



Final Traffic Impact Study for the Ghilotti Construction Yard



Prepared for the County of Sonoma

Submitted by
W-Trans

March 7, 2018



**TRAFFIC ENGINEERING
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Executive Summary

The proposed project would update the Ghilotti Construction Use Permit to reflect existing non-compliant uses. It is understood the property is zoned M3 (Limited Rural Industrial), and is currently being used to temporarily store contractor's equipment, stockpile rock rip-rap material, and process broken asphalt and concrete for recycling and reuse. The project is expected to generate a maximum of 50 new truck trips per day including a maximum of 30 trips during either the a.m. or p.m. peak hour.

The study area includes the intersections of Todd Road with Standish Avenue-Ghilotti Avenue, Moorland Avenue, US 101 North and South ramps, and Santa Rosa Avenue. Analysis indicates that the study intersections are operating acceptably under Existing Conditions except for Todd Road/Standish Avenue-Ghilotti Avenue, which operates unacceptably at LOS E during the p.m. peak hour. Existing p.m. peak hour volumes meet warrants for a traffic signal.

Upon the addition of project-generated traffic to Existing volumes, the study intersections are expected to continue operating acceptably during the a.m. peak hour, but Todd Road/Standish Avenue-Ghilotti Avenue is expected to deteriorate to LOS F during the p.m. peak hour with an increase in average delay that exceeds the five seconds allowed under County Standards.

Under Baseline Conditions, all study intersections would operate acceptably with or without project-related trips except for Todd Road/Standish Avenue-Ghilotti Avenue, which would be expected to deteriorate to LOS F with an increase in delay that exceeds five seconds upon the addition of project-related traffic. Under the anticipated Future volumes, the intersections of Todd Road with the US 101 North and South ramps and Todd Road/Moorland Avenue are expected to continue operating acceptably overall during both peak hours; Todd Road/Standish Avenue-Ghilotti Avenue and Todd Road/Santa Rosa Avenue are expected to operate unacceptably at LOS F during both peak hours. The intersections would continue operating at the same levels of service with the addition of project-related traffic. Although Todd Road/Santa Rosa Avenue is projected to deteriorate to LOS F, the project would add less than five seconds of delay so the impact would be considered less-than-significant per County standards.

Upon installation of a traffic signal and southbound left-turn lane at Todd Road/Standish Avenue-Ghilotti Avenue, the intersection would operate acceptably during both peak hours and for all evaluated scenarios; the project applicant should pay a proportional share fee of 11.1 percent toward these improvements.

The project would not cause any queues to exceed available storage that would not be expected to do so otherwise.

Pedestrian and transit facilities are adequate to serve the project site given the site location and anticipated demand and bicycle facilities would be adequate upon completion of the planned Class II bike lanes on Todd Road. Because the project site shares frontage with Todd Road, the applicant should make an in-lieu payment toward the cost of the future striping project, as opposed to striping an isolated short bike lane segment at this time.

Sight distances along Todd Road at Ghilotti Avenue are adequate for the measured approach speeds and the posted speed limit; however the bushes/trees along the roadway frontage west of Ghilotti Avenue should be trimmed regularly to maintain adequate sight lines.

Introduction

This report presents an analysis of the potential traffic impacts that would be associated with development of a construction yard at 304 Todd Road in the County of Sonoma. The traffic study was completed in accordance with the criteria established by the County of Sonoma, and is consistent with standard traffic engineering techniques. The scope of work and methodology reflect direction obtained from County staff.

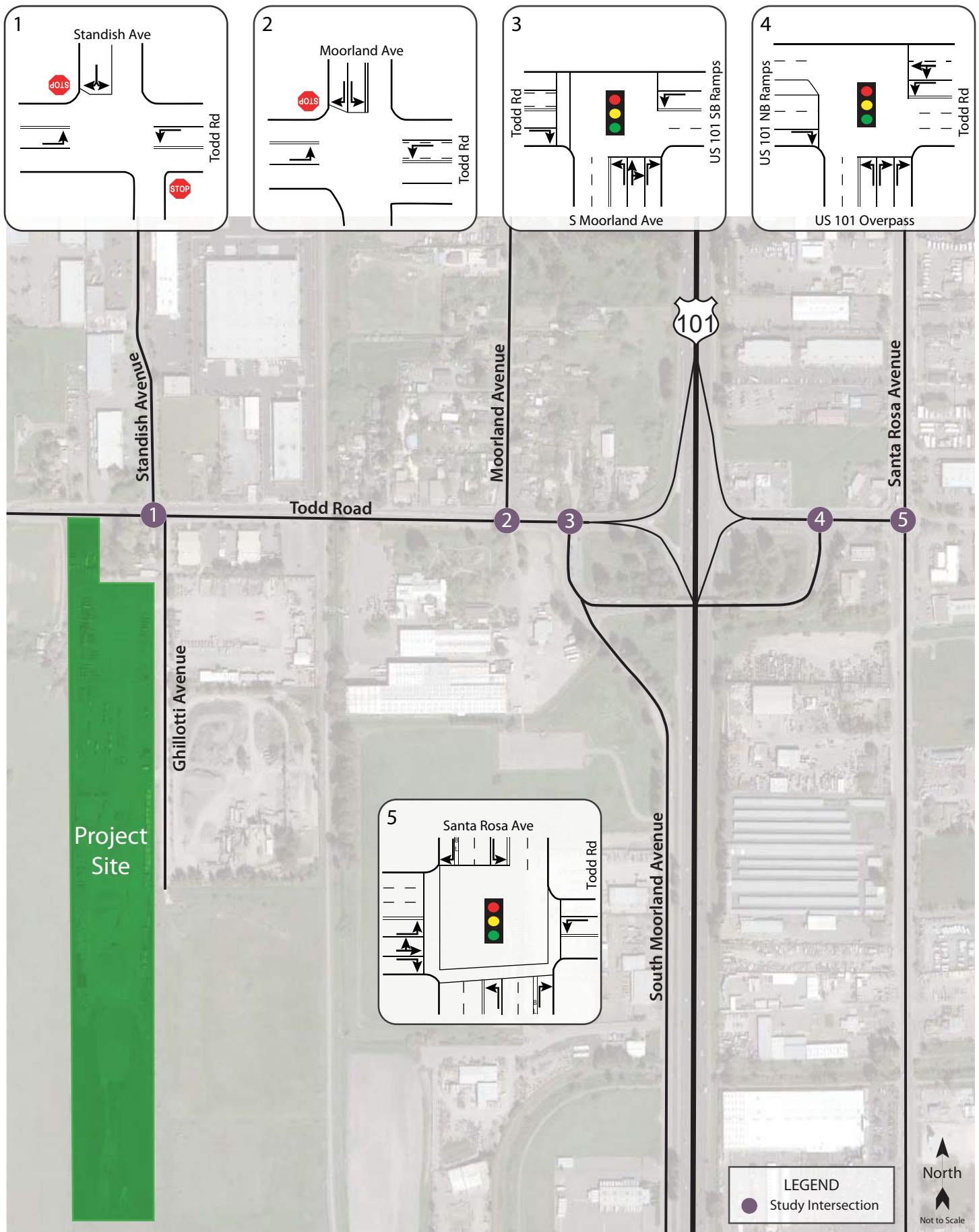
Prelude

The purpose of a traffic impact study is to provide County staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to a level of insignificance as defined by the County's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The proposed project is a modification of the Ghilotti Construction Use Permit to reflect existing non-compliant uses pursuant to the Notice of Violation received from the County dated August 9, 2011. The property is zoned M3 (Limited Rural Industrial), and is currently being used to temporarily store contractor's equipment, stockpile rock rip-rap material, and process broken asphalt and concrete for recycling and reuse. The requested permit would bring the most recent previous use into compliance.

The project site is located at 304 Todd Road in the County of Sonoma, as shown in Figure 1.



Transportation Setting

Operational Analysis

Study Area and Periods

The study area selected with input from County staff consists of the section of Todd Road fronting the project and the project access point as well as the following intersections.

1. Todd Road/Standish Avenue-Ghilotti Avenue
2. Todd Road/Moorland Avenue
3. Todd Road/US 101 South Ramps
4. Todd Road/US 101 North Ramps
5. Todd Road/Santa Rosa Avenue

Operating conditions during the weekday a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute. At the study intersections, the a.m. peak hour generally occurred between 7:30 and 8:30 a.m. and the p.m. peak hour occurred between 4:15 and 5:15 p.m.

Study Intersections

Todd Road/Standish Avenue-Ghilotti Avenue is an unsignalized four-way intersection stop-controlled on the Standish Avenue and Ghilotti Avenue approaches, which are offset by approximately 40 feet. Left-turn lanes are present on the eastbound and westbound Todd Road approaches.

Todd Road/Moorland Avenue is an unsignalized tee intersection, stop-controlled on the southbound Moorland Avenue approach. There is a left-turn lane provided on the eastbound approach and a two-way left-turn lane on the westbound approach between Moorland Avenue and South Moorland Avenue. Additionally, there is a private driveway that intersects Todd Road from the south.

Todd Road/US 101 South Ramps is a signalized tee intersection with left-turn pockets and protected left-turn phasing on the northbound and westbound approaches. A marked crosswalk is present on the west leg.

Todd Road/US 101 North Ramps is a signalized tee intersection with left-turn pockets and protected left-turn phasing on the northbound and westbound approaches. Additionally, a left-turn lane on the eastbound approach provides access to the service station located northwest of the intersection.

Todd Road/Santa Rosa Avenue is a signalized intersection with left-turn pockets provided on all four approaches and protected left-turn phasing on the northbound and southbound approaches; the eastbound and westbound approaches have split phasing. The northbound, southbound, and eastbound approaches have dedicated right-turn lanes, and marked crosswalks are provided on the south, east, and west legs.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Study Roadway

Todd Road in the project vicinity is a two-lane county road running east-west; it is discontinuous at US 101, and east of Santa Rosa Avenue the roadway is known as East Todd Road. Within the project vicinity, the street ranges from 20 feet wide to 68 feet wide depending on the presence of turn lanes, width of the travel lanes, and width of the shoulders. Adjacent to the project site the posted speed limit is 35 miles per hour (mph). Vehicles are the primary mode of travel in the surrounding network as there are no bicycle lanes present and pedestrian facilities are limited.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is January 1, 2012 through December 31, 2016.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2013 Collision Data on California State Highways*, California Department of Transportation (Caltrans). The signalized intersections have collision rates comparable to statewide averages indicating that the intersections are operating as expected with regards to safety, though it is noted that Todd Road/Santa Rosa Avenue had a collision rate slightly higher than the statewide average and both of the unsignalized intersections have collision rates higher than the statewide averages which warranted further analysis.

Table 1 – Collision Rates at the Study Intersections

| Study Intersection | Number of Collisions (2012-2016) | Calculated Collision Rate (c/mve) | Statewide Average Collision Rate (c/mve) |
|--------------------------------------|----------------------------------|-----------------------------------|--|
| 1. Todd Rd/Standish Ave-Ghilotti Ave | 10 | 0.46 | 0.26 |
| 2. Todd Rd/Moorland Ave | 17 | 0.64 | 0.14 |
| 2. Todd Rd/US 101 South Ramps | 12 | 0.37 | 0.43 |
| 2. Todd Rd/US 101 North Ramps | 8 | 0.25 | 0.27 |
| 3. Todd Rd/Santa Rosa Ave | 27 | 0.49 | 0.43 |

Note: c/mve = collisions per million vehicles entering; **Bold** = above-average collision rate

Further review of the individual collisions that occurred at Todd Road/Standish Avenue-Ghilotti Avenue revealed that of the ten total collisions, seven were either a broadside or sideswipe. Similarly, over half of the collisions at Todd Road/Moorland Avenue were either a broadside or sideswipe. Signalization of the intersections could help to reduce the frequency of these types of collisions. The collision rate at Santa Rosa Avenue/Todd Road is higher than the statewide average largely due to the proximity of the gas stations on the northwest and southwest corners. Both of the gas stations have driveways within 90 feet of the intersection that create additional conflict zones. Consolidation of the driveways or restricting access to right-in right-out movements only could help to reduce the incidence of collisions. The collision rate calculations for the study intersections are provided in Appendix A.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. As might be expected given the rural location of the project site, a connected pedestrian network is lacking.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2012, classifies bikeways into three categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.

Although there are no existing bicycle facilities in the project area, there are plans to construct Class II bike lanes on Todd Road between Llano Road and Santa Rosa Avenue and on Standish Avenue. Additionally, the Sonoma Marin Area Rail Transit (SMART) Pathway is located approximately 600 feet east of the project site and would provide access to a Class I regional trail. Table 2 summarizes the planned bicycle facilities in the project vicinity, as contained in the *2010 Santa Rosa Bicycle and Pedestrian Master Plan*, and the existing and planned alternative modes in the project vicinity are shown in Figure 2

Table 2 – Planned Bicycle Facilities

| Facility | Class | Length (miles) | Begin Point | End Point |
|---------------|-------|----------------|-------------|----------------|
| SMART Pathway | I | Regional | | |
| Standish Ave | II | 0.5 | Todd Rd | W Robles Ave |
| Todd Rd | II | 2.8 | Llano Rd | Santa Rosa Ave |

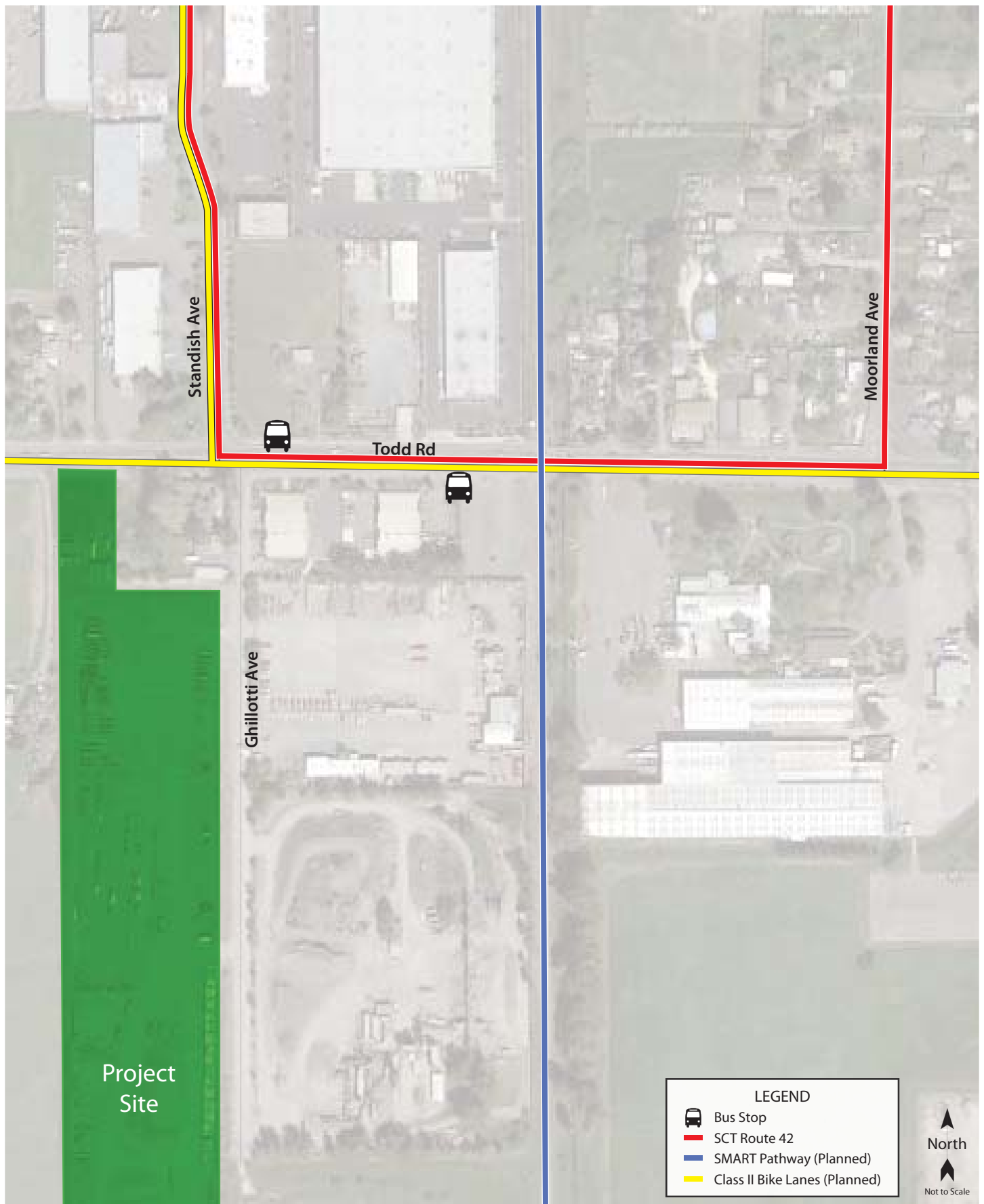
Source: *2010 Santa Rosa Bicycle and Pedestrian Master Plan*

Transit Facilities

Sonoma County Transit (SCT) provides fixed route bus service in Sonoma County. SCT Route 42 serves the bus stops on Todd Road adjacent to the project site and provides weekday commute service between the industrial area in which the project is located and the Santa Rosa Transit Mall.

Two bicycles can be carried on most SCT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on SCT buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Volunteer Wheels, the ADA paratransit operator for Sonoma County Transit, is designed to serve the needs of individuals with disabilities within the incorporated areas of Sonoma County, the Greater Santa Rosa Area, and between the County's nine incorporated cities.



Traffic Impact Study for the Ghillotti Construction Yard
Figure 2– Alternative Modes

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersections of Todd Road with Standish Avenue-Ghilotti Avenue and Moorland Avenue, which have side-street stop controls, were analyzed using the “Two-Way Stop-Controlled” intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections that are controlled by a traffic signal, or may be in the future, were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. Delays were calculated using signal timing provided by County and Caltrans staff, though for the Future conditions scenarios delays were calculated using optimized signal timing.

The Vistro software was used to analyze the intersections of Todd Road with Standish Avenue-Ghilotti Avenue and Moorland Avenue. The signalized intersections included in the study area were analyzed using microsimulation and the SimTraffic software to account for the proximity of the intersections. The average delays for ten microsimulation runs were calculated to determine the resulting Levels of Service for each scenario.

The ranges of delay associated with the various levels of service are indicated in Table 3.

Table 3 – Intersection Level of Service Criteria

| LOS | Two-Way Stop-Controlled | Signalized |
|------------|---|---|
| A | Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street. | Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all. |
| B | Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street. | Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop. |
| C | Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street. | Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping. |
| D | Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street. | Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop. |
| E | Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street. | Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive. |
| F | Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues. | Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection. |

Reference: *Highway Capacity Manual*, Transportation Research Board, 2000

Traffic Operation Standards

Based on the most recent criteria published by the County of Sonoma, the project would have a significant traffic impact if it results in any of the following conditions.

1. **On-site roads and frontage improvements** – Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or driveway design, or potentially result in safety hazards, as determined by the County in consultation with a registered traffic engineer.
2. **Parking** – Proposed on-site parking supply would not be adequate to accommodate parking demand.
3. **Emergency Access** – The project site would have inadequate emergency access.
4. **Alternative Transportation** – The project provides inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project creates potential conflicts with adopted policies, plans, or programs supporting alternative transportation.
5. **Road Hazards** – Hazards are increased due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment, heavy pedestrian or truck traffic).
6. **Vehicle Queues** – The addition of project traffic causes the 95th percentile queue length to exceed roadway turn lane storage capacity.
7. **Signal Warrants** – The addition of the project's vehicle or pedestrian traffic causes an intersection to meet or exceed Caltrans signal warrant criteria.

8. **Turn Lanes** – The addition of project traffic causes an intersection to meet or exceed criteria for provision of a right or left turn lane on an intersection approach.
9. **Sight Lines** – The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate sight lines based upon Caltrans criteria for state highway intersections and County criteria for County roadway intersections.
10. **Intersections** – The County Level of Service standard for intersections is Level of Service D. The project would have a significant traffic impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate below the standard (LOS E or F).

If the intersection currently operates or is projected to operate below the County standard (at LOS E or F), the project's impact is significant and cumulatively considerable if it causes the delay for any critical movement to increase by five seconds or more. The delay will be determined by comparing intersection operation with and without the project's traffic for both the existing near-term and projected future conditions. These criteria apply to all controlled or uncontrolled intersections with projected traffic volumes over 30 vehicles per hour per approach or per exclusive left turn movement.
11. **Roadway Operation** – The Level of Service Standard for County roadway operations is to maintain a Level of Service C per Policy CT-3.1.

Caltrans

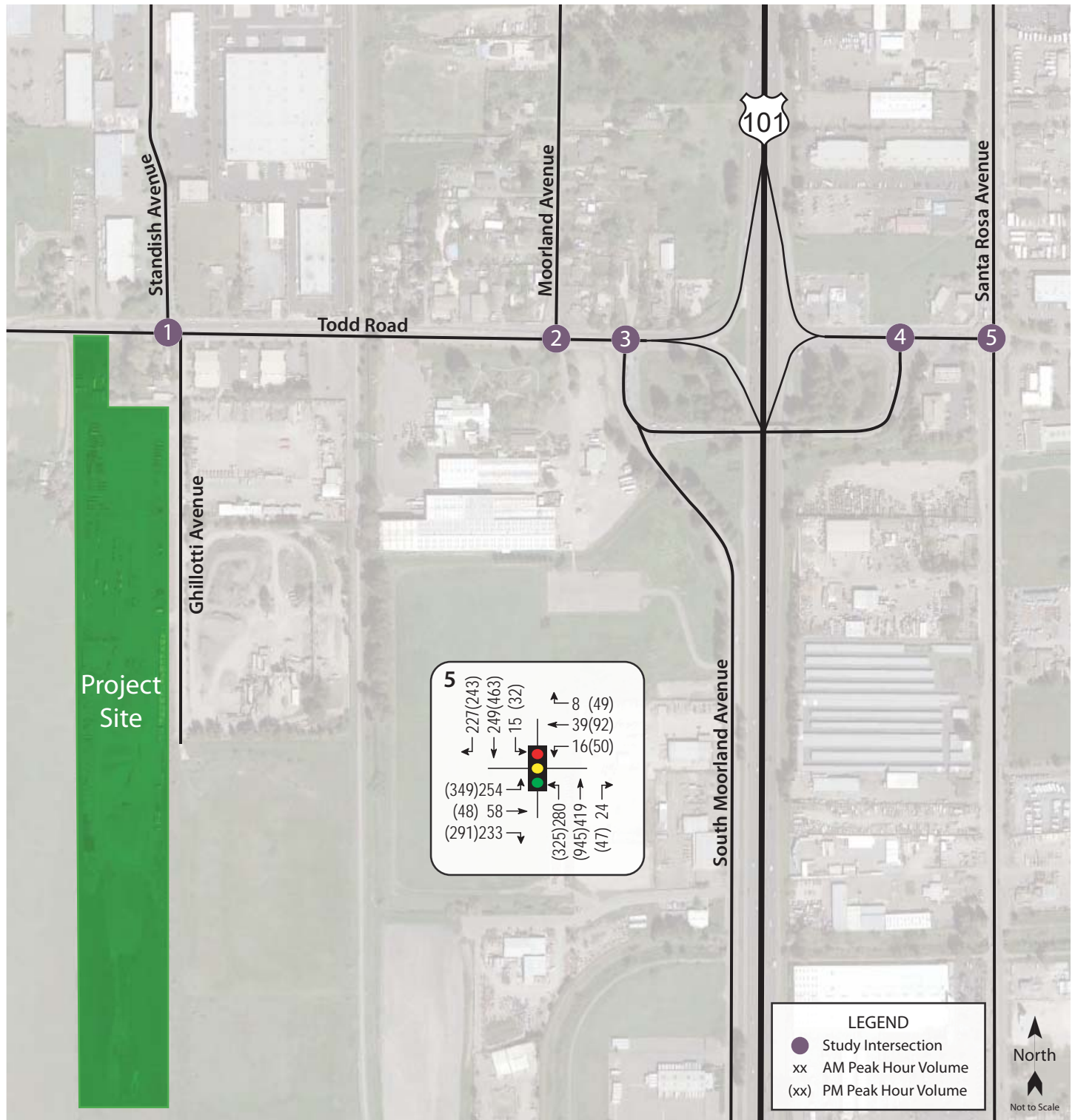
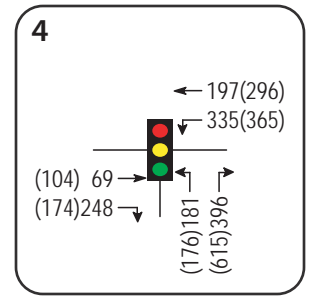
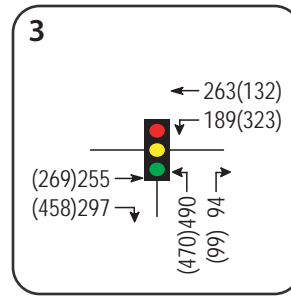
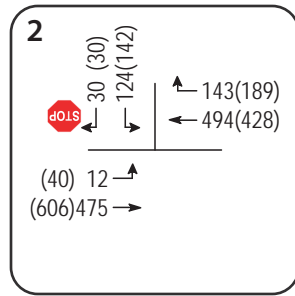
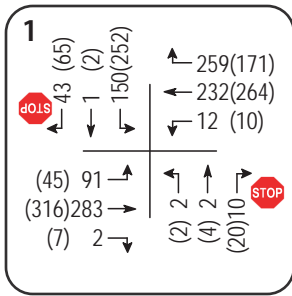
In the *Guide for the Preparation of Traffic Impact Studies*, Caltrans indicates that they endeavor to maintain operation at the transition from LOS C to LOS D. The Caltrans criteria was applied to the intersections of Todd Road with the US 101 North and South ramps.

Existing Conditions

Standard traffic engineering practice for conducting traffic studies includes the assessment of existing conditions and the evaluation of conditions that would be associated with the operation or occupation of a proposed project. For the purposes of analyzing traffic impacts associated with updating a Use Permit to reflect existing activity, traffic anticipated to be generated by the proposed uses were deducted from the volumes collected in October 2016 and May 2017 to document "Existing Conditions," or those without the construction yard.

Under Existing Conditions the study intersections operate acceptably at LOS B or better overall during the a.m. peak hour; however, Todd Road/Standish Avenue-Ghilotti Avenue operates unacceptably at LOS E overall during the p.m. peak hour and the southbound Standish Avenue approach operates at LOS F during both peaks. It is noted the southbound approach at Todd Road/Moorland Avenue operates at LOS E and F during the morning and evening peak hours, respectively; however, the intersection operates at LOS A overall during both peak hours.

The Existing traffic volumes are shown in Figure 3. A summary of the intersection level of service calculations is contained in Table 4, and copies of the Level of Service calculations for all evaluated scenarios for the unsignalized intersections are provided in Appendix B; Level of Service calculations for the signalized intersections are provided in Appendix C. It should be noted that because microsimulation was used to evaluate the signalized intersections the calculated delay can vary between runs, and while results were reported based on the average of ten runs in an attempt to converge on a single value, it is important to view the results with an understanding that there is a certain amount of fluctuation involved.



Traffic Impact Study for the Ghilotti Construction Yard
Figure 3 – Existing Traffic Volumes

Table 4 – Existing Peak Hour Intersection Levels of Service

| Study Intersection Approach | AM Peak | | PM Peak | |
|--|-------------|----------|-------------|----------|
| | Delay | LOS | Delay | LOS |
| 1. Todd Rd/Standish Ave-Ghilotti Ave | 10.3 | B | 38.4 | E |
| <i>Northbound (Ghilotti Ave) Approach</i> | <i>13.6</i> | <i>B</i> | <i>12.7</i> | <i>B</i> |
| <i>Southbound (Standish Ave) Approach</i> | <i>52.1</i> | <i>F</i> | ** | F |
| Install signal and restripe to add SB left-turn lane | 16.9 | B | 18.2 | B |
| 2. Todd Rd/Moorland Ave | 5.4 | A | 9.6 | A |
| <i>Southbound (Moorland Ave) Approach</i> | <i>44.3</i> | <i>E</i> | <i>78.2</i> | <i>F</i> |
| 3. Todd Rd/US 101 South Ramps | 17.8 | B | 22.7 | C |
| 4. Todd Rd/US 101 North Ramps | 7.4 | A | 6.3 | A |
| 5. Todd Rd/Santa Rosa Ave | 10.9 | B | 18.6 | B |

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

Due to high delay calculated at Todd Road/Standish Avenue-Ghilotti Avenue during the p.m. peak hour, a signal warrant analysis was performed to determine potential need for a traffic signal. Chapter 4C of the *California Manual on Uniform Traffic Control Devices* (CA-MUTCD) provides guidance on when a traffic signal should be considered based on nine different warrants, or criteria. For the purposes of this study, Warrant 3, the Peak Hour volume warrant, which determines the need for traffic control based on the highest volume hour of the day, was used as an initial indication of traffic control needs. The use of this signal warrant is common practice for planning studies.

