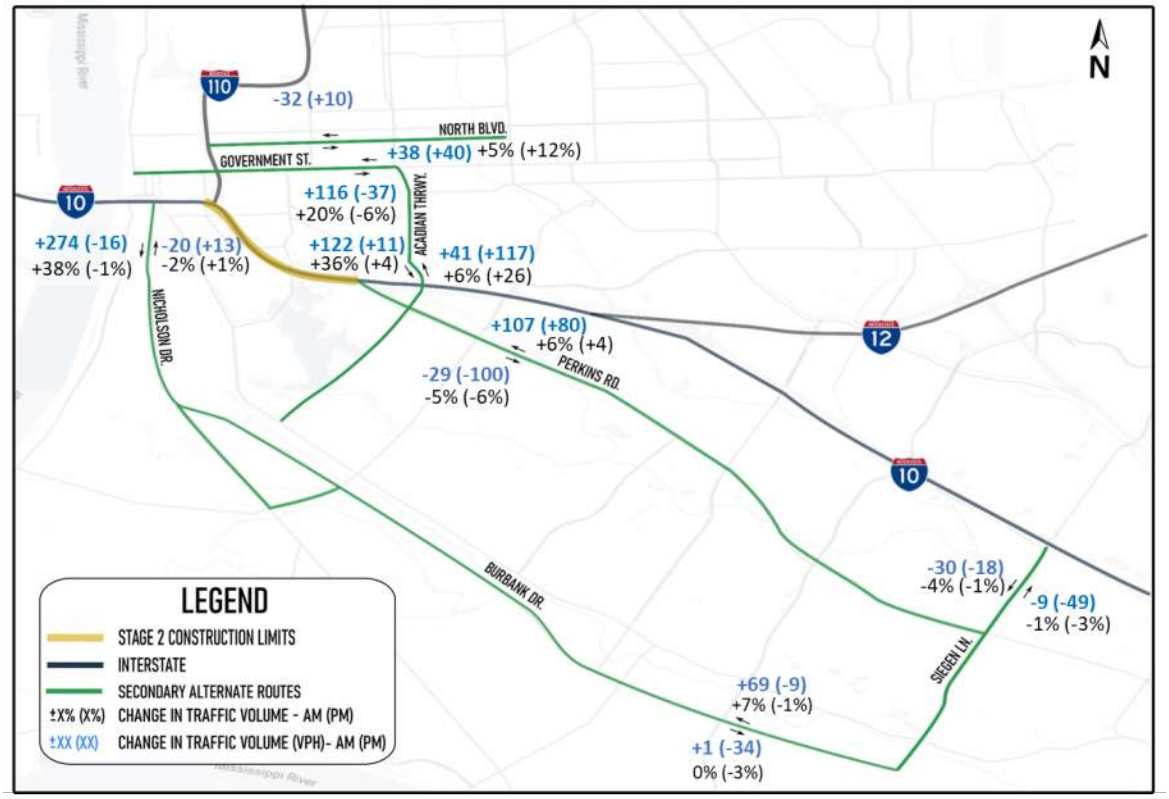

Figure 3: Secondary Alternative Routes and Predicted Diverted Volumes (East of the Mississippi River)

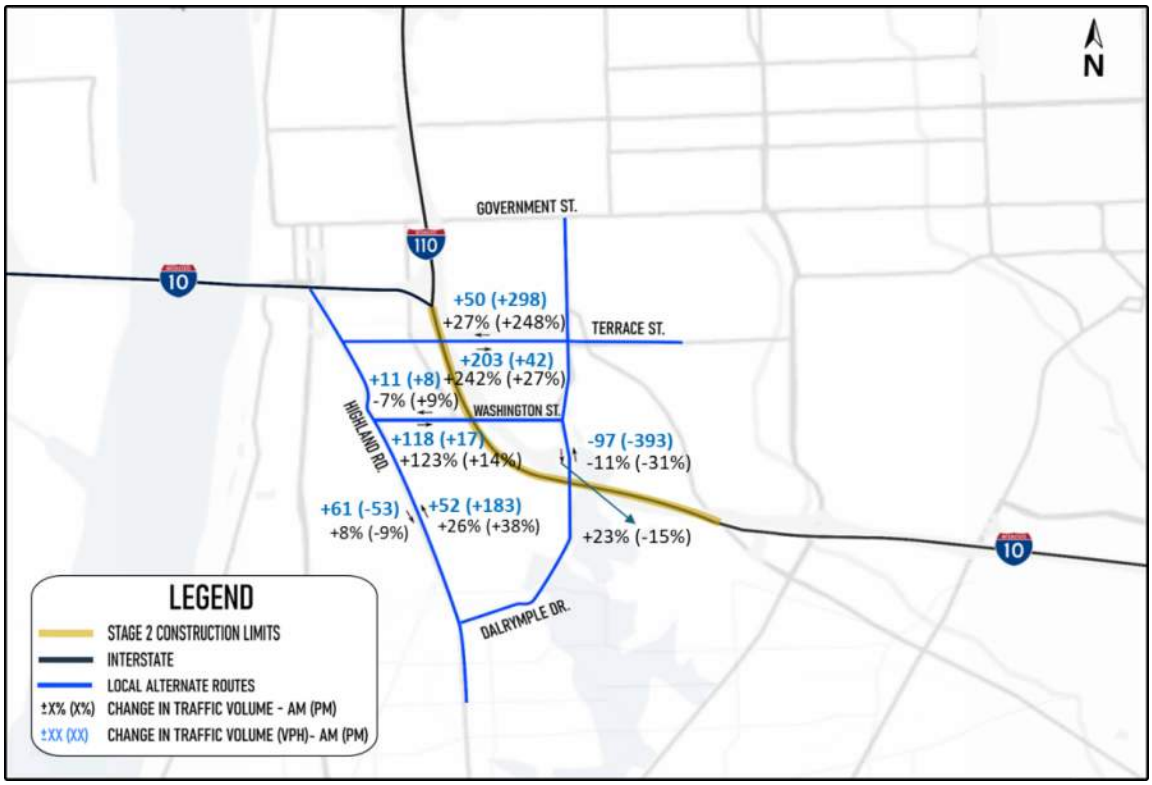

Figure 4: Local Alternative Routes and Predicted Diverted Volumes (East of the Mississippi River)

4. MITIGATION STRATEGIES

4.1 INTELLIGENT TRANSPORTATION SYSTEM (ITS) STATEWIDE* ADVANCE SIGNING

Statewide advance signing and traveler information involve the deployment of portable changeable message signs (PCMS). The existing lane configuration will be maintained for all construction stages within the work-zone limits of the six-lane MOT plan, except at the I-110 and I-10 interchange, as previously discussed in this memorandum. For this reason, the traffic queues on the I-10 mainline during peak hours are expected to be less in the six-lane MOT plan scenario compared to the four-lane MOT plan. The ITS Statewide Advance Signing Plan was revisited, and PCMS located at the Texas and Mississippi state lines were removed from the ITS Statewide Advance Signing Plan in the six-lane MOT plan. The proposed ITS Statewide Advance Signing Plan consists of approximately 26 temporary queue-detection PCMS to provide advance work-zone construction information to travelers approaching the work zone. Outfitted with cellular communication technology, PCMS can be remotely operated by the LADOTD's Traffic Management Center or the system operator to post important information to travelers. PCMS will also be managed through the smart work-zone software so that PCMS can be automated to provide real-time alerts such as traffic slowdowns and incidents detected by the smart work-zone system's radar sensors. Based on these capabilities, the proposed statewide PCMS locations are selected to provide alternative-route information to travelers approaching the work zone at strategic decision points. The PCMS locations are proposed on major routes and interchanges, including I-10, I-12, I-49, LA 1, and US Route 190 (US 190). A summary of proposed PCMS locations is provided below.

- I-10 eastbound locations: Crowley, the I-49 interchange (Lafayette), LA 415, and LA 1.
- I-12 westbound locations: Covington, Hammond, Livingston, and the I-12/US 61 interchange.
- I-10 westbound locations: LA 22, US 61, and I-310.
- I-49 southbound locations: the I-49 interchange, the US 190 interchange, Whiteville, Cheneyville, and Alexandria.
- Other key locations: I-110 southbound at Scotlandville, LA 1 northbound, US 190 eastbound in Westover, and I-49 northbound at Sunset.

The goal of providing advance traveler information at these key locations is to recommend alternative routes for travelers and actively manage the congestion in and around the work-zone area. Because traffic demand is expected to fluctuate and may possibly generate greater impacts to the work-zone congestion than projected in the four-lane MOT analysis, the scale of the PCMS coverage should be evaluated at regular intervals. For example, additional PCMS should be deployed in locations further upstream to help address traffic congestion and safety issues due to the work-zone construction. **Figure 5** shows both the locations of PCMS to be maintained as part of the six-lane MOT plan and the four-lane MOT plan PCMS locations that were removed.

***For the purposes of this memorandum, Statewide Advance Signing is considered Regional Advance Signing**

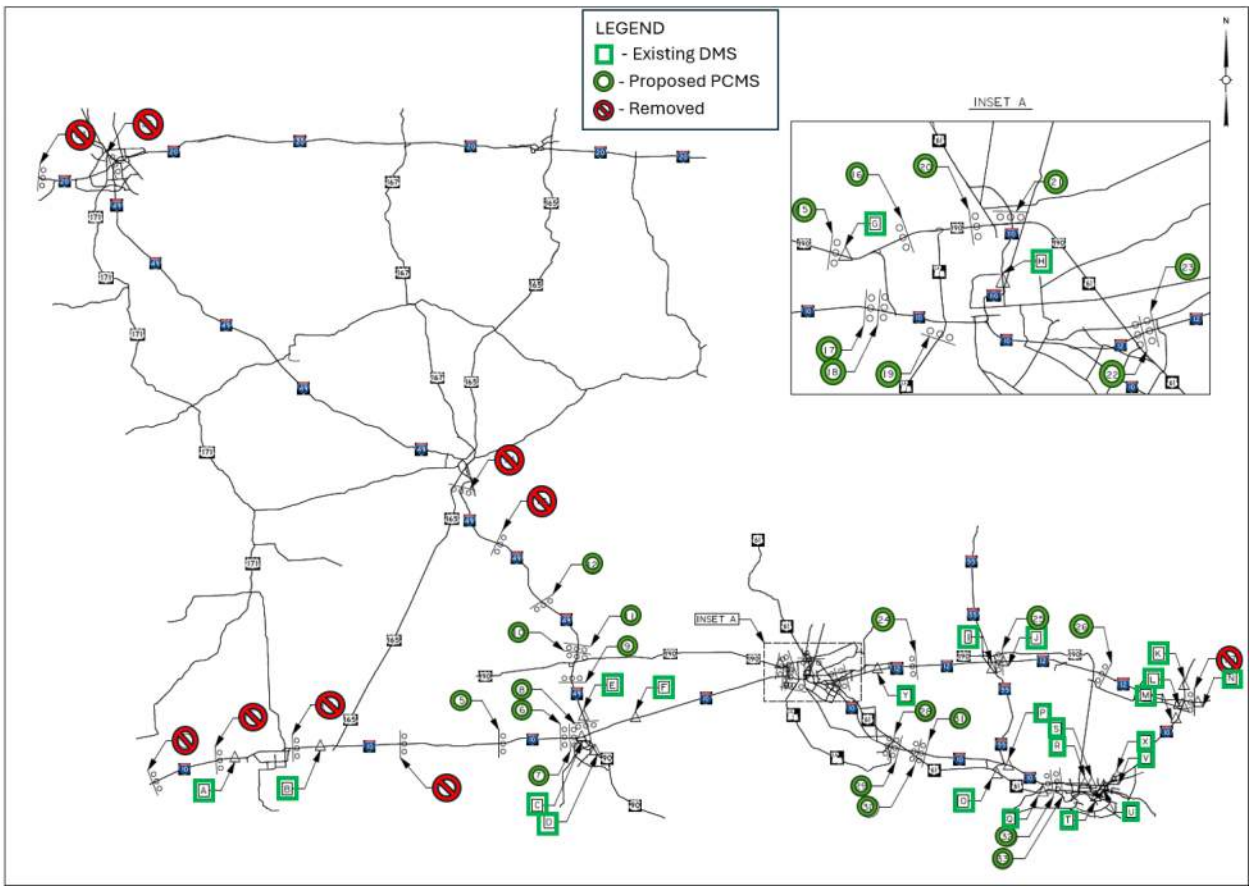

Figure 5: Proposed PCMS Locations for Six-Lane MOT Plan

4.2 I-10 WESTBOUND (EAST OF THE MISSISSIPPI RIVER)

The primary, secondary, and local alternative routes depicted on **Figures 2**, **3,** and **4** illustrate that drivers diverting from I-10 westbound (east of the Mississippi River) have access to a grid street network with many choices to reroute themselves to their desired destinations. Most of this diverted traffic will use Airline Highway, Acadian Thruway, and Florida Boulevard. In the p.m. peak hour, the DTA model predicted a 6 percent increase in traffic on Airline Highway northbound, a 26 percent increase in traffic on Acadian Thruway northbound, and a 4 percent increase in traffic on Florida Boulevard westbound.

To mitigate the potential impacts of diverted traffic onto the primary alternative routes, it is recommended that an adaptive traffic signal system be implemented before Stage 2 construction begins. An adaptive traffic signal system would adjust the traffic signal timing depending on unpredictable fluctuations in traffic flow due to Stage 2 construction and incidents on I-10. Implementation would include upgrades to hardware, vehicle detection, communication, and traffic signal operations software. The adaptive traffic signal system could adapt to varying traffic demands and reduce delay, improve travel-time reliability, improve safety, and reduce emissions.

A secondary benefit of implementing an adaptive traffic signal system before Stage 2 construction begins is to mitigate non-recurring traffic congestion due to incidents. Data from 2017 to 2019 indicate approximately 3,600 incidents occurred within Segment 1 of the I-10: LA 415 to Essen Lane on the I-10 and I-12 project. When incidents occur during Stage 2 construction, the reduced lane widths and minimal shoulder widths will create extended queues and longer travel times. A portion of the I-10, I-12,

and I-110 trips destined outside the Stage 2 construction limits are expected to use US 190/Airline Highway, Florida Boulevard, LA 1, and LA 415 as alternative routes to avoid the work-zone area. Adaptive signal control technology improvements at signalized intersections along US 190/Airline Highway and Florida Boulevard corridors and signal timing improvements on LA 1 and LA 415 corridors will improve traffic operations during the construction of Segment 1.

Table 1 summarizes the signalized intersections along the primary alternative routes. The table also summarizes the stage of construction when improvements should be implemented, the number of traffic signals along each route, and the first and last intersections predicted to experience an increase in traffic volumes during Stage 2 construction.

Table 1. Signalized Intersections Along Primary Alternative Routes

Category	Corridor	Contract Name	Stage of Construction	Number of Intersections	First Intersection	Last Intersection	Responsible Agency
Primary Alternative Routes	Airline Highway*	GMP Segment 1	Stage 2	26	Beachwood Drive	Pecue Lane	LADOTD
	Siegen Lane	GMP Segment 1	Stage 2	5	Cloverland Ave	I-10 Ramps	LADOTD
	Florida Blvd	GMP Segment 1	Stage 2	20	North Sherwood Forest Blvd	I-110 Frontage Southbound	LADOTD
	LA 1*	GMP Segment 1	Stage 1	4	Ave G	Lafiton Lane	LADOTD
	LA 415*	GMP Segment 1	Stage 1	2	Beachwood Drive	Pecue Lane	LADOTD

Similar to signalized intersections on the primary alternative routes, signalized intersections on secondary and local alternative routes identified in the four-lane MOT plan would experience an increase in traffic demand in the six-lane MOT plan, which maintains three lanes in each direction. However, the peak-hour traffic estimates from the meso model can vary due to the unpredictable nature of driver behavior during I-10 CMAR construction activities. To ensure more accurate and effective traffic management, the signal retiming improvements on secondary and local alternative routes should be implemented after Stage 2 construction begins, allowing LADOTD to observe and measure real-time traffic patterns. Traffic counts could be conducted at critical locations on secondary and local alternative routes to quantify volume increases. These data would provide a more realistic picture of traffic impacts from Stage 2 construction. LADOTD will be responsible for collecting the traffic counts and implementing signal retiming improvements at the signalized intersections on secondary and local alternative routes. Also, LADOTD will be responsible for collaborating with the City of Baton Rouge to assist them in optimizing signal timing plans for the affected intersections. Adjusting the traffic signal timing will improve the peak-hour traffic operations along the study corridors. Given the extended duration of Stage 2 construction (over 2 years), the investment in traffic signal retiming is justified.

4.3 I-10 EASTBOUND (WEST OF THE MISSISSIPPI RIVER)

The alternative routes depicted on **Figure 1** illustrate that commuters diverting from I-10 eastbound (west of the Mississippi River) do not have access to a grid street network. They have fewer choices to reroute themselves to their desired destinations. They are predicted to divert to the exit at Nicholson Drive east of the Mississippi River or to LA 415, LA 1, or US 190 west of the Mississippi River. The following intersections are identified as critical intersections along LA 415, US 190, and LA 1 to handle the increased traffic demand during Stage 2 of construction.

- LA 415 and Plantation Avenue
- LA 415 and the I-10 eastbound exit ramp
- US 190 and the LA 1 connector
- US 190 and West Service Road

TRAFFIC & SAFETY ANALYSIS

The purpose of the traffic and safety analysis is to determine what off-site mitigation measures may be needed during the widening and reconstruction of the I-10 mainline as part of I-10 CMAR Segment 1. Arcadis conducted a historical safety analysis, signal warrant analysis, and capacity analysis for each intersection listed above. The analyses were focused on determining if installing temporary traffic signals at these intersections is necessary during Stage 2 of construction.

The existing-year (2024) traffic count data were obtained from counts collected on Tuesday, January 23, 2024, during the a.m. (6:00 a.m. to 9:30 a.m.) and p.m. (3:15 p.m. to 6:45 p.m.) peak periods. Traffic volume distributions from LADOTD's 24-hour counts were used to estimate the volumes for the hours outside the peak periods needed for the warrant analysis. The estimated peak-hour volumes used for the signal warrant analysis are provided in **Attachment A**.

A safety analysis was conducted using historical crash data from 2017 to 2021. The summarized findings for each intersection are discussed in subsequent sections. An in-depth crash summary for each intersection is provided in **Attachment B**.

Highway Capacity Software (HCS) 7 was utilized to conduct signal warrant analysis for the study intersections. The analysis focused on Warrant 1 (8-hour vehicular volume), Warrant 2 (4-hour vehicular volume), Warrant 3 (peak hour), and Warrant 7 (crash experience); all other warrants are not applicable for the study intersections. Engineering Directives and Standards Manual (EDSM) VI-1-1-2 criteria "should satisfy both Warrant 1A 100% and Warrant 7" was considered for installing temporary traffic signals at the studied intersections. Two scenarios were evaluated at each intersection: 1) Existing Conditions – analysis based on the existing-year (2024) traffic counts and 2) Stage 2 Conditions – analysis incorporating the existing-year (2024) traffic counts and additional diverted volumes for Stage 2 construction. The detailed HCS signal warrant analysis results are provided in **Attachment C.**

A capacity analysis was conducted using Synchro 11 to assess the traffic operations of the study intersections for existing conditions, as well as Stage 2 conditions with and without off-site improvements. Highway Capacity Manual (HCM) 2000 results were summarized for the signalized and unsignalized intersections to compare existing and Stage 2 conditions. The Synchro reports for each intersection and scenario analyzed are provided in **Attachment D**. The summary of safety, signal

warrant, and capacity analysis results presented during the biweekly Task Force Meeting (September 3, 2024) is provided in **Attachment E**.

LA 415 AND PLANTATION AVENUE

The southbound and northbound approaches at the intersection of LA 415 and Plantation Avenue are stop controlled in existing conditions. The posted speed limit on LA 1 is 55 miles per hour (mph).

Historical Crash Data

A total of 45 crashes (9 per year) occurred between 2017 and 2021 at the intersection of LA 415 and Plantation Avenue. Of the 45 crashes, 24 resulted in some level of bodily injury, with 14 involving pain-complaint injuries, 9 involving moderate injuries, and 1 involving severe injuries. No fatalities were reported at this location.

Right-angle crashes were the predominant collision manner (64 percent), followed by single-vehicle (13 percent) and rear-end (7 percent) crashes. "Failure to yield" was the predominant cause of crashes (53 percent), which correlates with the high percentage of right-angle crashes, followed by "careless operation of the vehicle" (13 percent). **Table 2** summarizes all crashes by manner of collision. Installing a traffic signal at this location could potentially reduce by up to 23 percent all injury crashes (Crash Modification Factor Identification Number [CMF ID #] 319) and reduce by up to 67 percent all injury angle crashes (CMF ID #320).

Table 2. Summary by Collision Manner (2017-2021) – LA 415 and Plantation Avenue

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Same-Direction	0	1	0	0	0	**1**
Other	2	0	0	0	0	**2**
Rear-End	1	0	0	2	0	**3**
Right-Angle	5	6	7	5	6	**29**
Right-Turn Opposite-Direction	0	0	0	1	0	**1**
Sideswipe Same-Direction	0	2	0	1	0	**3**
Single-Vehicle	1	0	1	4	0	**6**
Total	**9**	**9**	**8**	**13**	**6**	**45**

Signal Warrant Analysis

A signal warrant analysis was conducted for Warrant 7 (crash experience). Based on the historical crash data, on average, six crashes per year that could be mitigated by installing a traffic signal were reported. This satisfies Criteria B of Warrant 7 (crash experience), which requires five or more reported crashes of types susceptible to correction by a traffic control signal to have occurred within a 12-month period. However, because no alternatives have been previously implemented to mitigate these crashes, Criteria A of Warrant 7 (crash experience) was not met, so these conditions fail to satisfy Warrant 7 (crash experience) fully.

The intersection of LA 415 and Plantation Avenue met Warrant 2 (4-hour vehicular volume) and Criteria B of Warrant 3 (peak hour) for both analysis scenarios. However, even with the increase in traffic volumes during Stage 2 construction, the intersection does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent.

Overall, the intersection **does not** meet the requirements set by EDSM VI-1-1-2 to warrant a traffic signal because it does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent or Warrant 7. **Figure 6** presents the HCS 7 signal warrant analysis results for the existing and Stage 2 conditions.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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LA 415 @ Plantation Ave Warrants - Raw.xsw

Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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LA 415 @ Plantation Ave Warrants - Stage 2.xsw

Figure 6: Signal Warrant Analysis – LA 415 and Plantation Avenue

Capacity Analysis

The DTA model predicts that during the a.m. peak hour, traffic on LA 415 southbound will decrease by approximately 350 vehicles during Stage 2 construction. This decrease in traffic is due to the I-10 eastbound traffic that will access US 190 eastbound to avoid the construction zone. Similarly, in the p.m. peak hour, some I-10 eastbound traffic will exit at the LA 415 interchange and access US 190 eastbound to avoid the construction zone. The DTA model shows an increase of approximately 400 vehicles on LA 415 northbound.

Table 3 shows the results of a Synchro capacity analysis. The table shows that currently, and during construction, drivers waiting at the stop signs on the southbound and northbound approaches have a difficult time finding gaps in traffic on LA 415 during the p.m. peak hour. Traffic on the southbound approach experiences approximately 60 seconds of delay per vehicle in existing conditions and Stage 2 of construction. The queue extends north past the upstream intersection north of the railroad crossing on Plantation Avenue.

Installing a temporary signal at the intersection would reduce the intersection delay and bring the volume-to-capacity (V/C) ratio down from 0.79 to 0.50 in the p.m. peak hour. The intersection experiences a delay of approximately 6 seconds per vehicle with the temporary signal in place in the p.m. peak hour, which is approximately 90 percent less than without the temporary signal improvement. With the temporary signal improvement, the 95th percentile queues on the southbound approach would decrease by nearly 1,000 feet in the p.m. peak hour and would no longer affect the upstream intersection.

Table 3. Synchro Results – A.M. and P.M. Peak Hours – LA 415 and Plantation Avenue

Scenario	Delay (sec/veh)	V/C	95th Percentile Queue			
			EB	WB	NB	SB
Existing Conditions	29.4/54.5	0.52/0.74	- / -	- / -	63/119	471/1,072
Stage 2 Construction	20.4/59.7	0.47/0.79	- / -	- / -	53/377	206/1,108
Stage 2 + Off-Site Mitigations	4.1/6.0	0.53/0.5	- / -	65/125	- / -	101/133

Notes:
95th percentile queues were obtained from SimTraffic.
XX/XX = A.M. peak hour/P.M. peak hour.

Abbreviations:
EB = Eastbound.
NB = Northbound.
SB = Southbound.
sec/veh = Seconds per vehicle.
V/C = Volume-to-capacity ratio.
WB = Westbound.

LA 415 AND I-10 EASTBOUND EXIT RAMP

The eastbound and northbound approaches at the intersection of LA 415 and the I-10 eastbound exit ramp are stop controlled in existing conditions. The posted speed limit on LA 415 is 45 mph.

Historical Crash Data

A total of 46 crashes (9 per year) occurred between 2017 and 2021 at the intersection of LA 415 and the I-10 eastbound exit ramp. Of the 46 crashes, 11 resulted in some level of bodily injury, with 8 involving pain-complaint injuries, 2 involving moderate injuries, and 1 involving a severe injury. No fatalities were reported at this location.

Rear-end crashes were the predominant collision manner (48 percent), followed by left-turn opposite-direction (24 percent) and right-angle (17 percent) crashes. "Failure to yield" was the predominant cause of crashes (43 percent), which correlates with the high percentage of left-turn opposite-direction and right-angle crashes, followed by "following too closely" (17 percent), which correlates with the high percentage of rear-end crashes. **Table 4** summarizes all crashes by manner of collision. Installing a traffic signal at this location could potentially reduce by up to 23 percent all injury crashes (CMF ID #319) and reduce by up to 67 percent all injury angle crashes (CMF ID #320).

Table 4. Summary by Collision Manner (2017-2021) – LA 415 and I-10 Eastbound Exit Ramp

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Same-Direction	2	4	2	0	3	**11**
Other	1	1	0	0	0	**2**
Rear-End	2	5	5	4	6	**22**
Right-Angle	2	2	0	2	2	**8**
Sideswipe Same-Direction	1	1	0	0	0	**2**
Single-Vehicle	1	0	0	0	0	**1**
Total	**9**	**13**	**7**	**6**	**11**	**46**

Signal Warrant Analysis

A signal warrant analysis was conducted for Warrant 7 (crash experience). Based on the historical crash data, on average, four crashes per year that could be mitigated by installing a traffic signal were reported. This crash frequency does not satisfy Criteria B of Warrant 7 (crash experience), which requires five or more reported crashes of types susceptible to correction by a traffic control signal to have occurred within a 12-month period.

The intersection of LA 415 and the I-10 eastbound exit ramp met Warrant 2 (4-hour vehicular volume) and Criteria B of Warrant 3 (peak hour) for both analysis scenarios. However, even with the increase in traffic volumes during Stage 2 construction, the intersection does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent.

Overall, the intersection **does not** meet the requirements set by EDSM VI-1-1-2 to warrant a traffic signal because it does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent or Warrant 7. **Figure 7** presents the HCS 7 signal warrant analysis results for the existing and Stage 2 conditions.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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LA 415 @ I-10 EB Ramps Warrants - Raw.xsw

Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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LA 415 @ I-10 EB Ramps Warrants - Stage 2.xsw

Figure 7: Signal Warrant Analysis – LA 415 and I-10 Eastbound Exit Ramp

Capacity Analysis

Table 5 shows the results of a Synchro and SimTraffic capacity analysis. Synchro does not support the existing intersection configuration in estimating intersection performance results based on the HCM. Therefore, 95th percentile queues from SimTraffic were used to evaluate the performance. The table shows that currently, in the a.m. peak hour, queues at the eastbound approach drop from 1,687 feet in the existing condition to 189 feet in the Stage 2 condition without improvements due to a decrease in the southbound left-turn volume predicted by the DTA model. However, due to additional traffic on the eastbound approach predicted by the DTA model during construction in the p.m. peak hour, eastbound left-turn drivers are not able to find enough gaps in traffic flow. Consequently, queues on the eastbound approach will increase from 174 feet in the existing condition to 1,629 feet during construction.

Installing a temporary signal at the intersection would result in reduced delays of 19 seconds per vehicle (sec/veh) and 86 sec/veh and V/C ratios of 0.85 and 1.06 in the a.m. and p.m. peak hours, respectively. The 95th percentile queue on the eastbound approach decreases by approximately 102 feet (a 55 percent reduction) in the a.m. peak hour and by approximately 377 feet (a 23 percent reduction) in the p.m. peak hour.

Table 5. Synchro Results – A.M. and P.M. Peak Hours – LA 415 and I-10 Eastbound Exit Ramp

Scenario	Delay (sec/veh)	V/C	95th Percentile Queue			
			EB	WB	NB	SB
Existing Conditions	NA	NA	1,687/174	- / -	526/220	- / -
Stage 2 Construction	NA	NA	186/1,629	- / -	89/174	- / -
Stage 2 + Off-Site Mitigations	18.9/86.2	0.85/1.06	84/1,252	- / -	90/828	318/151

Notes:
95th percentile queues were obtained from SimTraffic.
N/A = In Synchro, intersection sign configuration is not allowed in HCM analysis.
XX/XX = A.M. peak hour/P.M. peak hour.

Abbreviations:
EB = Eastbound.
HCM = Highway Capacity Manual.
NB = Northbound.
SB = Southbound.
sec/veh = Seconds per vehicle.
V/C = Volume-to-capacity ratio.
WB = Westbound.

US 190 AND LA 1 CONNECTOR

The westbound approach at the intersection of US 190 and the LA 1 connector is stop controlled in existing conditions. The posted speed limit on US 190 is 55 mph.

Historical Crash Data

A total of 23 crashes (5 per year) occurred between 2017 and 2021 at the intersection of US 190 and the LA 1 connector. Of the 23 crashes, 9 resulted in some level of bodily injury, with 7 involving pain-complaint injuries and 2 involving moderate injuries. No fatalities were reported at this location.

Right-angle crashes were the predominant collision manner (43 percent), followed by rear-end (30 percent) and left-turn (17 percent) crashes. "Failure to yield" was the predominant cause of crashes (52 percent), which correlates with the high percentage of right-angle crashes, followed by "disregarded traffic control" (13 percent) and "following too closely" (13 percent), which correlates with the high percentage of rear-end crashes. **Table 6** summarizes all crashes by manner of collision. Installing a traffic signal at this location could potentially reduce by up to 23 percent all injury crashes (CMF ID #319) and reduce by up to 67 percent all injury angle crashes (CMF ID #320).

Table 6. Summary by Collision Manner (2017-2021) – US 190 and LA 1 Connector

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Angle	0	0	1	0	1	**2**
Left-Turn Opposite-Direction	1	0	0	0	0	**1**
Left-Turn Same-Direction	0	0	1	0	0	**1**
Other	0	1	0	0	0	**1**
Rear-End	2	0	1	3	1	**7**
Right-Angle	1	3	2	0	4	**10**
Sideswipe Same-Direction	0	0	0	0	1	**1**
Total	**4**	**4**	**5**	**3**	**7**	**23**

Signal Warrant Analysis

A signal warrant analysis was conducted for Warrant 7 (crash experience). Based on the historical crash data, on average, three crashes per year that could be mitigated by installing a traffic signal were reported. This crash frequency does not satisfy Criteria B of Warrant 7 (crash experience), which requires five or more reported crashes of types susceptible to correction by a traffic control signal to have occurred within a 12-month period.

The intersection of US 190 and the LA 1 connector met Warrant 2 (4-hour vehicular volume) and Criteria B of Warrant 3 (peak hour) for both analysis scenarios. However, even with the increase in traffic volumes during Stage 2 construction, the intersection does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent.

Overall, the intersection **does not** meet the requirements set by EDSM VI-1-1-2 to warrant a traffic signal because it does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent or Warrant 7. **Figure 8** presents the HCS 7 signal warrant analysis results for the existing and Stage 2 conditions.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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LA 1 @ US 190 Ramps Warrants - Raw.xsw
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Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

 HCS™ Signal Warrants Version 7.8.5
LA 1 @ US 190 Ramps Warrants - Stage 2.xsw
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Figure 8: Signal Warrant Analysis – US 190 and LA 1 Connector

Capacity Analysis

The DTA model predicts that traffic on LA 1 northbound will increase by approximately 240 vehicles during the a.m. peak hour and 600 vehicles during the p.m. peak hour during construction. This increase in traffic is because traffic will exit I-10 eastbound and use LA 1 and US 190 to continue east across the Mississippi River during Stage 2 construction.

Table 7 shows the results of a Synchro capacity analysis. The table shows that currently, traffic on the westbound approach experiences approximately 17 and 252 seconds of delay per vehicle in the a.m. and p.m. peak hours, respectively. The V/C ratio is above 1 in the p.m. peak hour. During construction, because of the additional traffic on LA 1, westbound left-turn drivers are not able to find enough gaps in traffic flow. As such, the westbound approach experiences delays of approximately 26 and 713 seconds per vehicle in the a.m. and p.m. peak hours, respectively.

Installing a temporary signal at the intersection would reduce the intersection delay and the V/C ratio. In the a.m. peak hour, the intersection delay is reduced to 8 seconds per vehicle, which is 69 percent less than the delay during construction without the temporary signal improvement. In the p.m. peak hour, the intersection delay is reduced to 27 seconds per vehicle, which is 96 percent less than the delay during construction without the temporary signal. The 95th percentile queue on the westbound approach decreases by 98 feet (a 47 percent reduction) and 2,072 feet (a 90 percent reduction) in the a.m. and p.m. peak hours, respectively.

Table 7. Synchro Results – A.M. and P.M. Peak Hours – US 190 and LA 1 Connector

Scenario	Delay (sec/veh)	V/C	95th Percentile Queue			
			EB	WB	NB	SB
Existing Conditions	16.5/252.3	0.41/1.40	- / -	105/2,273	- / -	- / -
Stage 2 Construction	26.4/712.8	0.63/2.40	- / -	210/2,308	- / -	- / -
Stage 2 + Off-Site Mitigations	8.1/27.4	0.54/0.93	- / -	112/236	90/210	- / -

Notes:
95th percentile queues were obtained from SimTraffic.
XX/XX = A.M. peak hour/P.M. peak hour.

Abbreviations:
EB = Eastbound.
NB = Northbound.
SB = Southbound.
sec/veh = Seconds per vehicle.
V/C = Volume-to-capacity ratio.
WB = Westbound.

US 190 AND WEST SERVICE ROAD

The southbound approach at the intersection of US 190 and West Service Road is stop controlled in existing conditions. The posted speed limit on US 190 is 50 mph.

Historical Crash Data

A total of 18 crashes (4 per year) occurred between 2017 and 2021 at the intersection of US 190 and West Service Road. Of the 18 crashes, 3 resulted in some level of bodily injury and all were pain-complaint injuries. No fatalities were reported at this location.

Sideswipe same-direction crashes were the predominant collision manner (28 percent), followed by rear-end (22 percent) and left-turn (17 percent) crashes. "Failure to yield" was the predominant cause of crashes (33 percent), followed by "careless operation of the vehicle" (22 percent) and "cut corner on left-turn" (11 percent), which correlates with the high percentage of left-turn crashes. **Table 8** summarizes all crashes by manner of collision. Installing a traffic signal at this location could potentially reduce by up to 23 percent all injury crashes (CMF ID #319) and reduce by up to 67 percent all injury angle crashes (CMF ID #320).

Table 8. Summary by Collision Manner (2017-2021) – US 190 and West Service Road

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Opposite-Direction	1	0	0	0	0	**1**
Left-Turn Same-Direction	0	0	1	0	1	**2**
Other	0	0	0	0	1	**1**
Rear-End	1	2	1	0	0	**4**
Right-Angle	0	0	1	0	0	**1**
Sideswipe Opposite-Direction	0	0	0	0	2	**2**
Sideswipe Same-Direction	1	1	2	0	1	**5**
Single-Vehicle	2	0	0	0	0	**2**
Total	**5**	**3**	**5**	**0**	**5**	**18**

Signal Warrant Analysis

A signal warrant analysis was conducted for Warrant 7 (crash experience). Based on the historical crash data, on average, one crash per year that could be mitigated by installing a traffic signal was reported. This crash frequency does not satisfy Criteria B of Warrant 7 (crash experience), which requires five or more reported crashes of types susceptible to correction by a traffic control signal to have occurred within a 12-month period.

The intersection of US 190 and West Service Road met Warrant 2 (4-hour vehicular volume) and Criteria B of Warrant 3 (peak hour) for both analysis scenarios. However, even with the increase in traffic volumes during Stage 2 construction, the intersection does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent.

Overall, the intersection **does not** meet the requirements set by EDSM VI-1-1-2 to warrant a traffic signal because it does not satisfy Warrant 1A (8-hour vehicular volume) 100 percent or Warrant 7. **Figure 9** presents the HCS 7 signal warrant analysis results for the existing and Stage 2 conditions at US 190 and West Service Road.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

 HCS™ Signal Warrants Version 7.8.5
LA 1 @ US 190 Ramps Warrants - Raw.xsw Generated: 6/24/2024 4:59:03 PM

Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

 HCS™ Signal Warrants Version 7.8.5
LA 1 @ US 190 Ramps Warrants - Stage 2.xsw Generated: 6/24/2024 4:59:25 PM

Figure 9: Signal Warrant Analysis – US 190 and West Service Road

Capacity Analysis

Two capacity analysis scenarios were conducted at the intersection of US 190 and West Service Road. The first analysis scenario, discussed below and presented in **Table 9**, assumes a temporary traffic signal to meet the increased traffic demand during Stage 2 conditions at the intersection of US 190 and West Service Road.

The second analysis scenario assumes no temporary traffic signal will be constructed at the intersection of US 190 and West Service Road. Because a temporary traffic signal at the intersection of LA 1 and the LA 1 connector would improve traffic operations over the existing conditions, based on engineering judgment, 30 percent of the southbound left-turn volume at the US 190 and West Service Road intersection is assumed to divert onto the LA 1 connector.

The DTA model predicts that traffic on US 190 eastbound will increase by approximately 475 vehicles during the a.m. peak hour and 500 vehicles during the p.m. peak hour during construction. This is because traffic will exit I-10 eastbound and use US 190 to continue east across the Mississippi River during construction.

Table 9 shows the results of a Synchro capacity analysis if no temporary traffic signal is constructed at the intersection of US 190 and the LA 1 connector and no traffic diverts from the intersection of US 190 and West Service Road to the intersection of US 190 and the LA 1 connector. The table shows that currently, traffic on the southbound approach experiences approximately 18 seconds and 24 seconds of delay per vehicle in the a.m. and p.m. peak hours, respectively. During construction, the additional traffic on LA 190 eastbound causes southbound left-turn traffic to experience an increase in delay of approximately 113 and 144 percent compared to existing conditions in the a.m. and p.m. peak hours, respectively.

Installing a temporary signal at the intersection would reduce the intersection delay and the V/C ratio. In the a.m. peak hour, the intersection delay is reduced to 10 seconds per vehicle, which is 73 percent less than during construction without the temporary signal improvement. In the p.m. peak hour, the intersection delay is reduced to 12 seconds per vehicle, which is 80 percent less than during construction without the temporary signal improvement. The 95th percentile queue on the southbound approach is reduced from over 3,000 feet to just over 200 feet in the p.m. peak hour.

Table 9. Synchro Results – A.M. and P.M. Peak Hours – US 190 and West Service Road

Scenario	Delay (sec/veh)	V/C	95th Percentile Queue			
			EB	WB	NB	SB
Existing Conditions	17.9/23.9	0.47/0.61	- / -	- / -	- / -	153/252
Stage 2 Construction	38.0/58.4	0.72/0.86	- / -	- / -	- / -	1,466/3,227
Stage 2 + Off-Site Mitigations	10.1/11.8	0.64/0.70	180/211	- / -	- / -	245/228

Notes:
95th percentile queues were obtained from SimTraffic.
XX/XX = A.M. peak hour/P.M. peak hour.

Scenario	Delay (sec/veh)	V/C	95th Percentile Queue			
			EB	WB	NB	SB

Abbreviations:
EB = Eastbound.
NB = Northbound.
SB = Southbound.
sec/veh = Seconds per vehicle.
V/C = Volume-to-capacity ratio.
WB = Westbound.

30% DIVERSION TO LA 1 CONNECTOR AT INTERSECTION OF US 190 AND WEST SERVICE ROAD

Table 10 shows the results of a Synchro capacity analysis if a temporary signal is constructed at the intersection of LA 1 and the LA 1 connector and 30 percent of the traffic currently using the intersection of US 190 and West Service Road diverts to the temporary traffic signal at the intersection of LA 1 and the LA 1 connector.

The COREX10 team decided to perform this analysis after reviewing the results of the temporary signal analysis at the intersection of LA 1 and the LA 1 connector because it was observed that the peak-hour traffic operations would significantly improve. The queue on the westbound approach dropped 98 feet (a 47 percent reduction) and 2,072 feet (a 90 percent reduction) in the a.m. and p.m. peak hours, respectively. This second analysis at the intersection of US 190 and West Service Road maintained the existing stop-controlled intersection configuration at the intersection of US 190 and West Service Road. For the second analysis, with the improved traffic operations with a temporary traffic signal at the intersection of LA 1 and the LA 1 connector, it was assumed that some drivers traveling westbound on US 190 to reach LA 1 southbound would now prefer to use the LA 1 connector instead of making a left at West Service Road, another left at US 190 eastbound, and a right turn onto LA 1 southbound. Based on engineering judgment, this volume was assumed to be 30 percent of the southbound left-turn volume at the intersection of US 190 and West Service Road. This equates to 70 and 75 vehicles in the a.m. and p.m. peak hours, respectively. The analysis removed these volumes from the southbound left turn at the intersection of US 190 and West Service Road and added them to the westbound left turn at the newly signalized intersection of LA 1 and the LA 1 connector. The Synchro analysis results showed the queue on US 190 is reduced from 1,466 feet to 309 feet in the a.m. peak hour (a 79 percent reduction) and from 3,227 feet to 1,112 feet in the p.m. peak hour (a 65 percent reduction) without adding any improvements to the intersection.

Table 10. Synchro Results – 95th Percentile Queues during A.M. and P.M. Peak Hours at US 190 and West Service Road with 30% Volume Diversion Scenario

Scenario	SBL 95th Percentile Queue (Feet) A.M. Peak Hour	SBL 95th Percentile Queue (Feet) P.M. Peak Hour
Without 30 Percent Reduction	1,466	3,227
With 30 Percent Reduction	309	1,112

Abbreviation:
SBL = Southbound left-turn movement.

5. SUMMARY

Stage 2 of construction of the I-10: LA 415 to Essen Lane on I-10 and I-12 project includes a reduction on I-10 eastbound from two lanes to one lane at the I-10/I-110 interchange, a reduction on I-10 westbound from three lanes to two lanes at the I-10/I-110 interchange, and six access-point closures. While there are no plans to designate a primary detour route, it is anticipated that the work-zone capacity constraints and the access-point closures will impact the route choices for drivers within the project limits during Stage 2 construction.

The alternative routes drivers may take to avoid the Stage 2 construction zone were predicted by a calibrated regional-scale DTA model. The DTA model identified a series of primary, secondary, and local alternative routes.