Existing volumes at Todd Road/Standish Avenue-Ghilotti Avenue are sufficient to meet the criteria established by Warrant 3, and for this reason, it is recommended that the County consider installing a traffic signal at the intersection and restriping the Standish Avenue approach to provide a southbound left-turn lane in order to reduce delay during the p.m. peak hour. Upon completion of these improvements, the intersection would be expected to operate acceptably during both peak hours, as shown in Table 4. Further, a signal would address the pattern of crashes that resulted in an above-average collision rate at this location. The delays upon installation of a traffic signal were calculated assuming split phasing as the north and south legs are offset and optimized signal timing. A copy of the signal warrant analysis spreadsheet is included in Appendix D.

Baseline Conditions

Baseline operating conditions were assessed to reflect the addition of traffic associated with projects that are approved in the study area and would potentially be operational within the near-term. County Staff identified the following project to be included in this scenario.

- **Shamrock Materials** – An approved materials processing plant that would be accessed via Ghilotti Avenue and located just south of the Ghilotti Construction offices. The project would include a concrete batching facility, recycling operation, composting facility, sand and gravel processing plant, maintenance shop, and associated offices. As contained in the *Shamrock Materials Traffic Impact Study Updated Report*, prepared by W-Trans, the project would be expected to generate 231 new trips per day, including 16 trips during the morning peak hour and 10 during the evening peak hour. The same trip distribution assumptions used in the traffic study for the project were used in this analysis, including 45 percent to/from both US 101 North and South and five percent via Todd Road to both the east and west.

Intersection Levels of Service

The anticipated traffic associated with the Shamrock project was added to the volumes analyzed in the Existing Conditions scenario in order to determine Baseline volumes. Under these conditions, the study intersections are projected to continue operating at the same levels of service as Existing Conditions. These results are summarized in Table 5 and Baseline volumes are shown in Figure 4.

Table 5 – Baseline Peak Hour Intersection Levels of Service

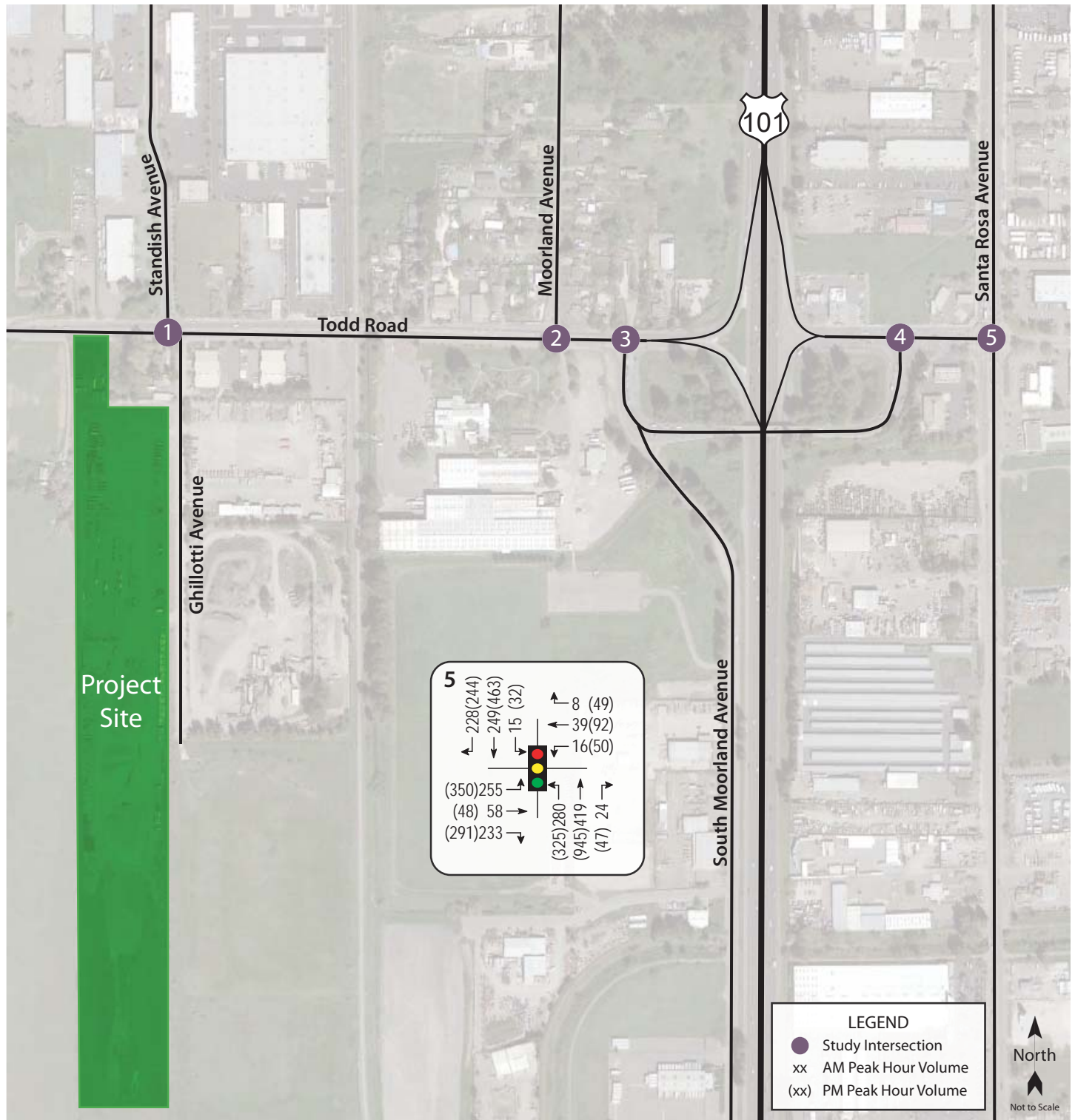
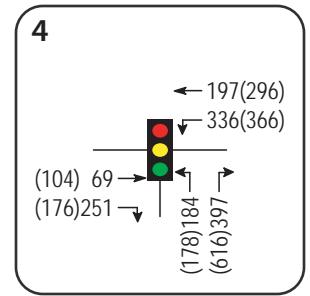
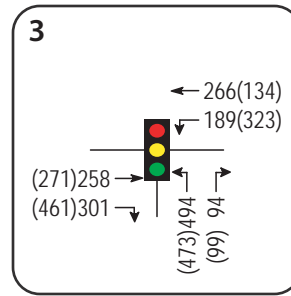
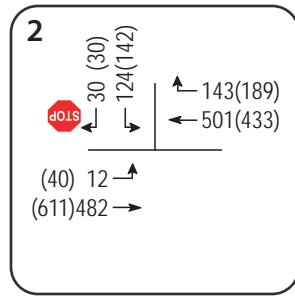
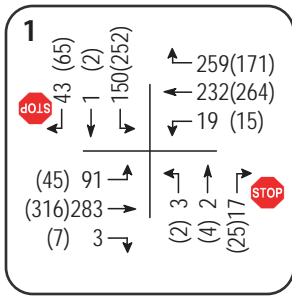
| Study Intersection <i>Approach</i> | AM Peak | | PM Peak | |
|--|-------------|----------|-------------|----------|
| | Delay | LOS | Delay | LOS |
| 1. Todd Rd/Standish Ave-Ghilotti Ave | 11.5 | B | 42.0 | E |
| <i>Northbound (Ghilotti Ave) Approach</i> | <i>13.2</i> | <i>B</i> | <i>12.4</i> | <i>B</i> |
| <i>Southbound (Standish Ave) Approach</i> | <i>59.0</i> | <i>F</i> | ** | F |
| Install signal and restripe to add SB left-turn lane | 17.5 | B | 18.6 | B |
| 2. Todd Rd/Moorland Ave | 5.6 | A | 9.9 | A |
| <i>Southbound (Moorland Ave) Approach</i> | <i>46.4</i> | <i>E</i> | <i>81.4</i> | <i>F</i> |
| 3. Todd Rd/US 101 South Ramps | 16.9 | B | 17.9 | B |
| 4. Todd Rd/US 101 North Ramps | 7.1 | A | 7.2 | A |
| 5. Todd Rd/Santa Rosa Ave | 10.9 | B | 19.8 | B |

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; **Shaded cells** = conditions with recommended improvements

Future Conditions

Segment volumes for the horizon year of 2040 were obtained from the County's gravity demand model maintained by the Sonoma County Transportation Authority (SCTA) and translated to peak hour turning movement volumes at the study intersections using the "Furness" method. The Furness method is an iterative process that employs existing turn movement data, existing link volumes, and future link volumes to project likely future turning movement volumes at intersections.

Under the anticipated Future volumes, the intersections are expected to operate at LOS A or B overall during both peak hours, except that Todd Road/Standish Avenue-Ghilotti Avenue and Todd Road/Santa Rosa Avenue are expected to deteriorate to LOS F during both peak hours. It is noted that the LOS at Todd Road/Moorland Avenue is expected to improve during the a.m. peak hour under Future conditions as the model is projecting fewer southbound volumes in 2040; this is likely attributable to the anticipated overcrossing at Bellevue Avenue to the north. Future volumes are shown in Figure 5 and operating conditions are summarized in Table 6.



LEGEND

- Study Intersection
- xx AM Peak Hour Volume
- (xx) PM Peak Hour Volume



Traffic Impact Study for the Ghillotti Construction Yard
Figure 4 – Baseline Traffic Volumes

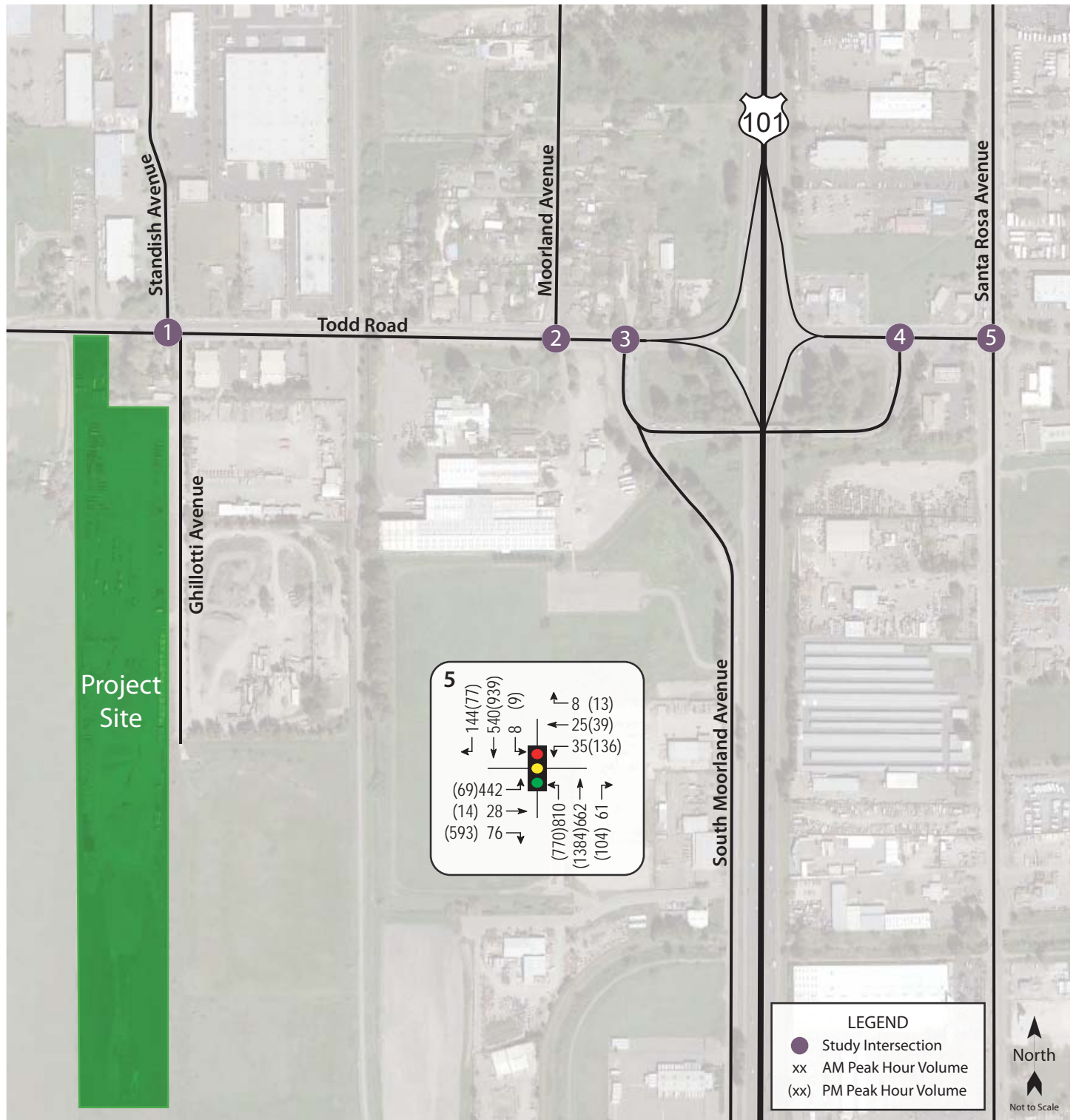
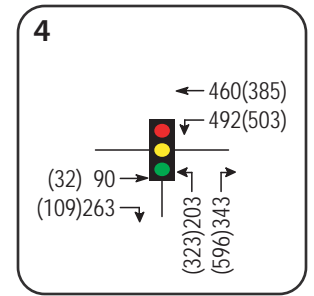
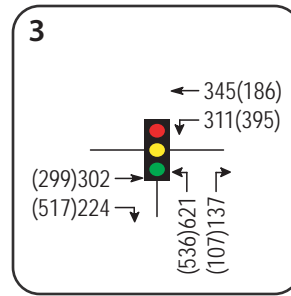
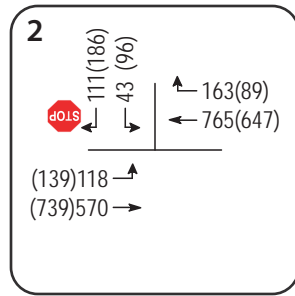
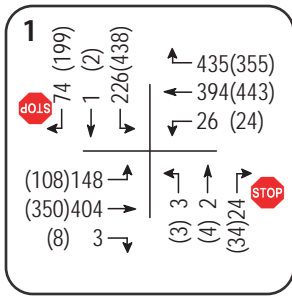


Table 6 – Future Peak Hour Intersection Levels of Service

| Study Intersection Approach | AM Peak | | PM Peak | |
|--|-------------|----------|-------------|----------|
| | Delay | LOS | Delay | LOS |
| 1. Todd Rd/Standish Ave-Ghilotti Ave | ** | F | ** | F |
| <i>Northbound (Ghilotti Ave) Approach</i> | <i>18.2</i> | <i>C</i> | <i>17.9</i> | <i>C</i> |
| <i>Southbound (Standish Ave) Approach</i> | ** | F | ** | F |
| Install signal and restripe to add SB left-turn lane | 30.1 | C | 38.2 | D |
| 2. Todd Rd/Moorland Ave | 3.8 | A | 14.3 | B |
| <i>Southbound (Moorland Ave) Approach</i> | <i>35.1</i> | <i>E</i> | <i>91.4</i> | <i>F</i> |
| 3. Todd Rd/US 101 South Ramps | 19.6 | B | 17.5 | B |
| 4. Todd Rd/US 101 North Ramps | 7.6 | A | 7.4 | A |
| 5. Todd Rd/Santa Rosa Ave | 63.8 | F | 77.2 | F |
| Restripe to provide 2 NB left-turn lanes | 24.1 | C | 40.8 | D |

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements; SB = Southbound; NB = Northbound

As might be expected with no changes to the intersection's geometry or controls, the operation of Todd Road/Standish Avenue-Ghilotti Avenue is anticipated to deteriorate significantly with the increase in traffic projected over the next 24 years. In fact, the delays estimated are well beyond what is reasonable, and indicate that the theoretical results are unreliable. As previously noted, it is recommended that the County install a traffic signal at the intersection and restripe the southbound approach to provide a left-turn lane in order to achieve acceptable levels of service during both peak hours under projected Future volumes.

Additionally, the northbound approach at Todd Road/Santa Rosa Avenue would need to be restriped to provide two left-turn lanes to accommodate the large increase in traffic anticipated for this movement. This improvement could be accomplished by restriping the western through lane into a second left-turn lane and the dedicated right-turn lane into a shared through/right lane. This configuration would result in two left-turn lanes, a single through lane, and a shared through/right lane. A conceptual striping plan for this improvement is contained in Appendix E. It should be noted that this improvement could also necessitate some modification to detection.

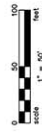
Project Description

The proposed project would update the Ghilotti Construction Use Permit to reflect existing non-compliant uses. It is understood the property is zoned M3 (Limited Rural Industrial), and is currently being used to temporarily store contractor's equipment, stockpile rock rip-rap material, and process broken asphalt and concrete for recycling and reuse. The project site is located at 304 Todd Road and accessed via Ghilotti Avenue; the site plan is shown in Figure 6.

Trip Generation

The anticipated trip generation potential for the proposed project was estimated using data from the *Proposal Statement & Project Description* submitted by Ghilotti Construction to Sonoma County as well as information received directly from Ghilotti Construction. The majority of traffic associated with the proposed project would be due to the import and export of materials which would occur on an as-needed basis varying with the demand imposed by ongoing countywide construction projects.

Most trips would be made by semi-end dump trucks, semi-bottom dump trucks, and transfer trailers; daily traffic is estimated to range between zero and 50 trips per day. Though the actual volume on a typical daily basis is



SITE PLAN

GHILOTTI PROPERTY

APN 134-171-050
 304 TODD ROAD, SANTA ROSA
 SONOMA COUNTY, CALIFORNIA
 JULY 20, 2011

CARLILE • MACY
 CIVIL ENGINEERS • URBAN PLANNERS • LAND SURVEYORS • LANDSCAPE ARCHITECTS
 115 Third Street, Santa Rosa, CA 95401
 Tel: (707) 542-4451 Fax: (707) 542-9212
 PROJECT NO. 110503-010

expected to be substantially lower, to be conservative it was assumed that a maximum of 30 trips would be made during either the a.m. or p.m. peak hour (15 trips in and 15 trips out).

Additionally, to account for the fact the trips would be made by large trucks, which have a more significant impact on traffic variables such as headway, speed, density, etc. than standard passenger vehicles, a passenger car equivalent (PCE) factor was used in the analysis. The *Highway Capacity Manual* (HCM), 6th Edition provides PCE factors based on terrain and recommends using 2.0 for level terrain and 3.0 for rolling terrain. Although the surrounding roadway network is flat, a ratio of three vehicles to one truck was used in the analysis to provide conservative results. After applying the PCE factor, it is estimated the proposed project would result in impacts similar to one that generates 90 passenger car trips during the peak hour, including 45 trips in and 45 trips out. The applied trip generation estimates are shown in Table 7.

| Land Use | Max Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|----------------------------|----------------------------|---------------------|-----------|------------|---------------------|-----------|------------|
| | | Trips | In | Out | Trips | In | Out |
| Construction Yard (Trucks) | 50 | 30 | 15 | 15 | 30 | 15 | 15 |
| Construction Yard (PCE) | 150 | 90 | 45 | 45 | 90 | 45 | 45 |

Note: PCE = Passenger Car Equivalent

Trip Distribution

The pattern used to allocate new project trips to the street network was determined based on the likely origins/destinations for site-generated traffic. Trips would be predominantly to and from construction projects located throughout the county and would occur via US 101. Maximum PCE trips are summarized in Table 8, and the applied distribution assumptions are shown in Figure 7.

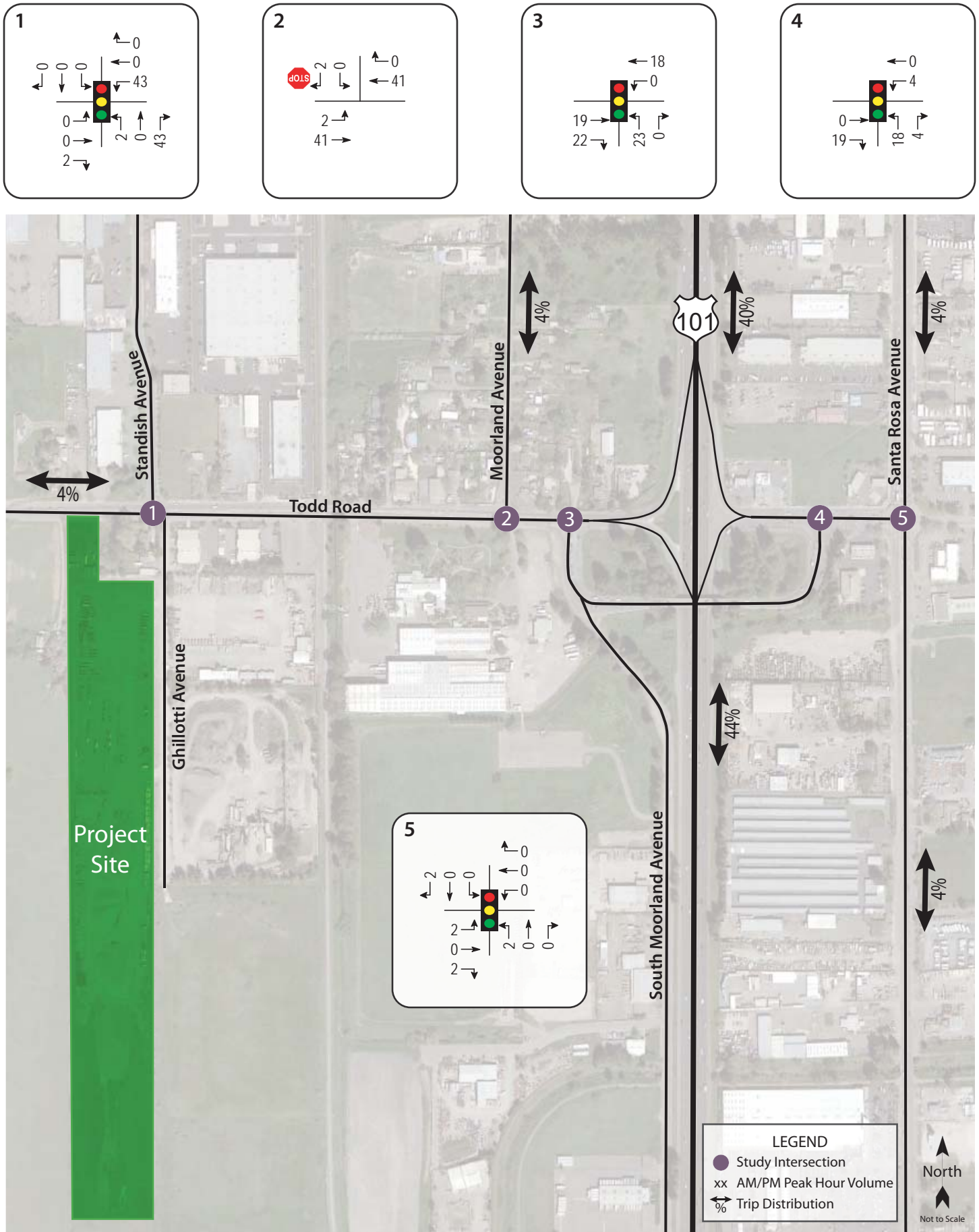
| Route | Percent | Daily Trips | AM Trips | PM Trips |
|-----------------------------------|----------------|--------------------|-----------------|-----------------|
| US 101 (North) | 40% | 60 | 36 | 36 |
| US 101 (South) | 44% | 66 | 38 | 38 |
| Todd Rd (West of Standish Ave) | 4% | 6 | 4 | 4 |
| Moorland Ave (North of Todd Rd) | 4% | 6 | 4 | 4 |
| Santa Rosa Ave (North of Todd Rd) | 4% | 6 | 4 | 4 |
| Santa Rosa Ave (South of Todd Rd) | 4% | 6 | 4 | 4 |
| TOTAL | 100% | 150 | 90 | 90 |

Note: Trips do not correspond to exact percentages due to rounding

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, the study intersections are expected to continue operating acceptably during both peak hours, except for Todd Road/Standish Avenue-Ghilotti Avenue which would be expected to further deteriorate from LOS E to LOS F during the p.m. peak hour. The intersection is currently operating unacceptably under Existing Conditions so the project would not cause the intersection to



Traffic Impact Study for the Ghilotti Construction Yard
Figure 7 – Project Traffic Volumes and Trip Distribution

drop from acceptable operation to unacceptable operation; however, the project would increase the average delay by more than five seconds so the impact would be considered significant under the County's standard. These results are summarized in Table 9 and Existing plus Project traffic volumes are shown in Figure 8.

Table 9 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

| Study Intersection Approach | Existing Conditions | | | | Existing plus Project | | | |
|--------------------------------------|---------------------|-----|-------------|----------|-----------------------|-----|-------------|----------|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1. Todd Rd/Standish Ave-Ghilotti Ave | 10.3 | B | 38.4 | E | 20.6 | C | 74.8 | F |
| Northbound (Ghilotti Ave) Approach | 13.6 | B | 12.7 | B | 12.2 | B | 12.5 | B |
| Southbound (Standish Ave) Approach | 52.1 | F | ** | F | 114.7 | F | ** | F |
| With signal and SB left-turn lane | 16.9 | B | 18.2 | B | 20.0 | B | 21.1 | C |
| 2. Todd Rd/Moorland Ave | 5.4 | A | 9.6 | A | 6.9 | A | 12.8 | B |
| Southbound (Moorland Ave) Approach | 44.3 | E | 78.2 | F | 59.0 | F | 109.3 | F |
| 3. Todd Rd/US 101 South Ramps | 17.8 | B | 22.7 | C | 18.5 | B | 22.2 | C |
| 4. Todd Rd/US 101 North Ramps | 7.4 | A | 6.3 | A | 6.9 | A | 7.1 | A |
| 5. Todd Rd/Santa Rosa Ave | 10.9 | B | 18.6 | B | 12.1 | B | 19.6 | B |

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

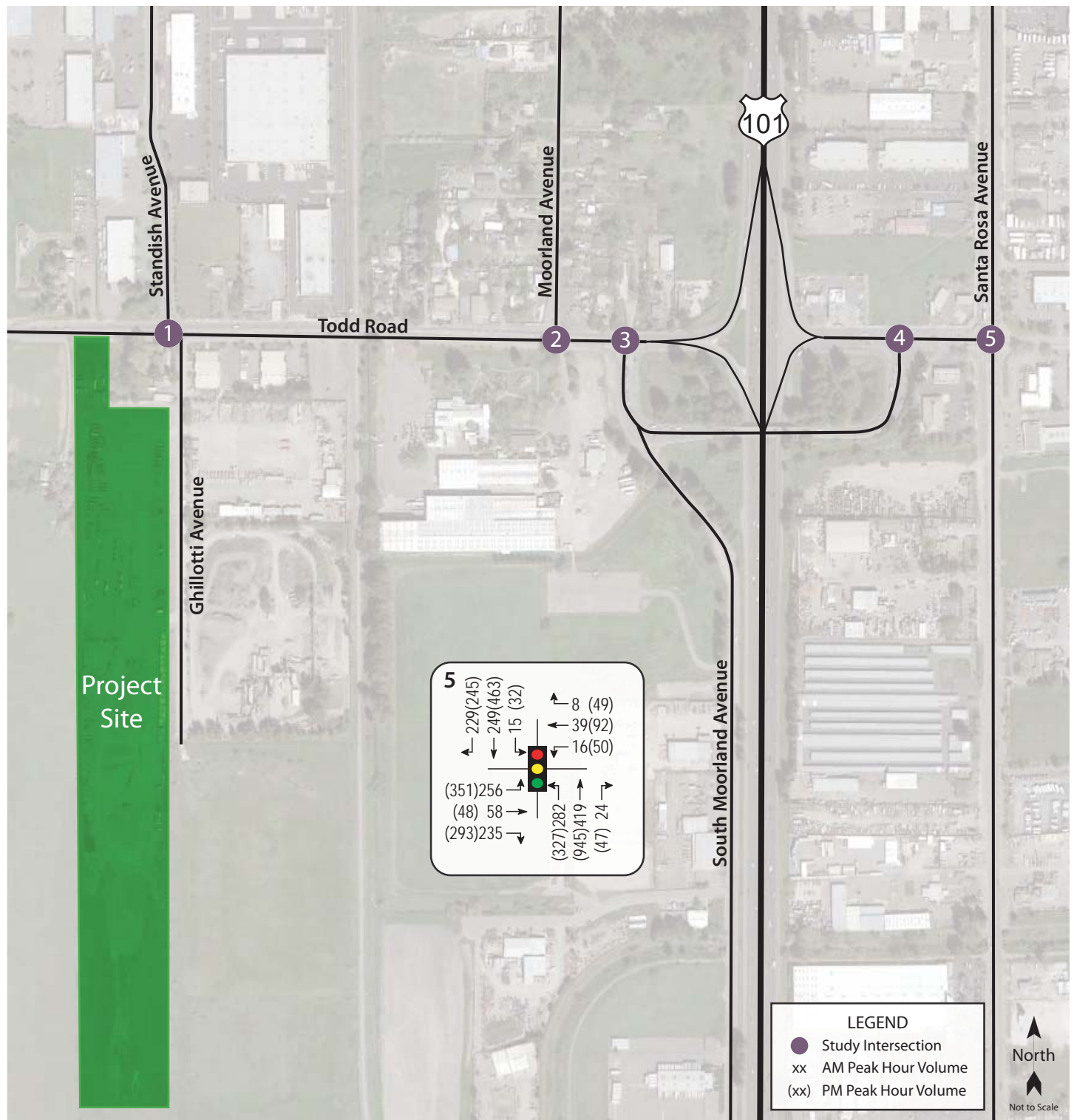
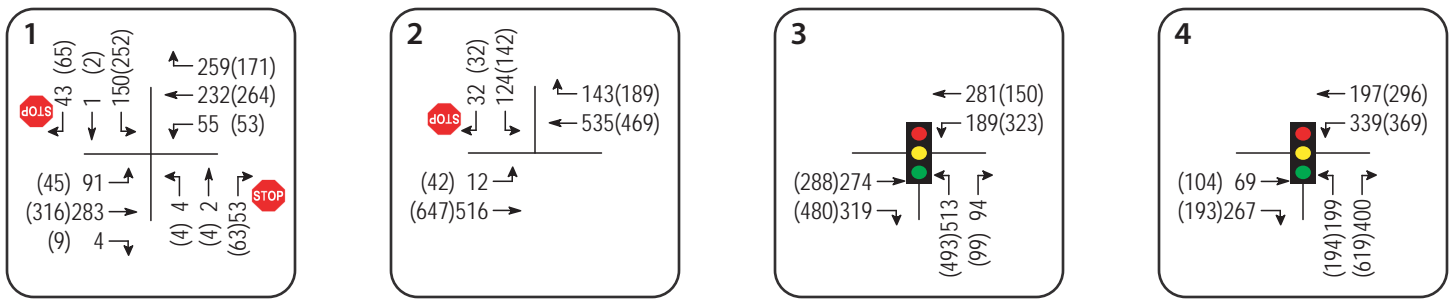
It should be noted that with the addition of project-related traffic volumes, average delay on the northbound Ghilotti Avenue approach decreases during both peak hours. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the approach average, resulting in a better balance between movements and lower average delay for that specific approach. The project adds traffic predominantly to the right-turn movement, which has an average delay that is lower than the average for the entire approach, resulting in a slight reduction in the average delay. This same reasoning also explains why delay decreases slightly at Todd Road/US 101 South Ramps during the evening peak hour.

Finding – The project would increase the overall average delay at Todd Road/Standish Avenue-Ghilotti Avenue by more than five seconds during the p.m. peak hour and therefore would have a significant impact per the County Standard.

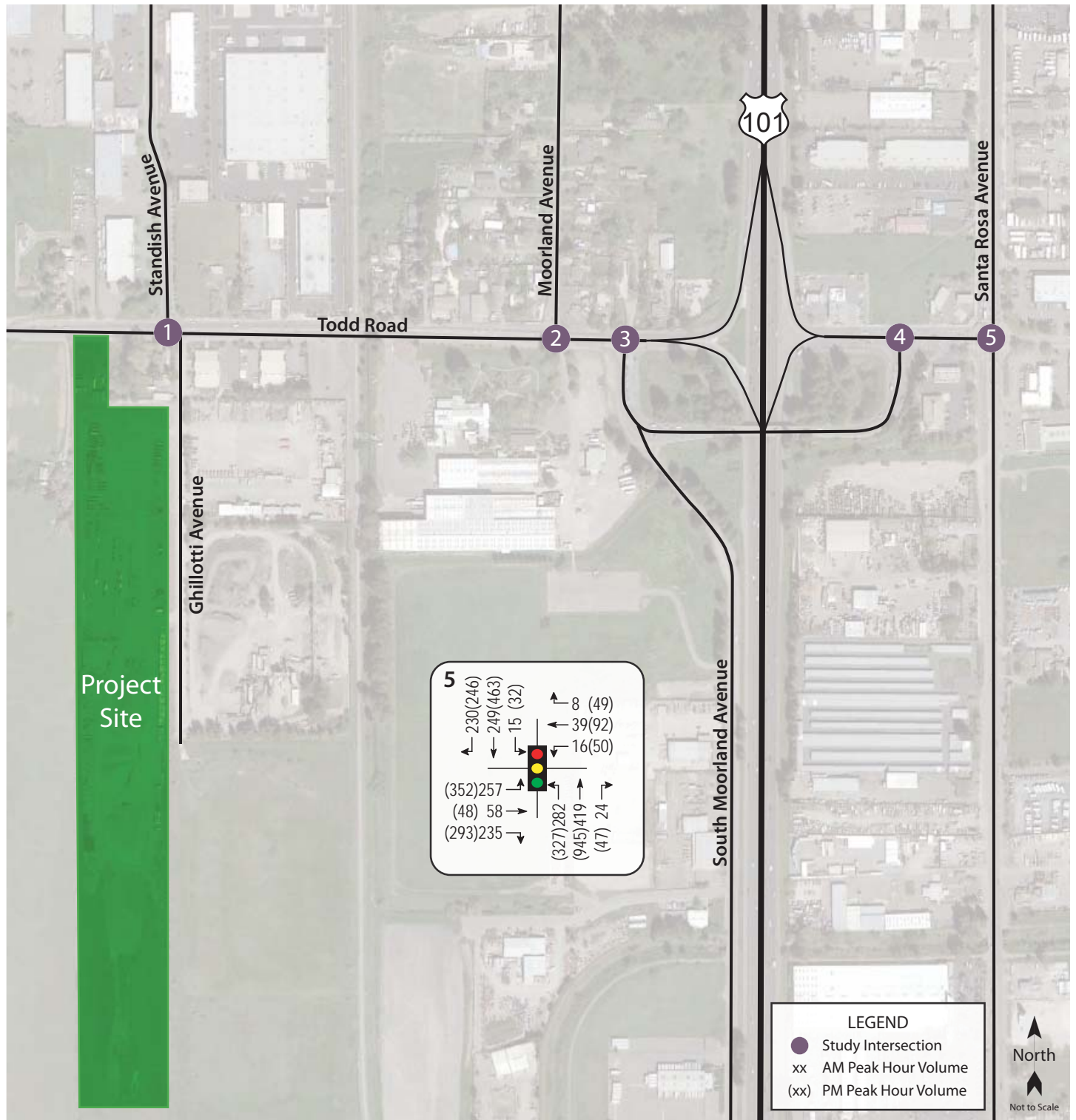
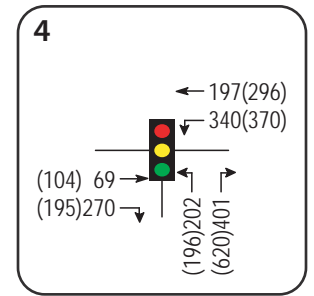
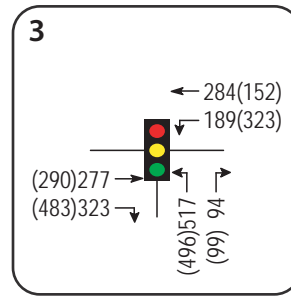
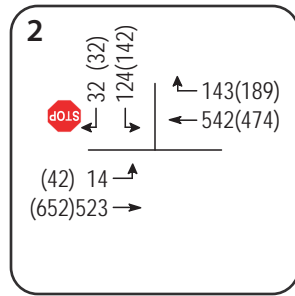
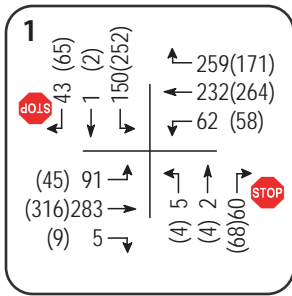
Recommendation – It is understood that the County is planning on installing a traffic signal at Todd Road/Standish Avenue-Ghilotti Avenue and will accept proportional share payments towards this project. To mitigate project impacts, is recommended that Ghilotti Construction pay a proportional share fee of 11.1 percent toward the installation of a traffic signal and southbound left-turn lane at Todd Road/Standish Avenue-Ghilotti Avenue. A copy of the Equitable Share Calculation spreadsheet is contained in Appendix D.

Baseline plus Project Conditions

With project-related traffic added to Baseline volumes, the study intersections are expected to operate acceptably except for Todd Road/Standish Avenue-Ghilotti Avenue during the p.m. peak hour. Baseline plus Project volumes are provided in Figure 9, and the resulting levels of service are summarized in Table 10.



Traffic Impact Study for the Ghilotti Construction Yard
Figure 8 – Existing plus Project Traffic Volumes



Traffic Impact Study for the Ghilotti Construction Yard
Figure 9 – Baseline plus Project Traffic Volumes

Table 10 – Baseline and Baseline plus Project Peak Hour Intersection Levels of Service

| Study Intersection Approach | Baseline Conditions | | | | Baseline plus Project | | | |
|--------------------------------------|---------------------|-----|-------------|----------|-----------------------|-----|-------------|----------|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1. Todd Rd/Standish Ave-Ghilotti Ave | 11.5 | B | 42.0 | E | 23.3 | C | 79.5 | F |
| Northbound (Ghilotti Ave) Approach | 13.2 | B | 12.4 | B | 12.5 | B | 12.5 | B |
| Southbound (Standish Ave) Approach | 59.0 | F | ** | F | ** | F | ** | F |
| With signal and SB left-turn lane | 17.5 | B | 18.6 | B | 20.5 | C | 21.5 | C |
| 2. Todd Rd/Moorland Ave | 5.6 | A | 9.9 | A | 7.2 | A | 13.2 | B |
| Southbound (Moorland Ave) Approach | 46.4 | E | 81.4 | F | 62.2 | F | 113.8 | F |
| 3. Todd Rd/US 101 South Ramps | 16.9 | B | 17.9 | B | 19.4 | B | 22.4 | C |
| 4. Todd Rd/US 101 North Ramps | 7.1 | A | 7.2 | A | 7.4 | A | 7.4 | A |
| 5. Todd Rd/Santa Rosa Ave | 10.9 | B | 19.8 | B | 12.1 | B | 18.8 | B |

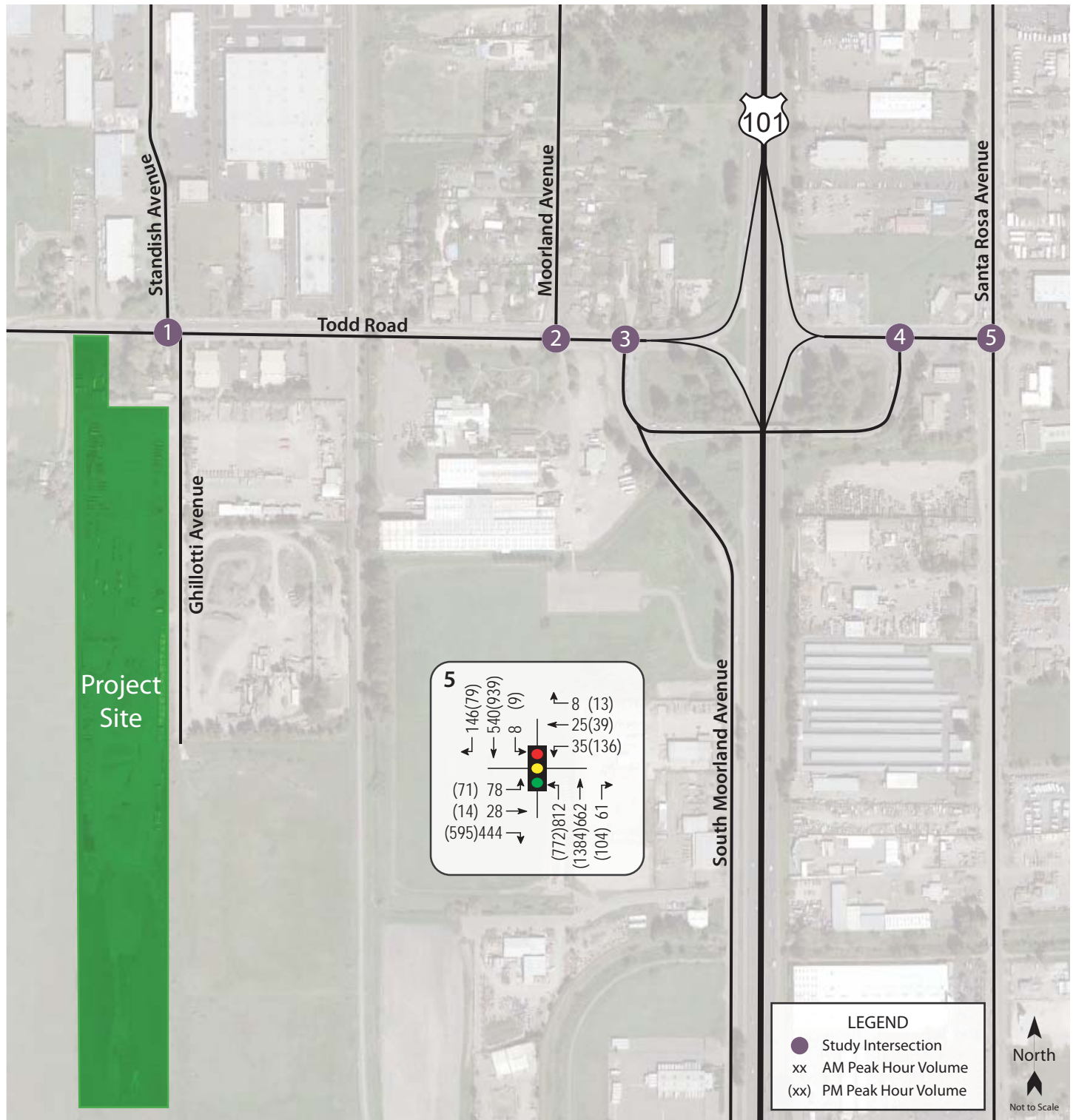
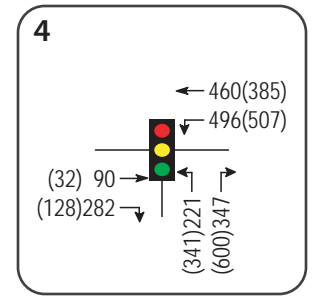
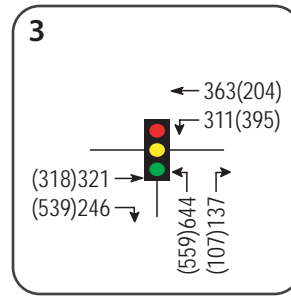
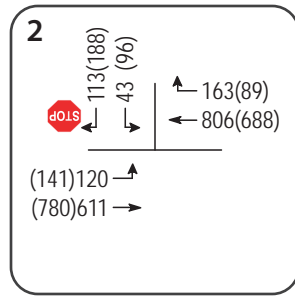
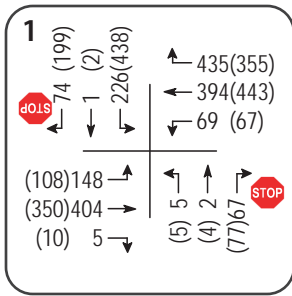
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

Finding – Consistent with Existing plus Project Conditions, the project would increase the overall average delay at Todd Road/Standish Avenue-Ghilotti Avenue by more than five seconds during the p.m. peak hour and therefore would have a significant impact per the County Standard.

Recommendation – As stated previously, the County is planning on installing a traffic signal at Todd Road/Standish Avenue-Ghilotti Avenue and will accept proportional share payments towards this project. To mitigate its impacts, the project should pay its proportional share of 11.1 percent toward the cost of the improvements.

Future plus Project Conditions

Upon the addition of project-related traffic to Future volumes, the study intersections that were operating acceptably would continue to operate acceptably and the intersections that were operating unacceptably would continue to operate unacceptably. Future plus Project volumes are shown in Figure 10, and the Future plus Project levels of service are summarized in Table 11.



Traffic Impact Study for the Ghilotti Construction Yard
Figure 10 – Future plus Project Traffic Volumes

Table 11 – Future and Future plus Project Peak Hour Intersection Levels of Service

| Study Intersection Approach | Future Conditions | | | | Future plus Project | | | |
|--------------------------------------|-------------------|----------|-------------|----------|---------------------|----------|-------------|----------|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1. Todd Rd/Standish Ave-Ghilotti Ave | ** | F | ** | F | ** | F | ** | F |
| Northbound (Ghilotti Ave) Approach | 18.2 | C | 17.9 | C | 17.3 | C | 18.2 | C |
| Southbound (Standish Ave) Approach | ** | F | ** | F | ** | F | ** | F |
| With signal and SB left-turn lane | 30.1 | C | 38.2 | D | 36.6 | D | 44.1 | D |
| 2. Todd Rd/Moorland Ave | 3.8 | A | 14.3 | B | 4.2 | A | 17.5 | C |
| Southbound (Moorland Ave) Approach | 35.1 | E | 91.4 | F | 40.8 | E | 116.8 | F |
| 3. Todd Rd/US 101 South Ramps | 19.6 | B | 18.9 | B | 21.4 | C | 16.4 | B |
| 4. Todd Rd/US 101 North Ramps | 7.6 | A | 7.4 | A | 7.5 | A | 7.4 | A |
| 5. Todd Rd/Santa Rosa Ave | 63.8 | F | 77.2 | F | 63.9 | F | 80.4 | F |
| With two NB Left-turn Lanes | 24.1 | C | 40.8 | D | 21.2 | C | 38.2 | D |

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements; SB = Southbound; NB = Northbound

Finding – Installation of a traffic signal at Todd Road/Standish Avenue-Ghilotti Avenue will be necessary to achieve acceptable operation under the projected Future conditions with or without the proposed project. Although Todd Road/Santa Rosa Avenue is expected to deteriorate to LOS F under Future Conditions, the addition of project traffic would result in less than a five-second increase in delay at the intersection, so the impact would be less-than-significant impact under the County's criterion. As noted for Future conditions without the project, in order for the intersection to operate acceptably the northbound approach would need to be restriped to provide two left-turn lanes. This improvement could be accomplished by restriping the western through lane into a second left-turn lane and the dedicated right-turn lane into a shared through/right-turn lane. This configuration would result in two left-turn lanes, a single through lane, and a shared through/right-turn lane.

Recommendation – As stated previously, the County is planning on installing a traffic signal at Todd Road/Standish Avenue-Ghilotti Avenue and will accept proportional share payments towards this project. To mitigate its impacts, the project should pay its proportional share of 11.1 percent toward the cost of the improvements.

Queuing

Under each scenario, the projected 95th percentile queues in the left-turn pockets at the study intersections were determined using the SimTraffic application of Synchro, and averaging the 95th percentile queue for each of ten runs. All five intersections were evaluated with their existing controls and lane configurations for all scenarios; no improvements were assumed to be in place. These results are summarized in Table 12 and copies of the SimTraffic projections are contained in Appendix F.

Table 12 – 95th Percentile Left-turn Queues at Study Intersections

| Study Intersection Approach | Avail. Storage | 95 th Percentile Queues | | | | | | | | | | | |
|-----------------------------------|----------------|------------------------------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|------------|
| | | AM Peak Hour | | | | | | PM Peak Hour | | | | | |
| | | E | E+P | B | B+P | F | F+P | E | E+P | B | B+P | F | F+P |
| Todd Rd/Standish Ave-Ghilotti Ave | | | | | | | | | | | | | |
| Southbound | - | 134 | 111 | 106 | 147 | 529 | 520 | 213 | 269 | 208 | 270 | 541 | 480 |
| Eastbound | 120 | 46 | 43 | 43 | 39 | 75 | 83 | 29 | 28 | 30 | 29 | 63 | 32 |
| Westbound | 150 | 11 | 28 | 11 | 30 | 18 | 28 | 9 | 24 | 14 | 25 | 14 | 10 |
| Todd Rd/Moorland Ave | | | | | | | | | | | | | |
| Southbound | 50 | 97 | 139 | 124 | 137 | 72 | 140 | 204 | 387 | 137 | 254 | 277 | 230 |
| Eastbound | 100 | 23 | 20 | 17 | 25 | 65 | 86 | 37 | 35 | 33 | 52 | 57 | 58 |
| Todd Rd/US 101 S Ramps | | | | | | | | | | | | | |
| Northbound | 160 | 298 | 290 | 278 | 307 | 300 | 296 | 304 | 292 | 263 | 293 | 230 | 238 |
| Westbound | 285 | 132 | 141 | 148 | 146 | 200 | 216 | 259 | 284 | 249 | 259 | 205 | 248 |
| Todd Rd/US 101 N Ramps | | | | | | | | | | | | | |
| Northbound | 100 | 133 | 137 | 111 | 139 | 158 | 153 | 110 | 118 | 117 | 130 | 154 | 156 |
| Westbound | 190 | 136 | 126 | 129 | 124 | 149 | 152 | 143 | 134 | 138 | 175 | 132 | 131 |
| Todd Rd/Santa Rosa Ave | | | | | | | | | | | | | |
| Northbound | 105 | 155 | 158 | 169 | 171 | 342 | 365 | 264 | 268 | 305 | 292 | 340 | 370 |
| Southbound | 200 | 25 | 20 | 17 | 22 | 11 | 19 | 39 | 60 | 39 | 48 | 19 | 13 |
| Eastbound | 300 | 85 | 82 | 92 | 99 | 54 | 54 | 116 | 136 | 123 | 141 | 45 | 46 |
| Westbound | 60 | 27 | 37 | 26 | 33 | 48 | 53 | 86 | 82 | 62 | 73 | 104 | 104 |

Notes: 95th Percentile Queue based on the average of ten SimTraffic runs; all distances are measured in feet; E = Existing conditions; E+P = Existing plus Project conditions; B = Baseline conditions; B+P = Baseline plus Project conditions; F = Future conditions; F+P = Future plus Project conditions; **Bold** = queue length exceeds available storage

At Todd Road/Standish Avenue-Ghilotti Avenue, no left-turn queues are expected to exceed available storage; however the southbound left-turn queue is projected to reach a maximum length of 541 feet during the evening peak hour under Future Conditions. Signalization of the intersection and the provision of a separate left-turn lane would be expected to reduce the southbound queue to a more reasonable length.

Southbound queues are expected to exceed available storage at Todd Road/Moorland Avenue during both peak hours and for all evaluated scenarios; however there is no potential to extend the existing left-turn lane without acquiring additional right-of-way. The County should consider installing a traffic signal at the intersection. In addition to reducing queuing, a traffic signal would also reduce the high delay projected for the southbound approach under Future Conditions.

Northbound queues are expected to exceed available storage at Todd Road/US 101 South ramps and Todd Road/US 101 North ramps during both peak hours and for all evaluated scenarios. There is no potential to extend the northbound left-turn lane at Todd Road/US 101 South ramps due to the proximity of the South Moorland Avenue/Overcrossing intersection; however there is room to extend the northbound left-turn lane at Todd Road/US 101 North ramps. As this is a tee intersection, there is no through traffic to be impacted by the excess queueing, though some modification to the signal timing could achieve relief and allow right-turning traffic to

pass by the queue of left-turning vehicles. Again, because there is no higher-speed through traffic, the normal safety concern associated with left-turn queues that extend beyond available storage does not apply.

At Todd Road/Santa Rosa Avenue, left-turn queues are expected to exceed available storage in the northbound direction during both peak hours and all evaluated scenarios; however because the left-turn lane connects to a two-way left-turn lane that extends approximately 2,500 feet to Mountain View Avenue there is no safety concern associated with the queuing. Field observations confirmed that the queue is currently extending into the two-way left-turn lane well beyond the end of the existing left-turn lane during the p.m. peak hour. The dual left-turn lanes identified as being needed to reduce the northbound approach delay under Future Conditions would also reduce queuing. Westbound left-turn queues are expected to exceed available storage under all evaluated scenarios during the evening peak hour; however the project would not add any trips to this movement.

Finding – The project would not cause any queues to exceed available storage that would not be expected to exceed available storage without the project.

Alternative Modes

Pedestrian Facilities

The proposed use of the site as a construction yard would not be expected to generate any pedestrian traffic so the existing lack of pedestrian facilities would have no impact.

Finding – Pedestrian facilities serving the project site are adequate for the demand given the rural setting.

Bicycle Facilities

The planned bicycle facilities summarized in the *2010 Santa Rosa Bicycle and Pedestrian Master Plan* would provide adequate access for the anticipated demand. Since the project site has limited frontage on Todd Road and it would make more sense to stripe an appreciable length of the roadway in both directions versus an isolated short segment in one direction only, the project should make an in-lieu payment towards the planned bicycle facility improvements to be completed at a later time.

Finding – Bicycle facilities serving the project site are expected to be adequate upon completion of the planned improvements.

Recommendation – Because the project site has frontage on Todd Road and Class II bike lanes are planned on the roadway, the project should make an in-lieu payment to the County towards the cost of striping a future Class II bike lane along the project frontage.

Transit

Existing transit routes are adequate to accommodate project-generated transit trips and the stops on Todd Road east of the project site are within acceptable walking distance.

Finding – Transit facilities serving the project site are adequate.

Access and Circulation

Site Access

Sight Distance

At unsignalized driveways and intersections, a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic drivers to radically alter their speed.

Sight distances along Todd Road at Ghilotti Avenue were evaluated based on sight distance criteria contained in *A Policy on Geometric Design on Highways and Streets* published by American Association of State Highway and Transportation Officials (AASHTO). These guidelines include recommended sight distances at intersections, including stopping sight distances for drivers traveling along the major approaches and for drivers of stopped vehicles at the minor street approaches and driveways. These recommendations are based upon approach travel speeds, and take into account which direction a vehicle would turn onto the major approach, with greater sight distance needed for the more time-consuming task of turning left as compared to turning right.

For the posted 35-mph speed limit on Todd Road adjacent to the project site, the recommended corner sight distance is 390 feet for a left-turn and 335 feet for a right turn. Based on a review of the field conditions, sight distance extends 500 feet to both the east and west which is enough to satisfy speeds greater than 35 mph.

Radar speed samples were obtained on the westbound and eastbound approaches of Todd Road at Ghilotti Avenue and prevailing speeds were found to be at or below the posted 35-mph speed limit in both directions. The 85th percentile speed for westbound vehicles was 29 mph, with a peak observed speed of 30 mph; in the eastbound direction, the 85th percentile speed was 35 mph, with a peak observed speed of 41 mph. Based on these actual approach speeds, the available sight distance in each direction is adequate. A copy of the speed survey data is contained in Appendix G.

Finding – Sight distances along Todd Road at Ghilotti Avenue are adequate for the posted speed limit; however, it is noted that the bushes/trees along the roadway frontage west of Ghilotti Avenue have the potential to interrupt sight lines.

Recommendation – To ensure that adequate sight lines are maintained to the west from Ghilotti Avenue it is recommended that the bushes/trees along the roadway frontage be regularly maintained.

Conclusions and Recommendations

Conclusions

- The project is expected to generate a maximum of 50 new truck trips per day including a maximum of 30 trips during either the a.m. or p.m. peak hour.
- Under Existing Conditions the study intersections operate acceptably at LOS A or B overall during the a.m. peak hour; however, Todd Road/Standish Avenue-Ghilotti Avenue operates unacceptably at LOS E overall during the p.m. peak hour.
- Under Existing Conditions, p.m. peak hour volumes at the intersection of Todd Road/Standish Avenue-Ghilotti Avenue are sufficient to meet the Peak Hour Volume signal warrant.
- Upon the addition of project-generated traffic to Existing volumes, the study intersections are expected to continue operating acceptably during the a.m. peak hour, but Todd Road/Standish Avenue-Ghilotti Avenue is expected to deteriorate to LOS F during the p.m. peak hour with an increase in average delay that exceeds the five seconds allowed under County Standards.
- Under Baseline Conditions, which includes traffic associated with the Shamrock Materials facility, all study intersections would operate acceptably during both peak hours except that Todd Road/Standish Avenue-Ghilotti Avenue is expected to continue operating unacceptably at LOS E during the p.m. peak hour.
- Upon the addition of project-related traffic to Baseline volumes, the study intersections would be expected to continue operating acceptably except for Todd Road/Standish Avenue-Ghilotti Avenue which would deteriorate to LOS F during the p.m. peak hour with an increase in average delay that exceeds five seconds.
- Under the anticipated Future volumes, the intersections of Todd Road with the US 101 North and South ramps and Todd Road/Moorland Avenue are expected to continue operating acceptably overall during both peak hours; Todd Road/Standish Avenue-Ghilotti Avenue and Todd Road/Santa Rosa Avenue are expected to operate unacceptably at LOS F during both peak hours.
- Upon the addition of project-related traffic to Future volumes, the study intersections would all be expected to continue operating at the same levels of service as without it.
- The project would not cause any left-turn queues to exceed available storage that would not be expected to exceed available storage without the project.
- Pedestrian and transit facilities are adequate to serve the project site given the site location and anticipated demand. Bicycle facilities will be adequate upon completion of the planned Class II bike lanes on Todd Road.
- Sight distances along Todd Road at Ghilotti Avenue are adequate for the measured approach speeds and the posted speed limit.