Because there will be a lane reduction on I-10 westbound at the I-10/I-110 interchange and some access-point closures in Stage 2, the commuters traveling I-10 westbound on the east side of the Mississippi River will have the option to access a grid network of roadways and streets to reach their desired destinations. These access-point closures and a lane reduction will increase traffic demand during peak hours on the major roadways located on the east side of the river. All of the intersections on the primary alternative routes identified in the four-lane MOT plan will also see increased traffic demand in the six-lane MOT plan. Therefore, to accommodate the increased traffic demand at the primary alternative-route intersections, the adaptive signal improvements proposed as part of the four-lane MOT plan will still apply to the six-lane MOT plan. An adaptive traffic signal system would adjust the traffic signal timing depending on unpredictable fluctuations in traffic flow due to I-10 CMAR construction and incidents on I-10.

Similar to signalized intersections on the primary alternative routes, signalized intersections on secondary and local alternative routes identified in the four-lane MOT plan would experience an increase in traffic demand in the six-lane MOT plan, which maintains three lanes in each direction. However, the peak-hour traffic estimates from the meso model can vary due to the unpredictable nature of driver behavior during I-10 CMAR construction activities. To ensure more accurate and effective traffic management, the signal retiming improvements on secondary and local alternative routes should be implemented after Stage 2 construction begins, allowing LADOTD to observe and measure real-time traffic patterns. Traffic counts could be conducted at critical locations on secondary and local alternative routes to quantify volume increases. These data would provide a more realistic picture of traffic impacts from Stage 2 construction. LADOTD will be responsible for collecting the traffic counts and implementing signal retiming improvements at the signalized intersections of secondary and local alternative routes. Also, LADOTD will be responsible for collaborating with the City of Baton Rouge to assist them in optimizing signal timing plans for the affected intersections. Adjusting the traffic signal timing will improve the peak-hour traffic operations along the study corridors. Given the extended duration of Stage 2 construction (over 2 years), the investment in traffic signal retiming is justified.

A lane reduction on I-10 eastbound at the I-10/I-110 interchange, access-point closures, and work-zone capacity constraints will influence some of the I-10 eastbound traffic on the west side of the Mississippi River to divert to alternative routes. Commuters diverting from I-10 eastbound (west of the Mississippi River) do not have access to a grid street network. They have fewer choices to reroute themselves to their desired destinations. Commuters are predicted to divert to the exit at Nicholson Drive east of the Mississippi River or to LA 415, LA 1, or US 190 west of the Mississippi River. The DTA model predicts an

increase in traffic demand at the LA 415 and Plantation Avenue, LA 415 and I-10 eastbound exit ramp, US 190 and LA 1 connector, and US 190 and West Service Road intersections during peak hours. Temporary traffic signals were proposed for the four-lane MOT plan to improve traffic operations at these four critical intersections. LADOTD advised performing a signal warrant analysis to determine if traffic signals are still warranted at these four critical intersections for the six-lane MOT plan scenario. Accordingly, the capacity (Synchro 11) and signal warrant (HCS) analyses were performed to determine the need for temporary traffic signals at these intersections with a six-lane MOT plan. The capacity analysis results summary indicates that temporary traffic signals during Stage 2 construction at the study intersections will improve traffic operations over the existing and no-build (without temporary traffic signals) conditions. The signal warrant analysis indicates that the Manual on Uniform Traffic Control Devices Traffic Signal Warrant 2 (4-hour vehicular volumes) and Warrant 3 (peak-hour vehicular volumes) were met for both existing and Stage 2 condition traffic volumes. However, the requirements set by EDSM VI-1-1-2 did not warrant traffic signals at the study intersections because they did not satisfy Warrant 1A (8-hour vehicular volume) 100 percent or Warrant 7.

Based on the estimations of the DTA model, a capacity and signal warrant analysis was conducted to determine the need for temporary traffic signals during Stage 2 construction for the six-lane MOT plan. The analysis results indicate that study intersections fail to meet the EDSM VI-1-1-2 criteria for signal warrant. Therefore, temporary traffic signals and associated lane configuration changes at the off-site intersections are not justified based solely on the traffic engineering analysis (EDSM VI-1-1-2) criteria. However, the peak-hour traffic demand is expected to increase, and traffic operations of these four study intersections should be closely monitored during Stage 2 construction. Temporary traffic signals or other mitigation measurements should be considered if the traffic at these intersections experiences heavy delays during peak hours.

ATTACHMENT A: HOURLY DEMAND DATA

Intersection 1: LA 415 at Plantation Avenue - Existing (2024)

	Demand (veh/hr)												
Time Period	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Totals
6:00-7:00 AM	12	907	4	5	330	83	4	16	16	94	13	3	1487
7:00-8:00 AM	18	734	4	10	322	88	1	8	15	104	6	4	1314
8:00-9:00 AM	14	555	0	7	306	78	2	6	6	92	4	3	1073
9:00-10:00 AM	3	239	0	1	133	28	2	2	2	40	2	2	453
3:30-4:30 PM	6	320	4	11	870	215	1	22	7	83	13	12	1564
4:30-5:30 PM	3	288	4	15	1022	234	6	24	18	110	7	14	1745
5:30-6:30 PM	3	226	2	12	674	195	2	5	10	64	12	8	1213
6:30-7:30 PM	0	77	1	2	120	12	0	0	1	6	3	1	223
Total Demand	**59**	**3346**	**19**	**63**	**3777**	**933**	**18**	**83**	**75**	**593**	**60**	**47**	

Intersection 1: LA 415 at Plantation Avenue - Existing (2024) + Stage 2 Diversions

	Demand (veh/hr)												
Time Period	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Totals
6:00-7:00 AM	12	495	4	5	330	84	4	16	16	122	13	3	1104
7:00-8:00 AM	18	351	4	10	322	159	1	8	15	130	6	4	1028
8:00-9:00 AM	14	451	0	7	306	104	2	6	6	136	4	3	1039
9:00-10:00 AM	3	227	0	1	133	31	2	2	2	44	2	2	449
3:30-4:30 PM	6	278	4	11	870	213	1	22	7	83	13	12	1520
4:30-5:30 PM	3	239	4	15	1022	638	6	24	18	95	7	14	2085
5:30-6:30 PM	3	188	2	12	674	494	2	5	10	95	12	8	1505
6:30-7:30 PM	0	69	1	2	120	89	0	0	1	0	3	1	286
Total Demand	**59**	**2298**	**19**	**63**	**3777**	**1812**	**18**	**83**	**75**	**705**	**60**	**47**	

Intersection 2: US 190 at W Service Road - Existing (2024)

Time Period	Demand (veh/hr)												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Totals
6:00-7:00 AM	26	622	-	-	-	-	-	-	-	225	0	0	873
7:00-8:00 AM	27	585	-	-	-	-	-	-	-	220	0	0	832
8:00-9:00 AM	18	422	-	-	-	-	-	-	-	173	0	0	613
9:00-10:00 AM	7	136	-	-	-	-	-	-	-	60	0	0	204
3:30-4:30 PM	32	724	-	-	-	-	-	-	-	251	0	0	1007
4:30-5:30 PM	19	823	-	-	-	-	-	-	-	269	0	0	1111
5:30-6:30 PM	12	618	-	-	-	-	-	-	-	203	0	0	833
6:30-7:30 PM	4	124	-	-	-	-	-	-	-	44	0	0	173
Total Demand	**145**	**4055**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1446**	**0**	**0**	

Intersection 2: US 190 at W Service Road - Existing (2024) + Stage 2 Diversions

Time Period	Demand (veh/hr)												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Totals
6:00-7:00 AM	26	1030	-	-	-	-	-	-	-	234	0	0	1290
7:00-8:00 AM	27	1093	-	-	-	-	-	-	-	221	0	0	1341
8:00-9:00 AM	18	604	-	-	-	-	-	-	-	173	0	0	795
9:00-10:00 AM	7	191	-	-	-	-	-	-	-	60	0	0	258
3:30-4:30 PM	32	790	-	-	-	-	-	-	-	251	0	0	1073
4:30-5:30 PM	19	1319	-	-	-	-	-	-	-	248	0	0	1586
5:30-6:30 PM	12	1219	-	-	-	-	-	-	-	190	0	0	1421
6:30-7:30 PM	4	397	-	-	-	-	-	-	-	9	0	0	410
Total Demand	**145**	**6644**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1386**	**0**	**0**	

Intersection 3: LA 1 at LA 1 Connector - Existing (2024)

Time Period	Demand (veh/hr)												Totals
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
6:00-7:00 AM	-	-	-	122	-	25	-	305	85	-	287	-	824
7:00-8:00 AM	-	-	-	128	-	28	-	516	79	-	293	-	1044
8:00-9:00 AM	-	-	-	86	-	20	-	201	95	-	225	-	627
9:00-10:00 AM	-	-	-	37	-	14	-	112	32	-	85	-	279
3:30-4:30 PM	-	-	-	111	-	68	-	1056	127	-	295	-	1657
4:30-5:30 PM	-	-	-	108	-	83	-	1473	112	-	344	-	2120
5:30-6:30 PM	-	-	-	74	-	42	-	1138	97	-	251	-	1602
6:30-7:30 PM	-	-	-	13	-	9	-	207	23	-	54	-	306
Total Demand	**-**	**-**	**-**	**679**	**-**	**289**	**-**	**5008**	**649**	**-**	**1834**	**-**	

Intersection 3: LA 1 at LA 1 Connector - Existing (2024) + Stage 2 Diversions

Time Period	Demand (veh/hr)												Totals
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
6:00-7:00 AM	-	-	-	207	-	25	-	305	169	-	282	-	988
7:00-8:00 AM	-	-	-	174	-	28	-	516	317	-	282	-	1317
8:00-9:00 AM	-	-	-	132	-	20	-	201	269	-	225	-	847
9:00-10:00 AM	-	-	-	45	-	14	-	112	74	-	85	-	329
3:30-4:30 PM	-	-	-	121	-	68	-	1056	299	-	254	-	1798
4:30-5:30 PM	-	-	-	115	-	83	-	1473	718	-	324	-	2713
5:30-6:30 PM	-	-	-	40	-	42	-	1138	713	-	336	-	2269
6:30-7:30 PM	-	-	-	13	-	9	-	207	127	-	151	-	508
Total Demand	**-**	**-**	**-**	**847**	**-**	**289**	**-**	**5008**	**2686**	**-**	**1940**	**-**	

Intersection 4: LA 415 at I-10 EB Off Ramp - Existing (2024)

	Demand (veh/hr)												
Time Period	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Totals
6:00-7:00 AM	34	2	74	-	-	-	-	58	111	1171	246	-	1696
7:00-8:00 AM	52	2	82	-	-	-	-	72	105	1017	154	-	1484
8:00-9:00 AM	34	2	63	-	-	-	-	52	87	878	160	-	1276
9:00-10:00 AM	34	2	62	-	-	-	-	52	86	874	160	-	1270
3:30-4:30 PM	216	11	103	-	-	-	-	236	81	179	129	-	956
4:30-5:30 PM	265	12	133	-	-	-	-	290	96	179	122	-	1098
5:30-6:30 PM	123	6	112	-	-	-	-	187	59	202	121	-	809
6:30-7:30 PM	34	3	36	-	-	-	-	50	12	47	22	-	205
Total Demand	**794**	**39**	**665**	**-**	**-**	**-**	**-**	**997**	**636**	**4548**	**1114**	**-**	

Intersection 4: LA 415 at I-10 EB Off Ramp - Existing (2024) + Stage 2 Diversions

	Demand (veh/hr)												
Time Period	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Totals
6:00-7:00 AM	52	2	74	-	-	-	-	58	111	873	246	-	1416
7:00-8:00 AM	124	2	82	-	-	-	-	72	105	703	154	-	1242
8:00-9:00 AM	67	2	63	-	-	-	-	52	87	841	160	-	1272
9:00-10:00 AM	45	2	62	-	-	-	-	52	86	818	160	-	1224
3:30-4:30 PM	238	11	103	-	-	-	-	236	81	143	129	-	942
4:30-5:30 PM	729	12	133	-	-	-	-	290	96	87	122	-	1470
5:30-6:30 PM	468	6	112	-	-	-	-	187	59	335	121	-	1287
6:30-7:30 PM	107	3	36	-	-	-	-	50	12	99	22	-	329
Total Demand	**1831**	**39**	**665**	**-**	**-**	**-**	**-**	**997**	**636**	**3900**	**1114**	**-**	

ATTACHMENT B: SAFETY DATA

Location

LA 415 at Plantation Ave

I-10 CMAR Sites Improvements

Crash Summary (2017-2021)

West Baton Rouge Parish

ARCADIS

Total Crashes

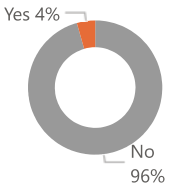
45

Fatalities	Injuries
0	41

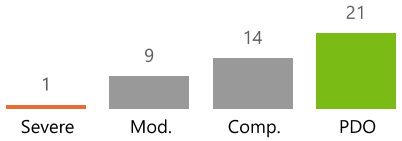
Pedestrian	Bicycle	Roadway Dep.
1	(Blank)	7

Crashes per Year

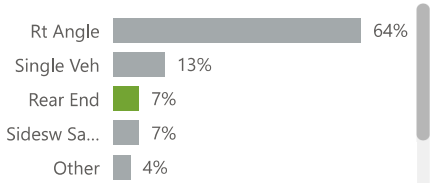
Alcohol



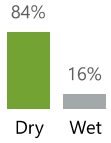
Crash Severity



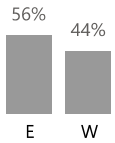
Collision Manner (Top 5)



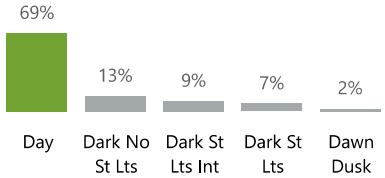
Surface Condition



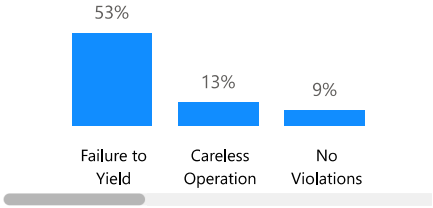
Travel Direction



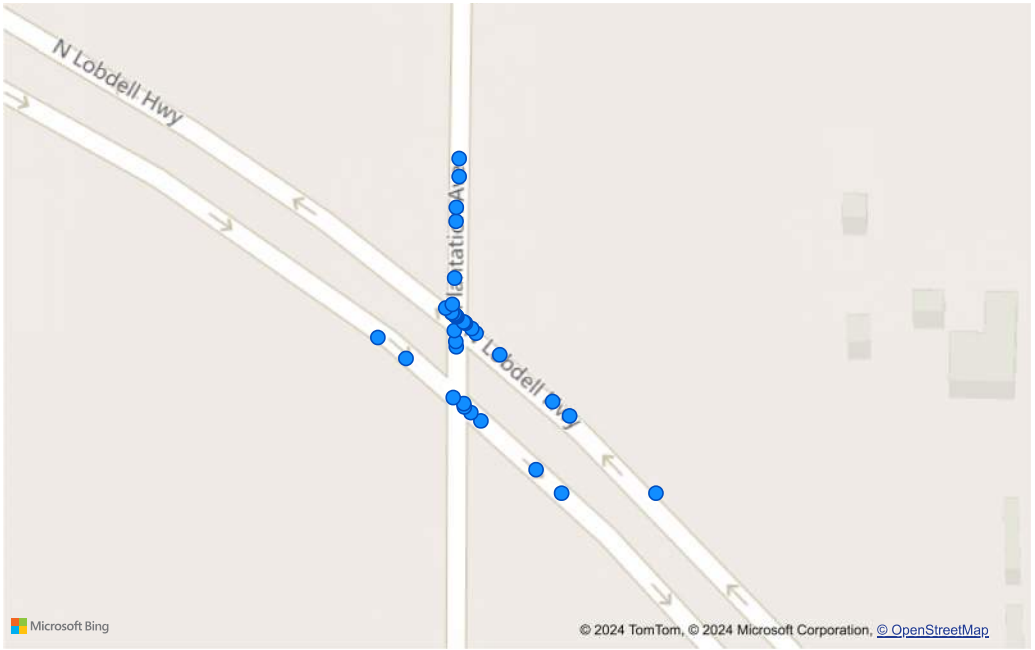
Lighting Condition



Violation of "At-fault" Subject (Top 3)



Hours/Days	1. Mon	2. Tue	3. Wed	4. Thu	5. Fri	6. Sat	7. Sun
1. 12am-4am				100.00%			
2. 4am-7am		20.00%	40.00%	20.00%		20.00%	
3. 7am-10am	18.18%		27.27%	9.09%	36.36%		9.09%
4. 10am-1pm		12.50%		25.00%	25.00%	25.00%	12.50%
5. 1pm-4pm	12.50%	25.00%		50.00%	12.50%		
6. 4pm-7pm		16.67%		33.33%	16.67%	16.67%	16.67%
7. 7pm-10pm				40.00%	40.00%	20.00%	



I-10 CMAR Sites Improvements

Crash Summary (2017-2021)

West Baton Rouge Parish

ARCADIS

Location

US 190 at Service Road

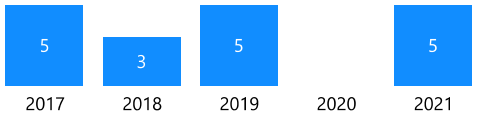
Total Crashes

18

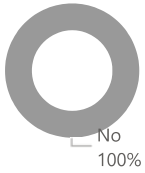
Fatalities	Injuries
0	6

Pedestrian	Bicycle	Roadway Dep.
(Blank)	(Blank)	3

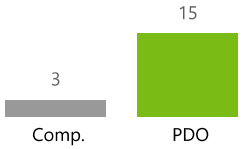
Crashes per Year



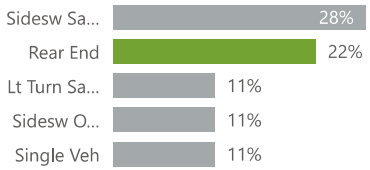
Alcohol



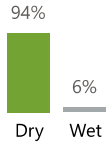
Crash Severity



Collision Manner (Top 5)

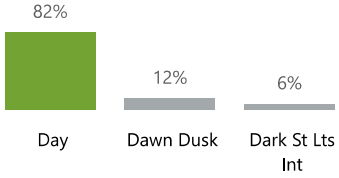


Surface Condition

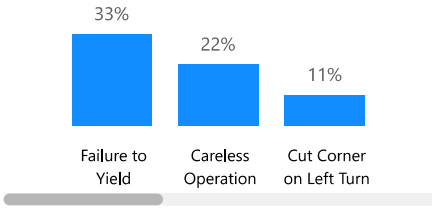


Travel Direction

Lighting Condition



Violation of "At-fault" Subject (Top 3)



Hours/Days	1. Mon	2. Tue	3. Wed	4. Thu	5. Fri	6. Sat	7. Sun
2. 4am-7am	33.33%			66.67%			
3. 7am-10am	100.00%						
4. 10am-1pm				50.00%	50.00%		
5. 1pm-4pm			40.00%		60.00%		
6. 4pm-7pm		14.29%		28.57%	28.57%	14.29%	14.29%

Location

LA 1 at LA 1 Connector

I-10 CMAR Sites Improvements

Crash Summary (2017-2021)

West Baton Rouge Parish

ARCADIS

Total Crashes

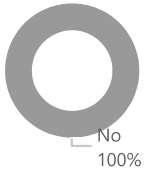
23

Fatalities	Injuries
0	22

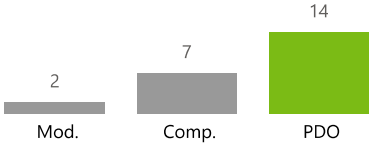
Pedestrian	Bicycle	Roadway Dep.
(Blank)	(Blank)	1

Crashes per Year

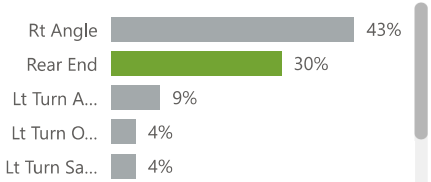
Alcohol



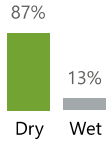
Crash Severity



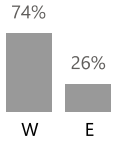
Collision Manner (Top 5)



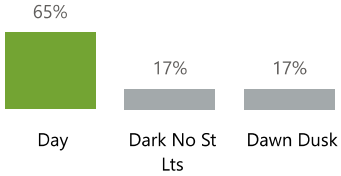
Surface Condition



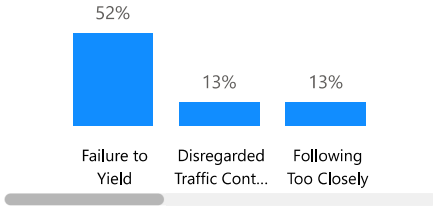
Travel Direction



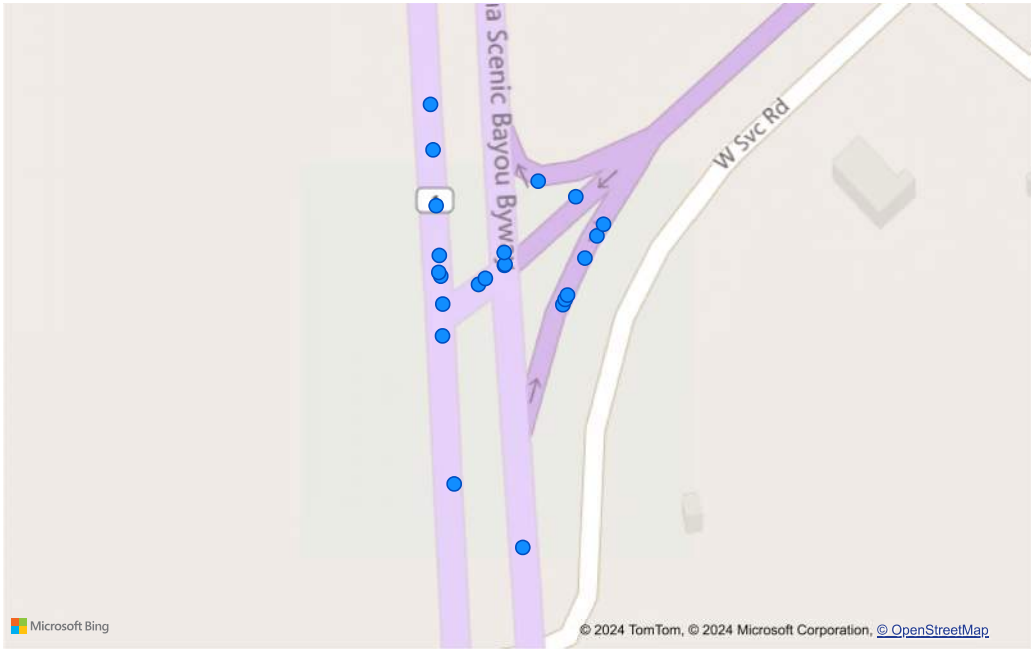
Lighting Condition



Violation of "At-fault" Subject (Top 3)