Recommendations

- It is understood that the County is planning on installing a traffic signal at Todd Road/Standish Avenue-Ghilotti Avenue and will accept proportional share payments towards this project. As part of these

improvements the Standish Avenue approach should be restriped to provide a southbound left-turn lane with at least 135 feet of storage length.

- The County should consider restriping the northbound approach at Santa Rosa Avenue/Todd Road to provide two northbound left-turn lanes to accommodate the anticipated growth under Future volumes.
- The project applicant should pay a proportional share fee of 11.1 percent toward the installation of a traffic signal and southbound left-turn lane at Todd Road/Standish Avenue-Ghilotti Avenue.
- The project applicant should make an in-lieu payment toward the cost of striping a Class II bike lane along the project frontage on Todd Road.
- The bushes/trees along the roadway frontage west of Ghilotti Avenue should be trimmed regularly to maintain adequate sight lines.

Study Participants and References

Study Participants

| | |
|---------------------|------------------------------|
| Principal in Charge | Dalene J. Whitlock, PE, PTOE |
| Assistant Engineer | Cameron Nye, EIT |
| Graphics | Hannah Yung |
| Editing/Formatting | Angela McCoy |

References

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SOX574



Appendix A

Collision Rate Calculations

Intersection Collision Rate Calculations

Ghilotti Construction Yard TIS

Intersection # 1: Todd Rd & Standish Ave-Ghilotti Ave

Date of Count: Wednesday, June 07, 2017

Number of Collisions: 10

Number of Injuries: 3

Number of Fatalities: 0

ADT: 11900

Start Date: January 1, 2012

End Date: December 31, 2016

Number of Years: 5

Intersection Type: Offset

Control Type: Stop & Yield Controls

Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{10}{11,900} \times \frac{1,000,000}{365 \times 5}$$

| | Collision Rate | Fatality Rate | Injury Rate |
|--------------------|----------------|---------------|-------------|
| Study Intersection | 0.46 c/mve | 0.0% | 30.0% |
| Statewide Average* | 0.26 c/mve | 0.9% | 37.4% |

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2013 Collision Data on California State Highways, Caltrans

Intersection # 2: Todd Rd & Moorland Ave

Date of Count: Wednesday, June 07, 2017

Number of Collisions: 17

Number of Injuries: 7

Number of Fatalities: 0

ADT: 14600

Start Date: January 1, 2012

End Date: December 31, 2016

Number of Years: 5

Intersection Type: Tee

Control Type: Stop & Yield Controls

Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{17}{14,600} \times \frac{1,000,000}{365 \times 5}$$

| | Collision Rate | Fatality Rate | Injury Rate |
|--------------------|----------------|---------------|-------------|
| Study Intersection | 0.64 c/mve | 0.0% | 41.2% |
| Statewide Average* | 0.14 c/mve | 0.7% | 38.0% |

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2013 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculations

Ghilotti Construction Yard TIS

Intersection # 3: Todd Rd & US 101 S Ramps

Date of Count: Wednesday, June 07, 2017

Number of Collisions: 12

Number of Injuries: 2

Number of Fatalities: 0

ADT: 17800

Start Date: January 1, 2012

End Date: December 31, 2016

Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{12}{17,800} \times \frac{1,000,000}{365 \times 5}$$

| | Collision Rate | Fatality Rate | Injury Rate |
|---------------------------|-------------------|---------------|--------------|
| Study Intersection | 0.37 c/mve | 0.0% | 16.7% |
| Statewide Average* | 0.43 c/mve | 0.4% | 37.9% |

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2013 Collision Data on California State Highways, Caltrans

Intersection # 4: Todd Rd & US 101 N Ramps

Date of Count: Wednesday, June 07, 2017

Number of Collisions: 8

Number of Injuries: 2

Number of Fatalities: 0

ADT: 17400

Start Date: January 1, 2012

End Date: December 31, 2016

Number of Years: 5

Intersection Type: Tee

Control Type: Signals

Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{8}{17,400} \times \frac{1,000,000}{365 \times 5}$$

| | Collision Rate | Fatality Rate | Injury Rate |
|---------------------------|-------------------|---------------|--------------|
| Study Intersection | 0.25 c/mve | 0.0% | 25.0% |
| Statewide Average* | 0.27 c/mve | 0.6% | 37.3% |

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2013 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculations

Ghilotti Construction Yard TIS

Intersection # 5: Santa Rosa Ave & Todd Rd

Date of Count: Thursday, April 27, 2017

Number of Collisions: 27

Number of Injuries: 3

Number of Fatalities: 0

ADT: 30400

Start Date: January 1, 2012

End Date: December 31, 2016

Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{27}{30,400} \times \frac{1,000,000}{365 \times 5}$$

| | Collision Rate | Fatality Rate | Injury Rate |
|---------------------------|-------------------|---------------|--------------|
| Study Intersection | 0.49 c/mve | 0.0% | 11.1% |
| Statewide Average* | 0.43 c/mve | 0.4% | 37.9% |

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2013 Collision Data on California State Highways, Caltrans

Appendix B

Unsignalized Intersection Level of Service Calculations

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 54.5
Level Of Service: F
Volume to Capacity (v/c): 0.720

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 2 | 10 | 150 | 1 | 43 | 91 | 283 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 2 | 10 | 150 | 1 | 43 | 91 | 283 | 2 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 3 | 40 | 0 | 12 | 25 | 76 | 1 |
| Total Analyse Volume [veh/h] | 2 | 2 | 11 | 162 | 1 | 46 | 98 | 305 | 2 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | No | No | Yes | Free |
| Storage Area [veh] | 0 | 0 | 1 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|-------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.01 | 0.01 | 0.72 | 0.00 | 0.07 | 0.09 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 22.63 | 23.15 | 10.20 | 54.46 | 53.26 | 43.92 | 8.63 | 0.00 | 0.00 | 7.90 | 0.00 | 0.00 |
| Movement LOS | C | C | B | F | F | E | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.11 | 0.11 | 0.11 | 5.77 | 5.77 | 5.77 | 0.31 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 2.68 | 2.68 | 2.68 | 144.16 | 144.16 | 144.16 | 7.80 | 0.00 | 0.00 | 0.79 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 13.58 | | | 52.14 | | | 2.14 | | | 0.19 | | |
| Approach LOS | B | | | F | | | A | | | A | | |
| d, I, Intersection Delay [s/veh] | | | | | | | 10.31 | | | | | |
| Intersection LOS | | | | | | | F | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 51.8
Level Of Service: F
Volume to Capacity (v/c): 0.668

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 124 | 30 | 12 | 475 | 494 | 143 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 124 | 30 | 12 | 475 | 494 | 143 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 8 | 3 | 132 | 137 | 40 |
| Total Analyse Volume [veh/h] | 138 | 33 | 13 | 528 | 549 | 159 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.67 | 0.07 | 0.01 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 51.81 | 13.01 | 9.10 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 4.09 | 0.22 | 0.04 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 102.29 | 5.48 | 1.11 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 44.32 | | 0.22 | | | |
| Approach LOS | E | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | | 5.42 | | |
| Intersection LOS | | | | F | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 138.5
Level Of Service: F
Volume to Capacity (v/c): 1.050

Intersection Setup

| Name | Ghiloti Ave | | Standish Ave | | Todd Rd | |
|------------------------|-------------|--------|--------------|--------|-----------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | + | | + | | + | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | 30.00 | | 35.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

Volumes

| Name | Ghiloti Ave | | Standish Ave | | Todd Rd | |
|---|-------------|--------|--------------|--------|---------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 20 | 252 | 2 | 65 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 4 | 20 | 252 | 2 | 65 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 5 | 68 | 1 | 17 |
| Total Analyse Volume [veh/h] | 2 | 4 | 21 | 271 | 2 | 70 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | Yes | No | Yes | Free |
| Storage Area [veh] | 0 | 0 | 1 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | |
|------------------------------------|-------|-------|--------|--------|--------|--------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.02 | 0.03 | 1.05 | 0.01 | 0.10 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 20.98 | 19.62 | 10.56 | 138.50 | 137.17 | 129.92 | 8.44 | 0.00 | 8.00 | 0.00 | 0.00 |
| Movement LOS | C | C | B | F | F | F | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.17 | 0.17 | 0.17 | 14.47 | 14.47 | 14.47 | 0.14 | 0.00 | 0.03 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 4.31 | 4.31 | 4.31 | 361.75 | 361.75 | 361.75 | 3.44 | 0.00 | 0.69 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 12.68 | | 136.74 | | 1.03 | | 0.18 | | 0.18 | | |
| Approach LOS | B | | F | | A | | A | | A | | |
| d, I, Intersection Delay [s/veh] | | | | | 38.37 | | | | | | |
| Intersection LOS | | | | | F | | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 92.1
Level Of Service: F
Volume to Capacity (v/c): 0.873

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 142 | 30 | 40 | 606 | 428 | 189 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 142 | 30 | 40 | 606 | 428 | 189 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 38 | 8 | 11 | 161 | 114 | 50 |
| Total Analyse Volume [veh/h] | 151 | 32 | 43 | 645 | 455 | 201 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.87 | 0.06 | 0.05 | 0.01 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 92.14 | 12.21 | 9.05 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 6.28 | 0.19 | 0.15 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 156.97 | 4.80 | 3.63 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 78.17 | | 0.57 | | | |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 9.62 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 16.9
Level Of Service: B
Volume to Capacity (v/c): 0.582

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 2 | 10 | 150 | 1 | 43 | 91 | 283 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverged Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 2 | 10 | 150 | 1 | 43 | 91 | 283 | 2 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 3 | 40 | 0 | 12 | 25 | 76 | 1 |
| Total Analysis Volume [veh/h] | 2 | 2 | 11 | 162 | 1 | 46 | 98 | 305 | 2 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | - | Lead | - | - | - |
| Lead / Lag | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 5 |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| Maximum Green [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Amber [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| All red [s] | 0 | 21 | 0 | 0 | 9 | 0 | 10 | 0 | 21 | 0 |
| Split [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Vehicle Extension [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 0 |
| Walk [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 | 0 |
| Rest In Walk | No | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C |
|--|-------|-------|-------|-------|------|-------|-------|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | 1 | 8 | 8 | 4 | 34 | 1 | 31 |
| g / C, Green / Cycle | 0.02 | 0.13 | 0.13 | 0.07 | 0.57 | 0.02 | 0.52 |
| (v / s), J Volume / Saturation Flow Rate | 0.01 | 0.09 | 0.03 | 0.06 | 0.17 | 0.01 | 0.31 |
| s, saturation flow rate [veh/h] | 1640 | 1774 | 1588 | 1774 | 1861 | 1774 | 1704 |
| c, Capacity [veh/h] | 34 | 224 | 200 | 132 | 1059 | 33 | 875 |
| d1, Uniform Delay [s] | 29.18 | 25.34 | 23.73 | 27.34 | 6.70 | 29.26 | 10.35 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 8.70 | 4.41 | 0.59 | 7.83 | 0.69 | 7.54 | 3.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

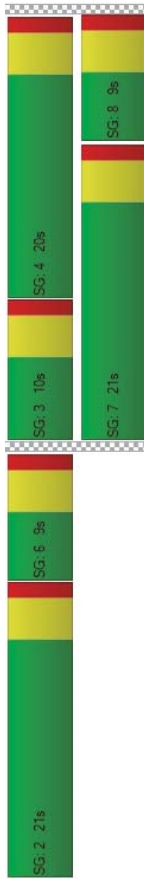
| | | | | | | | |
|------------------------------------|-------|--------|-------|-------|-------|-------|--------|
| X, volume / capacity | 0.44 | 0.72 | 0.23 | 0.74 | 0.29 | 0.40 | 0.60 |
| d, Delay for Lane Group [s/veh] | 37.88 | 29.75 | 24.32 | 35.27 | 7.39 | 36.79 | 13.45 |
| Lane Group LOS | D | C | C | D | A | D | B |
| Critical Lane Group | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.30 | 2.37 | 0.60 | 1.57 | 1.69 | 0.24 | 4.57 |
| 50th-Percentile Queue Length [ft] | 7.50 | 59.15 | 15.03 | 39.35 | 42.25 | 6.08 | 114.31 |
| 95th-Percentile Queue Length [veh] | 0.54 | 4.28 | 1.08 | 2.83 | 3.04 | 0.44 | 8.08 |
| 95th-Percentile Queue Length [ft] | 13.51 | 106.46 | 27.06 | 70.83 | 76.05 | 10.94 | 201.98 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 37.88 | 37.88 | 37.88 | 29.75 | 24.32 | 24.32 | 35.27 | 7.39 | 7.39 | 36.79 | 13.45 | 13.45 |
| Movement LOS | D | D | D | C | C | C | D | A | A | D | B | B |
| d, A, Approach Delay [s/veh] | | | 37.88 | | 28.53 | | | 14.14 | | | 14.01 | |
| Approach LOS | | D | | | C | | | B | | | B | |
| d, I, Intersection Delay [s/veh] | | | | | | | 16.95 | | | | | |
| Intersection LOS | | | | | | | B | | | | | |
| Intersection V/C | | | | | | | 0.582 | | | | | |

Sequence

| | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 18.2
Level Of Service: B
Volume to Capacity (v/c): 0.634

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 20 | 252 | 2 | 65 | 45 | 316 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 4 | 20 | 252 | 2 | 65 | 45 | 316 | 7 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 5 | 68 | 1 | 17 | 12 | 85 | 2 |
| Total Analysis Volume [veh/h] | 2 | 4 | 21 | 271 | 2 | 70 | 48 | 339 | 8 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 15.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss |
|------------------------------|-------|-------|-------|-------|-------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 |
| Split [s] | 0 | 9 | 0 | 0 | 26 | 9 | 16 | 9 | 16 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Rest In Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C |
|---|---------------|---------------|---------------|---------------|--------------|---------------|---------------|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| 11.p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g.L, Effective Green Time [s] g / C, Green / Cycle | 2 0.03 | 12 0.19 | 12 0.19 | 3 0.05 | 30 0.50 | 1 0.02 | 28 0.46 |
| (v/s), Volume / Saturation Flow Rate | 0.02 | 0.15 | 0.05 | 0.03 | 0.19 | 0.01 | 0.27 |
| s, saturation flow rate [veh/h] | 1633 | 1774 | 1590 | 1774 | 1855 | 1774 | 1742 |
| c, Capacity [veh/h] | 53 | 343 | 307 | 85 | 914 | 29 | 803 |
| d1, Uniform Delay [s] k, delay calibration | 28.69 0.11 | 23.17 0.11 | 20.56 0.11 | 28.09 0.11 | 9.54 0.50 | 29.38 0.11 | 11.98 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.24 | 4.12 | 0.39 | 5.78 | 1.20 | 8.14 | 3.08 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| X, volume / capacity | 0.51 | Lane Group LOS | | | | Critical Lane Group | | | |
|------------------------------------|-------|----------------|-------|-------|--------|---------------------|--------|-----|----|
| | | D | C | C | D | Yes | No | Yes | No |
| d, Delay for Lane Group [s/veh] | 35.93 | 27.29 | 20.95 | 33.87 | 10.74 | 37.50 | 15.06 | | |
| 50th-Percentile Queue Length [veh] | 0.50 | 3.79 | 0.83 | 0.77 | 2.58 | 0.21 | 4.43 | | |
| 50th-Percentile Queue Length [ft] | 12.43 | 94.69 | 20.84 | 19.21 | 64.39 | 5.32 | 110.80 | | |
| 95th-Percentile Queue Length [veh] | 0.89 | 6.82 | 1.50 | 1.38 | 4.64 | 0.38 | 7.88 | | |
| 95th-Percentile Queue Length [ft] | 22.37 | 170.45 | 37.52 | 34.58 | 115.90 | 9.57 | 197.12 | | |

Movement, Approach, & Intersection Results

[illegible]

Sequence

[illegible]

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 61.5
Level Of Service: F
Volume to Capacity (v/c): 0.751

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 17 | 150 | 1 | 43 | 91 | 283 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 2 | 17 | 150 | 1 | 43 | 91 | 283 | 3 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 5 | 40 | 0 | 12 | 25 | 76 | 1 |
| Total Analyse Volume [veh/h] | 3 | 2 | 18 | 162 | 1 | 46 | 98 | 305 | 3 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | No | No | Yes | Free |
| Storage Area [veh] | 0 | 0 | 1 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.01 | 0.02 | 0.75 | 0.00 | 0.07 | 0.09 | 0.00 | 0.02 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 23.21 | 23.72 | 10.31 | 61.51 | 60.00 | 50.27 | 8.83 | 0.00 | 7.92 | 0.00 | 0.00 |
| Movement LOS | C | C | B | F | F | F | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.16 | 0.16 | 0.16 | 6.26 | 6.26 | 6.26 | 0.31 | 0.00 | 0.05 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 3.90 | 3.90 | 3.90 | 156.54 | 156.54 | 156.54 | 7.80 | 0.00 | 1.22 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 13.16 | | | 59.03 | | | 2.13 | | | 0.29 | |
| Approach LOS | B | | | F | | | A | | | A | |
| d, I, Intersection Delay [s/veh] | | | | | | | 11.51 | | | | |
| Intersection LOS | | | | | | | F | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 54.4
Level Of Service: F
Volume to Capacity (v/c): 0.664

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 124 | 30 | 12 | 482 | 501 | 143 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 124 | 30 | 12 | 482 | 501 | 143 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 8 | 3 | 134 | 139 | 40 |
| Total Analyse Volume [veh/h] | 138 | 33 | 13 | 536 | 557 | 159 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.68 | 0.07 | 0.01 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 54.36 | 13.10 | 9.13 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 4.23 | 0.22 | 0.04 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 105.86 | 5.55 | 1.12 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 46.40 | | 0.22 | | | 0.00 |
| Approach LOS | E | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | | 5.61 | | |
| Intersection LOS | | | | F | | |

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 152.7
Level Of Service: F
Volume to Capacity (v/c): 1.064

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 25 | 252 | 2 | 65 | 45 | 316 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 4 | 25 | 252 | 2 | 65 | 45 | 316 | 7 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 7 | 68 | 1 | 17 | 12 | 85 | 2 |
| Total Analyse Volume [veh/h] | 2 | 4 | 27 | 271 | 2 | 70 | 48 | 339 | 8 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | | | | | | |
|------------------------------------|-----|---|--|--|--|--|--|---|---|
| Priority Scheme | | | | | | | | | |
| Flared Lane | Yes | | | | | | | | |
| Storage Area [veh] | | 0 | | | | | | 0 | 0 |
| Two-Stage Gap Acceptance | No | | | | | | | | |
| Number of Storage Spaces in Median | | 0 | | | | | | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|-------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.02 | 0.04 | 1.08 | 0.01 | 0.10 | 0.04 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 21.32 | 19.82 | 10.61 | 152.67 | 151.10 | 143.63 | 8.44 | 0.00 | 0.00 | 8.01 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | C | B | F | F | F | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.20 | 0.20 | 0.20 | 15.18 | 15.18 | 15.18 | 0.14 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 5.06 | 5.06 | 5.06 | 379.52 | 379.52 | 379.52 | 3.44 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | | 12.39 | | | 150.81 | | | | | | | | 0.26 |
| Approach LOS | | B | | | F | | | | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | | | | | 41.97 | | | | | | |
| Intersection LOS | | | | | | | F | | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 96.0
Level Of Service: F
Volume to Capacity (v/c): 0.887

Intersection Setup

| Name | Moorland Ave | | Todd Rd | |
|------------------------|--------------|-------|-----------|--------|
| Approach | Southbound | | Eastbound | |
| Lane Configuration | TT | | TL | |
| Turning Movement | Left | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | 35.00 |
| Grade [%] | 0.00 | | 0.00 | 0.00 |
| Crosswalk | No | | No | |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 142 | 30 | 40 | 611 | 433 | 189 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 142 | 30 | 40 | 611 | 433 | 189 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 38 | 8 | 11 | 163 | 115 | 50 |
| Total Analyse Volume [veh/h] | 151 | 32 | 43 | 650 | 461 | 201 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.89 | 0.06 | 0.05 | 0.01 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 96.05 | 12.28 | 9.07 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 6.42 | 0.19 | 0.15 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 160.45 | 4.84 | 3.65 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 81.40 | | 0.56 | | | |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 9.94 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 17.5
Level Of Service: B
Volume to Capacity (v/c): 0.589

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | T | | | T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 17 | 150 | 1 | 43 | 91 | 283 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 2 | 17 | 150 | 1 | 43 | 91 | 283 | 3 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 5 | 40 | 0 | 12 | 25 | 76 | 1 |
| Total Analysis Volume [veh/h] | 3 | 2 | 18 | 162 | 1 | 46 | 98 | 305 | 3 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protecte | Permiss | Protecte | Permiss |
|------------------------------|-------|-------|-------|-------|-------|----------|---------|----------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 |
| Split [s] | 0 | 21 | 0 | 0 | 9 | 0 | 10 | 9 | 20 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Rest in Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C |
|--|-------|-------|-------|-------|------|-------|-------|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | 2 | 8 | 8 | 4 | 33 | 1 | 31 |
| g / C, Green / Cycle | 0.03 | 0.12 | 0.12 | 0.07 | 0.56 | 0.02 | 0.51 |
| (v / s), J Volume / Saturation Flow Rate | 0.01 | 0.09 | 0.03 | 0.06 | 0.17 | 0.01 | 0.31 |
| s, saturation flow rate [veh/h] | 1627 | 1774 | 1588 | 1774 | 1860 | 1774 | 1704 |
| c, Capacity [veh/h] | 47 | 223 | 200 | 132 | 1030 | 46 | 861 |
| d1, Uniform Delay [s] | 28.83 | 25.35 | 23.73 | 27.34 | 7.20 | 28.93 | 10.70 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.61 | 4.43 | 0.60 | 7.95 | 0.74 | 6.28 | 3.27 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

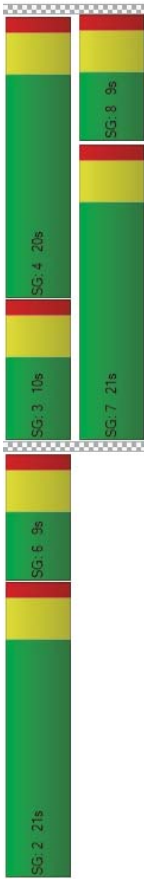
| | | | | | | | |
|------------------------------------|-------|--------|-------|-------|-------|-------|--------|
| X, volume / capacity | 0.49 | 0.72 | 0.23 | 0.74 | 0.30 | 0.43 | 0.61 |
| d, Delay for Lane Group [s/veh] | 36.44 | 29.77 | 24.33 | 35.29 | 7.94 | 35.21 | 13.97 |
| Lane Group LOS | D | C | C | D | A | D | B |
| Critical Lane Group | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.43 | 2.37 | 0.60 | 1.57 | 1.80 | 0.35 | 4.71 |
| 50th-Percentile Queue Length [ft] | 10.81 | 59.18 | 15.04 | 39.36 | 45.03 | 8.68 | 117.63 |
| 95th-Percentile Queue Length [veh] | 0.78 | 4.28 | 1.08 | 2.83 | 3.24 | 0.62 | 8.26 |
| 95th-Percentile Queue Length [ft] | 19.45 | 106.52 | 27.07 | 70.85 | 81.05 | 15.62 | 206.56 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 36.44 | 36.44 | 36.44 | 29.77 | 24.33 | 24.33 | 35.29 | 7.94 | 7.94 | 35.21 | 13.97 | 13.97 |
| Movement LOS | D | D | D | C | C | C | D | A | A | D | B | B |
| d, A, Approach Delay [s/veh] | | | 36.44 | | | 28.55 | | 14.54 | | | 14.74 | |
| Approach LOS | | | D | | | C | | B | | | B | |
| d, I, Intersection Delay [s/veh] | | | | | | 17.53 | | | | | | |
| Intersection LOS | | | | | | B | | | | | | |
| Intersection V/C | | | | | | 0.589 | | | | | | |

Sequence

| | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 18.6
Level Of Service: B
Volume to Capacity (v/c): 0.639

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 25 | 252 | 2 | 65 | 45 | 316 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 4 | 25 | 252 | 2 | 65 | 45 | 316 | 7 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 7 | 68 | 1 | 17 | 12 | 85 | 2 |
| Total Analysis Volume [veh/h] | 2 | 4 | 27 | 271 | 2 | 70 | 48 | 339 | 8 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 15.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protecte | Permiss | Protecte | Permiss |
|------------------------------|-------|-------|-------|-------|-------|----------|---------|----------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | - | - | - | - |
| Lead / Lag | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 0 | 30 |
| Maximum Green [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Amber [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 |
| All red [s] | 0 | 9 | 0 | 0 | 26 | 0 | 9 | 16 | 0 |
| Split [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Vehicle Extension [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 |
| Walk [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Rest in Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | | C | L | C | L | C | L | C |
|--|--|-------|-------|-------|-------|------|-------|-------|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | | 2 | 12 | 12 | 3 | 29 | 1 | 28 |
| g / C, Green / Cycle | | 0.04 | 0.19 | 0.19 | 0.05 | 0.48 | 0.02 | 0.46 |
| (v / s), J Volume / Saturation Flow Rate | | 0.02 | 0.15 | 0.05 | 0.03 | 0.19 | 0.01 | 0.27 |
| s, saturation flow rate [veh/h] | | 1623 | 1774 | 1590 | 1774 | 1855 | 1774 | 1742 |
| c, Capacity [veh/h] | | 61 | 342 | 307 | 85 | 894 | 39 | 794 |
| d1, Uniform Delay [s] | | 28.49 | 23.17 | 20.57 | 28.09 | 9.95 | 29.11 | 12.20 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 |
| l, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 7.15 | 4.13 | 0.39 | 5.78 | 1.27 | 6.87 | 3.19 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | |
|------------------------------------|--|-------|--------|-------|-------|--------|-------|--------|
| X, volume / capacity | | 0.54 | 0.79 | 0.23 | 0.57 | 0.39 | 0.41 | 0.59 |
| d, Delay for Lane Group [s/veh] | | 35.65 | 27.30 | 20.95 | 33.88 | 11.22 | 35.98 | 15.39 |
| Lane Group LOS | | D | C | C | C | B | D | B |
| Critical Lane Group | | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | | 0.60 | 3.79 | 0.83 | 0.77 | 2.66 | 0.29 | 4.50 |
| 50th-Percentile Queue Length [ft] | | 14.93 | 94.72 | 20.84 | 19.21 | 66.55 | 7.20 | 112.58 |
| 95th-Percentile Queue Length [veh] | | 1.07 | 6.82 | 1.50 | 1.38 | 4.79 | 0.52 | 7.98 |
| 95th-Percentile Queue Length [ft] | | 26.87 | 170.50 | 37.52 | 34.68 | 119.79 | 12.96 | 199.59 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 |
| Movement LOS | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D |
| d, A, Approach Delay [s/veh] | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 | 35.65 |
| Approach LOS | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D |
| d, I, Intersection Delay [s/veh] | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 | 18.63 |
| Intersection LOS | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| Intersection V/C | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 | 0.639 |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 751.5
Level Of Service: F
Volume to Capacity (v/c): 2.319

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 6 | 57 | 0 | 19 | 37 | 101 | 1 |
| Total Analyse Volume [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | | |
|------------------------------------|------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free | Free |
| Flared Lane | Yes | | | | |
| Storage Area [veh] | 0 | 1 | | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | | |
| Number of Storage Spaces in Median | 0 | 0 | | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|--------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.04 | 0.02 | 0.04 | 2.32 | 0.01 | 0.15 | 0.18 | 0.00 | 0.02 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 49.30 | 47.83 | 11.84 | 751.48 | 745.26 | 721.84 | 10.50 | 0.00 | 8.20 | 0.00 | 0.00 |
| Movement LOS | E | E | B | F | F | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.32 | 0.32 | 0.32 | 26.65 | 26.65 | 26.65 | 0.67 | 0.00 | 0.07 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 7.90 | 7.90 | 7.90 | 666.25 | 666.25 | 666.25 | 16.82 | 0.00 | 1.73 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | | 18.20 | | 744.17 | | | | 2.80 | | | 0.25 |
| Approach LOS | | C | | F | | | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | | | | | 130.05 | | | | |
| Intersection LOS | | | | | | | F | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 75.9
Level Of Service: F
Volume to Capacity (v/c): 0.473