Hours/Days	1. Mon	2. Tue	3. Wed	4. Thu	5. Fri	6. Sat
2. 4am-7am	33.33%	33.33%		33.33%		
3. 7am-10am					100.00%	
4. 10am-1pm		33.33%	33.33%		33.33%	
5. 1pm-4pm				60.00%	20.00%	20.00%
6. 4pm-7pm	33.33%	16.67%	16.67%		16.67%	16.67%
7. 7pm-10pm		100.00%				
8. 10pm-12am		33.33%		33.33%	33.33%	



Location

LA 415 at I-10 EB

I-10 CMAR Sites Improvements

Crash Summary (2017-2021)

West Baton Rouge Parish

ARCADIS

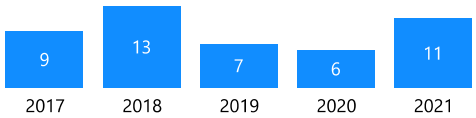
Total Crashes

46

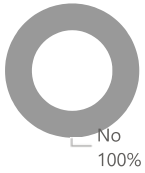
Fatalities	Injuries
0	16

Pedestrian	Bicycle	Roadway Dep.
(Blank)	(Blank)	1

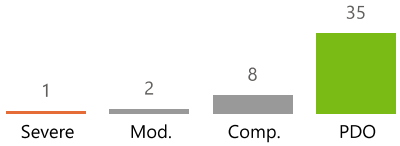
Crashes per Year



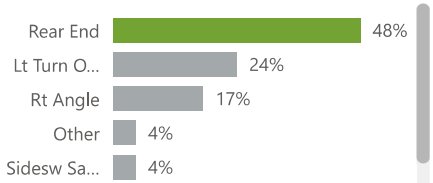
Alcohol



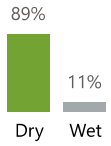
Crash Severity



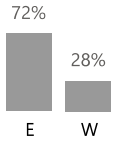
Collision Manner (Top 5)



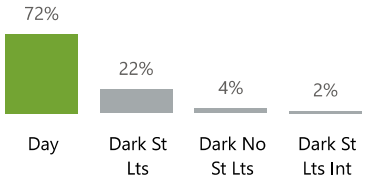
Surface Condition



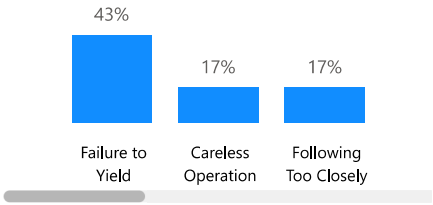
Travel Direction



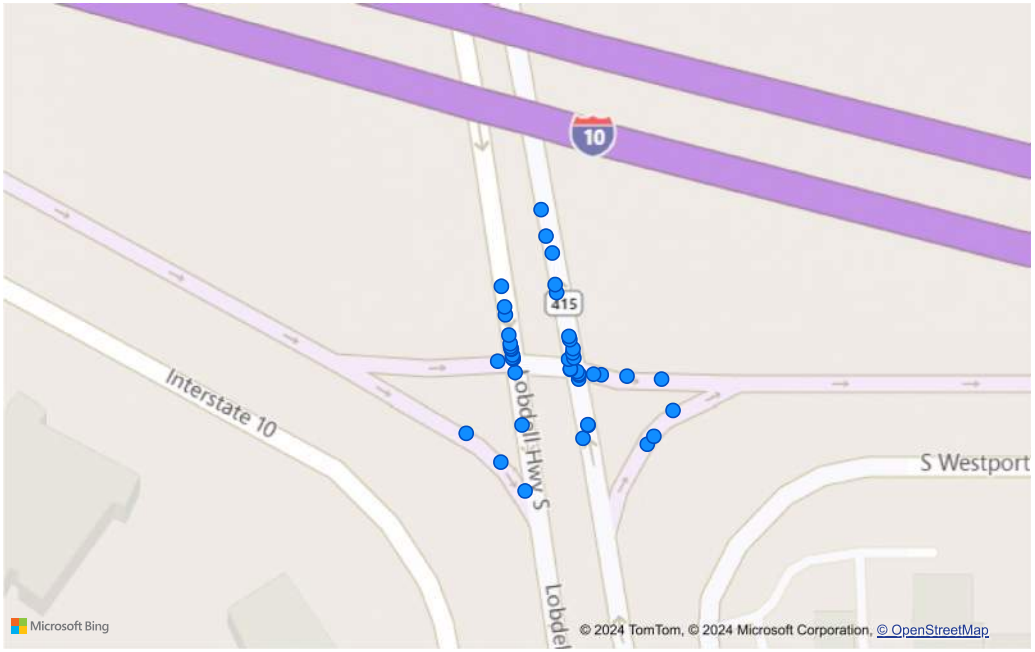
Lighting Condition



Violation of "At-fault" Subject (Top 3)



Hours/Days	1. Mon	2. Tue	3. Wed	4. Thu	5. Fri	6. Sat	7. Sun
1. 12am-4am			33.33%			33.33%	33.33%
2. 4am-7am	50.00%	25.00%		25.00%			
3. 7am-10am	20.00%	10.00%	30.00%	20.00%	10.00%		10.00%
4. 10am-1pm	22.22%	11.11%		11.11%	22.22%	22.22%	11.11%
5. 1pm-4pm	40.00%		40.00%		20.00%		
6. 4pm-7pm		22.22%	11.11%	11.11%	22.22%	11.11%	22.22%
7. 7pm-10pm			25.00%	25.00%	50.00%		
8. 10pm-12am				50.00%		50.00%	



ATTACHMENT C: HCS WARRANT ANALYSIS REPORTS

HCS7 Warrants Report

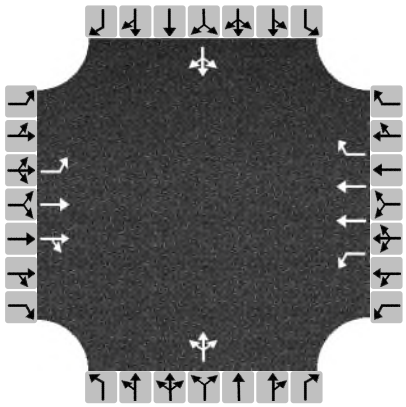
Project Information

Analyst	MAD	Date	6/24/2024
Agency	Arcadis, US Inc	Analysis Year	2024
Jurisdiction		Time Period Analyzed	AM peak and PM Peak
Project Description	I-10 CMAR Segment 2 Warrant Analysis - LA 415 @ Plantation Ave - Existing		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	6
Major Street Speed (mi/h)	55	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	1	2	0	1	2	1	0	1	0	0	1	0
Lane Usage	L	TR		L	T	R		LTR			LTR	
Vehicle Volumes Averages (veh/h)	4	273	1	5	314	77	1	6	6	49	5	3
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	11

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	1341	110	1487	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1176	114	1314	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	960	99	1073	0	0	No	Yes	Yes	Yes	Yes	No	No	No	No
10 - 11	404	44	454	0	0	No	No	No	No	No	No	No	No	No
11 - 12	0	0	0	0	0	No	No	No	No	No	No	No	No	No
12 - 13	0	0	0	0	0	No	No	No	No	No	No	No	No	No
13 - 14	0	0	0	0	0	No	No	No	No	No	No	No	No	No
14 - 15	0	0	0	0	0	No	No	No	No	No	No	No	No	No
15 - 16	1426	108	1564	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16 - 17	1506	131	1685	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1112	84	1213	0	0	No	Yes	Yes	Yes	Yes	No	No	No	No
18 - 19	212	10	223	0	0	No	No	No	No	No	No	No	No	No
Total	8137	700	9013	0	0	4	6	6	6	6	0	4	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

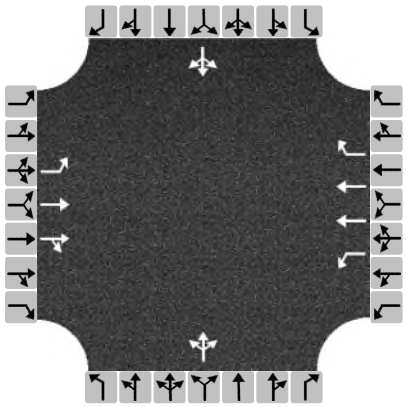
Project Information

Analyst	MAD	Date	6/24/2024
Agency	Arcadis, US Inc	Analysis Year	2024
Jurisdiction		Time Period Analyzed	AM peak and PM Peak
Project Description	I-10 CMAR Segment 2 Warrant Analysis - LA 415 @ Plantation Ave - Stage 2		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	6
Major Street Speed (mi/h)	55	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	1	2	0	1	2	1	0	1	0	0	1	0
Lane Usage	L	TR		L	T	R		LTR			LTR	
Vehicle Volumes Averages (veh/h)	4	191	1	5	314	151	1	6	6	58	5	3
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	11

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	930	138	1104	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	864	140	1028	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
09 - 10	882	143	1039	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
10 - 11	395	48	449	0	0	No	No	No	No	No	No	No	No	No
11 - 12	0	0	0	0	0	No	No	No	No	No	No	No	No	No
12 - 13	0	0	0	0	0	No	No	No	No	No	No	No	No	No
13 - 14	0	0	0	0	0	No	No	No	No	No	No	No	No	No
14 - 15	0	0	0	0	0	No	No	No	No	No	No	No	No	No
15 - 16	1382	108	1520	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16 - 17	1921	116	2085	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1373	115	1505	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18 - 19	281	4	286	0	0	No	No	No	No	No	No	No	No	No
Total	8028	812	9016	0	0	6	6	6	6	6	0	5	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

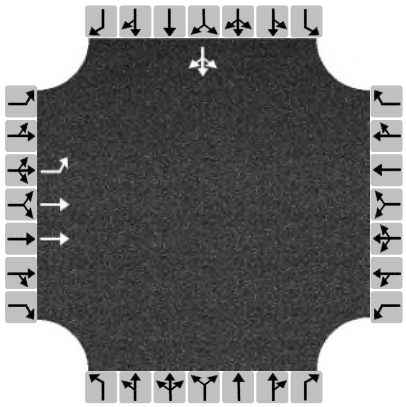
Project Information

Analyst	Jacob Beckham	Date	6/24/2024
Agency		Analysis Year	2024
Jurisdiction		Time Period Analyzed	6:15 AM-7:30 PM
Project Description	I-10 CMAR Segment 2 Warrant Analysis - US 190 @ W Service Rd - Existing		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	1
Major Street Speed (mi/h)	50	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	1	2	0	0	0	0	0	0	0	0	1	0
Lane Usage	L	T									LTR	
Vehicle Volumes Averages (veh/h)	12	337	0	0	0	0	0	0	0	120	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	12

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	648	225	873	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	612	220	832	0	0	Yes	Yes	No	Yes	Yes	No	No	No	No
09 - 10	440	173	613	0	0	Yes	Yes	No	No	No	No	No	No	No
10 - 11	143	60	203	0	0	No	No	No	No	No	No	No	No	No
11 - 12	756	251	1007	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
12 - 13	842	269	1111	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	630	203	833	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
14 - 15	128	44	172	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	0	0	0	0	0	No	No	No	No	No	No	No	No	No
17 - 18	0	0	0	0	0	No	No	No	No	No	No	No	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	4199	1445	5644	0	0	6	6	4	5	5	0	3	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

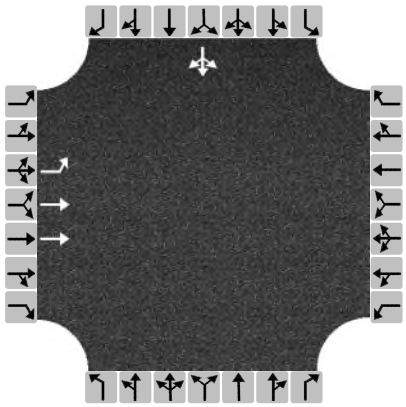
Project Information

Analyst	Jacob Beckham	Date	6/24/2024
Agency		Analysis Year	2024
Jurisdiction		Time Period Analyzed	6:15 AM-7:30 PM
Project Description	I-10 CMAR Segment 2 Warrant Analysis - US 190 @ W Service Rd - Stage 2		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	1
Major Street Speed (mi/h)	50	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	1	2	0	0	0	0	0	0	0	0	1	0
Lane Usage	L	T									LTR	
Vehicle Volumes Averages (veh/h)	12	553	0	0	0	0	0	0	0	115	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	10

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	1056	234	1290	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1120	221	1341	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	622	173	795	0	0	Yes	Yes	No	Yes	Yes	No	No	No	No
10 - 11	198	60	258	0	0	No	No	No	No	No	No	No	No	No
11 - 12	822	251	1073	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
12 - 13	1338	248	1586	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	1231	190	1421	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
14 - 15	401	9	410	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	0	0	0	0	0	No	No	No	No	No	No	No	No	No
17 - 18	0	0	0	0	0	No	No	No	No	No	No	No	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	6788	1386	8174	0	0	6	6	5	6	6	0	5	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

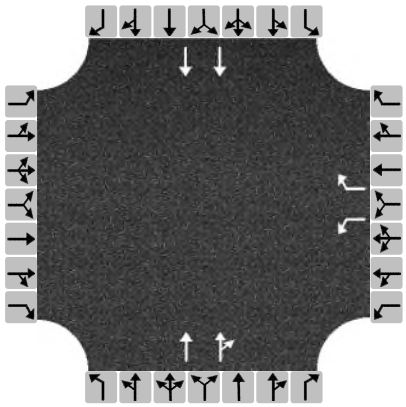
Project Information

Analyst	Jacob Beckham	Date	6/24/2024
Agency		Analysis Year	2024
Jurisdiction		Time Period Analyzed	6:15 AM-10:15 AM
Project Description	I-10 CMAR Segment 2 Warrant Analysis - LA 1 @ LA 1 Connector - Existing		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	3
Major Street Speed (mi/h)	55	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	0	0	1	0	1	0	2	0	0	2	0
Lane Usage				L		R		TR			T	
Vehicle Volumes Averages (veh/h)	0	0	0	56	0	24	0	417	54	0	152	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	10

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	677	147	824	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
08 - 09	888	156	1044	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
09 - 10	521	106	627	0	0	No	No	No	Yes	No	No	No	No	No
10 - 11	229	51	280	0	0	No	No	No	No	No	No	No	No	No
11 - 12	1478	179	1657	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
12 - 13	1929	191	2120	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	1486	116	1602	0	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
14 - 15	284	22	306	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	0	0	0	0	0	No	No	No	No	No	No	No	No	No
17 - 18	0	0	0	0	0	No	No	No	No	No	No	No	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	7492	968	8460	0	0	4	5	5	6	5	0	3	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

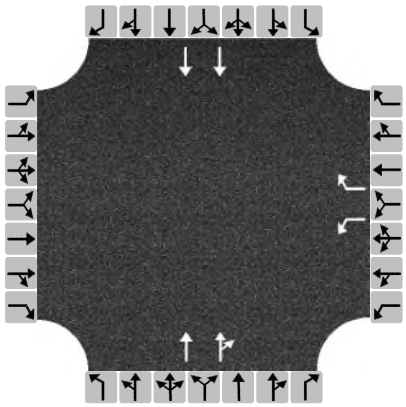
Project Information

Analyst	Jacob Beckham	Date	6/24/2024
Agency		Analysis Year	2024
Jurisdiction		Time Period Analyzed	6:15 AM-10:15 AM
Project Description	I-10 CMAR Segment 2 Warrant Analysis - LA 1 @ LA 1 Connector - Stage 2		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	3
Major Street Speed (mi/h)	55	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	0	0	1	0	1	0	2	0	0	2	0
Lane Usage				L		R		TR			T	
Vehicle Volumes Averages (veh/h)	0	0	0	70	0	24	0	417	223	0	161	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	10

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	756	232	988	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
08 - 09	1115	202	1317	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	695	152	847	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
10 - 11	271	59	330	0	0	No	No	No	No	No	No	No	No	No
11 - 12	1609	189	1798	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
12 - 13	2515	198	2713	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	2187	82	2269	0	0	No	No	Yes	Yes	Yes	No	No	No	No
14 - 15	485	22	507	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	0	0	0	0	0	No	No	No	No	No	No	No	No	No
17 - 18	0	0	0	0	0	No	No	No	No	No	No	No	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	9633	1136	10769	0	0	5	5	6	6	6	0	3	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

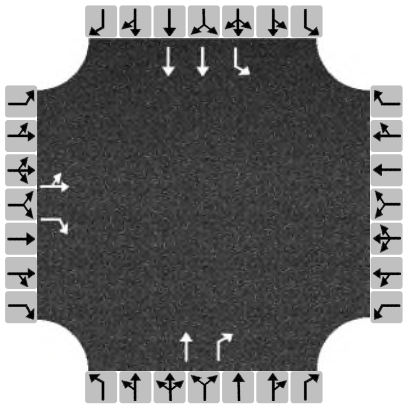
Project Information

Analyst	JMS	Date	6/24/2024
Agency		Analysis Year	2024
Jurisdiction		Time Period Analyzed	
Project Description	I-10 CMAR Segment 2 Warrant Analysis - LA 415 @ I-10 EB - Existing		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	4
Major Street Speed (mi/h)	45	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	1	0	0	0	0	1	1	1	2	0
Lane Usage		LT	R					T	R	L	T	
Vehicle Volumes Averages (veh/h)	66	3	55	0	0	0	0	83	53	378	92	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	15

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	1586	110	1696	0	0	No	No	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1348	136	1484	0	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	1177	99	1276	0	0	No	No	Yes	Yes	Yes	No	No	No	No
10 - 11	1172	98	1270	0	0	No	No	Yes	Yes	Yes	No	No	No	No
11 - 12	625	330	955	0	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
12 - 13	687	410	1097	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	569	241	810	0	0	Yes	Yes	No	Yes	Yes	No	No	No	No
14 - 15	131	73	204	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	0	0	0	0	0	No	No	No	No	No	No	No	No	No
17 - 18	0	0	0	0	0	No	No	No	No	No	No	No	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	7295	1497	8792	0	0	3	4	5	7	7	0	4	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

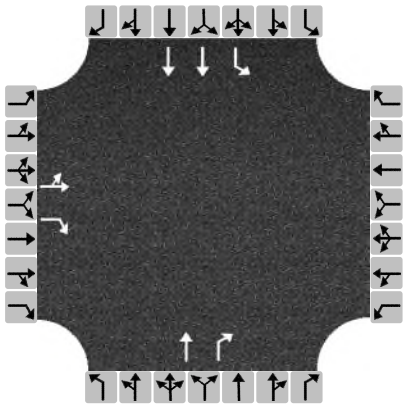
Project Information

Analyst	JMS	Date	6/24/2024
Agency		Analysis Year	2024
Jurisdiction		Time Period Analyzed	
Project Description	I-10 CMAR Segment 2 Warrant Analysis - LA 415 @ I-10 EB - Stage 2		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	4
Major Street Speed (mi/h)	45	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	1	0	0	0	0	1	1	1	2	0
Lane Usage		LT	R					T	R	L	T	
Vehicle Volumes Averages (veh/h)	152	3	55	0	0	0	0	83	53	324	92	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	15

HCS7 Warrants Report

Volume Summary

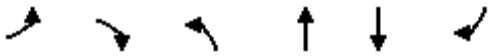
Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%)
07 - 08	1288	128	1416	0	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1034	208	1242	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	1140	132	1272	0	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
10 - 11	1116	109	1225	0	0	No	No	Yes	Yes	Yes	No	No	No	No
11 - 12	589	352	941	0	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
12 - 13	595	874	1469	0	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
13 - 14	702	586	1288	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
14 - 15	183	146	329	0	0	No	No	No	No	No	No	No	No	No
15 - 16	0	0	0	0	0	No	No	No	No	No	No	No	No	No
16 - 17	0	0	0	0	0	No	No	No	No	No	No	No	No	No
17 - 18	0	0	0	0	0	No	No	No	No	No	No	No	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	6647	2535	9182	0	0	4	6	5	7	7	0	6	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

ATTACHMENT D: SYNCHRO AND SIMTRAFFIC REPORTS

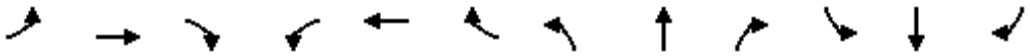
Synchro Results – Existing Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	92	9	98	1	0
Future Volume (Veh/h)	5	92	9	98	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	9	101	13	107	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	137	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	137	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	91	99			
cM capacity (veh/h)	849	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	110	120	4
Volume Left	9	13	0
Volume Right	101	0	0
cSH	1056	1618	1700
Volume to Capacity	0.10	0.01	0.00
Queue Length 95th (ft)	9	1	0
Control Delay (s)	8.8	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.8	0.0
Approach LOS	A		