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 43 | 111 | 118 | 570 | 765 | 163 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 43 | 111 | 118 | 570 | 765 | 163 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 11 | 28 | 30 | 143 | 191 | 41 |
| Total Analyse Volume [veh/h] | 43 | 111 | 118 | 570 | 765 | 163 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|-------|-------|-------|------|------|------|
| V/C, Movement V/C Ratio | 0.47 | 0.31 | 0.16 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 75.94 | 19.28 | 10.82 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | C | B | A | A | A |
| 95th-Percentile Queue Length [veh] | 2.01 | 1.27 | 0.57 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 50.35 | 31.87 | 14.20 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | | 35.10 | 1.85 | | | |
| Approach LOS | | E | A | | A | |
| d, I, Intersection Delay [s/veh] | | | 3.78 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 1,426.6
Level Of Service: F
Volume to Capacity (v/c): 3.609

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 4 | 34 | 438 | 2 | 199 | 108 | 350 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 4 | 34 | 438 | 2 | 199 | 108 | 350 | 8 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 9 | 110 | 1 | 50 | 27 | 88 | 2 |
| Total Analyse Volume [veh/h] | 3 | 4 | 34 | 438 | 2 | 199 | 108 | 350 | 8 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | No | No | Yes | Free |
| Storage Area [veh] | 0 | 0 | 1 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|---------|---------|---------|--------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.04 | 0.03 | 0.05 | 3.61 | 0.01 | 0.41 | 0.13 | 0.00 | 0.02 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 60.03 | 37.45 | 11.86 | 1426.63 | 1421.18 | 1404.35 | 10.02 | 0.00 | 8.06 | 0.00 | 0.00 |
| Movement LOS | F | E | B | F | F | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.43 | 0.43 | 0.43 | 63.80 | 63.80 | 63.80 | 0.45 | 0.00 | 0.06 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 10.87 | 10.87 | 10.87 | 1594.98 | 1594.98 | 1594.98 | 11.25 | 0.00 | 1.53 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 17.88 | | | 1419.67 | | | 2.32 | | | 0.24 | |
| Approach LOS | C | | | F | | | A | | | A | |
| d, I, Intersection Delay [s/veh] | | | | | | | 461.98 | | | | |
| Intersection LOS | | | | | | | F | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 232.1
Level Of Service: F
Volume to Capacity (v/c): 1.143

Intersection Setup

| Name | Moorland Ave | | Todd Rd | |
|------------------------|--------------|-------|-----------|--------|
| Approach | Southbound | | Eastbound | |
| Lane Configuration | TT | | TL | |
| Turning Movement | Left | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | |
| Grade [%] | 0.00 | | 0.00 | |
| Crosswalk | No | | No | |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 96 | 186 | 139 | 739 | 647 | 89 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 96 | 186 | 139 | 739 | 647 | 89 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 24 | 47 | 35 | 185 | 162 | 22 |
| Total Analyse Volume [veh/h] | 96 | 186 | 139 | 739 | 647 | 89 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| V/C, Movement V/C Ratio | 1.14 | 0.42 | 0.16 | 0.01 | 0.01 | 0.00 |
|------------------------------------|--------|-------|-------|------|------|------|
| d, M, Delay for Movement [s/veh] | 232.06 | 18.82 | 9.93 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 6.80 | 2.03 | 0.57 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 169.96 | 50.82 | 14.18 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 91.41 | | 1.57 | | | |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 14.32 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 30.1
Level Of Service: C
Volume to Capacity (v/c): 0.825

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 6 | 57 | 0 | 19 | 37 | 101 | 1 |
| Total Analysis Volume [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss |
|------------------------------|-------|-------|-------|-------|-------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 |
| Split [s] | 0 | 9 | 0 | 0 | 15 | 0 | 13 | 57 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Rest In Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C | L | C |
|---|-------|-------|-------|-------|------|-------|-------|------|------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | 3 | 13 | 13 | 9 | 56 | 2 | 49 | | |
| g / C, Green / Cycle | 0.03 | 0.15 | 0.15 | 0.10 | 0.62 | 0.03 | 0.55 | | |
| (v / s), J, Volume / Saturation Flow Rate | 0.02 | 0.13 | 0.05 | 0.08 | 0.22 | 0.01 | 0.49 | | |
| s, saturation flow rate [veh/h] | 1618 | 1774 | 1587 | 1774 | 1860 | 1774 | 1705 | | |
| c, Capacity [veh/h] | 47 | 259 | 231 | 180 | 1155 | 47 | 931 | | |
| d1, Uniform Delay [s] | 43.23 | 37.64 | 34.47 | 39.63 | 8.28 | 43.27 | 18.06 | | |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | | |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| d2, Incremental Delay [s] | 12.73 | 8.88 | 0.80 | 8.81 | 0.85 | 9.50 | 12.55 | | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |

Lane Group Results

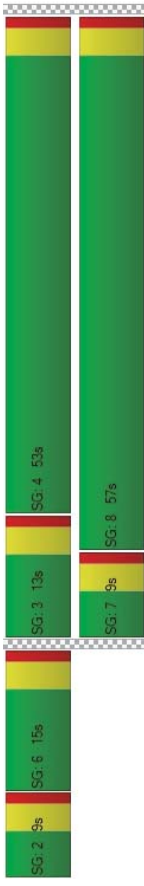
| | | | | | | | |
|------------------------------------|-------|--------|-------|--------|--------|-------|--------|
| X, volume / capacity | 0.62 | 0.87 | 0.32 | 0.82 | 0.35 | 0.55 | 0.89 |
| d, Delay for Lane Group [s/veh] | 55.96 | 46.61 | 35.27 | 48.54 | 9.13 | 52.77 | 30.60 |
| Lane Group LOS | E | D | D | D | A | D | C |
| Critical Lane Group | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.82 | 5.43 | 1.50 | 3.57 | 3.60 | 0.69 | 16.56 |
| 50th-Percentile Queue Length [ft] | 20.59 | 135.63 | 37.62 | 89.28 | 89.88 | 17.13 | 414.01 |
| 95th-Percentile Queue Length [veh] | 1.48 | 9.25 | 2.71 | 6.43 | 6.47 | 1.23 | 23.23 |
| 95th-Percentile Queue Length [ft] | 37.06 | 231.13 | 67.71 | 160.70 | 161.79 | 30.84 | 580.85 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 55.96 | 55.96 | 55.96 | 46.61 | 35.27 | 48.54 | 9.13 | 9.13 | 52.77 | 30.60 | 30.60 |
| Movement LOS | E | E | E | D | D | D | A | A | D | C | C |
| d, A, Approach Delay [s/veh] | | | 55.96 | | 43.79 | | 19.64 | | | 31.28 | |
| Approach LOS | | | E | | D | | B | | | C | |
| d, I, Intersection Delay [s/veh] | | | | | | 30.14 | | | | | |
| Intersection LOS | | | | | | C | | | | | |
| Intersection V/C | | | | | | 0.825 | | | | | |

Sequence

| | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 38.2
Level Of Service: D
Volume to Capacity (v/c): 0.908

Intersection Setup

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|------------------------|-------------|--------|--------|--------|--------------|--------|--------|--------|-----------|--------|--------|--------|
| Approach | Northbound | | | | Southbound | | | | Eastbound | | | |
| Lane Configuration | + | | | | T | | | | T | | | |
| Turning Movement | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | | 30.00 | | | | 35.00 | | | |
| Grade [%] | 0.00 | | | | 0.00 | | | | 0.00 | | | |
| Crosswalk | No | | | | No | | | | No | | | |

Volumes

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|---|-------------|--------|--------|--|--------------|--------|--------|--|---------|--------|--------|--|
| Base Volume Input [veh/h] | 3 | 4 | 34 | | 438 | 2 | 199 | | 108 | 350 | 8 | |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | |
| Growth Rate | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | |
| In-Process Volume [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Diverted Trips [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Other Volume [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 11 | | 0 | 0 | 66 | | 0 | 0 | 3 | |
| Total Hourly Volume [veh/h] | 3 | 4 | 23 | | 438 | 2 | 133 | | 108 | 350 | 5 | |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 6 | | 110 | 1 | 33 | | 27 | 88 | 1 | |
| Total Analysis Volume [veh/h] | 3 | 4 | 23 | | 438 | 2 | 133 | | 108 | 350 | 5 | |
| Presence of On-Street Parking | No | No | No | | No | No | No | | No | No | No | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 15.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|---------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 0 | 7 | 0 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | - | Lead | - | Lead | - | - |
| Lead / Lag | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |
| Maximum Green [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Amber [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 |
| All red [s] | 0 | 9 | 0 | 0 | 27 | 0 | 9 | 45 | 0 | 9 | 45 |
| Split [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Vehicle Extension [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 |
| Walk [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 | 0 | 0 |
| Pedestrian Clearance [s] | No | No | No | No | No | No | No | No | No | No | No |
| Rest In Walk | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C | L | C |
|---|-------|-------|-------|-------|-------|-------|-------|------|------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | 3 | 24 | 24 | 6 | 45 | 2 | 41 | | |
| g / C, Green / Cycle | 0.03 | 0.27 | 0.27 | 0.07 | 0.50 | 0.03 | 0.45 | | |
| (v / s), J, Volume / Saturation Flow Rate | 0.02 | 0.25 | 0.09 | 0.06 | 0.19 | 0.01 | 0.42 | | |
| s, saturation flow rate [veh/h] | 1634 | 1774 | 1587 | 1774 | 1858 | 1774 | 1741 | | |
| c, Capacity [veh/h] | 48 | 472 | 423 | 129 | 932 | 45 | 790 | | |
| d1, Uniform Delay [s] | 43.19 | 32.17 | 26.48 | 41.18 | 13.82 | 43.36 | 23.18 | | |
| k, delay calibration | 0.11 | 0.26 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | | |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| d2, Incremental Delay [s] | 12.60 | 16.74 | 0.43 | 12.89 | 1.18 | 9.73 | 18.46 | | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |

Lane Group Results

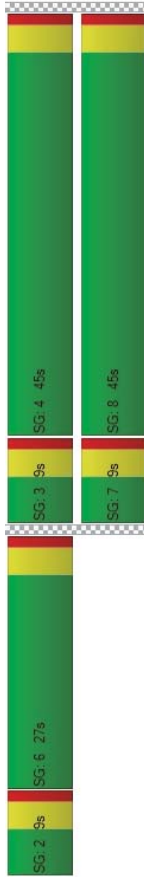
| | | | | | | | |
|------------------------------------|-------|--------|--------|--------|--------|-------|--------|
| X, volume / capacity | 0.63 | 0.93 | 0.32 | 0.63 | 0.38 | 0.54 | 0.93 |
| d, Delay for Lane Group [s/veh] | 55.79 | 48.91 | 26.91 | 54.07 | 15.01 | 53.09 | 41.63 |
| Lane Group LOS | E | D | C | D | B | D | D |
| Critical Lane Group | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.85 | 11.19 | 2.33 | 2.77 | 4.41 | 0.64 | 17.35 |
| 50th-Percentile Queue Length [ft] | 21.22 | 279.64 | 58.28 | 69.35 | 110.30 | 15.94 | 433.63 |
| 95th-Percentile Queue Length [veh] | 1.53 | 16.67 | 4.20 | 4.99 | 7.66 | 1.15 | 24.18 |
| 95th-Percentile Queue Length [ft] | 38.20 | 416.77 | 104.90 | 124.83 | 196.42 | 28.70 | 604.39 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 | 55.79 |
| Movement LOS | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| d, A, Approach Delay [s/veh] | | | | | | | | | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | | | | | | | | |
| d, I, Intersection Delay [s/veh] | | | | | | | | | | | | | | | | | | | |
| Intersection LOS | | | | | | | | | | | | | | | | | | | |
| Intersection V/C | | | | | | | | | | | | | | | | | | | |

Sequence

| | | | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 116.9
Level Of Service: F
Volume to Capacity (v/c): 0.947

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 2 | 10 | 150 | 1 | 43 | 91 | 283 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 2 | 53 | 150 | 1 | 43 | 91 | 283 | 4 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 14 | 40 | 0 | 12 | 25 | 76 | 1 |
| Total Analyse Volume [veh/h] | 4 | 2 | 57 | 162 | 1 | 46 | 98 | 305 | 4 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | No | No | No | Free |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|-------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.02 | 0.01 | 0.08 | 0.95 | 0.00 | 0.07 | 0.09 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 26.37 | 26.79 | 10.72 | 116.91 | 113.27 | 101.34 | 8.83 | 0.00 | 0.00 | 8.02 | 0.00 | 0.00 |
| Movement LOS | D | D | B | F | F | F | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.38 | 0.38 | 0.38 | 8.97 | 8.97 | 8.97 | 0.31 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 9.43 | 9.43 | 9.43 | 224.25 | 224.25 | 224.25 | 7.80 | 0.00 | 0.00 | 3.64 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 12.22 | | | 113.47 | | | 2.13 | | | 0.79 | | |
| Approach LOS | B | | | F | | | A | | | A | | |
| d, I, Intersection Delay [s/veh] | | | | | | | 20.39 | | | | | |
| Intersection LOS | | | | | | | F | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 70.6
Level Of Service: F
Volume to Capacity (v/c): 0.766

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--|---------|--------|--------|
| Base Volume Input [veh/h] | 124 | 30 | | 12 | 475 | 494 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | | 2 | 41 | 40 |
| Diverted Trips [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 124 | 32 | | 14 | 516 | 534 |
| Peak Hour Factor | 0.9000 | 0.9000 | | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 9 | | 4 | 143 | 148 |
| Total Analyse Volume [veh/h] | 138 | 36 | | 16 | 573 | 593 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.77 | 0.08 | 0.02 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 70.62 | 13.58 | 9.28 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 5.03 | 0.26 | 0.06 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 125.66 | 6.41 | 1.43 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 58.82 | | 0.25 | | | 0.00 |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 6.85 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 287.6
Level Of Service: F
Volume to Capacity (v/c): 1.391

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 20 | 252 | 2 | 65 | 45 | 316 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 4 | 63 | 252 | 2 | 65 | 45 | 316 | 9 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 17 | 68 | 1 | 17 | 12 | 85 | 2 |
| Total Analyse Volume [veh/h] | 4 | 4 | 68 | 271 | 2 | 70 | 48 | 339 | 10 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | | |
|------------------------------------|------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free | Free |
| Flared Lane | No | No | Yes | | |
| Storage Area [veh] | 0 | 0 | 1 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|-------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.02 | 0.02 | 0.10 | 1.39 | 0.01 | 0.10 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 24.49 | 22.70 | 11.17 | 287.60 | 283.96 | 274.49 | 8.44 | 0.00 | 0.00 | 8.12 | 0.00 | 0.00 |
| Movement LOS | C | C | B | F | F | F | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.47 | 0.47 | 0.47 | 20.52 | 20.52 | 20.52 | 0.14 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 11.75 | 11.75 | 11.75 | 512.96 | 512.96 | 512.96 | 3.44 | 0.00 | 0.00 | 3.64 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 12.48 | | | 284.90 | | | 1.02 | | | 0.87 | | |
| Approach LOS | B | | | F | | | A | | | A | | |
| d, I, Intersection Delay [s/veh] | | | | | | | 74.28 | | | | | |
| Intersection LOS | | | | | | | F | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 130.5
Level Of Service: F
Volume to Capacity (v/c): 0.994

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 142 | 30 | 40 | 606 | 428 | 189 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | 2 | 41 | 40 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 142 | 32 | 42 | 647 | 468 | 189 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 38 | 9 | 11 | 172 | 124 | 50 |
| Total Analyse Volume [veh/h] | 151 | 34 | 45 | 688 | 498 | 201 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|-------|------|------|------|
| V/C, Movement V/C Ratio | 0.99 | 0.07 | 0.05 | 0.01 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 130.49 | 12.69 | 9.22 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 7.47 | 0.22 | 0.16 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 186.82 | 5.43 | 3.95 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 108.84 | | 0.57 | | | 0.00 |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 12.71 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 20.0
Level Of Service: B
Volume to Capacity (v/c): 0.620

Intersection Setup

| Name | Ghiloti Ave Northbound | | | Standish Ave Southbound | | | Todd Rd Eastbound | | | Todd Rd Westbound | | |
|------------------------|---------------------------|--------|--------|----------------------------|--------|--------|----------------------|--------|--------|----------------------|--------|--------|
| Approach | | | | | | | | | | | | |
| Lane Configuration | + | | | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | | No | | |

Volumes

| Name | | Ghiloti Ave | | Standish Ave | | Todd Rd | | Todd Rd | | | | |
|---|--------|-------------|--------|--------------|--------|---------|--------|---------|--------|--------|--------|--------|
| Base Volume Input [veh/h] | 2 | 2 | 10 | 150 | 1 | 43 | 91 | 283 | 2 | 12 | 232 | 259 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 2 | 42 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 2 | 53 | 150 | 1 | 43 | 91 | 283 | 4 | 54 | 232 | 259 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 14 | 40 | 0 | 12 | 25 | 76 | 1 | 15 | 63 | 70 |
| Total Analysis Volume [veh/h] | 4 | 2 | 57 | 162 | 1 | 46 | 98 | 305 | 4 | 58 | 250 | 279 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [1/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [1/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Protecte | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|----------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | - | Lead | - | - | - |
| Lead / Lag | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 5 |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| Maximum Green [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Amber [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 |
| All red [s] | 0 | 21 | 0 | 0 | 9 | 0 | 10 | 0 | 21 | 0 |
| Split [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Vehicle Extension [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 0 |
| Walk [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 | 0 |
| Rest In Walk | No | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C |
|--|-------|-------|-------|-------|------|-------|-------|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | 3 | 7 | 7 | 4 | 30 | 3 | 29 |
| g / C, Green / Cycle | 0.06 | 0.12 | 0.12 | 0.07 | 0.50 | 0.05 | 0.48 |
| (v / s), J Volume / Saturation Flow Rate | 0.04 | 0.09 | 0.03 | 0.06 | 0.17 | 0.03 | 0.31 |
| s, saturation flow rate [veh/h] | 1602 | 1774 | 1588 | 1774 | 1858 | 1774 | 1704 |
| c, Capacity [veh/h] | 91 | 223 | 199 | 132 | 926 | 96 | 815 |
| d1, Uniform Delay [s] | 27.93 | 25.37 | 23.76 | 27.35 | 9.10 | 27.89 | 11.90 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.12 | 4.50 | 0.60 | 8.02 | 0.97 | 5.99 | 3.99 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

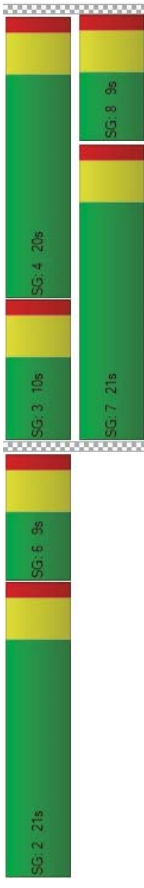
| | | | | | | | |
|------------------------------------|-------|--------|-------|-------|-------|-------|--------|
| X, volume / capacity | 0.69 | 0.73 | 0.24 | 0.74 | 0.33 | 0.60 | 0.65 |
| d, Delay for Lane Group [s/veh] | 37.05 | 29.87 | 24.36 | 35.36 | 10.07 | 33.87 | 15.89 |
| Lane Group LOS | D | C | C | D | B | C | B |
| Critical Lane Group | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.13 | 2.37 | 0.60 | 1.58 | 2.19 | 0.92 | 5.17 |
| 50th-Percentile Queue Length [ft] | 28.37 | 59.29 | 15.05 | 39.42 | 54.67 | 23.05 | 129.34 |
| 95th-Percentile Queue Length [veh] | 2.04 | 4.27 | 1.08 | 2.84 | 3.94 | 1.66 | 8.90 |
| 95th-Percentile Queue Length [ft] | 51.06 | 106.72 | 27.09 | 70.95 | 98.41 | 41.48 | 222.59 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 37.05 | 37.05 | 37.05 | 29.87 | 24.36 | 24.36 | 35.36 | 10.07 | 10.07 | 33.87 | 15.89 | 15.89 |
| Movement LOS | D | D | D | C | C | C | D | B | B | C | B | B |
| d, A, Approach Delay [s/veh] | | | 37.05 | | | 28.63 | | 16.16 | | | 17.67 | |
| Approach LOS | | D | | | C | | | B | | | B | |
| d, I, Intersection Delay [s/veh] | | | | | | | 19.96 | | | | | |
| Intersection LOS | | | | | | | B | | | | | |
| Intersection V/C | | | | | | | 0.620 | | | | | |

Sequence

| | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 21.1
Level Of Service: C
Volume to Capacity (v/c): 0.676

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 20 | 252 | 2 | 65 | 45 | 316 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 4 | 63 | 252 | 2 | 65 | 45 | 316 | 9 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 17 | 68 | 1 | 17 | 12 | 85 | 2 |
| Total Analysis Volume [veh/h] | 4 | 4 | 68 | 271 | 2 | 70 | 48 | 339 | 10 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 15.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss |
|------------------------------|-------|-------|-------|-------|-------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 |
| Split [s] | 0 | 9 | 0 | 0 | 26 | 9 | 16 | 9 | 16 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Rest In Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | | C | L | C | L | C | L | C | L | C |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | | 4 | 11 | 11 | 3 | 26 | 3 | 26 | 3 | 26 |
| g / C, Green / Cycle | | 0.06 | 0.19 | 0.19 | 0.05 | 0.43 | 0.05 | 0.43 | 0.05 | 0.44 |
| (v / s), J Volume / Saturation Flow Rate | | 0.05 | 0.15 | 0.05 | 0.03 | 0.19 | 0.03 | 0.19 | 0.03 | 0.27 |
| s, saturation flow rate [veh/h] | | 1605 | 1774 | 1590 | 1774 | 1853 | 1774 | 1853 | 1774 | 1742 |
| c, Capacity [veh/h] | | 98 | 340 | 304 | 83 | 796 | 92 | 757 | 92 | 757 |
| d1, Uniform Delay [s] | | 27.82 | 23.21 | 20.59 | 28.08 | 12.06 | 27.82 | 13.15 | 27.82 | 13.15 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.50 |
| l, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 12.10 | 4.31 | 0.40 | 6.17 | 1.75 | 6.34 | 3.77 | 6.34 | 3.77 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | |
|------------------------------------|--|-------|--------|-------|-------|--------|-------|--------|-------|--------|
| X, volume / capacity | | 0.77 | 0.80 | 0.24 | 0.58 | 0.44 | 0.61 | 0.62 | 0.61 | 0.62 |
| d, Delay for Lane Group [s/veh] | | 39.92 | 27.52 | 20.99 | 34.25 | 13.82 | 34.25 | 16.93 | 34.25 | 16.93 |
| Lane Group LOS | | D | C | C | C | B | C | B | C | B |
| Critical Lane Group | | Yes | Yes | No | Yes | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh] | | 1.42 | 3.80 | 0.83 | 0.77 | 3.13 | 0.90 | 4.83 | 0.90 | 4.83 |
| 50th-Percentile Queue Length [ft] | | 35.56 | 95.08 | 20.85 | 19.36 | 78.32 | 22.44 | 120.68 | 22.44 | 120.68 |
| 95th-Percentile Queue Length [veh] | | 2.56 | 6.85 | 1.50 | 1.39 | 5.64 | 1.62 | 8.43 | 1.62 | 8.43 |
| 95th-Percentile Queue Length [ft] | | 64.01 | 171.15 | 37.54 | 34.84 | 140.98 | 40.39 | 210.77 | 40.39 | 210.77 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 | 39.92 |
| Movement LOS | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D |
| d, A, Approach Delay [s/veh] | 26.15 | | | | | | | | | | | | | | | | |
| Approach LOS | C | | | | | | | | | | | | | | | | |
| d, I, Intersection Delay [s/veh] | 21.13 | | | | | | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | | | | | | |
| Intersection V/C | 0.676 | | | | | | | | | | | | | | | | |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 135.9
Level Of Service: F
Volume to Capacity (v/c): 0.998

Intersection Setup

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|------------------------|-------------|--------|--------|--------|--------------|--------|--------|--------|-----------|--------|--------|--------|
| Approach | Northbound | | | | Southbound | | | | Eastbound | | | |
| Lane Configuration | + | | | | + | | | | + | | | |
| Turning Movement | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | | 12.00 | 12.00 | 12.00 | | 12.00 | 12.00 | 12.00 | |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | | 30.00 | | | | 35.00 | | | |
| Grade [%] | 0.00 | | | | 0.00 | | | | 0.00 | | | |
| Crosswalk | No | | | | No | | | | No | | | |

Volumes

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|---|-------------|--------|--------|--------|--------------|--------|--------|--------|---------|--------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 17 | | 150 | 1 | 43 | | 91 | 283 | 3 | |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | |
| Growth Rate | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 2 | 43 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 2 | 60 | 150 | 1 | 43 | 91 | 283 | 5 | 62 | 232 | 259 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 16 | 40 | 0 | 12 | 25 | 76 | 1 | 17 | 63 | 70 |
| Total Analyse Volume [veh/h] | 5 | 2 | 65 | 162 | 1 | 46 | 98 | 305 | 5 | 67 | 250 | 279 |
| Pedestrian Volume [ped/h] | 0 | | | | 0 | | | | 0 | | | |

Intersection Settings

| Priority Scheme | Stop | Stop | Stop | Free | Free |
|------------------------------------|------|------|------|------|------|
| Flared Lane | | No | | | |
| Storage Area [veh] | | 0 | | 0 | 0 |
| Two-Stage Gap Acceptance | | No | | No | |
| Number of Storage Spaces in Median | | 0 | | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.03 | 0.01 | 0.09 | 1.00 | 0.00 | 0.07 | 0.09 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 27.26 | 27.65 | 10.89 | 135.92 | 131.72 | 119.20 | 8.83 | 0.00 | 0.00 | 8.04 | 0.00 | 0.00 |
| Movement LOS | D | D | B | F | F | F | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.45 | 0.45 | 0.45 | 9.66 | 9.66 | 9.66 | 0.31 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 11.16 | 11.16 | 11.16 | 241.44 | 241.44 | 241.44 | 7.80 | 0.00 | 0.00 | 4.24 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 12.49 | | | | 132.22 | | | | 2.12 | | | |
| Approach LOS | B | | | | F | | | | A | | | |
| d, I, Intersection Delay [s/veh] | 23.30 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 74.8
Level Of Service: F
Volume to Capacity (v/c): 0.764

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|---|---------|--------|--------|
| Base Volume Input [veh/h] | 124 | 30 | | 12 | 482 | 501 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | | 2 | 41 | 41 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 124 | 32 | | 14 | 523 | 542 |
| Peak Hour Factor | 0.9000 | 0.9000 | | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 9 | | 4 | 145 | 151 |
| Total Analyse Volume [veh/h] | 138 | 36 | | 16 | 581 | 602 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.78 | 0.08 | 0.02 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 74.83 | 13.69 | 9.31 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 5.20 | 0.26 | 0.06 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 130.11 | 6.49 | 1.44 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 62.18 | | 0.25 | | | 0.00 |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 7.16 | | | |
| Intersection LOS | F | | | | | |

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 310.2
Level Of Service: F
Volume to Capacity (v/c): 1.440

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 25 | 252 | 2 | 65 | 45 | 316 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 43 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 4 | 68 | 252 | 2 | 65 | 45 | 316 | 9 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 18 | 68 | 1 | 17 | 12 | 85 | 2 |
| Total Analyse Volume [veh/h] | 4 | 4 | 73 | 271 | 2 | 70 | 48 | 339 | 10 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | No | No | Yes | Free |
| Storage Area [veh] | 0 | 0 | 1 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|--------|--------|--------|-------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.02 | 0.02 | 0.10 | 1.44 | 0.01 | 0.10 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 24.98 | 23.13 | 11.23 | 310.21 | 306.24 | 296.45 | 8.44 | 0.00 | 0.00 | 8.14 | 0.00 | 0.00 |
| Movement LOS | C | C | B | F | F | F | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.50 | 0.50 | 0.50 | 21.23 | 21.23 | 21.23 | 0.14 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 12.55 | 12.55 | 12.55 | 530.82 | 530.82 | 530.82 | 3.44 | 0.00 | 0.00 | 4.05 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 12.50 | | | 307.38 | | | 1.02 | | | 0.95 | | |
| Approach LOS | B | | | F | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | | | | | | | 79.46 | | | | | |
| Intersection LOS | | | | | | | F | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

136.6
F
1.012

Control Type:
Analysis Method:
Analysis Period:

Two-way stop
HCM 2010
15 minutes

Intersection Setup

| Name | Moorland Ave | | Todd Rd | |
|------------------------|--------------|-------|-----------|--------|
| Approach | Southbound | | Eastbound | |
| Lane Configuration | TT | | TL | |
| Turning Movement | Left | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | 35.00 |
| Grade [%] | 0.00 | | 0.00 | 0.00 |
| Crosswalk | No | | No | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--|---------|--------|--------|
| Base Volume Input [veh/h] | 142 | 30 | | 40 | 611 | 433 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | | 2 | 41 | 41 |
| Diverted Trips [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 142 | 32 | | 42 | 652 | 474 |
| Peak Hour Factor | 0.9400 | 0.9400 | | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 38 | 9 | | 11 | 173 | 126 |
| Total Analysis Volume [veh/h] | 151 | 34 | | 45 | 694 | 504 |
| Pedestrian Volume [ped/h] | | 0 | | | 0 | 0 |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|-------|-------|------|------|------|
| V/C, Movement V/C Ratio | 1.01 | 0.07 | 0.05 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 136.56 | 12.76 | 9.25 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 7.63 | 0.22 | 0.16 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 190.86 | 5.48 | 3.97 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 113.80 | | 0.56 | | | 0.00 |
| Approach LOS | F | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 13.18 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Control Type: Signalized
Delay (sec / veh): 20.5
Analysis Method: HCM 2010
Level Of Service: C
Analysis Period: 15 minutes
Volume to Capacity (v/c): 0.627

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | T | | | T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 17 | 150 | 1 | 43 | 91 | 283 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 43 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 2 | 60 | 150 | 1 | 43 | 91 | 283 | 5 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 16 | 40 | 0 | 12 | 25 | 76 | 1 |
| Total Analysis Volume [veh/h] | 5 | 2 | 65 | 162 | 1 | 46 | 98 | 305 | 5 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protecte | Permiss | Protecte | Permiss |
|------------------------------|-------|-------|-------|-------|-------|----------|---------|----------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 |
| Split [s] | 0 | 21 | 0 | 0 | 9 | 0 | 10 | 9 | 20 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Rest in Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |



Lane Group Calculations

| Lane Group | | C | L | C | L | C | L | C |
|--|--|-------|-------|-------|-------|------|-------|-------|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | | 4 | 7 | 7 | 4 | 30 | 3 | 29 |
| g / C, Green / Cycle | | 0.06 | 0.12 | 0.12 | 0.07 | 0.49 | 0.06 | 0.48 |
| (v / s), J Volume / Saturation Flow Rate | | 0.04 | 0.09 | 0.03 | 0.06 | 0.17 | 0.04 | 0.31 |
| s, saturation flow rate [veh/h] | | 1602 | 1774 | 1588 | 1774 | 1857 | 1774 | 1704 |
| c, Capacity [veh/h] | | 97 | 223 | 199 | 132 | 910 | 104 | 808 |
| d1, Uniform Delay [s] | | 27.85 | 25.38 | 23.76 | 27.35 | 9.42 | 27.77 | 12.09 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 |
| l, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 10.41 | 4.51 | 0.60 | 8.03 | 1.02 | 6.56 | 4.11 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

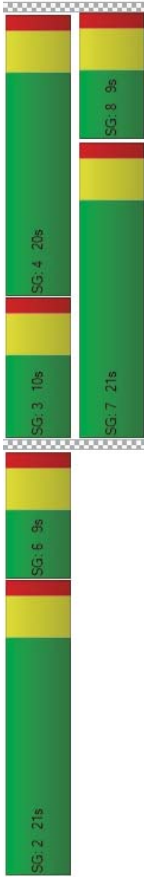
| | | | | | | | | |
|------------------------------------|--|-------|--------|-------|-------|--------|-------|--------|
| X, volume / capacity | | 0.74 | 0.73 | 0.24 | 0.74 | 0.34 | 0.65 | 0.65 |
| d, Delay for Lane Group [s/veh] | | 38.26 | 29.88 | 24.36 | 35.38 | 10.43 | 34.33 | 16.20 |
| Lane Group LOS | | D | C | C | D | B | C | B |
| Critical Lane Group | | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | | 1.32 | 2.37 | 0.60 | 1.58 | 2.25 | 1.07 | 5.25 |
| 50th-Percentile Queue Length [ft] | | 32.91 | 59.31 | 15.05 | 39.43 | 56.37 | 26.73 | 131.15 |
| 95th-Percentile Queue Length [veh] | | 2.37 | 4.27 | 1.08 | 2.84 | 4.06 | 1.92 | 9.00 |
| 95th-Percentile Queue Length [ft] | | 59.25 | 106.75 | 27.09 | 70.97 | 101.47 | 48.11 | 225.05 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 38.26 | 38.26 | 38.26 | 29.88 | 24.36 | 24.36 | 35.38 | 10.43 | 10.43 | 34.33 | 16.20 | 16.20 |
| Movement LOS | D | D | D | C | C | C | D | B | B | C | B | B |
| d, A, Approach Delay [s/veh] | | | 38.26 | | | 28.64 | | 16.42 | | | 18.24 | |
| Approach LOS | | D | | | C | | | B | | | B | |
| d, I, Intersection Delay [s/veh] | | | | | | | 20.48 | | | | | |
| Intersection LOS | | | | | | | C | | | | | |
| Intersection V/C | | | | | | | 0.627 | | | | | |

Sequence

| | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
Delay (sec / veh): 21.5
HCM 2010 Level Of Service: C
Analysis Method: C
15 minutes Volume to Capacity (v/c): 0.680

Intersection Setup

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|------------------------|-------------|--------|--------|--------|--------------|--------|--------|--------|-----------|--------|--------|--------|
| Approach | Northbound | | | | Southbound | | | | Eastbound | | | |
| Lane Configuration | + | | | | + | | | | + | | | |
| Turning Movement | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | | 30.00 | | | | 35.00 | | | |
| Grade [%] | 0.00 | | | | 0.00 | | | | 0.00 | | | |
| Crosswalk | No | | | | No | | | | No | | | |

Volumes

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|---|-------------|--------|--------|--------|--------------|--------|--------|--------|---------|--------|--------|--------|
| Base Volume Input [veh/h] | 2 | 4 | 25 | | 252 | 2 | 65 | 45 | 316 | 7 | 15 | 284 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 43 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 4 | 68 | 252 | 2 | 65 | 45 | 316 | 9 | 58 | 284 | 171 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 18 | 68 | 1 | 17 | 12 | 85 | 2 | 16 | 71 | 46 |
| Total Analysis Volume [veh/h] | 4 | 4 | 73 | 271 | 2 | 70 | 48 | 339 | 10 | 62 | 284 | 184 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [1/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [1/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Split | Protecte | Permiss | Protecte | Permiss |
|------------------------------|-------|-------|-------|-------|-------|-------|----------|---------|----------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | - | Lead | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 0 | 30 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 |
| Split [s] | 0 | 9 | 0 | 0 | 26 | 0 | 9 | 16 | 0 | 9 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 10 |
| Rest in Walk | No | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | | C | L | C | L | C | L | C | L | C |
|--|--|-------|---|-------|---|-------|---|-------|---|-------|
| C, Cycle Length [s] | | 60 | | 60 | | 60 | | 60 | | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | | 4.00 | | 4.00 | | 4.00 | | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | | 2.00 | | 2.00 | | 2.00 | | 2.00 |
| g, l, Effective Green Time [s] | | 4 | | 11 | | 26 | | 3 | | 26 |
| g / C, Green / Cycle | | 0.06 | | 0.19 | | 0.05 | | 0.43 | | 0.43 |
| (v / s), J Volume / Saturation Flow Rate | | 0.05 | | 0.15 | | 0.05 | | 0.19 | | 0.27 |
| s, saturation flow rate [veh/h] | | 1604 | | 1774 | | 1774 | | 1853 | | 1742 |
| c, Capacity [veh/h] | | 101 | | 340 | | 83 | | 786 | | 753 |
| d1, Uniform Delay [s] | | 27.79 | | 23.21 | | 20.60 | | 28.08 | | 12.28 |
| k, delay calibration | | 0.11 | | 0.11 | | 0.11 | | 0.50 | | 0.50 |
| l, Upstream Filtering Factor | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 |
| d2, Incremental Delay [s] | | 13.24 | | 4.32 | | 0.40 | | 6.17 | | 1.81 |
| d3, Initial Queue Delay [s] | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 |
| Rp, platoon ratio | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 |
| PF, progression factor | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 |

Lane Group Results

| | | | | | | | | | | | | | | |
|------------------------------------|--|-------|--|--------|--|-------|--|-------|--|--------|--|-------|--|--------|
| X, volume / capacity | | 0.80 | | 0.80 | | 0.24 | | 0.58 | | 0.44 | | 0.64 | | 0.62 |
| d, Delay for Lane Group [s/veh] | | 41.04 | | 27.53 | | 20.99 | | 34.25 | | 14.09 | | 34.51 | | 17.08 |
| Lane Group LOS | | D | | C | | C | | C | | B | | C | | B |
| Critical Lane Group | | Yes | | Yes | | No | | Yes | | No | | No | | Yes |
| 50th-Percentile Queue Length [veh] | | 1.54 | | 3.80 | | 0.83 | | 0.77 | | 3.18 | | 0.89 | | 4.86 |
| 50th-Percentile Queue Length [ft] | | 38.46 | | 95.10 | | 20.86 | | 19.36 | | 79.44 | | 24.87 | | 121.43 |
| 95th-Percentile Queue Length [veh] | | 2.77 | | 6.85 | | 1.50 | | 1.39 | | 5.72 | | 1.79 | | 8.47 |
| 95th-Percentile Queue Length [ft] | | 69.23 | | 171.18 | | 37.54 | | 34.84 | | 142.98 | | 44.77 | | 211.79 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 41.04 | 41.04 | 41.04 | 27.53 | 20.99 | 20.99 | 34.25 | 14.09 | 14.09 | 34.51 | 17.08 | 17.08 |
| Movement LOS | D | D | D | C | C | C | C | B | B | C | B | B |
| d, A, Approach Delay [s/veh] | | | 41.04 | | 26.16 | | | 16.53 | | | 19.12 | |
| Approach LOS | | | D | | C | | | B | | | B | |
| d, I, Intersection Delay [s/veh] | | | | | | 21.46 | | | | | | |
| Intersection LOS | | | | | | C | | | | | | |
| Intersection V/C | | | | | | 0.680 | | | | | | |

Sequence

| | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 1,098.3
Level Of Service: F
Volume to Capacity (v/c): 3.047

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 2 | 67 | 226 | 1 | 74 | 148 | 404 | 5 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 17 | 57 | 0 | 19 | 37 | 101 | 1 |
| Total Analyse Volume [veh/h] | 5 | 2 | 67 | 226 | 1 | 74 | 148 | 404 | 5 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free |
| Flared Lane | No | No | No | Free |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | No | 0 |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|---------|---------|---------|--------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.07 | 0.03 | 0.10 | 3.05 | 0.01 | 0.15 | 0.18 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 55.21 | 56.15 | 13.04 | 1098.33 | 1085.78 | 1057.10 | 10.50 | 0.00 | 0.00 | 8.33 | 0.00 | 0.00 |
| Movement LOS | F | F | B | F | F | F | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.74 | 0.74 | 0.74 | 29.69 | 29.69 | 0.67 | 0.67 | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 18.55 | 18.55 | 18.55 | 742.13 | 742.13 | 16.82 | 16.82 | 0.00 | 0.00 | 4.71 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 17.26 | | | 1088.15 | | | 2.79 | | | 0.63 | | |
| Approach LOS | C | | | F | | | A | | | A | | |
| d, I, Intersection Delay [s/veh] | | | | | | | 180.94 | | | | | |
| Intersection LOS | | | | | | | F | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 93.8
Level Of Service: F
Volume to Capacity (v/c): 0.539

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 43 | 111 | 118 | 570 | 765 | 163 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | 2 | 41 | 40 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 43 | 113 | 120 | 611 | 805 | 163 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 11 | 28 | 30 | 153 | 201 | 41 |
| Total Analyse Volume [veh/h] | 43 | 113 | 120 | 611 | 805 | 163 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Area | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|-------|-------|-------|------|------|------|
| V/C, Movement V/C Ratio | 0.54 | 0.33 | 0.17 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 93.76 | 20.55 | 11.08 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | C | B | A | A | A |
| 95th-Percentile Queue Length [veh] | 2.33 | 1.40 | 0.60 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 59.22 | 35.09 | 15.09 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | 40.73 | | 1.82 | | | 0.00 |
| Approach LOS | E | | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 4.14 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report

Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 1,943.5
Level Of Service: F
Volume to Capacity (v/c): 4.721

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 4 | 34 | 438 | 2 | 199 | 108 | 350 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 2 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 4 | 77 | 438 | 2 | 199 | 108 | 350 | 10 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 19 | 110 | 1 | 50 | 27 | 88 | 3 |
| Total Analyse Volume [veh/h] | 5 | 4 | 77 | 438 | 2 | 199 | 108 | 350 | 10 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | | | | | |
|------------------------------------|------|------|------|------|------|
| Priority Scheme | Stop | Stop | Stop | Free | Free |
| Flared Lane | Yes | No | Yes | | |
| Storage Area [veh] | | 0 | 1 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|---------|---------|---------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.09 | 0.04 | 0.11 | 4.72 | 0.02 | 0.41 | 0.13 | 0.00 | 0.06 | 0.00 | 0.00 |
| d, M, Delay for Movement [s/veh] | 71.04 | 44.10 | 13.34 | 1943.47 | 162.95 | 1612.05 | 10.02 | 0.00 | 8.18 | 0.00 | 0.00 |
| Movement LOS | F | E | B | F | F | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.92 | 0.92 | 0.92 | 67.87 | 67.87 | 67.87 | 0.45 | 0.00 | 0.17 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 22.96 | 22.96 | 22.96 | 1696.87 | 1696.87 | 1696.87 | 11.25 | 0.00 | 4.36 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | | 18.13 | | 1833.65 | | | 2.31 | | 0.62 | | |
| Approach LOS | | C | | F | | | A | | A | | |
| d, I, Intersection Delay [s/veh] | | | | | | 602.23 | | | | | |
| Intersection LOS | | | | | | F | | | | | |

Intersection Level Of Service Report

Intersection 2: Todd Rd/Moorland Ave

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes
Delay (sec / veh): 304.7
Level Of Service: F
Volume to Capacity (v/c): 1.303

Intersection Setup

| Name | Moorland Ave | | Todd Rd | | Todd Rd |
|------------------------|--------------|-------|-----------|--------|-----------|
| Approach | Southbound | | Eastbound | | Westbound |
| Lane Configuration | TT | | TL | | F |
| Turning Movement | Left | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 35.00 | | 35.00 |
| Grade [%] | 0.00 | | 0.00 | | 0.00 |
| Crosswalk | No | | No | | No |

Volumes

| Name | Moorland Ave | | | Todd Rd | | |
|---|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 96 | 186 | 139 | 739 | 647 | 89 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | 2 | 41 | 40 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 96 | 188 | 141 | 780 | 687 | 89 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 24 | 47 | 35 | 195 | 172 | 22 |
| Total Analyse Volume [veh/h] | 96 | 188 | 141 | 780 | 687 | 89 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|------------------------------------|--------|--------|-------|------|------|------|
| V/C, Movement V/C Ratio | 1.30 | 0.45 | 0.17 | 0.01 | 0.01 | 0.00 |
| d, M, Delay for Movement [s/veh] | 304.70 | 20.24 | 10.15 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | C | B | A | A | A |
| 95th-Percentile Queue Length [veh] | 7.56 | 2.24 | 0.60 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 188.93 | 56.09 | 15.02 | 0.00 | 0.00 | 0.00 |
| d, A, Approach Delay [s/veh] | | 116.40 | 1.55 | | | 0.00 |
| Approach LOS | | F | A | | | A |
| d, I, Intersection Delay [s/veh] | | | 17.41 | | | |
| Intersection LOS | | | F | | | |

Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 36.6
Level Of Service: D
Volume to Capacity (v/c): 0.858

Intersection Setup

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|------------------------|-------------|--------|--------|--------------|--------|--------|-----------|--------|--------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | + | | | + | | | + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | 30.00 | | | 35.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | |

Volumes

| Name | Ghiloti Ave | | | Standish Ave | | | Todd Rd | | |
|---|-------------|--------|--------|--------------|--------|--------|---------|--------|--------|
| Base Volume Input [veh/h] | 3 | 2 | 24 | 226 | 1 | 74 | 148 | 404 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 42 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 2 | 67 | 226 | 1 | 74 | 148 | 404 | 5 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 17 | 57 | 0 | 19 | 37 | 101 | 1 |
| Total Analysis Volume [veh/h] | 5 | 2 | 67 | 226 | 1 | 74 | 148 | 404 | 5 |
| Presence of On-Street Parking | No | No | No | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [1/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [1/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss |
|------------------------------|-------|-------|-------|-------|-------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 4 |
| Auxiliary Signal Groups | - | - | - | - | - | Lead | - | Lead | - |
| Lead / Lag | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 0 | 30 |
| Maximum Green [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Amber [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 |
| All red [s] | 0 | 9 | 0 | 0 | 15 | 0 | 13 | 0 | 9 |
| Split [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Vehicle Extension [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 5 |
| Walk [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 10 |
| Rest In Walk | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | | C | | L | | C | | L | | C | | L | | C | |
|---|--|-------|--|-------|--|-------|--|-------|--|------|--|-------|--|-------|--|
| C, Cycle Length [s] | | 90 | | 90 | | 90 | | 90 | | 90 | | 90 | | 90 | |
| L, Total Lost Time per Cycle [s] | | 4.00 | | 4.00 | | 4.00 | | 4.00 | | 4.00 | | 4.00 | | 4.00 | |
| l1, p, Permitted Start-Up Lost Time [s] | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| l2, Clearance Lost Time [s] | | 2.00 | | 2.00 | | 2.00 | | 2.00 | | 2.00 | | 2.00 | | 2.00 | |
| g, l, Effective Green Time [s] | | 5 | | 11 | | 11 | | 9 | | 54 | | 5 | | 49 | |
| g / C, Green / Cycle | | 0.06 | | 0.12 | | 0.10 | | 0.10 | | 0.59 | | 0.05 | | 0.54 | |
| (v / s), J, Volume / Saturation Flow Rate | | 0.05 | | 0.13 | | 0.05 | | 0.08 | | 0.22 | | 0.04 | | 0.49 | |
| s, saturation flow rate [veh/h] | | 1601 | | 1774 | | 1587 | | 1774 | | 1859 | | 1774 | | 1705 | |
| c, Capacity [veh/h] | | 89 | | 214 | | 192 | | 180 | | 1107 | | 89 | | 928 | |
| d1, Uniform Delay [s] | | 42.08 | | 39.57 | | 36.52 | | 39.64 | | 9.44 | | 42.21 | | 18.20 | |
| k, delay calibration | | 0.11 | | 0.11 | | 0.11 | | 0.11 | | 0.50 | | 0.11 | | 0.50 | |
| l, Upstream Filtering Factor | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| d2, Incremental Delay [s] | | 17.35 | | 44.01 | | 1.30 | | 8.86 | | 0.95 | | 12.49 | | 12.83 | |
| d3, Initial Queue Delay [s] | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| Rp, platoon ratio | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| PF, progression factor | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |

Lane Group Results

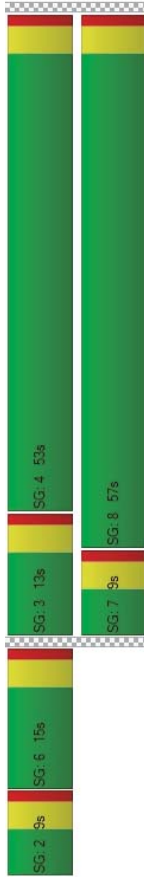
| | | | | | | | | | | | | | | | |
|------------------------------------|--|-------|--|--------|--|-------|--|--------|--|--------|--|-------|--|--------|--|
| X, volume / capacity | | 0.83 | | 1.05 | | 0.39 | | 0.82 | | 0.37 | | 0.76 | | 0.89 | |
| d, Delay for Lane Group [s/veh] | | 59.43 | | 83.58 | | 37.82 | | 48.60 | | 10.39 | | 54.70 | | 31.03 | |
| Lane Group LOS | | E | | F | | D | | D | | B | | D | | C | |
| Critical Lane Group | | Yes | | Yes | | No | | Yes | | No | | No | | Yes | |
| 50th-Percentile Queue Length [veh] | | 2.11 | | 7.27 | | 1.57 | | 3.57 | | 3.97 | | 1.77 | | 16.69 | |
| 50th-Percentile Queue Length [ft] | | 52.69 | | 181.82 | | 39.28 | | 89.35 | | 99.29 | | 44.22 | | 417.34 | |
| 95th-Percentile Queue Length [veh] | | 3.79 | | 11.95 | | 2.83 | | 6.43 | | 7.15 | | 3.18 | | 23.39 | |
| 95th-Percentile Queue Length [ft] | | 94.85 | | 298.70 | | 70.71 | | 160.82 | | 178.72 | | 79.60 | | 584.86 | |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|--|-------|--|-------|--|-------|--|-------|--|-------|--|-------|--|-------|--|-------|--|-------|--|-------|--|
| d, M, Delay for Movement [s/veh] | | 59.43 | | 59.43 | | 59.43 | | 83.58 | | 37.82 | | 48.60 | | 10.39 | | 54.70 | | 31.03 | | 31.03 | |
| Movement LOS | | E | | E | | E | | F | | D | | D | | B | | D | | C | | C | |
| d, A, Approach Delay [s/veh] | | | | 59.43 | | | | | | 20.55 | | | | B | | | | 32.82 | | | |
| Approach LOS | | | | E | | | | | | C | | | | | | | | C | | | |
| d, I, Intersection Delay [s/veh] | | | | | | | | | | 36.64 | | | | | | | | | | | |
| Intersection LOS | | | | | | | | | | D | | | | | | | | | | | |
| Intersection V/C | | | | | | | | | | 0.858 | | | | | | | | | | | |

Sequence

| | | | | | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 1: Todd Rd/Ghiloti Ave-Standish Ave
Signalized
HCM 2010
Analysis Method:
15 minutes
Delay (sec / veh): 44.1
D
Level Of Service: 0.942
Volume to Capacity (v/c):

Intersection Setup

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|------------------------|-------------|--------|--------|--------|--------------|--------|--------|--------|-----------|--------|--------|--------|
| Approach | Northbound | | | | Southbound | | | | Eastbound | | | |
| Lane Configuration | + | | | | T | | | | T | | | |
| Turning Movement | Left | Thru | Right | | Left | Thru | Right | | Left | Thru | Right | |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 10.00 | | | | 30.00 | | | | 35.00 | | | |
| Grade [%] | 0.00 | | | | 0.00 | | | | 0.00 | | | |
| Crosswalk | No | | | | No | | | | No | | | |

Volumes

| Name | Ghiloti Ave | | | | Standish Ave | | | | Todd Rd | | | |
|---|-------------|--------|--------|--|--------------|--------|--------|--|---------|--------|--------|--------|
| Base Volume Input [veh/h] | 3 | 4 | 34 | | 438 | 2 | 199 | | 108 | 350 | 8 | 24 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 43 | | 0 | 0 | 0 | | 0 | 0 | 2 | 42 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 11 | | 0 | 0 | 66 | | 0 | 0 | 3 | 0 |
| Total Hourly Volume [veh/h] | 5 | 4 | 66 | | 438 | 2 | 133 | | 108 | 350 | 7 | 66 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 17 | | 110 | 1 | 33 | | 27 | 88 | 2 | 17 |
| Total Analysis Volume [veh/h] | 5 | 4 | 66 | | 438 | 2 | 133 | | 108 | 350 | 7 | 66 |
| Presence of On-Street Parking | No | No | No | | No | No | No | | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Bicycle Volume [bicycles/h] | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |

Intersection Settings

| | |
|---------------------------|------------------------------|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 15.00 |

Phasing & Timing

| Control Type | Split | Split | Split | Split | Split | Protect | Permiss | Protect | Permiss | Permiss |
|------------------------------|-------|-------|-------|-------|-------|---------|---------|---------|---------|---------|
| Signal group | 0 | 2 | 0 | 0 | 6 | 3 | 0 | 7 | 0 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | Lead | - | Lead | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 | 5 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 |
| Split [s] | 0 | 9 | 0 | 0 | 27 | 0 | 9 | 45 | 0 | 45 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 10 |
| Rest In Walk | No | No | No | No | No | No | No | No | No | No |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | C | L | C | L | C | L | C | L | C |
|---|-------|-------|-------|-------|-------|-------|-------|------|------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1, p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g, l, Effective Green Time [s] | 5 | 23 | 23 | 5 | 42 | 4 | 41 | | |
| g / C, Green / Cycle | 0.06 | 0.26 | 0.26 | 0.06 | 0.46 | 0.05 | 0.45 | | |
| (v / s), J, Volume / Saturation Flow Rate | 0.05 | 0.25 | 0.09 | 0.06 | 0.19 | 0.04 | 0.42 | | |
| s, saturation flow rate [veh/h] | 1608 | 1774 | 1587 | 1774 | 1856 | 1774 | 1741 | | |
| c, Capacity [veh/h] | 89 | 453 | 405 | 102 | 859 | 87 | 790 | | |
| d1, Uniform Delay [s] | 42.10 | 33.14 | 27.28 | 42.41 | 16.09 | 42.29 | 23.16 | | |
| k, delay calibration | 0.11 | 0.26 | 0.11 | 0.11 | 0.50 | 0.11 | 0.50 | | |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| d2, Incremental Delay [s] | 18.20 | 23.56 | 0.48 | 57.16 | 1.48 | 12.87 | 18.40 | | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |

Lane Group Results

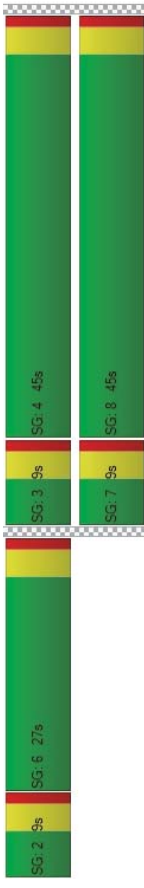
| | | | | | | | |
|------------------------------------|-------|--------|--------|--------|--------|-------|--------|
| X, volume / capacity | 0.84 | 0.97 | 0.33 | 1.06 | 0.42 | 0.76 | 0.93 |
| d, Delay for Lane Group [s/veh] | 60.30 | 56.71 | 27.76 | 99.57 | 17.57 | 55.16 | 41.56 |
| Lane Group LOS | E | E | C | F | B | E | D |
| Critical Lane Group | Yes | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 2.15 | 12.11 | 2.38 | 3.84 | 4.92 | 1.73 | 17.33 |
| 50th-Percentile Queue Length [ft] | 53.82 | 302.82 | 59.38 | 96.07 | 122.96 | 43.16 | 433.30 |
| 95th-Percentile Queue Length [veh] | 3.88 | 17.82 | 4.28 | 6.92 | 8.56 | 3.11 | 24.16 |
| 95th-Percentile Queue Length [ft] | 96.88 | 445.51 | 106.88 | 172.93 | 213.89 | 77.69 | 603.99 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d, M, Delay for Movement [s/veh] | 60.30 | 60.30 | 60.30 | 60.30 | 56.71 | 27.76 | 27.76 | 99.57 | 17.57 | 17.57 | 55.16 | 41.56 | 41.56 |
| Movement LOS | E | E | E | E | E | C | C | F | B | B | E | D | D |
| d, A, Approach Delay [s/veh] | | | 60.30 | | | 49.89 | | | 36.62 | | 42.68 | | |
| Approach LOS | | | E | | | D | | | D | | D | | |
| d, I, Intersection Delay [s/veh] | | | | | | | 44.06 | | | | | | |
| Intersection LOS | | | | | | | D | | | | | | |
| Intersection V/C | | | | | | | 0.942 | | | | | | |

Sequence

| | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 6 | 3 | 4 | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 7 | 8 | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |



Appendix C

Signalized Intersection Level of Service Calculations

SimTraffic Performance Report
AM Existing

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.1 | 0.0 |
| Total Del/Veh (s) | 12.1 | 21.6 | 20.4 | 17.8 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.3 | 0.0 | 0.0 | 0.7 |
| Total Del/Veh (s) | 5.4 | 8.4 | 7.5 | 7.4 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.1 | 1.5 | 1.7 | 1.1 |
| Total Del/Veh (s) | 10.2 | 23.7 | 11.0 | 10.2 | 10.9 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.9 |
| Total Del/Veh (s) | 240.3 |

SimTraffic Performance Report
PM Existing

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 14.6 | 31.5 | 25.5 | 22.7 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.1 | 0.0 | 0.0 | 0.5 |
| Total Del/Veh (s) | 6.9 | 6.9 | 5.6 | 6.3 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.3 | 1.0 | 1.3 | 0.9 |
| Total Del/Veh (s) | 16.5 | 30.3 | 18.7 | 17.0 | 18.6 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.3 |
| Total Del/Veh (s) | 277.6 |