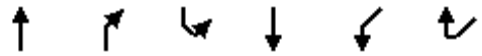
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	924	4	7	332	95	4	15	14	100	13	4
Future Volume (Veh/h)	17	924	4	7	332	95	4	15	14	100	13	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Hourly flow rate (vph)	45	1074	16	10	342	112	7	25	23	120	28	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	454			1090			1382	1646	545	1024	1542	171
vC1, stage 1 conf vol							1172	1172		362	362	
vC2, stage 2 conf vol							210	474		662	1180	
vCu, unblocked vol	454			1090			1382	1646	545	1024	1542	171
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			96	89	95	61	88	99
cM capacity (veh/h)	1103			636			189	232	482	309	229	843

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	45	716	374	10	171	171	112	55	153
Volume Left	45	0	0	10	0	0	0	7	120
Volume Right	0	0	16	0	0	0	112	23	5
cSH	1103	1700	1700	636	1700	1700	1700	286	296
Volume to Capacity	0.04	0.42	0.22	0.02	0.10	0.10	0.07	0.19	0.52
Queue Length 95th (ft)	3	0	0	1	0	0	0	17	69
Control Delay (s)	8.4	0.0	0.0	10.8	0.0	0.0	0.0	20.6	29.4
Lane LOS	A			B				C	D
Approach Delay (s)	0.3			0.2				20.6	29.4
Approach LOS								C	D

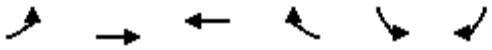
Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	45.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	516	79	0	293	128	28
Future Volume (Veh/h)	516	79	0	293	128	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.82	0.92	0.93	0.75	0.61
Hourly flow rate (vph)	532	96	0	315	171	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			532		738	314
vC1, stage 1 conf vol					580	
vC2, stage 2 conf vol					158	
vCu, unblocked vol			532		738	314
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		66	93
cM capacity (veh/h)			1032		498	682

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1
Volume Total	355	273	158	158	217
Volume Left	0	0	0	0	171
Volume Right	0	96	0	0	46
cSH	1700	1700	1700	1700	528
Volume to Capacity	0.21	0.16	0.09	0.09	0.41
Queue Length 95th (ft)	0	0	0	0	50
Control Delay (s)	0.0	0.0	0.0	0.0	16.5
Lane LOS					C
Approach Delay (s)	0.0		0.0		16.5
Approach LOS					C

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

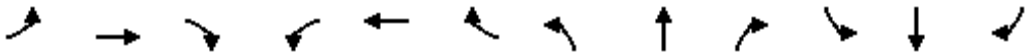


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	648	0	0	224	0
Future Volume (Veh/h)	30	648	0	0	224	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.68	0.88	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	44	736	0	0	243	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				456	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				456	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				53	100
cM capacity (veh/h)	1622				519	1084

Direction, Lane #	EB 1	EB 2	EB 3	SB 1
Volume Total	44	368	368	243
Volume Left	44	0	0	243
Volume Right	0	0	0	0
cSH	1622	1700	1700	519
Volume to Capacity	0.03	0.22	0.22	0.47
Queue Length 95th (ft)	2	0	0	62
Control Delay (s)	7.3	0.0	0.0	17.9
Lane LOS	A			C
Approach Delay (s)	0.4			17.9
Approach LOS				C

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

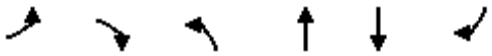
Intersection Sign configuration not allowed in HCM analysis.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	215	407	24	8	22	0	0	9	14
Future Volume (Veh/h)	0	0	0	215	407	24	8	22	0	0	9	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	242	468	32	17	73	0	0	11	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	500			0			744	984	0	1004	968	250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			0			744	984	0	1004	968	250
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			85			93	65	100	100	95	97
cM capacity (veh/h)	1060			1622			251	210	1084	128	215	750

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	242	312	188	90	32
Volume Left	242	0	0	17	0
Volume Right	0	0	32	0	21
cSH	1622	1700	1700	217	404
Volume to Capacity	0.15	0.18	0.11	0.42	0.08
Queue Length 95th (ft)	13	0	0	48	6
Control Delay (s)	7.6	0.0	0.0	32.9	14.7
Lane LOS	A			D	B
Approach Delay (s)	2.5			32.9	14.7
Approach LOS				D	B

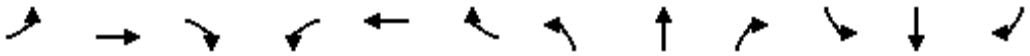
Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	26.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	117	28	224	1	0
Future Volume (Veh/h)	11	117	28	224	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	20	129	40	243	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	327	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	327	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	88	98			
cM capacity (veh/h)	651	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	149	283	4
Volume Left	20	40	0
Volume Right	129	0	0
cSH	992	1618	1700
Volume to Capacity	0.15	0.02	0.00
Queue Length 95th (ft)	13	2	0
Control Delay (s)	9.3	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.2	0.0
Approach LOS	A		

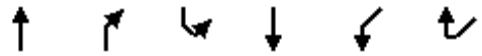
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	309	3	14	1044	234	7	24	17	100	13	18
Future Volume (Veh/h)	3	309	3	14	1044	234	7	24	17	100	13	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Hourly flow rate (vph)	8	359	12	20	1076	275	12	40	28	120	28	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1351			371			997	1772	186	1360	1503	538
vC1, stage 1 conf vol							381	381		1116	1116	
vC2, stage 2 conf vol							616	1391		244	387	
vCu, unblocked vol	1351			371			997	1772	186	1360	1503	538
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			96	79	97	42	89	95
cM capacity (veh/h)	505			1184			333	187	825	207	257	488

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	8	239	132	20	538	538	275	80	172
Volume Left	8	0	0	20	0	0	0	12	120
Volume Right	0	0	12	0	0	0	275	28	24
cSH	505	1700	1700	1184	1700	1700	1700	282	233
Volume to Capacity	0.02	0.14	0.08	0.02	0.32	0.32	0.16	0.28	0.74
Queue Length 95th (ft)	1	0	0	1	0	0	0	28	127
Control Delay (s)	12.2	0.0	0.0	8.1	0.0	0.0	0.0	22.8	54.5
Lane LOS	B			A				C	F
Approach Delay (s)	0.3			0.1				22.8	54.5
Approach LOS								C	F

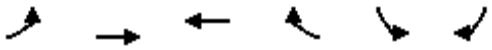
Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	49.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	1473	112	0	344	108	83
Future Volume (Veh/h)	1473	112	0	344	108	83
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.82	0.92	0.93	0.75	0.61
Hourly flow rate (vph)	1519	137	0	370	144	136
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1519		1772	828
vC1, stage 1 conf vol					1588	
vC2, stage 2 conf vol					185	
vCu, unblocked vol			1519		1772	828
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		3	57
cM capacity (veh/h)			435		149	314

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1
Volume Total	1013	643	185	185	280
Volume Left	0	0	0	0	144
Volume Right	0	137	0	0	136
cSH	1700	1700	1700	1700	200
Volume to Capacity	0.60	0.38	0.11	0.11	1.40
Queue Length 95th (ft)	0	0	0	0	410
Control Delay (s)	0.0	0.0	0.0	0.0	252.3
Lane LOS					F
Approach Delay (s)	0.0		0.0		252.3
Approach LOS					F

Intersection Summary			
Average Delay	30.6		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

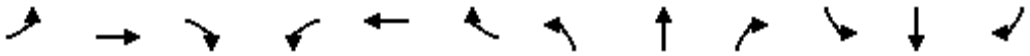


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	823	0	0	269	0
Future Volume (Veh/h)	19	823	0	0	269	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.68	0.88	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	935	0	0	292	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				524	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				524	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				39	100
cM capacity (veh/h)	1622				475	1084

Direction, Lane #	EB 1	EB 2	EB 3	SB 1
Volume Total	28	468	468	292
Volume Left	28	0	0	292
Volume Right	0	0	0	0
cSH	1622	1700	1700	475
Volume to Capacity	0.02	0.28	0.28	0.61
Queue Length 95th (ft)	1	0	0	102
Control Delay (s)	7.3	0.0	0.0	23.9
Lane LOS	A			C
Approach Delay (s)	0.2			23.9
Approach LOS				C

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	242	852	6	21	12	0	0	36	21
Future Volume (Veh/h)	0	0	0	242	852	6	21	12	0	0	36	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	272	979	8	44	40	0	0	44	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	987			0			1088	1531	0	1547	1527	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	987			0			1088	1531	0	1547	1527	494
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			83			52	58	100	100	55	94
cM capacity (veh/h)	696			1622			91	96	1084	46	97	521

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	272	653	334	84	76
Volume Left	272	0	0	44	0
Volume Right	0	0	8	0	32
cSH	1622	1700	1700	93	147
Volume to Capacity	0.17	0.38	0.20	0.90	0.52
Queue Length 95th (ft)	15	0	0	126	62
Control Delay (s)	7.7	0.0	0.0	147.8	52.8
Lane LOS	A			F	F
Approach Delay (s)	1.7			147.8	52.8
Approach LOS				F	F

Intersection Summary				
Average Delay	13.1			
Intersection Capacity Utilization	38.9%	ICU Level of Service		A
Analysis Period (min)	15			

Simtraffic Results – Existing Conditions

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	78
Average Queue (ft)	34
95th Queue (ft)	55
Link Distance (ft)	316
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: LA 415 & Plantation Ave.

Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	12	68	520
Average Queue (ft)	0	28	264
95th Queue (ft)	4	63	471
Link Distance (ft)		282	462
Upstream Blk Time (%)			6
Queuing Penalty (veh)			5
Storage Bay Dist (ft)	500		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: LA 1 & LA 1 Ramp

Movement	SW
Directions Served	LR
Maximum Queue (ft)	152
Average Queue (ft)	54
95th Queue (ft)	105
Link Distance (ft)	1841
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 21: US 190

Movement	SB
Directions Served	L
Maximum Queue (ft)	161
Average Queue (ft)	70
95th Queue (ft)	122
Link Distance (ft)	156
Upstream Blk Time (%)	1
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	B4
Directions Served	LTR	TR	T
Maximum Queue (ft)	1627	458	1082
Average Queue (ft)	1139	429	529
95th Queue (ft)	1687	526	1218
Link Distance (ft)	1593	388	1067
Upstream Blk Time (%)	20	83	20
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 27: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	243	30
Average Queue (ft)	9	1
95th Queue (ft)	81	10
Link Distance (ft)	326	326
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 72:

Movement	WB	NB	SB
Directions Served	L	LT	TR
Maximum Queue (ft)	90	52	28
Average Queue (ft)	4	17	15
95th Queue (ft)	31	47	38
Link Distance (ft)		156	41
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 7

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB	B6	SB
Directions Served	LR	T	TR
Maximum Queue (ft)	395	338	30
Average Queue (ft)	296	174	1
95th Queue (ft)	518	419	10
Link Distance (ft)	316	304	208
Upstream Blk Time (%)	66	42	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: LA 415 & Plantation Ave.

Movement	NB	SB	B13
Directions Served	LTR	LTR	T
Maximum Queue (ft)	121	581	491
Average Queue (ft)	67	535	460
95th Queue (ft)	119	554	580
Link Distance (ft)	282	462	479
Upstream Blk Time (%)		100	79
Queuing Penalty (veh)		118	93
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: LA 1 & LA 1 Ramp

Movement	NB	SW	B16	B70
Directions Served	T	LR	T	T
Maximum Queue (ft)	12	1913	891	221
Average Queue (ft)	0	1475	252	14
95th Queue (ft)	4	2273	817	97
Link Distance (ft)	386	1841	822	599
Upstream Blk Time (%)		42	11	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 21: US 190

Movement	SB
Directions Served	L
Maximum Queue (ft)	174
Average Queue (ft)	129
95th Queue (ft)	187
Link Distance (ft)	156
Upstream Blk Time (%)	12
Queuing Penalty (veh)	33
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB
Directions Served	LTR	TR	L
Maximum Queue (ft)	243	288	16
Average Queue (ft)	90	109	2
95th Queue (ft)	174	220	9
Link Distance (ft)	1593	388	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			200
Storage Blk Time (%)			
Queuing Penalty (veh)			

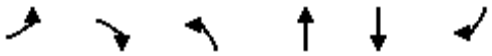
Intersection: 72:

Movement	WB	NB	SB
Directions Served	L	LT	TR
Maximum Queue (ft)	85	50	72
Average Queue (ft)	19	23	38
95th Queue (ft)	65	47	67
Link Distance (ft)		156	41
Upstream Blk Time (%)			6
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 244

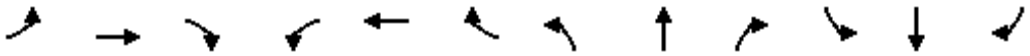
Synchro Results – Stage 2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	132	9	107	1	0
Future Volume (Veh/h)	5	132	9	107	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	9	145	13	116	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	146	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	87	99			
cM capacity (veh/h)	840	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	154	129	4
Volume Left	9	13	0
Volume Right	145	0	0
cSH	1062	1618	1700
Volume to Capacity	0.15	0.01	0.00
Queue Length 95th (ft)	13	1	0
Control Delay (s)	9.0	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.8	0.0
Approach LOS	A		

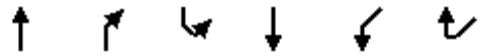
Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	500	4	7	332	104	4	15	14	140	13	4
Future Volume (Veh/h)	17	500	4	7	332	104	4	15	14	140	13	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Hourly flow rate (vph)	45	581	16	10	342	122	7	25	23	169	28	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh)		2			1							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	464			597			889	1163	298	778	1049	171
vC1, stage 1 conf vol							679	679		362	362	
vC2, stage 2 conf vol							210	484		416	687	
vCu, unblocked vol	464			597			889	1163	298	778	1049	171
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			98	93	97	61	93	99
cM capacity (veh/h)	1094			976			365	359	698	437	379	843

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	45	387	210	10	171	171	122	55	202
Volume Left	45	0	0	10	0	0	0	7	169
Volume Right	0	0	16	0	0	0	122	23	5
cSH	1094	1700	1700	976	1700	1700	1700	452	433
Volume to Capacity	0.04	0.23	0.12	0.01	0.10	0.10	0.07	0.12	0.47
Queue Length 95th (ft)	3	0	0	1	0	0	0	10	60
Control Delay (s)	8.4	0.0	0.0	8.7	0.0	0.0	0.0	14.1	20.4
Lane LOS	A			A				B	C
Approach Delay (s)	0.6			0.2				14.1	20.4
Approach LOS								B	C

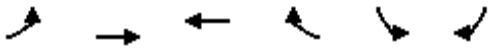
Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	36.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	516	317	0	282	174	28
Future Volume (Veh/h)	516	317	0	282	174	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.82	0.92	0.93	0.75	0.61
Hourly flow rate (vph)	532	387	0	303	232	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			532		877	460
vC1, stage 1 conf vol					726	
vC2, stage 2 conf vol					152	
vCu, unblocked vol			532		877	460
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		45	92
cM capacity (veh/h)			1032		422	549

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1
Volume Total	355	564	152	152	278
Volume Left	0	0	0	0	232
Volume Right	0	387	0	0	46
cSH	1700	1700	1700	1700	439
Volume to Capacity	0.21	0.33	0.09	0.09	0.63
Queue Length 95th (ft)	0	0	0	0	107
Control Delay (s)	0.0	0.0	0.0	0.0	26.4
Lane LOS					D
Approach Delay (s)	0.0		0.0		26.4
Approach LOS					D

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

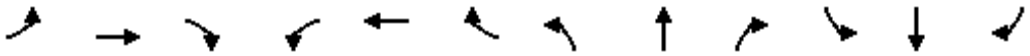


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	1122	0	0	233	0
Future Volume (Veh/h)	30	1122	0	0	233	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.68	0.88	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	44	1275	0	0	253	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				726	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				726	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				28	100
cM capacity (veh/h)	1622				350	1084

Direction, Lane #	EB 1	EB 2	EB 3	SB 1
Volume Total	44	638	638	253
Volume Left	44	0	0	253
Volume Right	0	0	0	0
cSH	1622	1700	1700	350
Volume to Capacity	0.03	0.38	0.38	0.72
Queue Length 95th (ft)	2	0	0	135
Control Delay (s)	7.3	0.0	0.0	38.0
Lane LOS	A			E
Approach Delay (s)	0.2			38.0
Approach LOS				E

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

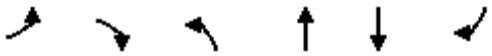
Intersection Sign configuration not allowed in HCM analysis.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	224	407	24	8	22	0	0	9	14
Future Volume (Veh/h)	0	0	0	224	407	24	8	22	0	0	9	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	252	468	32	17	73	0	0	11	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	500			0			764	1004	0	1024	988	250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			0			764	1004	0	1024	988	250
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			84			93	64	100	100	95	97
cM capacity (veh/h)	1060			1622			241	203	1084	121	207	750

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	252	312	188	90	32
Volume Left	252	0	0	17	0
Volume Right	0	0	32	0	21
cSH	1622	1700	1700	209	395
Volume to Capacity	0.16	0.18	0.11	0.43	0.08
Queue Length 95th (ft)	14	0	0	50	7
Control Delay (s)	7.6	0.0	0.0	34.6	14.9
Lane LOS	A			D	B
Approach Delay (s)	2.6			34.6	14.9
Approach LOS				D	B

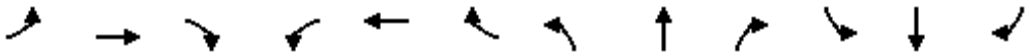
Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	27.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	128	28	448	1	0
Future Volume (Veh/h)	11	128	28	448	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	20	141	40	487	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	571	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	571	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	87	98			
cM capacity (veh/h)	470	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	161	527	4
Volume Left	20	40	0
Volume Right	141	0	0
cSH	930	1618	1700
Volume to Capacity	0.17	0.02	0.00
Queue Length 95th (ft)	16	2	0
Control Delay (s)	9.7	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.8	0.0
Approach LOS	A		

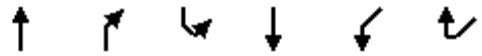
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	239	4	15	1022	638	7	24	17	111	13	18
Future Volume (Veh/h)	3	239	4	15	1022	638	7	24	17	111	13	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Hourly flow rate (vph)	8	278	16	21	1054	751	12	40	28	134	28	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh)		2			1							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1805			294			909	2149	147	1299	1406	527
vC1, stage 1 conf vol							302	302		1096	1096	
vC2, stage 2 conf vol							607	1847		203	310	
vCu, unblocked vol	1805			294			909	2149	147	1299	1406	527
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			97	64	97	37	89	95
cM capacity (veh/h)	337			1264			347	110	873	212	266	496

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	8	185	109	21	527	527	751	80	186
Volume Left	8	0	0	21	0	0	0	12	134
Volume Right	0	0	16	0	0	0	751	28	24
cSH	337	1700	1700	1264	1700	1700	1700	186	237
Volume to Capacity	0.02	0.11	0.06	0.02	0.31	0.31	0.44	0.43	0.79
Queue Length 95th (ft)	2	0	0	1	0	0	0	49	144
Control Delay (s)	15.9	0.0	0.0	7.9	0.0	0.0	0.0	38.3	59.7
Lane LOS	C			A				E	F
Approach Delay (s)	0.4			0.1				38.3	59.7
Approach LOS								E	F

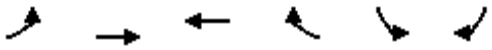
Intersection Summary				
Average Delay	6.0			
Intersection Capacity Utilization	56.2%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	1473	718	0	324	115	83
Future Volume (Veh/h)	1473	718	0	324	115	83
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.82	0.92	0.93	0.75	0.61
Hourly flow rate (vph)	1519	876	0	348	153	136
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1519		2131	1198
vC1, stage 1 conf vol					1957	
vC2, stage 2 conf vol					174	
vCu, unblocked vol			1519		2131	1198
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	24
cM capacity (veh/h)			435		93	178

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SW 1
Volume Total	1013	1382	174	174	289
Volume Left	0	0	0	0	153
Volume Right	0	876	0	0	136
cSH	1700	1700	1700	1700	120
Volume to Capacity	0.60	0.81	0.10	0.10	2.40
Queue Length 95th (ft)	0	0	0	0	634
Control Delay (s)	0.0	0.0	0.0	0.0	712.8
Lane LOS					F
Approach Delay (s)	0.0		0.0		712.8
Approach LOS					F

Intersection Summary			
Average Delay	67.9		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

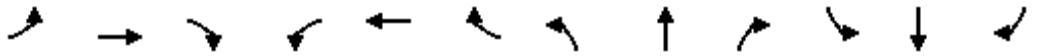


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	1319	0	0	248	0
Future Volume (Veh/h)	19	1319	0	0	248	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.68	0.88	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	1499	0	0	270	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				806	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				806	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				14	100
cM capacity (veh/h)	1622				314	1084

Direction, Lane #	EB 1	EB 2	EB 3	SB 1
Volume Total	28	750	750	270
Volume Left	28	0	0	270
Volume Right	0	0	0	0
cSH	1622	1700	1700	314
Volume to Capacity	0.02	0.44	0.44	0.86
Queue Length 95th (ft)	1	0	0	192
Control Delay (s)	7.3	0.0	0.0	58.4
Lane LOS	A			F
Approach Delay (s)	0.1			58.4
Approach LOS				F

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	221	852	6	21	12	0	0	36	21
Future Volume (Veh/h)	0	0	0	221	852	6	21	12	0	0	36	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	248	979	8	44	40	0	0	44	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	987			0			1040	1483	0	1499	1479	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	987			0			1040	1483	0	1499	1479	494
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			85			58	62	100	100	58	94
cM capacity (veh/h)	696			1622			104	105	1084	53	106	521

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	248	653	334	84	76
Volume Left	248	0	0	44	0
Volume Right	0	0	8	0	32
cSH	1622	1700	1700	105	159
Volume to Capacity	0.15	0.38	0.20	0.80	0.48
Queue Length 95th (ft)	13	0	0	112	56
Control Delay (s)	7.6	0.0	0.0	115.2	46.8
Lane LOS	A			F	E
Approach Delay (s)	1.5			115.2	46.8
Approach LOS				F	E

Intersection Summary				
Average Delay	10.8			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Simtraffic Results – Stage 2

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	90
Average Queue (ft)	39
95th Queue (ft)	61
Link Distance (ft)	316
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: LA 415 & Plantation Ave.

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	1	50	247
Average Queue (ft)	0	22	111
95th Queue (ft)	0	53	206
Link Distance (ft)		298	464
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	420		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: LA 1 & LA 1 Ramp

Movement	SW
Directions Served	LR
Maximum Queue (ft)	240
Average Queue (ft)	109
95th Queue (ft)	210
Link Distance (ft)	1845
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 21: US 190

Movement	SB
Directions Served	L
Maximum Queue (ft)	165
Average Queue (ft)	161
95th Queue (ft)	165
Link Distance (ft)	156
Upstream Blk Time (%)	78
Queuing Penalty (veh)	182
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB
Directions Served	LTR	TR	L
Maximum Queue (ft)	263	112	15
Average Queue (ft)	82	45	1
95th Queue (ft)	186	89	8
Link Distance (ft)	1588	505	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			200
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 72:

Movement	WB	WB	WB	B73	B73	NB	SB	B20
Directions Served	L	T	TR	T	T	LT	TR	T
Maximum Queue (ft)	275	1019	1000	633	596	30	108	153
Average Queue (ft)	275	872	530	240	204	15	62	28
95th Queue (ft)	275	1218	1301	600	551	39	119	110
Link Distance (ft)		928	928	3399	3399	156	41	830
Upstream Blk Time (%)		64	10				73	
Queuing Penalty (veh)		0	0				0	
Storage Bay Dist (ft)	250							
Storage Blk Time (%)	99	0						
Queuing Penalty (veh)	200	0						

Network Summary

Network wide Queuing Penalty: 382

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB	B6	SB
Directions Served	LR	T	TR
Maximum Queue (ft)	403	343	31
Average Queue (ft)	235	151	2
95th Queue (ft)	515	398	15
Link Distance (ft)	316	304	208
Upstream Blk Time (%)	55	38	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: LA 415 & Plantation Ave.

Movement	WB	NB	SB	B13
Directions Served	L	LTR	LTR	T
Maximum Queue (ft)	3	313	536	488
Average Queue (ft)	0	223	521	358
95th Queue (ft)	1	377	593	666
Link Distance (ft)		298	464	479
Upstream Blk Time (%)		20	90	58
Queuing Penalty (veh)		0	117	75
Storage Bay Dist (ft)	420			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: LA 1 & LA 1 Ramp

Movement	NB	NB	B3	SW	B16	B70
Directions Served	T	TR	T	LR	T	T
Maximum Queue (ft)	56	18	26	1917	891	614
Average Queue (ft)	4	3	1	1647	439	188
95th Queue (ft)	26	12	9	2308	1106	614
Link Distance (ft)	389	389	614	1845	822	599
Upstream Blk Time (%)				64	38	21
Queuing Penalty (veh)				0	0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: US 190

Movement	SB
Directions Served	L
Maximum Queue (ft)	166
Average Queue (ft)	160
95th Queue (ft)	165
Link Distance (ft)	156
Upstream Blk Time (%)	87
Queuing Penalty (veh)	223
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB
Directions Served	LTR	TR	L
Maximum Queue (ft)	1651	202	15
Average Queue (ft)	1610	106	2
95th Queue (ft)	1629	174	11
Link Distance (ft)	1588	505	
Upstream Blk Time (%)	100		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			200
Storage Blk Time (%)			
Queuing Penalty (veh)			

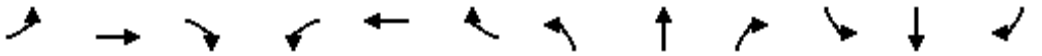
Intersection: 72:

Movement	WB	WB	WB	B73	B73	NB	SB	B20	B7
Directions Served	L	T	TR	T	T	LT	TR	T	T
Maximum Queue (ft)	275	1016	1012	3446	3450	30	107	900	62
Average Queue (ft)	273	919	622	1171	1163	17	93	412	5
95th Queue (ft)	282	1205	1329	3062	3057	41	131	938	30
Link Distance (ft)		928	928	3399	3399	156	41	830	674
Upstream Blk Time (%)		72	9	3	2		88	11	
Queuing Penalty (veh)		0	0	0	0		0	0	
Storage Bay Dist (ft)	250								
Storage Blk Time (%)	100	0							
Queuing Penalty (veh)	426	0							

Network Summary

Network wide Queuing Penalty: 841

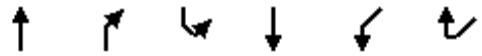
Synchro Results – Stage 2 + Off-Site Improvements



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	517	17	0	341	136	0	0	33	140	0	17
Future Volume (vph)	0	517	17	0	341	136	0	0	33	140	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			6.0	6.0			5.0	5.0		5.0
Lane Util. Factor		1.00			0.95	1.00			1.00	1.00		1.00
Frt		0.99			1.00	0.85			0.86	1.00		0.85
Flt Protected		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (prot)		1837			3539	1583			1611	1770		1583
Flt Permitted		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (perm)		1837			3539	1583			1611	1770		1583
Peak-hour factor, PHF	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Adj. Flow (vph)	0	601	68	0	352	160	0	0	54	169	0	23
RTOR Reduction (vph)	0	0	0	0	0	91	0	0	0	0	0	17
Lane Group Flow (vph)	0	669	0	0	352	69	0	0	54	169	0	6
Turn Type		NA			NA	Perm			Perm	D.Pm		Perm
Protected Phases		5 6!			6							
Permitted Phases						6			5 6	5!		5
Actuated Green, G (s)		34.8			15.0	15.0			34.8	8.8		8.8
Effective Green, g (s)		28.8			15.0	15.0			28.8	8.8		8.8
Actuated g/C Ratio		0.83			0.43	0.43			0.83	0.25		0.25
Clearance Time (s)					6.0	6.0				5.0		5.0
Vehicle Extension (s)					2.0	2.0				2.0		2.0
Lane Grp Cap (vph)		1520			1525	682			1333	447		400
v/s Ratio Prot		c0.36			0.10							
v/s Ratio Perm						0.04			0.03	0.10		0.00
v/c Ratio		0.44			0.23	0.10			0.04	0.38		0.01
Uniform Delay, d1		0.8			6.3	5.9			0.5	10.7		9.7
Progression Factor		1.00			1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2		0.1			0.0	0.0			0.0	0.2		0.0
Delay (s)		0.9			6.3	5.9			0.5	10.9		9.8
Level of Service		A			A	A			A	B		A
Approach Delay (s)		0.9			6.2			0.5			10.8	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	34.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

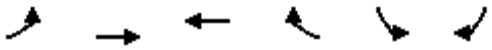


Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	516	317	0	282	174	28
Future Volume (vph)	516	317	0	282	174	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			5.0	5.0	
Lane Util. Factor	0.95			1.00	1.00	
Frt	0.94			1.00	0.98	
Flt Protected	1.00			1.00	0.96	
Satd. Flow (prot)	3316			1863	1748	
Flt Permitted	1.00			1.00	0.96	
Satd. Flow (perm)	3316			1863	1748	
Peak-hour factor, PHF	0.97	0.82	0.92	0.93	0.75	0.61
Adj. Flow (vph)	532	387	0	303	232	46
RTOR Reduction (vph)	94	0	0	0	5	0
Lane Group Flow (vph)	825	0	0	303	273	0
Turn Type	NA			NA	Prot	
Protected Phases	6			5 6!	5!	
Permitted Phases						
Actuated Green, G (s)	19.6			43.7	13.1	
Effective Green, g (s)	19.6			37.7	13.1	
Actuated g/C Ratio	0.45			0.86	0.30	
Clearance Time (s)	6.0				5.0	
Vehicle Extension (s)	2.0				2.0	
Lane Grp Cap (vph)	1487			1607	524	
v/s Ratio Prot	c0.25			0.16	c0.16	
v/s Ratio Perm						
v/c Ratio	0.55			0.19	0.52	
Uniform Delay, d1	8.8			0.5	12.7	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.3			0.0	0.4	
Delay (s)	9.1			0.5	13.1	
Level of Service	A			A	B	
Approach Delay (s)	9.1			0.5	13.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	11.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.

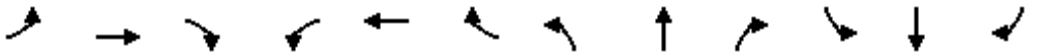
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1122	0	0	233	0
Future Volume (vph)	30	1122	0	0	233	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			4.0	
Lane Util. Factor	1.00	0.95			1.00	
Frt	1.00	1.00			1.00	
Flt Protected	0.95	1.00			0.95	
Satd. Flow (prot)	1770	3539			1770	
Flt Permitted	0.95	1.00			0.95	
Satd. Flow (perm)	1770	3539			1770	
Peak-hour factor, PHF	0.68	0.88	0.92	0.92	0.92	0.92
Adj. Flow (vph)	44	1275	0	0	253	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	44	1275	0	0	253	0
Turn Type	Prot	NA			Prot	
Protected Phases	5	2			4	
Permitted Phases						
Actuated Green, G (s)	24.4	24.4			12.3	
Effective Green, g (s)	24.4	24.4			12.3	
Actuated g/C Ratio	0.52	0.52			0.26	
Clearance Time (s)	6.0	6.0			4.0	
Vehicle Extension (s)	2.0	2.0			2.0	
Lane Grp Cap (vph)	924	1849			466	
v/s Ratio Prot	0.02	c0.36			c0.14	
v/s Ratio Perm						
v/c Ratio	0.05	0.69			0.54	
Uniform Delay, d1	5.5	8.3			14.8	
Progression Factor	1.00	1.00			1.00	
Incremental Delay, d2	0.0	0.9			0.7	
Delay (s)	5.5	9.2			15.5	
Level of Service	A	A			B	
Approach Delay (s)		9.1	0.0		15.5	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

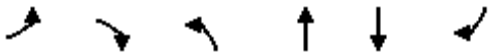
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	2	85	0	0	0	0	64	113	834	220	0
Future Volume (vph)	68	2	85	0	0	0	0	64	113	834	220	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0		5.0	5.0	
Lane Util. Factor		1.00						1.00		1.00	1.00	
Frt		0.93						0.91		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1688						1702		1770	1863	
Flt Permitted		0.98						1.00		0.48	1.00	
Satd. Flow (perm)		1688						1702		896	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	2	92	0	0	0	0	70	123	907	239	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	125	0	0	0	0	0	142	0	907	239	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		8						6		5	2	
Permitted Phases	8									2		
Actuated Green, G (s)		15.6						31.3		79.4	79.4	
Effective Green, g (s)		15.6						31.3		79.4	79.4	
Actuated g/C Ratio		0.15						0.30		0.76	0.76	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		250						507		1036	1408	
v/s Ratio Prot								0.08		c0.36	0.13	
v/s Ratio Perm		0.07								c0.30		
v/c Ratio		0.50						0.28		0.88	0.17	
Uniform Delay, d1		41.1						28.2		8.2	3.6	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.6						1.4		8.2	0.0	
Delay (s)		41.7						29.6		16.4	3.6	
Level of Service		D						C		B	A	
Approach Delay (s)		41.7			0.0			29.6			13.7	
Approach LOS		D			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

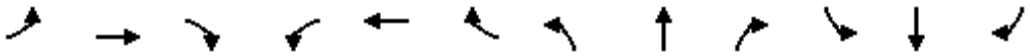
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	132	9	107	1	0
Future Volume (Veh/h)	5	132	9	107	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	9	145	13	116	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1122		
pX, platoon unblocked						
vC, conflicting volume	146	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	87	99			
cM capacity (veh/h)	840	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	154	129	4
Volume Left	9	13	0
Volume Right	145	0	0
cSH	1062	1618	1700
Volume to Capacity	0.15	0.01	0.00
Queue Length 95th (ft)	13	1	0
Control Delay (s)	9.0	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.8	0.0
Approach LOS	A		

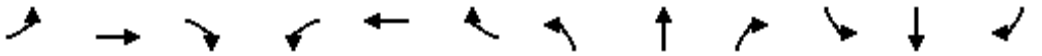
Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	224	407	24	8	22	0	0	9	14
Future Volume (Veh/h)	0	0	0	224	407	24	8	22	0	0	9	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	252	468	32	17	73	0	0	11	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	500			0			764	1004	0	1024	988	250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			0			764	1004	0	1024	988	250
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			84			93	64	100	100	95	97
cM capacity (veh/h)	1060			1622			241	203	1084	121	207	750

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	252	312	188	90	32
Volume Left	252	0	0	17	0
Volume Right	0	0	32	0	21
cSH	1622	1700	1700	209	395
Volume to Capacity	0.16	0.18	0.11	0.43	0.08
Queue Length 95th (ft)	14	0	0	50	7
Control Delay (s)	7.6	0.0	0.0	34.6	14.9
Lane LOS	A			D	B
Approach Delay (s)	2.6			34.6	14.9
Approach LOS				D	B

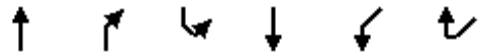
Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	0	239	22	0	1044	665	0	0	48	111	0	31
Future Volume (vph)	0	239	22	0	1044	665	0	0	48	111	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			6.0	6.0			5.0	5.0		5.0
Lane Util. Factor		1.00			0.95	1.00			1.00	1.00		1.00
Frt		0.97			1.00	0.85			0.86	1.00		0.85
Flt Protected		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (prot)		1802			3539	1583			1611	1770		1583
Flt Permitted		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (perm)		1802			3539	1583			1611	1770		1583
Peak-hour factor, PHF	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Adj. Flow (vph)	0	278	88	0	1076	782	0	0	79	134	0	41
RTOR Reduction (vph)	0	0	0	0	0	343	0	0	0	0	0	33
Lane Group Flow (vph)	0	366	0	0	1076	439	0	0	79	134	0	8
Turn Type		NA			NA	Perm			Perm	D.Pm		Perm
Protected Phases		5 6!			6							
Permitted Phases						6			5 6	5!		5
Actuated Green, G (s)		45.6			25.6	25.6			45.6	9.0		9.0
Effective Green, g (s)		39.6			25.6	25.6			39.6	9.0		9.0
Actuated g/C Ratio		0.87			0.56	0.56			0.87	0.20		0.20
Clearance Time (s)					6.0	6.0				5.0		5.0
Vehicle Extension (s)					2.0	2.0				2.0		2.0
Lane Grp Cap (vph)		1564			1986	888			1399	349		312
v/s Ratio Prot		0.20			c0.30							
v/s Ratio Perm						0.28			0.05	c0.08		0.01
v/c Ratio		0.23			0.54	0.49			0.06	0.38		0.03
Uniform Delay, d1		0.5			6.3	6.1			0.4	15.9		14.8
Progression Factor		1.00			1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2		0.0			0.2	0.2			0.0	0.3		0.0
Delay (s)		0.5			6.5	6.2			0.4	16.1		14.8
Level of Service		A			A	A			A	B		B
Approach Delay (s)		0.5			6.4			0.4			15.8	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

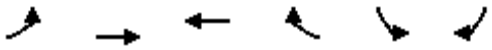


Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	1473	718	0	324	115	83
Future Volume (vph)	1473	718	0	324	115	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			5.0	5.0	
Lane Util. Factor	0.95			1.00	1.00	
Frt	0.95			1.00	0.94	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	3345			1863	1699	
Flt Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	3345			1863	1699	
Peak-hour factor, PHF	0.97	0.82	0.92	0.93	0.75	0.61
Adj. Flow (vph)	1519	876	0	348	153	136
RTOR Reduction (vph)	47	0	0	0	19	0
Lane Group Flow (vph)	2348	0	0	348	270	0
Turn Type	NA			NA	Prot	
Protected Phases	6			5 6!	5!	
Permitted Phases						
Actuated Green, G (s)	119.1			159.0	28.9	
Effective Green, g (s)	119.1			153.0	28.9	
Actuated g/C Ratio	0.75			0.96	0.18	
Clearance Time (s)	6.0				5.0	
Vehicle Extension (s)	2.0				2.0	
Lane Grp Cap (vph)	2505			1792	308	
v/s Ratio Prot	c0.70			0.19	c0.16	
v/s Ratio Perm						
v/c Ratio	0.94			0.19	0.88	
Uniform Delay, d1	16.8			0.1	63.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	7.4			0.0	22.7	
Delay (s)	24.3			0.2	86.0	
Level of Service	C			A	F	
Approach Delay (s)	24.3			0.2	86.0	
Approach LOS	C			A	F	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	159.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

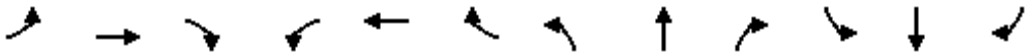
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	1319	0	0	248	0
Future Volume (vph)	19	1319	0	0	248	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			4.0	
Lane Util. Factor	1.00	0.95			1.00	
Frt	1.00	1.00			1.00	
Flt Protected	0.95	1.00			0.95	
Satd. Flow (prot)	1770	3539			1770	
Flt Permitted	0.95	1.00			0.95	
Satd. Flow (perm)	1770	3539			1770	
Peak-hour factor, PHF	0.68	0.88	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	1499	0	0	270	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	28	1499	0	0	270	0
Turn Type	Prot	NA			Prot	
Protected Phases	5	2			4	
Permitted Phases						
Actuated Green, G (s)	32.1	32.1			14.4	
Effective Green, g (s)	32.1	32.1			14.4	
Actuated g/C Ratio	0.57	0.57			0.25	
Clearance Time (s)	6.0	6.0			4.0	
Vehicle Extension (s)	2.0	2.0			2.0	
Lane Grp Cap (vph)	1005	2010			451	
v/s Ratio Prot	0.02	c0.42			c0.15	
v/s Ratio Perm						
v/c Ratio	0.03	0.75			0.60	
Uniform Delay, d1	5.4	9.1			18.5	
Progression Factor	1.00	1.00			1.00	
Incremental Delay, d2	0.0	1.4			1.4	
Delay (s)	5.4	10.5			19.9	
Level of Service	A	B			B	
Approach Delay (s)		10.4	0.0		19.9	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

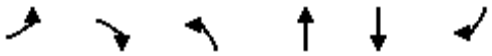
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	810	15	172	0	0	0	0	287	100	145	126	0
Future Volume (vph)	810	15	172	0	0	0	0	287	100	145	126	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0		5.0	5.0	
Lane Util. Factor		1.00						1.00		1.00	1.00	
Frt		0.98						0.97		1.00	1.00	
Flt Protected		0.96						1.00		0.95	1.00	
Satd. Flow (prot)		1748						1798		1770	1863	
Flt Permitted		0.96						1.00		0.18	1.00	
Satd. Flow (perm)		1748						1798		339	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	880	16	187	0	0	0	0	312	109	158	137	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	1076	0	0	0	0	0	409	0	158	137	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		8						6		5	2	
Permitted Phases	8									2		
Actuated Green, G (s)		61.0						17.0		29.0	29.0	
Effective Green, g (s)		61.0						17.0		29.0	29.0	
Actuated g/C Ratio		0.61						0.17		0.29	0.29	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		1066						305		198	540	
v/s Ratio Prot								c0.23		c0.06	0.07	
v/s Ratio Perm		0.62								0.18		
v/c Ratio		1.01						1.34		0.80	0.25	
Uniform Delay, d1		19.5						41.5		29.4	27.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		29.8						173.3		18.5	0.1	
Delay (s)		49.3						214.8		47.9	27.3	
Level of Service		D						F		D	C	
Approach Delay (s)		49.3			0.0			214.8			38.4	
Approach LOS		D			A			F			D	

Intersection Summary			
HCM 2000 Control Delay	86.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

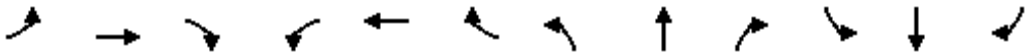
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	128	28	448	1	0
Future Volume (Veh/h)	11	128	28	448	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	20	141	40	487	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1122		
pX, platoon unblocked						
vC, conflicting volume	571	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	571	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	87	98			
cM capacity (veh/h)	470	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	161	527	4
Volume Left	20	40	0
Volume Right	141	0	0
cSH	930	1618	1700
Volume to Capacity	0.17	0.02	0.00
Queue Length 95th (ft)	16	2	0
Control Delay (s)	9.7	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	221	852	6	21	12	0	0	36	21
Future Volume (Veh/h)	0	0	0	221	852	6	21	12	0	0	36	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	248	979	8	44	40	0	0	44	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	987			0			1040	1483	0	1499	1479	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	987			0			1040	1483	0	1499	1479	494
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			85			58	62	100	100	58	94
cM capacity (veh/h)	696			1622			104	105	1084	53	106	521

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	248	653	334	84	76
Volume Left	248	0	0	44	0
Volume Right	0	0	8	0	32
cSH	1622	1700	1700	105	159
Volume to Capacity	0.15	0.38	0.20	0.80	0.48
Queue Length 95th (ft)	13	0	0	112	56
Control Delay (s)	7.6	0.0	0.0	115.2	46.8
Lane LOS	A			F	E
Approach Delay (s)	1.5			115.2	46.8
Approach LOS				F	E

Intersection Summary				
Average Delay	10.8			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Simtraffic Results – Stage 2 + Off-Sitte Improvements

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	55
Average Queue (ft)	37
95th Queue (ft)	54
Link Distance (ft)	291
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: LA 415 & Plantation Ave.