SimTraffic Performance Report
AM Baseline

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.1 | 0.0 |
| Total Del/Veh (s) | 13.4 | 19.4 | 18.3 | 16.9 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.4 | 0.0 | 0.0 | 0.8 |
| Total Del/Veh (s) | 5.7 | 8.2 | 6.9 | 7.1 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.3 | 1.3 | 1.8 | 1.0 |
| Total Del/Veh (s) | 10.1 | 26.2 | 10.9 | 10.4 | 10.9 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.8 |
| Total Del/Veh (s) | 244.4 |

SimTraffic Performance Report
PM Baseline

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 11.7 | 25.5 | 19.9 | 17.9 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.1 | 0.0 | 0.0 | 0.5 |
| Total Del/Veh (s) | 7.5 | 8.3 | 6.2 | 7.2 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.3 | 1.1 | 1.2 | 0.9 |
| Total Del/Veh (s) | 14.2 | 30.4 | 22.4 | 18.0 | 19.8 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.4 |
| Total Del/Veh (s) | 277.5 |

SimTraffic Performance Report
AM Future

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 13.5 | 21.0 | 24.1 | 19.6 | |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|-----|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.5 | 0.0 | 0.0 | 0.8 | |
| Total Del/Veh (s) | 5.5 | 7.9 | 8.5 | 7.6 | |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.2 | 2.6 | 1.2 | 0.8 | 1.0 |
| Total Del/Veh (s) | 11.3 | 33.4 | 98.7 | 19.6 | 63.8 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.5 |
| Total Del/Veh (s) | 291.8 |

SimTraffic Performance Report
PM Future

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 11.7 | 21.9 | 20.3 | 17.5 | |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|-----|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.7 | 0.0 | 0.0 | 0.4 | |
| Total Del/Veh (s) | 6.4 | 6.8 | 7.9 | 7.4 | |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|-------|------|------|
| Denied Del/Veh (s) | 1.9 | 2.7 | 2.5 | 0.4 | 1.9 |
| Total Del/Veh (s) | 20.9 | 45.0 | 110.8 | 37.5 | 71.2 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 2.2 |
| Total Del/Veh (s) | 328.6 |

5: Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.5 | 1.7 | 0.4 | 0.8 | 0.5 |
| Total Del/Veh (s) | 11.1 | 30.9 | 29.6 | 20.3 | 24.1 |

5: Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 1.2 | 3.0 | 0.7 | 0.4 | 0.8 |
| Total Del/Veh (s) | 20.0 | 54.8 | 42.3 | 45.5 | 40.8 |

SimTraffic Performance Report
AM Existing plus Project

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 12.1 | 21.0 | 22.7 | 18.5 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.2 | 0.0 | 0.0 | 0.8 |
| Total Del/Veh (s) | 6.0 | 7.5 | 6.8 | 6.9 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.1 | 1.5 | 1.8 | 1.1 |
| Total Del/Veh (s) | 10.3 | 19.7 | 12.6 | 12.3 | 12.1 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.9 |
| Total Del/Veh (s) | 271.3 |

SimTraffic Performance Report
PM Existing plus Project

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 13.7 | 33.2 | 24.7 | 22.2 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.0 | 0.0 | 0.0 | 0.5 |
| Total Del/Veh (s) | 7.0 | 8.3 | 6.2 | 7.1 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.3 | 0.9 | 1.3 | 0.8 |
| Total Del/Veh (s) | 15.5 | 30.9 | 20.8 | 18.5 | 19.6 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.3 |
| Total Del/Veh (s) | 289.3 |

SimTraffic Performance Report
AM Baseline + Project

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.3 | 0.1 |
| Total Del/Veh (s) | 13.6 | 21.2 | 23.9 | 19.4 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.3 | 0.0 | 0.1 | 0.8 |
| Total Del/Veh (s) | 6.1 | 8.1 | 7.6 | 7.4 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.1 | 1.4 | 1.6 | 1.1 |
| Total Del/Veh (s) | 10.6 | 24.1 | 12.2 | 11.7 | 12.1 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.9 |
| Total Del/Veh (s) | 257.7 |

SimTraffic Performance Report
PM Baseline + Project

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.7 | 0.2 |
| Total Del/Veh (s) | 15.2 | 30.3 | 25.2 | 22.4 |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.2 | 0.0 | 0.1 | 0.6 |
| Total Del/Veh (s) | 7.0 | 8.8 | 6.3 | 7.4 |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 1.3 | 1.1 | 1.3 | 0.9 |
| Total Del/Veh (s) | 15.9 | 26.6 | 19.9 | 17.1 | 18.8 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.5 |
| Total Del/Veh (s) | 299.4 |

SimTraffic Performance Report
AM Future plus Project

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| Total Del/Veh (s) | 14.8 | 22.1 | 26.9 | 21.4 | |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|-----|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.5 | 0.0 | 0.0 | 0.8 | |
| Total Del/Veh (s) | 6.1 | 7.4 | 8.5 | 7.5 | |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|-------|------|------|
| Denied Del/Veh (s) | 0.3 | 2.1 | 4.1 | 0.8 | 2.6 |
| Total Del/Veh (s) | 11.5 | 29.7 | 102.9 | 18.6 | 63.9 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 3.1 |
| Total Del/Veh (s) | 305.3 |

SimTraffic Performance Report
PM Future plus Project

11/13/2017

3. S Moorland Ave & Todd Rd/US 101 South Ramps Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 11.5 | 20.2 | 18.9 | 16.4 | |

4. Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|-----|-----|-----|-----|-----|
| Denied Del/Veh (s) | 3.9 | 0.0 | 0.0 | 0.4 | |
| Total Del/Veh (s) | 5.5 | 6.8 | 8.2 | 7.4 | |

5. Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|-------|------|------|
| Denied Del/Veh (s) | 0.4 | 3.1 | 2.2 | 0.5 | 1.5 |
| Total Del/Veh (s) | 18.2 | 49.4 | 115.3 | 37.7 | 80.4 |

Total Zone Performance

| | |
|--------------------|-------|
| Denied Del/Veh (s) | 1.9 |
| Total Del/Veh (s) | 314.2 |

5: Santa Rosa Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.3 | 2.2 | 0.4 | 0.9 | 0.5 |
| Total Del/Veh (s) | 12.6 | 27.4 | 24.4 | 19.8 | 21.2 |

1: Ghillotti Ave/Standish Ave & Todd Rd Performance by approach

| Approach | EB | WB | NB | SB | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 1.3 | 0.0 | 0.1 | 10.5 | 3.9 |
| Total Del/Veh (s) | 30.7 | 30.7 | 15.5 | 55.1 | 38.2 |

Appendix D

Signal Warrants Analysis & Equitable Share Calculations

Warrant 3: Peak-Hour Volumes and Delay

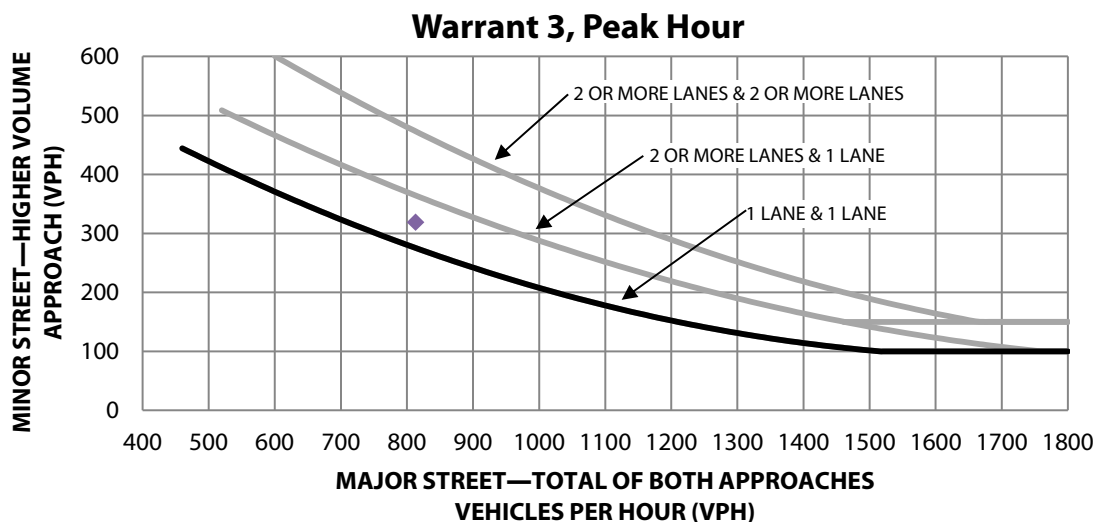
Sonoma County
Todd Rd & Standish-Ghilotti Ave

304 Todd Road CUP

| | <u>Major Street</u> | <u>Minor Street</u> |
|------------------------|---------------------|-----------------------|
| Street Name | Todd Rd | Standish-Ghilotti Ave |
| Direction | E-W | N-S |
| Number of Lanes | 1 | 1 |
| Approach Speed | 35 | 30 |

Population less than 10,000? No
Date of Count: Tuesday, October 04, 2016
Scenario: PM Existing

| | |
|--|------------|
| Warrant 3 Met?: Met when either Condition A or B is met | Yes |
| Condition A: Met when conditions A1, A2, and A3 are met | Met |
| <i>Condition A1</i> The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach <div style="text-align: right;">Minor Approach Delay: 15.92 vehicle-hours</div> | Met |
| <i>Condition A2</i> The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes <div style="text-align: right;">Minor Approach Volume: 319 vph</div> | Met |
| <i>Condition A3</i> The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches <div style="text-align: right;">Total Entering Volume: 1158 vph</div> | Met |
| Condition B The plotted point falls above the curve | Met |



Equitable Share Calculations 304 Todd Road CUP Traffic Study

| | | Total Volume Entering the Intersection of | |
|---------------------------|-----------|--|-----------|
| | | Todd Rd/Standish Ave-Ghilotti Ave | |
| | PM | | PM |
| | | Existing | 1158 |
| Project Trips (T)* | 90 | Future Year | 1968 |

Description of Project Improvement:

Install a traffic signal and restripe southbound approach to provide a left-turn lane.

Calculation of Project Share

$$P = T / (TB - TE)$$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

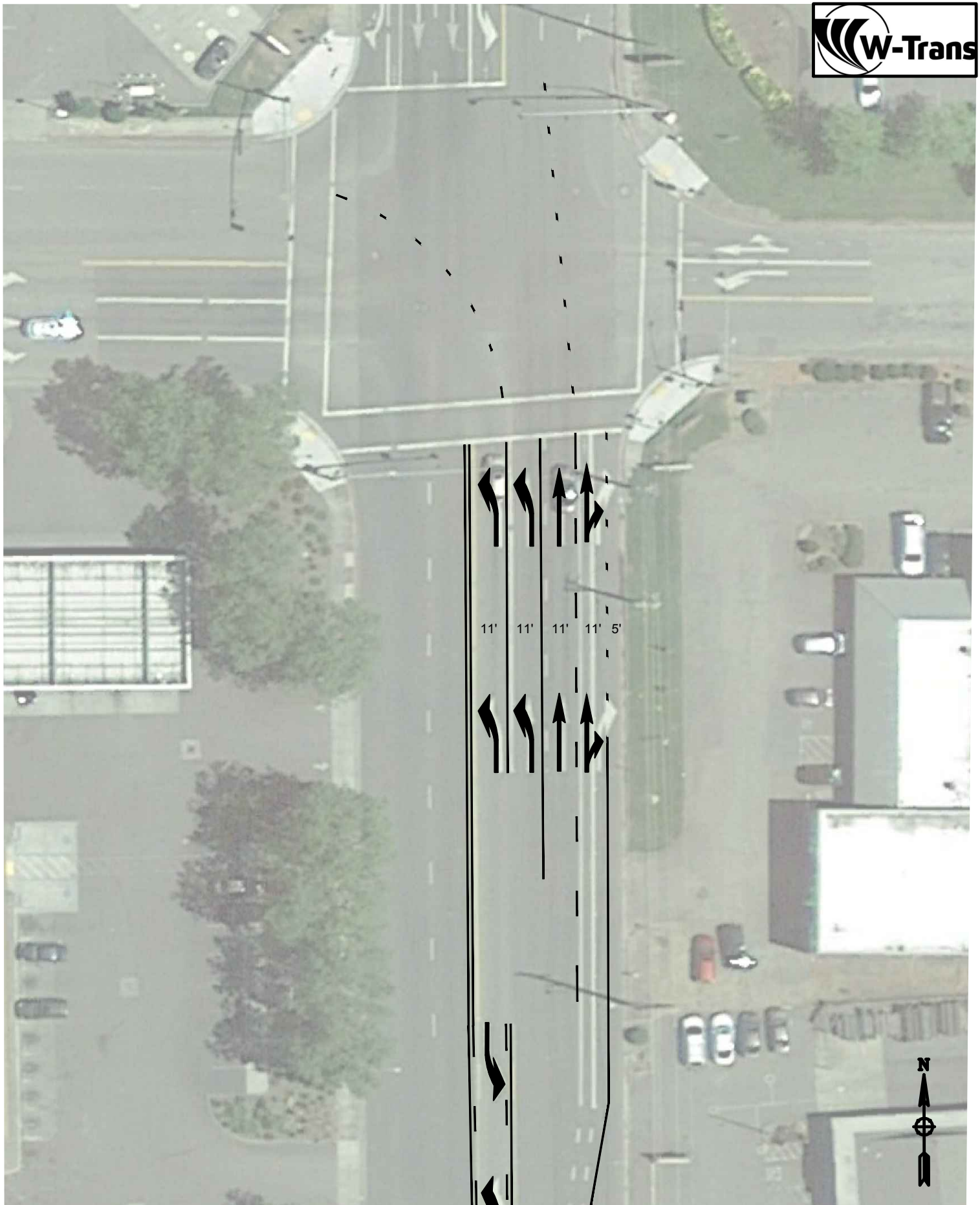
TE = Existing volumes

| | | |
|----|--------------|---|
| T | 90 | * Trips are PCE (1 truck = 3 passenger cars) |
| TB | 1968 | |
| TE | 1158 | |
| P | 11.1% | |

Equitable Share (per Caltrans "Guide for the Preparation of Traffic Impact Studies")

Appendix E

Concept Striping Plan



Appendix F

Queuing Calculations

Queuing and Blocking Report

AM Existing

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 38 | 8 | 7 | 24 | 98 | 55 |
| Average Queue (ft) | 20 | 2 | 1 | 11 | 67 | 39 |
| 95th Queue (ft) | 46 | 11 | 12 | 34 | 134 | 71 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 26 | 3 |
| Queuing Penalty (veh) | | | | | 11 | 4 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 17 | 2 | 3 | 84 | 56 |
| Average Queue (ft) | 6 | 0 | 1 | 53 | 31 |
| 95th Queue (ft) | 23 | 5 | 7 | 97 | 67 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | | | 16 | 1 |
| Queuing Penalty (veh) | | | | 5 | 1 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 129 | 68 | 125 | 143 | 255 | 140 | 17 |
| Average Queue (ft) | 94 | 49 | 76 | 94 | 205 | 54 | 5 |
| 95th Queue (ft) | 148 | 73 | 132 | 157 | 298 | 173 | 25 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 1 | | | | 6 | 1 | |
| Queuing Penalty (veh) | 3 | | | | 17 | 4 | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 57 | | | | | | |
| Queuing Penalty (veh) | 0 | | | | | | |

Queuing and Blocking Report

AM Existing

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 35 | 34 | 83 | 120 | 87 | 72 | 112 | 68 | 79 |
| Average Queue (ft) | 16 | 17 | 55 | 79 | 46 | 46 | 78 | 30 | 45 |
| 95th Queue (ft) | 43 | 46 | 89 | 136 | 106 | 82 | 133 | 79 | 93 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 4 | | 0 |
| Queuing Penalty (veh) | | | | | | | 16 | | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 77 | 81 | 63 | 23 | 59 | 136 | 104 | 54 | 14 | 21 | 75 | 43 |
| Average Queue (ft) | 49 | 55 | 41 | 8 | 24 | 102 | 53 | 28 | 5 | 6 | 54 | 25 |
| 95th Queue (ft) | 85 | 87 | 72 | 27 | 61 | 155 | 114 | 60 | 17 | 25 | 90 | 58 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | | 2 | | | | | | | |
| Queuing Penalty (veh) | | | | | 0 | | | | | | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 70 |
| Average Queue (ft) | 46 |
| 95th Queue (ft) | 76 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 62

Queuing and Blocking Report

PM Existing

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 24 | 6 | 1 | 39 | 180 | 60 |
| Average Queue (ft) | 9 | 1 | 0 | 19 | 115 | 44 |
| 95th Queue (ft) | 29 | 9 | 1 | 47 | 213 | 78 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 47 | 3 |
| Queuing Penalty (veh) | | | | | 31 | 9 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 31 | 80 | 7 | 148 | 62 |
| Average Queue (ft) | 13 | 20 | 2 | 108 | 30 |
| 95th Queue (ft) | 37 | 103 | 16 | 204 | 82 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | 1 | 0 | 54 | 1 |
| Queuing Penalty (veh) | | 0 | 0 | 16 | 1 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 142 | 119 | 212 | 126 | 251 | 68 | 15 |
| Average Queue (ft) | 105 | 84 | 153 | 70 | 211 | 34 | 3 |
| 95th Queue (ft) | 169 | 145 | 259 | 144 | 304 | 94 | 18 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 4 | 2 | 0 | | 9 | 0 | |
| Queuing Penalty (veh) | 14 | 8 | 0 | | 24 | 1 | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 57 | | 1 | 0 | | | |
| Queuing Penalty (veh) | 0 | | 1 | 0 | | | |

Queuing and Blocking Report

PM Existing

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 47 | 32 | 59 | 127 | 86 | 77 | 95 | 44 | 81 |
| Average Queue (ft) | 28 | 17 | 43 | 82 | 49 | 50 | 65 | 30 | 54 |
| 95th Queue (ft) | 60 | 43 | 67 | 143 | 102 | 88 | 110 | 55 | 96 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 2 | | 0 |
| Queuing Penalty (veh) | | | | | | | 14 | | 2 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 108 | 121 | 89 | 76 | 131 | 231 | 201 | 159 | 20 | 35 | 164 | 119 |
| Average Queue (ft) | 71 | 88 | 55 | 38 | 75 | 161 | 134 | 109 | 11 | 14 | 117 | 70 |
| 95th Queue (ft) | 116 | 132 | 105 | 86 | 157 | 264 | 246 | 193 | 26 | 39 | 174 | 135 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 2 | 17 | 2 | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | | 3 | 8 | 7 | 0 | 0 | | | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 83 |
| Average Queue (ft) | 54 |
| 95th Queue (ft) | 93 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 141

Queuing and Blocking Report
AM Existing plus Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 62 | 92 | 21 | 193 | 20 | 99 | 56 |
| Average Queue (ft) | 36 | 49 | 8 | 123 | 10 | 65 | 28 |
| 95th Queue (ft) | 74 | 100 | 27 | 223 | 33 | 112 | 73 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 0 | 0 | | 4 | | 3 | |
| Queuing Penalty (veh) | 0 | 0 | | 1 | | 1 | |

Queuing and Blocking Report
PM Existing plus Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 49 | 108 | 53 | 170 | 33 | 115 | 104 |
| Average Queue (ft) | 23 | 65 | 13 | 108 | 15 | 91 | 38 |
| 95th Queue (ft) | 56 | 126 | 79 | 192 | 42 | 132 | 119 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | | 1 | | 3 | | 6 | |
| Queuing Penalty (veh) | | 0 | | 0 | | 4 | |

Queuing and Blocking Report

AM Baseline

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 34 | 8 | 7 | 38 | 95 | 54 |
| Average Queue (ft) | 21 | 2 | 2 | 14 | 59 | 35 |
| 95th Queue (ft) | 43 | 11 | 9 | 44 | 106 | 70 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 20 | 2 |
| Queuing Penalty (veh) | | | | | 9 | 4 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 15 | 25 | 5 | 99 | 51 |
| Average Queue (ft) | 3 | 6 | 1 | 59 | 27 |
| 95th Queue (ft) | 17 | 35 | 13 | 124 | 69 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | | 0 | 20 | 0 |
| Queuing Penalty (veh) | | | 0 | 6 | 1 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 152 | 71 | 125 | 142 | 243 | 69 | 16 |
| Average Queue (ft) | 108 | 51 | 84 | 96 | 193 | 35 | 3 |
| 95th Queue (ft) | 168 | 77 | 148 | 163 | 278 | 93 | 21 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 2 | | | | 3 | 0 | |
| Queuing Penalty (veh) | 7 | | | | 8 | 0 | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 55 | | | | | | |
| Queuing Penalty (veh) | 0 | | | | | | |

Queuing and Blocking Report

AM Baseline

07/05/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 34 | 46 | 70 | 119 | 68 | 57 | 99 | 45 | 67 |
| Average Queue (ft) | 14 | 22 | 49 | 76 | 36 | 38 | 69 | 26 | 44 |
| 95th Queue (ft) | 43 | 55 | 79 | 129 | 83 | 68 | 111 | 52 | 79 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 2 | | 0 |
| Queuing Penalty (veh) | | | | | | | 9 | | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 85 | 98 | 70 | 22 | 35 | 155 | 88 | 59 | 12 | 14 | 72 | 45 |
| Average Queue (ft) | 54 | 64 | 40 | 7 | 21 | 92 | 45 | 30 | 3 | 5 | 52 | 23 |
| 95th Queue (ft) | 92 | 109 | 77 | 26 | 42 | 169 | 90 | 65 | 14 | 17 | 89 | 54 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | | 0 | | | | | | | |
| Queuing Penalty (veh) | | | | | 0 | | | | | | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 65 |
| Average Queue (ft) | 44 |
| 95th Queue (ft) | 72 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 43

Queuing and Blocking Report

PM Baseline

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|----|
| Directions Served | L | L | LTR | LT | R |
| Maximum Queue (ft) | 23 | 9 | 36 | 196 | 59 |
| Average Queue (ft) | 11 | 3 | 18 | 122 | 48 |
| 95th Queue (ft) | 30 | 14 | 45 | 208 | 78 |
| Link Distance (ft) | | | 265 | 442 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | 40 |
| Storage Blk Time (%) | | | | 52 | 4 |
| Queuing Penalty (veh) | | | | 34 | 10 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 25 | 4 | 6 | 111 | 65 |
| Average Queue (ft) | 13 | 1 | 1 | 79 | 32 |
| 95th Queue (ft) | 33 | 10 | 9 | 137 | 77 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | | | 36 | 1 |
| Queuing Penalty (veh) | | | | 11 | 1 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 132 | 113 | 217 | 120 | 226 | 39 | 21 |
| Average Queue (ft) | 97 | 78 | 145 | 53 | 175 | 29 | 6 |
| 95th Queue (ft) | 152 | 122 | 249 | 147 | 263 | 51 | 25 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 1 | 0 | 0 | 0 | 4 | | |
| Queuing Penalty (veh) | 3 | 0 | 0 | 0 | 11 | | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 52 | | 1 | 0 | | | |
| Queuing Penalty (veh) | 0 | | 2 | 1 | | | |

Queuing and Blocking Report

PM Baseline

07/05/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 48 | 51 | 59 | 119 | 86 | 87 | 106 | 45 | 78 |
| Average Queue (ft) | 28 | 32 | 43 | 84 | 54 | 55 | 70 | 29 | 52 |
| 95th Queue (ft) | 59 | 64 | 66 | 138 | 98 | 91 | 117 | 55 | 90 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 3 | | 0 |
| Queuing Penalty (veh) | | | | | | | 16 | | 1 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 109 | 130 | 91 | 54 | 103 | 239 | 295 | 260 | 48 | 34 | 147 | 121 |
| Average Queue (ft) | 74 | 91 | 59 | 29 | 62 | 173 | 171 | 145 | 16 | 14 | 110 | 76 |
| 95th Queue (ft) | 123 | 145 | 104 | 62 | 119 | 305 | 366 | 306 | 75 | 39 | 166 | 142 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | 1 | | | | | |
| Queuing Penalty (veh) | | | | | | | 0 | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 0 | 11 | 5 | 0 | 2 | | | | 0 |
| Queuing Penalty (veh) | | | | 0 | 5 | 22 | 1 | 1 | | | | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 67 |
| Average Queue (ft) | 47 |
| 95th Queue (ft) | 75 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 117

Queuing and Blocking Report
AM Baseline Mitigated

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 63 | 100 | 28 | 178 | 30 | 92 | 54 |
| Average Queue (ft) | 38 | 56 | 11 | 117 | 15 | 63 | 26 |
| 95th Queue (ft) | 72 | 108 | 34 | 194 | 39 | 108 | 66 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 0 | 0 | | 3 | | 2 | |
| Queuing Penalty (veh) | 0 | 0 | | 1 | | 1 | |

Queuing and Blocking Report
PM Baseline Mitigated

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 55 | 135 | 17 | 180 | 43 | 113 | 81 |
| Average Queue (ft) | 29 | 78 | 6 | 117 | 20 | 85 | 38 |
| 95th Queue (ft) | 62 | 157 | 21 | 202 | 52 | 121 | 103 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | | 1 | | 3 | | 5 | |
| Queuing Penalty (veh) | | 1 | | 0 | | 3 | |

Queuing and Blocking Report

AM Future

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 64 | 13 | 17 | 36 | 433 | 60 |
| Average Queue (ft) | 42 | 4 | 4 | 19 | 315 | 44 |
| 95th Queue (ft) | 75 | 18 | 20 | 45 | 529 | 86 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | 23 | |
| Queuing Penalty (veh) | | | | | 0 | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 91 | 3 |
| Queuing Penalty (veh) | | | | | 67 | 6 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 61 | 38 | 10 | 59 | 66 |
| Average Queue (ft) | 35 | 8 | 2 | 37 | 45 |
| 95th Queue (ft) | 65 | 56 | 15 | 72 | 76 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | 0 | 0 | 0 | 5 | 7 |
| Queuing Penalty (veh) | 0 | 0 | 0 | 6 | 3 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 145 | 67 | 179 | 182 | 267 | 113 | 30 |
| Average Queue (ft) | 108 | 48 | 120 | 118 | 213 | 52 | 8 |
| 95th Queue (ft) | 169 | 72 | 200 | 203 | 300 | 155 | 32 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 3 | | | | 8 | 1 | |
| Queuing Penalty (veh) | 8 | | | | 30 | 5 | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 59 | | 0 | 0 | | | |
| Queuing Penalty (veh) | 0 | | 0 | 0 | | | |

Queuing and Blocking Report

AM Future

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 21 | 54 | 75 | 133 | 85 | 88 | 145 | 73 | 85 |
| Average Queue (ft) | 6 | 32 | 54 | 95 | 55 | 60 | 95 | 26 | 50 |
| 95th Queue (ft) | 28 | 64 | 83 | 149 | 100 | 103 | 158 | 122 | 98 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | 0 | |
| Queuing Penalty (veh) | | | | | | | | 0 | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 7 | | 1 |
| Queuing Penalty (veh) | | | | | | | 24 | | 2 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 48 | 41 | 160 | 40 | 47 | 340 | 606 | 534 | 23 | 8 | 176 | 148 |
| Average Queue (ft) | 26 | 24 | 109 | 22 | 20 | 340 | 587 | 345 | 9 | 2 | 134 | 94 |
| 95th Queue (ft) | 54 | 55 | 183 | 48 | 53 | 342 | 636 | 685 | 27 | 11 | 207 | 171 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 0 | | | | 83 | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 1 | 2 | 81 | | 0 | | | 0 | 0 |
| Queuing Penalty (veh) | | | | 0 | 1 | 269 | | 0 | | | 0 | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 61 |
| Average Queue (ft) | 38 |
| 95th Queue (ft) | 68 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 422

Queuing and Blocking Report

PM Future

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 53 | 11 | 16 | 50 | 469 | 60 |
| Average Queue (ft) | 31 | 3 | 4 | 30 | 441 | 54 |
| 95th Queue (ft) | 63 | 14 | 23 | 61 | 541 | 84 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | 74 | |
| Queuing Penalty (veh) | | | | | 0 | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 94 | 8 |
| Queuing Penalty (veh) | | | | | 187 | 34 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 47 | 8 | 4 | 188 | 75 |
| Average Queue (ft) | 29 | 2 | 1 | 113 | 63 |
| 95th Queue (ft) | 57 | 17 | 7 | 277 | 91 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | 0 | |
| Queuing Penalty (veh) | | | | 0 | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | | | 33 | 12 |
| Queuing Penalty (veh) | | | | 62 | 11 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 123 | 116 | 192 | 136 | 199 | 35 | 3 |
| Average Queue (ft) | 81 | 71 | 133 | 70 | 145 | 22 | 1 |
| 95th Queue (ft) | 137 | 123 | 205 | 158 | 230 | 47 | 8 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 1 | 1 | | | 0 | | |
| Queuing Penalty (veh) | 3 | 4 | | | 1 | | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 48 | | 0 | 0 | | | |
| Queuing Penalty (veh) | 0 | | 0 | 1 | | | |