Movement	WB	WB	WB	SB
Directions Served	T	T	R	L
Maximum Queue (ft)	108	28	43	114
Average Queue (ft)	28	3	3	65
95th Queue (ft)	65	14	19	101
Link Distance (ft)	577	577		777
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			420	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: LA 1 & LA 1 Ramp

Movement	NB	NB	SW
Directions Served	T	TR	LR
Maximum Queue (ft)	97	118	139
Average Queue (ft)	50	22	62
95th Queue (ft)	90	62	112
Link Distance (ft)	361	361	1833
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	816
Average Queue (ft)	27
95th Queue (ft)	269
Link Distance (ft)	1187
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20:

Movement	WB	NB	SB
Directions Served	L	LT	TR
Maximum Queue (ft)	138	96	31
Average Queue (ft)	11	21	21
95th Queue (ft)	62	62	45
Link Distance (ft)		180	43
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: US 190

Movement	EB	EB	EB	SB
Directions Served	L	T	T	L
Maximum Queue (ft)	72	246	235	198
Average Queue (ft)	20	106	61	115
95th Queue (ft)	52	180	157	183
Link Distance (ft)		2131	2131	180
Upstream Blk Time (%)				2
Queuing Penalty (veh)				5
Storage Bay Dist (ft)	350			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB	SB
Directions Served	LTR	TR	L	T
Maximum Queue (ft)	116	114	370	73
Average Queue (ft)	45	45	217	32
95th Queue (ft)	84	90	318	70
Link Distance (ft)	1424	1417	612	612
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 5

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	73
Average Queue (ft)	38
95th Queue (ft)	61
Link Distance (ft)	291
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: LA 415 & Plantation Ave.

Movement	WB	WB	WB	SB
Directions Served	T	T	R	L
Maximum Queue (ft)	175	128	110	173
Average Queue (ft)	62	20	44	78
95th Queue (ft)	125	75	87	133
Link Distance (ft)	577	577		777
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			420	
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 17: LA 1 & LA 1 Ramp

Movement	NB	NB	SW
Directions Served	T	TR	LR
Maximum Queue (ft)	211	231	311
Average Queue (ft)	101	75	122
95th Queue (ft)	210	190	236
Link Distance (ft)	361	361	1833
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	974
Average Queue (ft)	58
95th Queue (ft)	421
Link Distance (ft)	1187
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20:

Movement	WB	NB	SB
Directions Served	L	LT	TR
Maximum Queue (ft)	111	55	55
Average Queue (ft)	10	20	31
95th Queue (ft)	48	53	58
Link Distance (ft)		180	43
Upstream Blk Time (%)			3
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: US 190

Movement	EB	EB	EB	SB
Directions Served	L	T	T	L
Maximum Queue (ft)	52	287	299	196
Average Queue (ft)	14	123	71	114
95th Queue (ft)	41	211	184	180
Link Distance (ft)		2131	2131	180
Upstream Blk Time (%)				2
Queuing Penalty (veh)				6
Storage Bay Dist (ft)	350			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 22: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	36
Average Queue (ft)	1
95th Queue (ft)	12
Link Distance (ft)	346
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

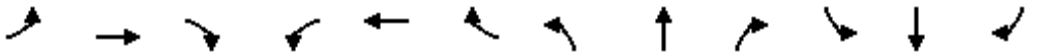
Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB	SB
Directions Served	LTR	TR	L	T
Maximum Queue (ft)	1361	853	180	137
Average Queue (ft)	854	406	87	57
95th Queue (ft)	1252	828	151	116
Link Distance (ft)	1424	1417	612	612
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 6

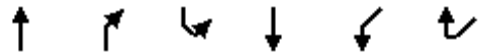
Synchro Results – Stage 2 (30% SBL)+ Off-Site Improvements



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	517	17	0	341	136	0	0	33	140	0	17
Future Volume (vph)	0	517	17	0	341	136	0	0	33	140	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			6.0	6.0			5.0	5.0		5.0
Lane Util. Factor		1.00			0.95	1.00			1.00	1.00		1.00
Frt		0.99			1.00	0.85			0.86	1.00		0.85
Flt Protected		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (prot)		1837			3539	1583			1611	1770		1583
Flt Permitted		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (perm)		1837			3539	1583			1611	1770		1583
Peak-hour factor, PHF	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Adj. Flow (vph)	0	601	68	0	352	160	0	0	54	169	0	23
RTOR Reduction (vph)	0	0	0	0	0	91	0	0	0	0	0	17
Lane Group Flow (vph)	0	669	0	0	352	69	0	0	54	169	0	6
Turn Type		NA			NA	Perm			Perm	D.Pm		Perm
Protected Phases		5 6!			6							
Permitted Phases						6			5 6	5!		5
Actuated Green, G (s)		34.8			15.0	15.0			34.8	8.8		8.8
Effective Green, g (s)		28.8			15.0	15.0			28.8	8.8		8.8
Actuated g/C Ratio		0.83			0.43	0.43			0.83	0.25		0.25
Clearance Time (s)					6.0	6.0				5.0		5.0
Vehicle Extension (s)					2.0	2.0				2.0		2.0
Lane Grp Cap (vph)		1520			1525	682			1333	447		400
v/s Ratio Prot		c0.36			0.10							
v/s Ratio Perm						0.04			0.03	0.10		0.00
v/c Ratio		0.44			0.23	0.10			0.04	0.38		0.01
Uniform Delay, d1		0.8			6.3	5.9			0.5	10.7		9.7
Progression Factor		1.00			1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2		0.1			0.0	0.0			0.0	0.2		0.0
Delay (s)		0.9			6.3	5.9			0.5	10.9		9.8
Level of Service		A			A	A			A	B		A
Approach Delay (s)		0.9			6.2			0.5			10.8	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	34.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

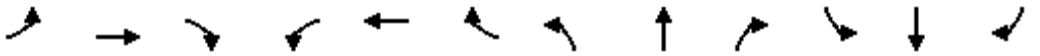


Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	516	317	0	282	244	28
Future Volume (vph)	516	317	0	282	244	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			5.0	5.0	
Lane Util. Factor	0.95			1.00	1.00	
Frt	0.94			1.00	0.98	
Flt Protected	1.00			1.00	0.96	
Satd. Flow (prot)	3316			1863	1755	
Flt Permitted	1.00			1.00	0.96	
Satd. Flow (perm)	3316			1863	1755	
Peak-hour factor, PHF	0.97	0.82	0.92	0.93	0.75	0.61
Adj. Flow (vph)	532	387	0	303	325	46
RTOR Reduction (vph)	95	0	0	0	3	0
Lane Group Flow (vph)	824	0	0	303	368	0
Turn Type	NA			NA	Prot	
Protected Phases	6			5 6!	5!	
Permitted Phases						
Actuated Green, G (s)	22.2			50.1	16.9	
Effective Green, g (s)	22.2			44.1	16.9	
Actuated g/C Ratio	0.44			0.88	0.34	
Clearance Time (s)	6.0				5.0	
Vehicle Extension (s)	2.0				2.0	
Lane Grp Cap (vph)	1469			1639	592	
v/s Ratio Prot	c0.25			0.16	c0.21	
v/s Ratio Perm						
v/c Ratio	0.56			0.18	0.62	
Uniform Delay, d1	10.3			0.4	13.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.3			0.0	1.5	
Delay (s)	10.6			0.4	15.4	
Level of Service	B			A	B	
Approach Delay (s)	10.6			0.4	15.4	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.

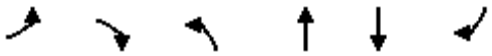
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	2	85	0	0	0	0	64	113	834	220	0
Future Volume (vph)	68	2	85	0	0	0	0	64	113	834	220	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0		5.0	5.0	
Lane Util. Factor		1.00						1.00		1.00	1.00	
Frt		0.93						0.91		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1688						1702		1770	1863	
Flt Permitted		0.98						1.00		0.48	1.00	
Satd. Flow (perm)		1688						1702		896	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	2	92	0	0	0	0	70	123	907	239	0
RTOR Reduction (vph)	0	43	0	0	0	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	125	0	0	0	0	0	142	0	907	239	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		8						6		5	2	
Permitted Phases	8									2		
Actuated Green, G (s)		15.6						31.3		79.4	79.4	
Effective Green, g (s)		15.6						31.3		79.4	79.4	
Actuated g/C Ratio		0.15						0.30		0.76	0.76	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		250						507		1036	1408	
v/s Ratio Prot								0.08		c0.36	0.13	
v/s Ratio Perm		0.07								c0.30		
v/c Ratio		0.50						0.28		0.88	0.17	
Uniform Delay, d1		41.1						28.2		8.2	3.6	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.6						1.4		8.2	0.0	
Delay (s)		41.7						29.6		16.4	3.6	
Level of Service		D						C		B	A	
Approach Delay (s)		41.7			0.0			29.6			13.7	
Approach LOS		D			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

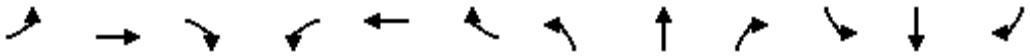
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	132	9	107	1	0
Future Volume (Veh/h)	5	132	9	107	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	9	145	13	116	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1122		
pX, platoon unblocked						
vC, conflicting volume	146	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	87	99			
cM capacity (veh/h)	840	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	154	129	4
Volume Left	9	13	0
Volume Right	145	0	0
cSH	1062	1618	1700
Volume to Capacity	0.15	0.01	0.00
Queue Length 95th (ft)	13	1	0
Control Delay (s)	9.0	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.8	0.0
Approach LOS	A		

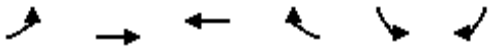
Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	154	407	24	8	22	0	0	9	14
Future Volume (Veh/h)	0	0	0	154	407	24	8	22	0	0	9	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	173	468	32	17	73	0	0	11	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	500			0			606	846	0	866	830	250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			0			606	846	0	866	830	250
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			95	73	100	100	96	97
cM capacity (veh/h)	1060			1622			329	266	1084	179	272	750

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	173	312	188	90	32
Volume Left	173	0	0	17	0
Volume Right	0	0	32	0	21
cSH	1622	1700	1700	276	467
Volume to Capacity	0.11	0.18	0.11	0.33	0.07
Queue Length 95th (ft)	9	0	0	34	5
Control Delay (s)	7.5	0.0	0.0	24.2	13.3
Lane LOS	A			C	B
Approach Delay (s)	1.9			24.2	13.3
Approach LOS				C	B

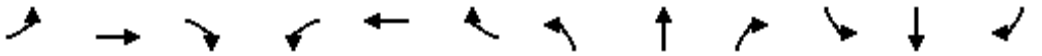
Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	26.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	1122	0	0	163	0
Future Volume (Veh/h)	30	1122	0	0	163	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.68	0.88	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	44	1275	0	0	177	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				726	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				726	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				49	100
cM capacity (veh/h)	1622				350	1084

Direction, Lane #	EB 1	EB 2	EB 3	SB 1
Volume Total	44	638	638	177
Volume Left	44	0	0	177
Volume Right	0	0	0	0
cSH	1622	1700	1700	350
Volume to Capacity	0.03	0.38	0.38	0.51
Queue Length 95th (ft)	2	0	0	68
Control Delay (s)	7.3	0.0	0.0	25.3
Lane LOS	A			D
Approach Delay (s)	0.2			25.3
Approach LOS				D

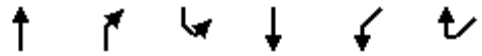
Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	0	249	16	0	1065	485	0	0	48	111	0	31
Future Volume (vph)	0	249	16	0	1065	485	0	0	48	111	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			6.0	6.0			5.0	5.0		5.0
Lane Util. Factor		1.00			0.95	1.00			1.00	1.00		1.00
Frt		0.98			1.00	0.85			0.86	1.00		0.85
Flt Protected		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (prot)		1817			3539	1583			1611	1770		1583
Flt Permitted		1.00			1.00	1.00			1.00	0.95		1.00
Satd. Flow (perm)		1817			3539	1583			1611	1770		1583
Peak-hour factor, PHF	0.38	0.86	0.25	0.70	0.97	0.85	0.58	0.60	0.61	0.83	0.46	0.75
Adj. Flow (vph)	0	290	64	0	1098	571	0	0	79	134	0	41
RTOR Reduction (vph)	0	0	0	0	0	260	0	0	0	0	0	33
Lane Group Flow (vph)	0	354	0	0	1098	311	0	0	79	134	0	8
Turn Type		NA			NA	Perm			Perm	D.Pm		Perm
Protected Phases		5 6!			6							
Permitted Phases						6			5 6	5!		5
Actuated Green, G (s)		43.7			23.8	23.8			43.7	8.9		8.9
Effective Green, g (s)		37.7			23.8	23.8			37.7	8.9		8.9
Actuated g/C Ratio		0.86			0.54	0.54			0.86	0.20		0.20
Clearance Time (s)					6.0	6.0				5.0		5.0
Vehicle Extension (s)					2.0	2.0				2.0		2.0
Lane Grp Cap (vph)		1567			1927	862			1389	360		322
v/s Ratio Prot		0.19			c0.31							
v/s Ratio Perm						0.20			0.05	c0.08		0.01
v/c Ratio		0.23			0.57	0.36			0.06	0.37		0.03
Uniform Delay, d1		0.5			6.6	5.6			0.4	15.0		13.9
Progression Factor		1.00			1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2		0.0			0.2	0.1			0.0	0.2		0.0
Delay (s)		0.5			6.8	5.7			0.4	15.2		13.9
Level of Service		A			A	A			A	B		B
Approach Delay (s)		0.5			6.4			0.4			14.9	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	11.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

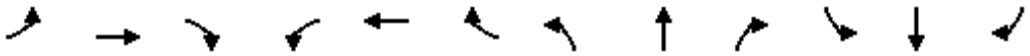


Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	1473	718	0	324	190	83
Future Volume (vph)	1473	718	0	324	190	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			5.0	5.0	
Lane Util. Factor	0.95			1.00	1.00	
Frt	0.95			1.00	0.95	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	3345			1863	1719	
Flt Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	3345			1863	1719	
Peak-hour factor, PHF	0.97	0.82	0.92	0.93	0.75	0.61
Adj. Flow (vph)	1519	876	0	348	253	136
RTOR Reduction (vph)	50	0	0	0	11	0
Lane Group Flow (vph)	2345	0	0	348	378	0
Turn Type	NA			NA	Prot	
Protected Phases	6			5 6!	5!	
Permitted Phases						
Actuated Green, G (s)	122.4			166.8	33.4	
Effective Green, g (s)	122.4			160.8	33.4	
Actuated g/C Ratio	0.73			0.96	0.20	
Clearance Time (s)	6.0				5.0	
Vehicle Extension (s)	2.0				2.0	
Lane Grp Cap (vph)	2454			1795	344	
v/s Ratio Prot	c0.70			0.19	c0.22	
v/s Ratio Perm						
v/c Ratio	0.96			0.19	1.10	
Uniform Delay, d1	19.8			0.1	66.7	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	9.7			0.0	77.6	
Delay (s)	29.5			0.2	144.3	
Level of Service	C			A	F	
Approach Delay (s)	29.5			0.2	144.3	
Approach LOS	C			A	F	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	166.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

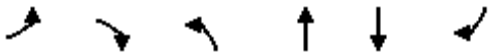
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	810	15	172	0	0	0	0	287	100	145	126	0
Future Volume (vph)	810	15	172	0	0	0	0	287	100	145	126	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0		5.0	5.0	
Lane Util. Factor		1.00						1.00		1.00	1.00	
Frt		0.98						0.97		1.00	1.00	
Flt Protected		0.96						1.00		0.95	1.00	
Satd. Flow (prot)		1748						1798		1770	1863	
Flt Permitted		0.96						1.00		0.20	1.00	
Satd. Flow (perm)		1748						1798		373	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	880	16	187	0	0	0	0	312	109	158	137	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	1075	0	0	0	0	0	407	0	158	137	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		8						6		5	2	
Permitted Phases	8									2		
Actuated Green, G (s)		53.0						15.0		27.0	27.0	
Effective Green, g (s)		53.0						15.0		27.0	27.0	
Actuated g/C Ratio		0.59						0.17		0.30	0.30	
Clearance Time (s)		5.0						5.0		5.0	5.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		1029						299		220	558	
v/s Ratio Prot								c0.23		c0.06	0.07	
v/s Ratio Perm		0.61								0.16		
v/c Ratio		1.04						1.36		0.72	0.25	
Uniform Delay, d1		18.5						37.5		25.8	23.8	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		40.4						182.5		9.0	0.1	
Delay (s)		58.9						220.0		34.7	23.9	
Level of Service		E						F		C	C	
Approach Delay (s)		58.9			0.0			220.0			29.7	
Approach LOS		E			A			F			C	

Intersection Summary			
HCM 2000 Control Delay	91.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

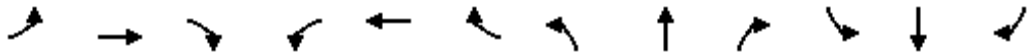
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	128	28	448	1	0
Future Volume (Veh/h)	11	128	28	448	1	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.55	0.91	0.70	0.92	0.25	0.92
Hourly flow rate (vph)	20	141	40	487	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1122		
pX, platoon unblocked						
vC, conflicting volume	571	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	571	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	87	98			
cM capacity (veh/h)	470	1080	1618			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	161	527	4
Volume Left	20	40	0
Volume Right	141	0	0
cSH	930	1618	1700
Volume to Capacity	0.17	0.02	0.00
Queue Length 95th (ft)	16	2	0
Control Delay (s)	9.7	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.8	0.0
Approach LOS	A		

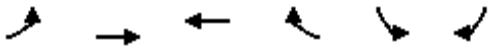
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	148	852	6	21	12	0	0	36	21
Future Volume (Veh/h)	0	0	0	148	852	6	21	12	0	0	36	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.87	0.75	0.48	0.30	0.92	0.92	0.82	0.66
Hourly flow rate (vph)	0	0	0	166	979	8	44	40	0	0	44	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	987			0			876	1319	0	1335	1315	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	987			0			876	1319	0	1335	1315	494
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			73	71	100	100	69	94
cM capacity (veh/h)	696			1622			160	140	1084	81	141	521

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	166	653	334	84	76
Volume Left	166	0	0	44	0
Volume Right	0	0	8	0	32
cSH	1622	1700	1700	150	203
Volume to Capacity	0.10	0.38	0.20	0.56	0.37
Queue Length 95th (ft)	9	0	0	71	41
Control Delay (s)	7.5	0.0	0.0	56.0	32.9
Lane LOS	A			F	D
Approach Delay (s)	1.1			56.0	32.9
Approach LOS				F	D

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	1319	0	0	173	0
Future Volume (Veh/h)	19	1319	0	0	173	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.68	0.88	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	1499	0	0	188	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0				806	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				806	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				40	100
cM capacity (veh/h)	1622				314	1084

Direction, Lane #	EB 1	EB 2	EB 3	SB 1
Volume Total	28	750	750	188
Volume Left	28	0	0	188
Volume Right	0	0	0	0
cSH	1622	1700	1700	314
Volume to Capacity	0.02	0.44	0.44	0.60
Queue Length 95th (ft)	1	0	0	91
Control Delay (s)	7.3	0.0	0.0	32.1
Lane LOS	A			D
Approach Delay (s)	0.1			32.1
Approach LOS				D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

Simtraffic Results – Stage 2 (30% SBL)+ Off-Site Improvements

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	79
Average Queue (ft)	37
95th Queue (ft)	59
Link Distance (ft)	291
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: LA 415 & Plantation Ave.

Movement	WB	WB	WB	SB
Directions Served	T	T	R	L
Maximum Queue (ft)	55	28	24	119
Average Queue (ft)	24	3	3	61
95th Queue (ft)	50	14	16	105
Link Distance (ft)	577	577		777
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			420	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: LA 1 & LA 1 Ramp

Movement	NB	NB	SW
Directions Served	T	TR	LR
Maximum Queue (ft)	104	109	179
Average Queue (ft)	54	34	93
95th Queue (ft)	96	83	163
Link Distance (ft)	361	361	1833
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20:

Movement	WB	NB	SB
Directions Served	L	LT	TR
Maximum Queue (ft)	200	52	53
Average Queue (ft)	30	21	15
95th Queue (ft)	129	46	43
Link Distance (ft)		180	43
Upstream Blk Time (%)			5
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: US 190 EB

Movement	SB
Directions Served	L
Maximum Queue (ft)	198
Average Queue (ft)	120
95th Queue (ft)	201
Link Distance (ft)	180
Upstream Blk Time (%)	16
Queuing Penalty (veh)	26
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB	SB
Directions Served	LTR	TR	L	T
Maximum Queue (ft)	92	93	375	122
Average Queue (ft)	45	46	223	38
95th Queue (ft)	86	85	340	90
Link Distance (ft)	1424	398	612	612
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 26

Intersection: 8: Loop Rd & Plantation Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	55
Average Queue (ft)	35
95th Queue (ft)	51
Link Distance (ft)	291
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: LA 415 & Plantation Ave.