Queuing and Blocking Report

PM Future

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 12 | 41 | 54 | 113 | 63 | 71 | 141 | 24 | 96 |
| Average Queue (ft) | 2 | 19 | 36 | 72 | 31 | 38 | 99 | 9 | 60 |
| 95th Queue (ft) | 16 | 51 | 58 | 132 | 78 | 83 | 154 | 30 | 117 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 6 | | 2 |
| Queuing Penalty (veh) | | | | | | | 37 | | 12 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 40 | 36 | 203 | 86 | 138 | 340 | 602 | 555 | 51 | 17 | 321 | 301 |
| Average Queue (ft) | 24 | 14 | 157 | 65 | 66 | 339 | 592 | 497 | 16 | 5 | 264 | 234 |
| 95th Queue (ft) | 45 | 41 | 236 | 104 | 169 | 340 | 606 | 677 | 78 | 19 | 386 | 356 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 2 | | | | 92 | 0 | | | | |
| Queuing Penalty (veh) | | | 5 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 31 | 5 | 88 | | 3 | | | 22 | 13 |
| Queuing Penalty (veh) | | | | 16 | 6 | 611 | | 3 | | | 2 | 10 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 108 |
| Average Queue (ft) | 43 |
| 95th Queue (ft) | 154 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 1005

Queuing and Blocking Report

AM Future plus Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 145 | 204 | 53 | 328 | 39 | 120 | 139 |
| Average Queue (ft) | 99 | 124 | 18 | 247 | 17 | 96 | 58 |
| 95th Queue (ft) | 164 | 243 | 70 | 398 | 46 | 134 | 159 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 9 | 4 | | 23 | | 11 | |
| Queuing Penalty (veh) | 37 | 6 | | 6 | | 9 | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | L | T | TR | L | T | T |
| Maximum Queue (ft) | 51 | 55 | 154 | 47 | 40 | 284 | 356 | 253 | 153 | 6 | 174 | 139 |
| Average Queue (ft) | 29 | 29 | 114 | 29 | 20 | 191 | 242 | 147 | 51 | 2 | 126 | 81 |
| 95th Queue (ft) | 60 | 60 | 185 | 54 | 50 | 337 | 480 | 370 | 168 | 9 | 193 | 158 |
| Link Distance (ft) | 211 | 211 | 211 | | 707 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 0 | | | | 1 | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 1 | 0 | 3 | 11 | 1 | 0 | | 1 | |
| Queuing Penalty (veh) | | | | 0 | 0 | 12 | 43 | 6 | 0 | | 0 | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 57 |
| Average Queue (ft) | 35 |
| 95th Queue (ft) | 60 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 119

Queuing and Blocking Report

PM Future plus Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 129 | 175 | 67 | 438 | 50 | 124 | 421 |
| Average Queue (ft) | 85 | 106 | 21 | 311 | 27 | 122 | 340 |
| 95th Queue (ft) | 166 | 215 | 89 | 531 | 59 | 131 | 565 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | 20 |
| Queuing Penalty (veh) | | | | | | | 0 |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 8 | 5 | | 29 | | 53 | 3 |
| Queuing Penalty (veh) | 29 | 5 | | 7 | | 106 | 13 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | L | T | TR | L | T | T |
| Maximum Queue (ft) | 36 | 38 | 208 | 87 | 132 | 320 | 590 | 598 | 260 | 16 | 343 | 314 |
| Average Queue (ft) | 19 | 24 | 172 | 67 | 62 | 273 | 507 | 570 | 247 | 4 | 256 | 226 |
| 95th Queue (ft) | 45 | 51 | 246 | 100 | 146 | 389 | 755 | 675 | 314 | 18 | 374 | 349 |
| Link Distance (ft) | 211 | 211 | 211 | | 707 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 4 | | | | 13 | 19 | | | | |
| Queuing Penalty (veh) | | | 8 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 20 | 8 | 23 | 28 | 28 | 5 | | 19 | 9 |
| Queuing Penalty (veh) | | | | 10 | 10 | 90 | 109 | 224 | 32 | | 2 | 7 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 112 |
| Average Queue (ft) | 48 |
| 95th Queue (ft) | 156 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 652

Queuing and Blocking Report
AM Existing plus Project

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 34 | 25 | 3 | 49 | 97 | 57 |
| Average Queue (ft) | 19 | 9 | 1 | 30 | 65 | 34 |
| 95th Queue (ft) | 43 | 28 | 4 | 56 | 111 | 73 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 24 | 2 |
| Queuing Penalty (veh) | | | | | 10 | 3 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | SB | SB |
|-----------------------|-----|------|-----|----|
| Directions Served | L | TR | L | TR |
| Maximum Queue (ft) | 17 | 28 | 120 | 67 |
| Average Queue (ft) | 4 | 6 | 71 | 29 |
| 95th Queue (ft) | 20 | 38 | 139 | 74 |
| Link Distance (ft) | | 1164 | 516 | |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 100 | | | 50 |
| Storage Blk Time (%) | | 0 | 27 | 0 |
| Queuing Penalty (veh) | | 0 | 9 | 0 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 131 | 78 | 116 | 166 | 256 | 41 | 9 |
| Average Queue (ft) | 95 | 55 | 75 | 113 | 208 | 30 | 2 |
| 95th Queue (ft) | 147 | 86 | 141 | 185 | 290 | 52 | 15 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 1 | | | | 6 | | |
| Queuing Penalty (veh) | 4 | | | | 19 | | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 53 | | | | | | |
| Queuing Penalty (veh) | 0 | | | | | | |

Queuing and Blocking Report

AM Existing plus Project

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | B26 | B26 |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R | T | |
| Maximum Queue (ft) | 36 | 42 | 77 | 107 | 67 | 61 | 124 | 37 | 71 | 8 | 6 |
| Average Queue (ft) | 20 | 18 | 55 | 73 | 42 | 40 | 82 | 21 | 40 | 2 | 1 |
| 95th Queue (ft) | 48 | 48 | 83 | 126 | 87 | 70 | 137 | 47 | 82 | 19 | 15 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | | 127 | 127 |
| Upstream Blk Time (%) | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 | | |
| Storage Blk Time (%) | | | | | | | 3 | | 0 | | |
| Queuing Penalty (veh) | | | | | | | 11 | | 1 | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 71 | 98 | 70 | 32 | 37 | 147 | 104 | 68 | 15 | 15 | 92 | 62 |
| Average Queue (ft) | 47 | 63 | 41 | 12 | 20 | 98 | 56 | 37 | 5 | 6 | 57 | 28 |
| 95th Queue (ft) | 82 | 109 | 78 | 37 | 46 | 158 | 112 | 82 | 18 | 20 | 103 | 71 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | | 1 | | | | | | | |
| Queuing Penalty (veh) | | | | | 0 | | | | | | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 61 |
| Average Queue (ft) | 43 |
| 95th Queue (ft) | 68 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 57

Queuing and Blocking Report
PM Existing plus Project

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 17 | 18 | 1 | 44 | 230 | 59 |
| Average Queue (ft) | 10 | 8 | 0 | 29 | 142 | 48 |
| 95th Queue (ft) | 28 | 24 | 2 | 52 | 269 | 78 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 56 | 4 |
| Queuing Penalty (veh) | | | | | 36 | 10 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 29 | 37 | 2 | 269 | 75 |
| Average Queue (ft) | 13 | 8 | 0 | 186 | 39 |
| 95th Queue (ft) | 35 | 60 | 5 | 387 | 95 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | 4 | |
| Queuing Penalty (veh) | | | | 0 | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | 1 | | 74 | 0 |
| Queuing Penalty (veh) | | 0 | | 24 | 1 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | B24 | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | T | L | R | R |
| Maximum Queue (ft) | 135 | 111 | 219 | 139 | 50 | 249 | 83 | 14 |
| Average Queue (ft) | 105 | 83 | 156 | 89 | 16 | 219 | 42 | 3 |
| 95th Queue (ft) | 160 | 140 | 284 | 271 | 131 | 292 | 135 | 20 |
| Link Distance (ft) | 151 | 151 | | 318 | 411 | 251 | 251 | |
| Upstream Blk Time (%) | 3 | 2 | 1 | 4 | 1 | 8 | 1 | |
| Queuing Penalty (veh) | 11 | 7 | 0 | 0 | 0 | 25 | 2 | |
| Storage Bay Dist (ft) | | | 260 | | | | | 150 |
| Storage Blk Time (%) | 56 | | 7 | 2 | | | | |
| Queuing Penalty (veh) | 0 | | 11 | 6 | | | | |

Queuing and Blocking Report

PM Existing plus Project

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | B26 |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R | |
| Maximum Queue (ft) | 54 | 58 | 70 | 113 | 100 | 82 | 105 | 47 | 85 | 5 |
| Average Queue (ft) | 28 | 22 | 46 | 78 | 52 | 54 | 71 | 30 | 56 | 1 |
| 95th Queue (ft) | 64 | 63 | 75 | 134 | 111 | 91 | 118 | 57 | 94 | 13 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | | 127 |
| Upstream Blk Time (%) | | | | 0 | | | | | | |
| Queuing Penalty (veh) | | | | 0 | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 | |
| Storage Blk Time (%) | | | | | | | 3 | | 0 | |
| Queuing Penalty (veh) | | | | | | | 17 | | 1 | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 120 | 137 | 92 | 75 | 117 | 214 | 250 | 234 | 50 | 48 | 169 | 142 |
| Average Queue (ft) | 79 | 93 | 59 | 38 | 64 | 167 | 161 | 133 | 16 | 22 | 123 | 80 |
| 95th Queue (ft) | 136 | 159 | 102 | 82 | 135 | 268 | 296 | 257 | 77 | 60 | 186 | 156 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 3 | 14 | 2 | 0 | 1 | | | 0 | |
| Queuing Penalty (veh) | | | | 4 | 7 | 12 | 1 | 1 | | | 0 | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 79 |
| Average Queue (ft) | 53 |
| 95th Queue (ft) | 88 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 176

Queuing and Blocking Report
AM Existing plus Project and Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 90 | 104 | 97 | 216 | 51 | 82 | 39 |
| Average Queue (ft) | 51 | 60 | 41 | 148 | 30 | 53 | 20 |
| 95th Queue (ft) | 99 | 119 | 128 | 253 | 58 | 91 | 47 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 1 | 0 | | 9 | | 1 | |
| Queuing Penalty (veh) | 2 | 0 | | 5 | | 0 | |

Queuing and Blocking Report
PM Existing plus Mitigation

06/30/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 49 | 157 | 61 | 169 | 53 | 114 | 93 |
| Average Queue (ft) | 25 | 104 | 30 | 109 | 35 | 85 | 42 |
| 95th Queue (ft) | 54 | 174 | 80 | 207 | 60 | 129 | 113 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | | 5 | | 4 | | 7 | |
| Queuing Penalty (veh) | | 2 | | 2 | | 5 | |

Queuing and Blocking Report
AM Baseline + Project

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 32 | 23 | 2 | 59 | 125 | 57 |
| Average Queue (ft) | 17 | 12 | 0 | 35 | 71 | 36 |
| 95th Queue (ft) | 39 | 30 | 4 | 68 | 147 | 71 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 27 | 2 |
| Queuing Penalty (veh) | | | | | 12 | 3 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 19 | 50 | 2 | 115 | 61 |
| Average Queue (ft) | 6 | 15 | 0 | 73 | 31 |
| 95th Queue (ft) | 25 | 86 | 5 | 137 | 73 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | 1 | | 29 | 1 |
| Queuing Penalty (veh) | | 0 | | 9 | 1 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 149 | 68 | 127 | 193 | 262 | 74 | 24 |
| Average Queue (ft) | 112 | 49 | 86 | 116 | 212 | 36 | 6 |
| 95th Queue (ft) | 177 | 75 | 146 | 212 | 307 | 105 | 26 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 4 | | | | 11 | 0 | |
| Queuing Penalty (veh) | 14 | | | | 31 | 0 | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 57 | | | 0 | | | |
| Queuing Penalty (veh) | 0 | | | 1 | | | |

Queuing and Blocking Report

AM Baseline + Project

07/05/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 38 | 44 | 86 | 111 | 76 | 65 | 123 | 76 | 62 |
| Average Queue (ft) | 21 | 20 | 54 | 82 | 42 | 42 | 85 | 32 | 41 |
| 95th Queue (ft) | 49 | 53 | 92 | 124 | 90 | 79 | 139 | 103 | 74 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | 0 | |
| Queuing Penalty (veh) | | | | | | | | 1 | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 5 | | |
| Queuing Penalty (veh) | | | | | | | 20 | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 92 | 91 | 79 | 29 | 51 | 145 | 86 | 54 | 13 | 20 | 87 | 42 |
| Average Queue (ft) | 55 | 56 | 48 | 10 | 29 | 107 | 49 | 31 | 4 | 6 | 59 | 22 |
| 95th Queue (ft) | 99 | 105 | 86 | 33 | 58 | 171 | 97 | 64 | 17 | 22 | 97 | 49 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | | 1 | | | | | | | |
| Queuing Penalty (veh) | | | | | 0 | | | | | | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 65 |
| Average Queue (ft) | 42 |
| 95th Queue (ft) | 71 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 92

Queuing and Blocking Report
PM Baseline + Project

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 22 | 20 | 3 | 51 | 219 | 60 |
| Average Queue (ft) | 9 | 8 | 1 | 35 | 132 | 48 |
| 95th Queue (ft) | 29 | 25 | 5 | 61 | 270 | 81 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | | | | | 53 | 4 |
| Queuing Penalty (veh) | | | | | 35 | 10 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 45 | 136 | 6 | 191 | 65 |
| Average Queue (ft) | 16 | 43 | 1 | 118 | 29 |
| 95th Queue (ft) | 52 | 197 | 14 | 254 | 77 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | 5 | 0 | 52 | 0 |
| Queuing Penalty (veh) | | 2 | 0 | 17 | 0 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | B24 | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | T | L | R | R |
| Maximum Queue (ft) | 143 | 116 | 198 | 115 | 22 | 254 | 91 | 21 |
| Average Queue (ft) | 112 | 90 | 150 | 69 | 7 | 205 | 40 | 5 |
| 95th Queue (ft) | 166 | 145 | 259 | 186 | 69 | 293 | 122 | 22 |
| Link Distance (ft) | 151 | 151 | | 318 | 411 | 251 | 251 | |
| Upstream Blk Time (%) | 4 | 3 | 1 | 3 | | 9 | 1 | |
| Queuing Penalty (veh) | 17 | 14 | 0 | 0 | | 26 | 1 | |
| Storage Bay Dist (ft) | | | 260 | | | | | 150 |
| Storage Blk Time (%) | 55 | | 4 | | | | | |
| Queuing Penalty (veh) | 0 | | 6 | | | | | |

Queuing and Blocking Report

PM Baseline + Project

07/05/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 50 | 42 | 63 | 153 | 86 | 88 | 111 | 72 | 84 |
| Average Queue (ft) | 29 | 26 | 45 | 99 | 52 | 58 | 77 | 36 | 51 |
| 95th Queue (ft) | 68 | 54 | 74 | 175 | 93 | 97 | 130 | 86 | 98 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 3 | | 0 |
| Queuing Penalty (veh) | | | | | | | 20 | | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 120 | 138 | 75 | 69 | 104 | 238 | 220 | 204 | 22 | 39 | 148 | 116 |
| Average Queue (ft) | 80 | 98 | 50 | 34 | 64 | 174 | 157 | 129 | 10 | 19 | 111 | 71 |
| 95th Queue (ft) | 141 | 168 | 83 | 73 | 119 | 292 | 343 | 290 | 28 | 48 | 170 | 142 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | 0 | 0 | | | | | 1 | | | | | |
| Queuing Penalty (veh) | 0 | 0 | | | | | 0 | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 2 | 11 | 5 | | 0 | | | 0 | |
| Queuing Penalty (veh) | | | | 3 | 5 | 22 | | 0 | | | 0 | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 81 |
| Average Queue (ft) | 54 |
| 95th Queue (ft) | 89 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 179

Queuing and Blocking Report
AM Baseline + Project Mitigated

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 59 | 108 | 53 | 180 | 55 | 88 | 43 |
| Average Queue (ft) | 41 | 65 | 31 | 126 | 34 | 62 | 24 |
| 95th Queue (ft) | 65 | 122 | 61 | 208 | 67 | 105 | 53 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | | 1 | | 5 | | 2 | |
| Queuing Penalty (veh) | | 1 | | 3 | | 1 | |

Queuing and Blocking Report
PM Baseline + Project Mitigated

07/05/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 66 | 125 | 58 | 171 | 61 | 118 | 135 |
| Average Queue (ft) | 31 | 80 | 32 | 108 | 36 | 97 | 59 |
| 95th Queue (ft) | 77 | 146 | 65 | 198 | 69 | 141 | 170 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | | 2 | | 3 | | 10 | |
| Queuing Penalty (veh) | | 1 | | 2 | | 7 | |

Queuing and Blocking Report
AM Future plus Project

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 74 | 23 | 9 | 53 | 409 | 60 |
| Average Queue (ft) | 42 | 10 | 3 | 37 | 306 | 43 |
| 95th Queue (ft) | 83 | 28 | 15 | 63 | 520 | 85 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | 19 | |
| Queuing Penalty (veh) | | | | | 0 | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | 0 | | | | 91 | 3 |
| Queuing Penalty (veh) | 0 | | | | 67 | 7 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 74 | 79 | 17 | 105 | 71 |
| Average Queue (ft) | 41 | 29 | 4 | 49 | 49 |
| 95th Queue (ft) | 86 | 142 | 17 | 140 | 81 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | 1 | 2 | | 14 | 8 |
| Queuing Penalty (veh) | 3 | 3 | | 16 | 4 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 154 | 71 | 192 | 205 | 266 | 114 | 23 |
| Average Queue (ft) | 121 | 49 | 124 | 141 | 234 | 49 | 7 |
| 95th Queue (ft) | 177 | 82 | 216 | 227 | 296 | 140 | 28 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 7 | | | | 12 | 1 | |
| Queuing Penalty (veh) | 23 | | | | 46 | 5 | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 62 | | 0 | 0 | | | |
| Queuing Penalty (veh) | 0 | | 1 | 1 | | | |

Queuing and Blocking Report

AM Future plus Project

06/28/2017

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R |
| Maximum Queue (ft) | 19 | 48 | 66 | 138 | 96 | 85 | 136 | 46 | 75 |
| Average Queue (ft) | 4 | 27 | 50 | 93 | 56 | 60 | 96 | 12 | 46 |
| 95th Queue (ft) | 25 | 56 | 77 | 152 | 108 | 102 | 153 | 63 | 84 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 |
| Storage Blk Time (%) | | | | | | | 7 | | 0 |
| Queuing Penalty (veh) | | | | | | | 25 | | 1 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 44 | 38 | 154 | 46 | 52 | 340 | 615 | 517 | 31 | 14 | 169 | 129 |
| Average Queue (ft) | 29 | 21 | 109 | 24 | 21 | 337 | 581 | 300 | 10 | 6 | 126 | 85 |
| 95th Queue (ft) | 54 | 46 | 170 | 53 | 66 | 365 | 698 | 646 | 35 | 19 | 185 | 162 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 0 | | | | 80 | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 1 | 2 | 79 | | 0 | | | | |
| Queuing Penalty (veh) | | | | 0 | 1 | 260 | | 0 | | | | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 57 |
| Average Queue (ft) | 39 |
| 95th Queue (ft) | 64 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 463

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|------|-----|-----|----|
| Directions Served | L | L | TR | LTR | LT | R |
| Maximum Queue (ft) | 61 | 25 | 6 | 52 | 477 | 62 |
| Average Queue (ft) | 32 | 10 | 1 | 37 | 462 | 54 |
| 95th Queue (ft) | 67 | 30 | 7 | 61 | 480 | 84 |
| Link Distance (ft) | | | 1164 | 265 | 442 | |
| Upstream Blk Time (%) | | | | | 90 | |
| Queuing Penalty (veh) | | | | | 0 | |
| Storage Bay Dist (ft) | 120 | 150 | | | | 40 |
| Storage Blk Time (%) | 0 | | | | 96 | 9 |
| Queuing Penalty (veh) | 0 | | | | 190 | 40 |

Intersection: 2: Todd Rd & Moorland Ave

| Movement | EB | EB | WB | SB | SB |
|-----------------------|-----|------|-----|-----|----|
| Directions Served | L | TR | TR | L | TR |
| Maximum Queue (ft) | 50 | 16 | 12 | 184 | 74 |
| Average Queue (ft) | 28 | 3 | 2 | 99 | 63 |
| 95th Queue (ft) | 58 | 37 | 16 | 230 | 86 |
| Link Distance (ft) | | 1164 | 151 | 516 | |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 100 | | | | 50 |
| Storage Blk Time (%) | | 0 | 0 | 33 | 9 |
| Queuing Penalty (veh) | | 1 | 0 | 61 | 9 |

Intersection: 3: S Moorland Ave & Todd Rd/US 101 South Ramps

| Movement | EB | EB | WB | WB | NB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | R | L | TR | L | R | R |
| Maximum Queue (ft) | 136 | 106 | 221 | 149 | 222 | 39 | 17 |
| Average Queue (ft) | 92 | 73 | 169 | 75 | 146 | 28 | 3 |
| 95th Queue (ft) | 150 | 119 | 248 | 161 | 238 | 48 | 19 |
| Link Distance (ft) | 151 | 151 | | 318 | 251 | 251 | |
| Upstream Blk Time (%) | 2 | 0 | | | 1 | | |
| Queuing Penalty (veh) | 7 | 1 | | | 3 | | |
| Storage Bay Dist (ft) | | | 260 | | | | 150 |
| Storage Blk Time (%) | 54 | | 0 | 0 | | | |
| Queuing Penalty (veh) | 0 | | 0 | 0 | | | |

Intersection: 4: Todd Rd Overcrossing & US 101 North Off-ramp/Todd Rd

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | B26 |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | T | T | R | L | LT | T | L | R | R | |
| Maximum Queue (ft) | 6 | 39 | 52 | 114 | 74 | 64 | 136 | 73 | 121 | 5 |
| Average Queue (ft) | 2 | 19 | 36 | 70 | 37 | 38 | 102 | 23 | 72 | 1 |
| 95th Queue (ft) | 12 | 49 | 57 | 131 | 85 | 74 | 156 | 111 | 138 | 14 |
| Link Distance (ft) | 566 | | | 211 | 211 | 211 | | 264 | | 127 |
| Upstream Blk Time (%) | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | |
| Storage Bay Dist (ft) | | 180 | 180 | | | | 100 | | 100 | |
| Storage Blk Time (%) | | | | | | | 8 | | 3 | |
| Queuing Penalty (veh) | | | | | | | 49 | | 21 | |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | T | T | R | L | T | T |
| Maximum Queue (ft) | 39 | 38 | 217 | 89 | 141 | 340 | 598 | 562 | 91 | 12 | 377 | 348 |
| Average Queue (ft) | 21 | 17 | 176 | 73 | 84 | 337 | 583 | 472 | 23 | 3 | 297 | 266 |
| 95th Queue (ft) | 46 | 44 | 249 | 104 | 197 | 370 | 667 | 720 | 120 | 13 | 420 | 396 |
| Link Distance (ft) | 211 | 211 | 211 | | 701 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 6 | | | | 91 | 0 | | | | |
| Queuing Penalty (veh) | | | 12 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 42 | 5 | 86 | | 5 | | | 30 | 18 |
| Queuing Penalty (veh) | | | | 22 | 6 | 596 | | 5 | | | 3 | 14 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 218 |
| Average Queue (ft) | 94 |
| 95th Queue (ft) | 269 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 1040

Queuing and Blocking Report

AM Future plus Project and Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 134 | 190 | 176 | 392 | 55 | 116 | 158 |
| Average Queue (ft) | 96 | 123 | 82 | 263 | 32 | 96 | 69 |
| 95th Queue (ft) | 153 | 229 | 216 | 432 | 66 | 135 | 193 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 7 | 8 | | 27 | | 14 | 0 |
| Queuing Penalty (veh) | 28 | 11 | | 18 | | 10 | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | L | T | TR | L | T | T |
| Maximum Queue (ft) | 55 | 57 | 161 | 42 | 55 | 281 | 355 | 217 | 170 | 12 | 168 | 136 |
| Average Queue (ft) | 30 | 31 | 106 | 26 | 23 | 207 | 235 | 135 | 65 | 4 | 129 | 86 |
| 95th Queue (ft) | 65 | 70 | 181 | 53 | 63 | 336 | 407 | 257 | 190 | 16 | 196 | 159 |
| Link Distance (ft) | 211 | 211 | 211 | | 707 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 0 | | | | | | | | | |
| Queuing Penalty (veh) | | | 0 | | | | | | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 1 | 2 | 2 | 7 | 2 | 0 | | 0 | 0 |
| Queuing Penalty (veh) | | | | 0 | 1 | 7 | 28 | 8 | 1 | | 0 | 0 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 60 |
| Average Queue (ft) | 41 |
| 95th Queue (ft) | 69 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 112

Queuing and Blocking Report

PM Future plus Project and Mitigation

06/28/2017

Intersection: 1: Ghillotti Ave/Standish Ave & Todd Rd

| Movement | EB | EB | WB | WB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | TR | L | TR | LTR | L | TR |
| Maximum Queue (ft) | 143 | 247 | 164 | 447 | 78 | 124 | 440 |
| Average Queue (ft) | 94 | 155 | 66 | 315 | 47 | 123 | 341 |
| 95th Queue (ft) | 177 | 286 | 175 | 568 | 86 | 127 | 553 |
| Link Distance (ft) | | 590 | | 1159 | 265 | | 442 |
| Upstream Blk Time (%) | | | | | | | 16 |
| Queuing Penalty (veh) | | | | | | | 0 |
| Storage Bay Dist (ft) | 120 | | 150 | | | 100 | |
| Storage Blk Time (%) | 13 | 11 | | 29 | | 54 | 2 |
| Queuing Penalty (veh) | 46 | 12 | | 19 | | 109 | 10 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | EB | EB | EB | WB | WB | NB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Directions Served | L | LT | R | L | TR | L | L | T | TR | L | T | T |
| Maximum Queue (ft) | 34 | 48 | 212 | 89 | 164 | 335 | 592 | 597 | 260 | 44 | 344 | 305 |
| Average Queue (ft) | 17 | 21 | 170 | 78 | 97 | 285 | 524 | 553 | 245 | 11 | 276 | 238 |
| 95th Queue (ft) | 41 | 54 | 251 | 101 | 204 | 392 | 737 | 708 | 325 | 80 | 385 | 363 |
| Link Distance (ft) | 211 | 211 | 211 | | 707 | | 573 | 573 | | | 1108 | 1108 |
| Upstream Blk Time (%) | | | 5 | | | | 14 | 25 | | | | |
| Queuing Penalty (veh) | | | 10 | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | | 65 | | 280 | | | 200 | 205 | | |
| Storage Blk Time (%) | | | | 38 | 7 | 17 | 31 | 30 | 7 | | 24 | 13 |
| Queuing Penalty (veh) | | | | 20 | 9 | 64 | 121 | 241 | 47 | | 2 | 10 |

Intersection: 5: Santa Rosa Ave & Todd Rd

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 174 |
| Average Queue (ft) | 58 |
| 95th Queue (ft) | 195 |
| Link Distance (ft) | |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | 205 |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Zone Summary

Zone wide Queuing Penalty: 721

Appendix G

Speed Survey Data

| SPEED SURVEY CALCULATIONS | | |
|----------------------------|---------|------|
| Ghilotti Construction Yard | | |
| Roadway: | Todd Rd | |
| Direction of Travel: | EB | WB |
| Speed Samples: | 27 | 23 |
| | 33 | 26 |
| | 36 | 24 |
| | 30 | 23 |
| | 33 | 26 |
| | 33 | 20 |
| | 32 | 30 |
| | 29 | 27 |
| | 27 | 30 |
| | 26 | 24 |
| | 21 | 28 |
| | 32 | 23 |
| | 41 | 28 |
| | 32 | 25 |
| | 30 | 22 |
| | 31 | 20 |
| | 30 | 23 |
| | 41 | 22 |
| | 31 | 28 |
| | 27 | 30 |
| | 28 | 29 |
| | 35 | 22 |
| | 29 | 26 |
| | 31 | 29 |
| | 36 | 23 |
| Average Speed: | 31.2 | 25.2 |
| 85th Percentile Speed: | 35.4 | 29.0 |
| High Speed: | 41.0 | 30.0 |

*Note: All speeds in miles per hour (mph).