Movement	WB	WB	WB	SB
Directions Served	T	T	R	L
Maximum Queue (ft)	119	87	89	140
Average Queue (ft)	56	16	31	69
95th Queue (ft)	99	53	68	111
Link Distance (ft)	577	577		777
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			420	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: LA 1 & LA 1 Ramp

Movement	NB	NB	SW
Directions Served	T	TR	LR
Maximum Queue (ft)	234	247	767
Average Queue (ft)	99	79	280
95th Queue (ft)	193	184	572
Link Distance (ft)	361	361	1833
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20:

Movement	WB	WB	WB	NB	SB	B66	B4
Directions Served	L	T	TR	LT	TR	T	T
Maximum Queue (ft)	275	760	743	55	110	1016	30
Average Queue (ft)	221	424	352	20	90	440	1
95th Queue (ft)	393	882	828	49	145	968	10
Link Distance (ft)		950	950	180	43	952	528
Upstream Blk Time (%)					81	5	
Queuing Penalty (veh)					0	0	
Storage Bay Dist (ft)	250						
Storage Blk Time (%)	74	0					
Queuing Penalty (veh)	315	0					

Intersection: 21: US 190 EB

Movement	SB
Directions Served	L
Maximum Queue (ft)	201
Average Queue (ft)	179
95th Queue (ft)	230
Link Distance (ft)	180
Upstream Blk Time (%)	73
Queuing Penalty (veh)	135
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: I-10 EB Off-Ramp & LA 415

Movement	EB	NB	SB	SB
Directions Served	LTR	TR	L	T
Maximum Queue (ft)	1471	413	138	178
Average Queue (ft)	924	272	68	67
95th Queue (ft)	1539	458	123	133
Link Distance (ft)	1424	398	612	612
Upstream Blk Time (%)	8	12		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 450

ATTACHMENT E: Off-Site Improvement PowerPoint Presentation

I-10 CMAR Segment 1: Off-Site Improvements

September 03, 2024

Site #1
LA 415 at Plantation Avenue

Crash History (2017-2021)

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Same-Direction	0	1	0	0	0	1
Other	2	0	0	0	0	2
Rear-End	1	0	0	2	0	3
Right-Angle	5	6	7	5	6	29
Right-Turn Opposite-Direction	0	0	0	1	0	1
Sideswipe Same-Direction	0	2	0	1	0	3
Single Vehicle	1	0	1	4	0	6
Total	9	9	8	13	6	45

- Installing a traffic signal at this location could potentially reduce up to 23 percent of all injury crashes (CMF ID #319) and up to 67 percent of all injury angle crashes (CMF ID #320).

Signal Warrant Analysis

As Per EDSM VI-1-1-2, Warrant 1A 100% and Warrant 7 should satisfy for installation of signal.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

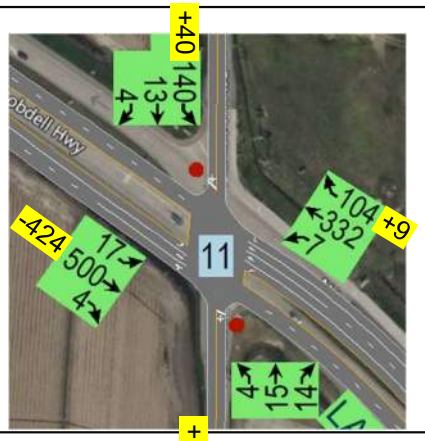
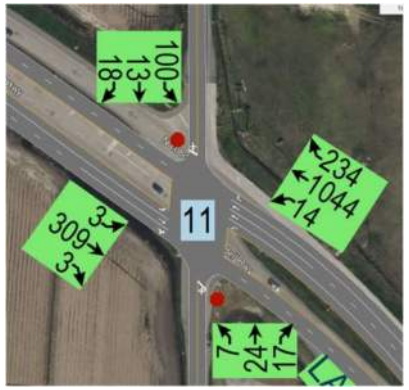
HCS™ Signal Warrants Version 7.8.5
LA 415 @ Plantation Ave Warrants - Raw.xsw
Generated: 6/24/2024 4:56:06 PM

Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS™ Signal Warrants Version 7.8.5
LA 415 @ Plantation Ave Warrants - Stage 2.xsw
Generated: 6/24/2024 4:57:43 PM

Capacity Analysis – Peak Hour Volumes

	Existing Volumes	Stage 2 Volumes
AM Peak Hour		
PM Peak Hour		

Capacity Analysis – Synchro Results

Scenario	Total Intersection Delay (sec / veh)	V / C	95th Percentile Queue (ft) (From SimTraffic)			
			EB	WB	NB	SB
Existing Conditions	29.4 / 54.5	0.52 / 0.74	- / -	- / -	63 / 119	471 / 1072
Stage 2 Conditions	20.4 / 59.7	0.47 / 0.79	- / -	- / -	53 / 377	206 / 1108
Stage 2 Conditions + Proposed Improvements	4.1 / 6	0.53 / 0.5	- / -	65 / 125	- / -	101 / 133

XX / XX = AM Peak Hour / PM Peak Hour
V / C = volume to capacity ratio
95th Percentile queues were obtained from SimTraffic

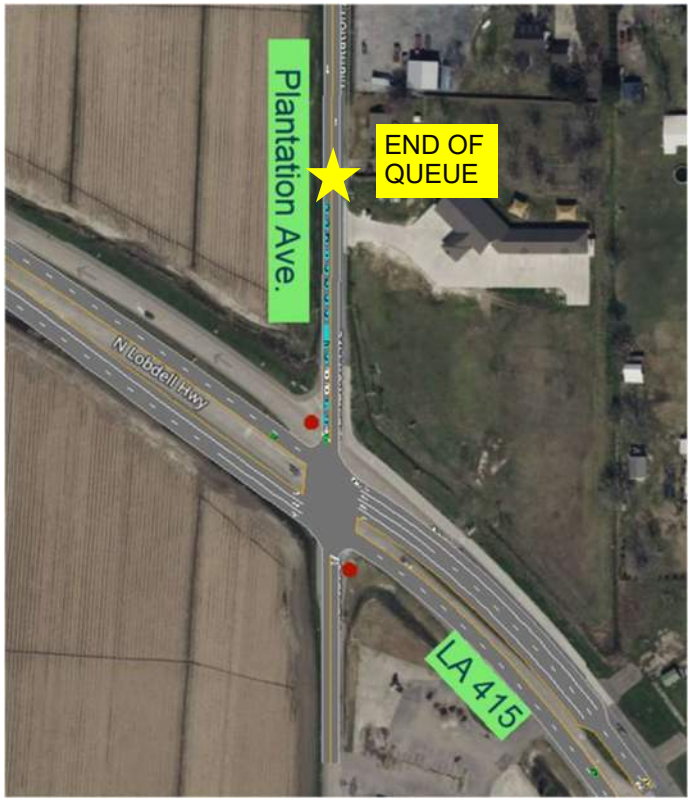
SimTraffic Queues - Existing Conditions

AM Peak Hour

PM Peak Hour

SimTraffic Queues - Stage 2 Conditions

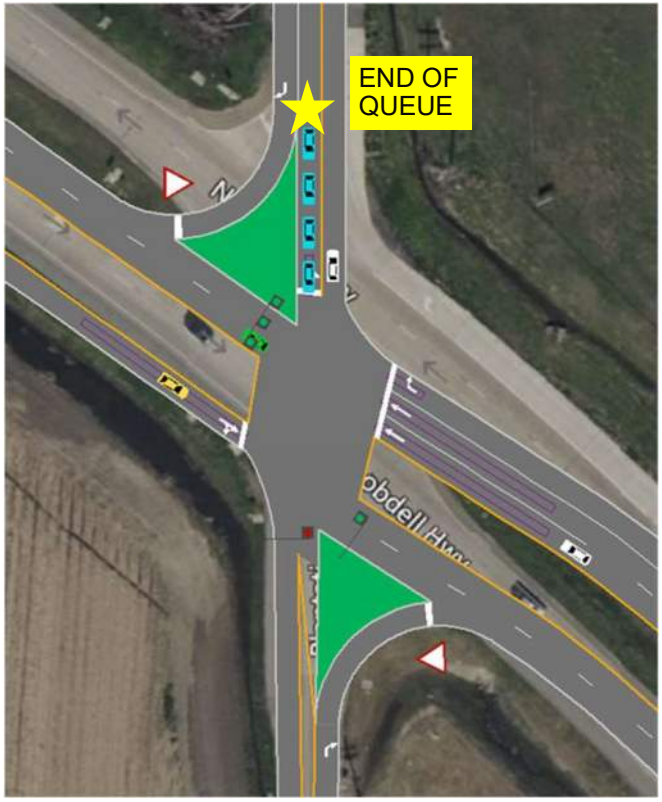
AM Peak Hour



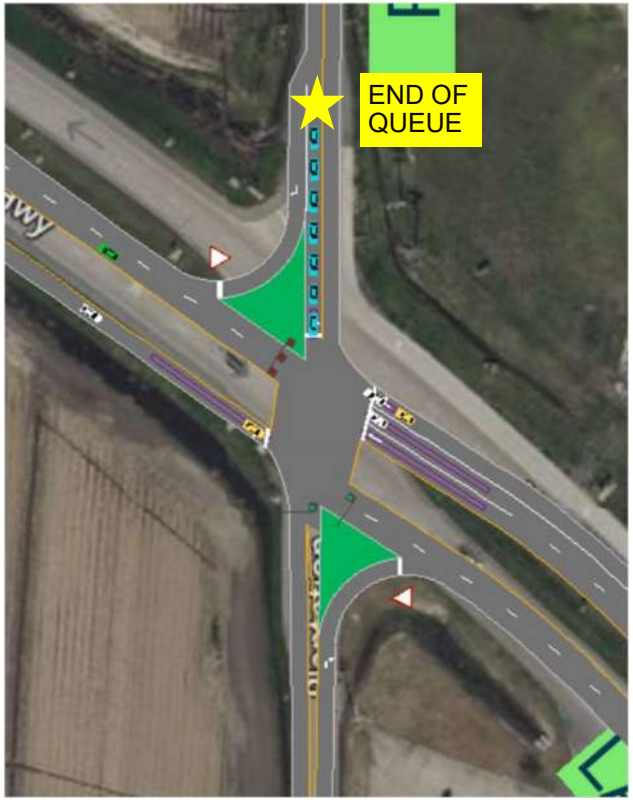
PM Peak Hour

SimTraffic Queues - Stage 2 Conditions + Proposed Improvements

AM Peak Hour



PM Peak Hour



Site #2
LA 415 at I-10 EB

Crash History (2017-2021)

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Opposite-Direction	2	4	2	0	3	**11**
Other	1	1	0	0	0	**2**
Rear-End	2	5	5	4	6	**22**
Right-Angle	2	2	0	2	2	**8**
Sideswipe Same-Direction	1	1	0	0	0	**2**
Single Vehicle	1	0	0	0	0	**1**
Total	**9**	**13**	**7**	**6**	**11**	**46**

- Installing a traffic signal at this location could potentially reduce up to 23 percent of all injury crashes (CMF ID #319) and up to 67 percent of all injury angle crashes (CMF ID #320).

Signal Warrant Analysis

As Per EDSM VI-1-1-2, Warrant 1A 100% and Warrant 7 should satisfy for installation of signal.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS™ Signal Warrants Version 7.8.5
LA 415 @ I-10 EB Ramps Warrants - Raw.xsw
Generated: 6/24/2024 5:01:03 PM

Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS™ Signal Warrants Version 7.8.5
LA 415 @ I-10 EB Ramps Warrants - Stage 2.xsw
Generated: 6/24/2024 5:02:02 PM

Capacity Analysis – Peak Hour Volumes

	Existing Volumes	Stage 2 Volumes
AM Peak Hour		
PM Peak Hour		

Capacity Analysis – Synchro Results

Scenario	Total Intersection Delay (sec / veh)	V / C	95th Percentile Queue (ft) (From SimTraffic)			
			EB	WB	NB	SB
Existing Conditions	NA / NA	NA / NA	1687 / 174	- / -	526 / 220	- / -
Stage 2 Conditions	NA / NA	NA / NA	186 / 1629	- / -	89 / 174	- / -
Stage 2 Conditions + Proposed Improvements	18.9 / 86.2	0.85 / 1.06	84 / 1252	- / -	90 / 828	318 / 151

XX / XX = AM Peak Hour / PM Peak Hour
V / C = volume to capacity ratio
95th Percentile queues were obtained from SimTraffic
NA - In synchro, intersection sign configuration is not allowed in HCM analysis.

SimTraffic Queues - Existing Conditions

AM Peak Hour

PM Peak Hour

SimTraffic Queues - Stage 2 Conditions

AM Peak Hour

PM Peak Hour

SimTraffic Queues - Stage 2 Conditions + Proposed Improvements

AM Peak Hour

PM Peak Hour

Site #3
US 190 at Service Road

Crash History (2017-2021)

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Opposite-Direction	1	0	0	0	0	**1**
Left-Turn Same-Direction	0	0	1	0	1	**2**
Other	0	0	0	0	1	**1**
Rear-End	1	2	1	0	0	**4**
Right-Angle	0	0	1	0	0	**1**
Sideswipe Opposite-Direction	0	0	0	0	2	**2**
Sideswipe Same-Direction	1	1	2	0	1	**5**
Single Vehicle	2	0	0	0	0	**2**
Total	**5**	**3**	**5**	**0**	**5**	**18**

- Installing a traffic signal at this location could potentially reduce up to 14 percent of all injury crashes (CMF ID #316) and up to 34 percent of all injury angle crashes (CMF ID #317).

Signal Warrant Analysis

As Per EDSM VI-1-1-2, Warrant 1A 100% and Warrant 7 should satisfy for installation of signal.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS™ Signal Warrants Version 7.8.5
US 190 @ W Service Rd Warrants - Raw.xsw
Generated: 6/24/2024 5:02:57 PM

Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS™ Signal Warrants Version 7.8.5
US 190 @ W Service Rd Warrants - Stage 2.xsw
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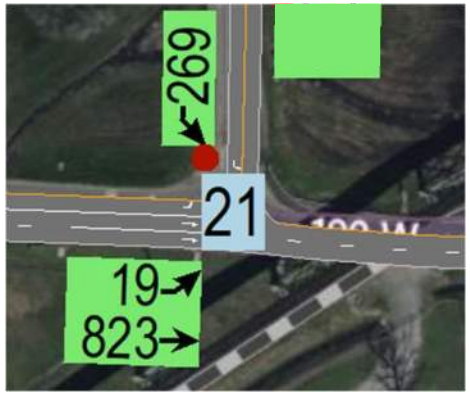
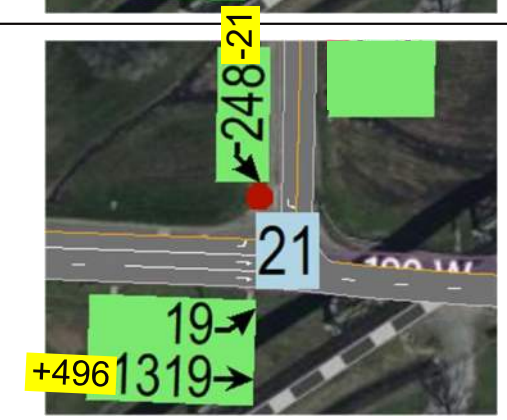
Capacity Analysis – Peak Hour Volumes

	Existing Volumes	Stage 2 Volumes
AM Peak Hour		
PM Peak Hour		

Capacity Analysis – Synchro Results

Scenario	Total Intersection Delay (sec / veh)	V / C	95th Percentile Queue (ft) (From SimTraffic)			
			EB	WB	NB	SB
Existing Conditions	17.9 / 23.9	0.47 / 0.61	- / -	- / -	- / -	153/ 252
Stage 2 Conditions	38 / 58.4	0.72 / 0.86	- / -	- / -	- / -	1466 / 3227
Stage 2 Conditions + Proposed Improvements	10.1 / 11.8	0.64 / 0.7	180 / 211	- / -	- / -	245 / 228

XX / XX = AM Peak Hour / PM Peak Hour
V / C = volume to capacity ratio
95th Percentile queues were obtained from SimTraffic

Site #4
US 190 at Service Road

Crash History (2017-2021)

Collision Manner	2017	2018	2019	2020	2021	Total
Left-Turn Angle	0	0	1	0	1	2
Left-Turn Opposite-Direction	1	0	0	0	0	1
Left-Turn Same-Direction	0	0	1	0	0	1
Other	0	1	0	0	0	1
Rear-End	2	0	1	3	1	7
Right-Angle	1	3	2	0	4	10
Sideswipe Same-Direction	0	0	0	0	1	1
Total	4	4	5	3	7	23

- Installing a traffic signal at this location could potentially reduce up to 14 percent of all injury crashes (CMF ID #316) and up to 34 percent of all injury angle crashes (CMF ID #317).

Signal Warrant Analysis

As Per EDSM VI-1-1-2, Warrant 1A 100% and Warrant 7 should satisfy for installation of signal.

Existing Year (2024) Traffic Counts

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

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LA 1 @ US 190 Ramps Warrants - Raw.xsw
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Existing Year (2024) Traffic Counts + Re-routed Volumes for Stage 2

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
56% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 56% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS™ Signal Warrants Version 7.8.5
LA 1 @ US 190 Ramps Warrants - Stage 2.xsw
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Capacity Analysis – Peak Hour Volumes

	Existing Volumes	Stage 2 Volumes
AM Peak Hour		
PM Peak Hour		

Capacity Analysis – Synchro Results

Scenario	Total Intersection Delay (sec / veh)	V / C	95th Percentile Queue (ft) (From SimTraffic)			
			EB	WB	NB	SB
Existing Conditions	16.5 / 252.3	0.41 / 1.4	- / -	105 / 2273	- / -	- / -
Stage 2 Conditions	26.4 / 712.8	0.63 / 2.4	- / -	210 / 2308	- / -	- / -
Stage 2 Conditions + Proposed Improvements	8.1 / 27.4	0.54 / 0.93	- / -	112 / 236	90 / 210	- / -

XX / XX = AM Peak Hour / PM Peak Hour
V / C = volume to capacity ratio
95th Percentile queues were obtained from SimTraffic

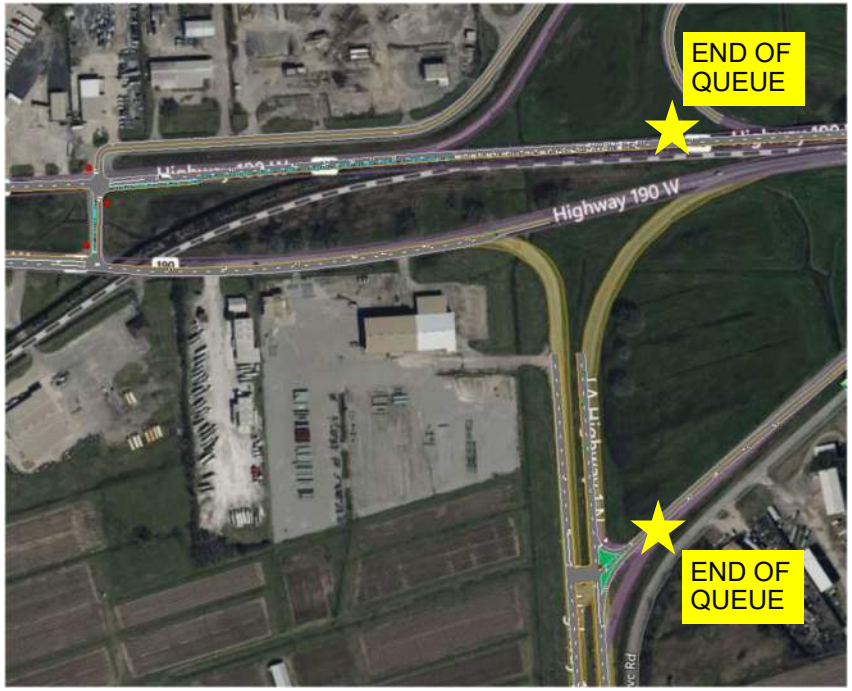
SimTraffic Queues - Existing Conditions

AM Peak Hour

PM Peak Hour

SimTraffic Queues - Stage 2 Conditions

AM Peak Hour

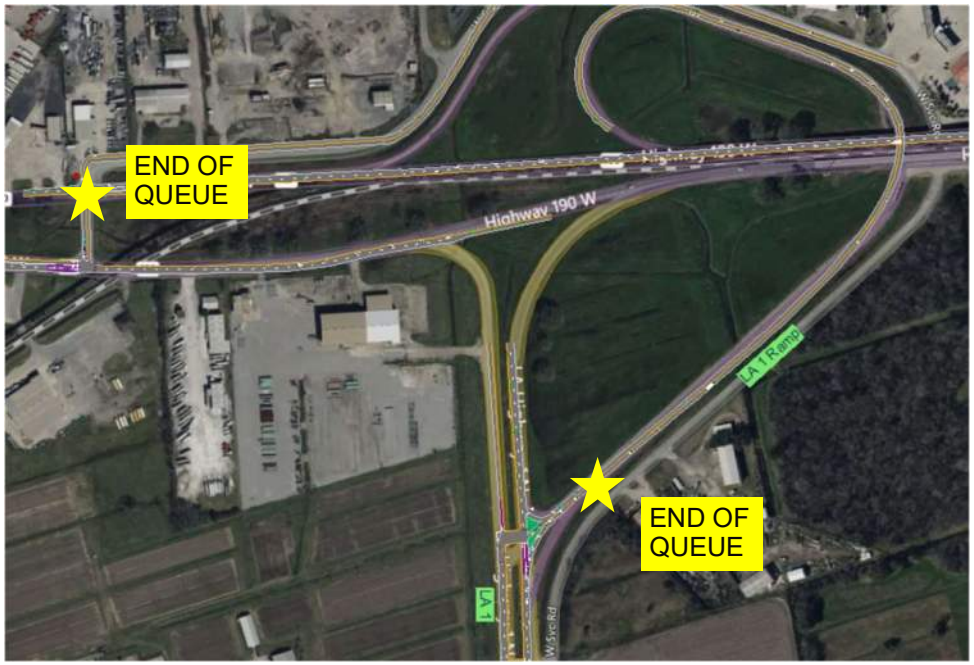


PM Peak Hour

SimTraffic Queues - Stage 2 Conditions + Proposed Improvements

AM Peak Hour

PM Peak Hour



30% (SBL) Reduced Volumes @ US 190 EB and LA Service Rd

AM Peak Hour

PM Peak Hour

30% (SBL) Reduced Volumes @ US 190 EB and LA Service Rd – SimTraffic Queues

AM Peak Hour

Scenario	SBL 95th Percentile Queue (Ft)
Without 30% Reduction	1466
With 30% Reduction	330

PM Peak Hour

Scenario	SBL 95th Percentile Queue (Ft)
Without 30% Reduction	3227
With 30% Reduction	1112