Route 5 Corridor Study

City of Meriden Town of Wallingford

PREPARED FOR

South Central Regional Council of Governments (SCRCOG)

City of Meriden

Town of Wallingford

PREPARED BY



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3

Future Conditions

This section of the Route 5 Corridor Study summarizes the tasks associated with the assessment of future conditions within the study area and the recommendation of transportation improvement alternatives. The future conditions were based upon prepandemic traffic volumes, base year 2020.

Overall corridor improvement figures have been prepared and included in the report text as well as specific intersection concept plans as noted.

3.1 Method

An important component of this study involved forecasting travel demands and land use changes. Doing so ensures that the studied alternatives and the recommended transportation infrastructure investments anticipate future needs and provide long-term benefits for the City of Meriden and Town of Wallingford. To estimate future conditions along the Route 5 corridor, a 20-year planning horizon was studied incorporating all potential transportation and development activity that may be realized by the year 2040. This future year of 2040 was developed without consideration of the potential impacts of the pandemic on traffic volumes. Rather, the projects are conservatively estimated and ignore the expected temporary changes in traffic volumes over the long term 20 year horizon. Based upon these projections, the future conditions were studied under two scenarios, a No-Build and Build Condition.

The 2040 No-Build Condition models future transportation conditions including regional traffic growth, planned geometric and operational transportation projects identified by the Connecticut Department of Transportation, and planned development projects along the

corridor. The proposed transportation improvement alternatives that are described in later sections of this document are not included in the 2040 No-Build Condition. The resulting comparison of Existing Conditions to the 2040 No-Build Condition is a measure of the ability of the existing transportation system to handle future travel demands.

The 2040 Build Condition includes the future transportation and development characteristics described in the No-Build Condition as well as the transportation improvement alternatives recommended in this corridor study. The purpose of the transportation improvement alternatives is to provide for consideration conceptual transportation solutions at locations along the corridor with existing safety or operational deficiencies as noted by the municipalities of Meriden and Wallingford, SCRCOG, the public, and the traffic operations analyses herein. Subsequent sections of this corridor study describe the transportation improvement alternatives in detail. The resulting comparison of the future conditions is a measure of the effectiveness of transportation improvements if implemented.

3.2 2040 No-Build Condition

The No-Build Condition was developed using information provided by CTDOT and the Town of Wallingford. Ultimately, this information was used to estimate traffic operations along the corridor in 2040 without any of the transportation improvement alternatives proposed in this document.

3.2.1 2040 Traffic Volumes

Traffic volumes along a corridor change over time according to driving demand, which is influenced by anticipated land development, economic activity, broader regional driving trends, and land use characteristics. New developments typically attract new driving trips, particularly in locations with land use characteristics like the Route 5 corridor.

Future traffic volumes are typically estimated by growing existing traffic volume data by a percentage reflecting historical, area-specific traffic trends compounded over the length of the planning horizon. CTDOT calculated and provided 2040 peak hour traffic volumes along the corridor by growing the 2020 traffic volumes previously described. The 2040 traffic volumes reflect an approximately 15 percent increase from 2020 volumes, representing a highly conservative estimate of future traffic volumes. The 2040 peak hour traffic volume networks provided by CTDOT are included in the Appendix.

The provided 2040 peak hour traffic volumes were used to conduct the operational analyses at the study intersections throughout the corridor.

3.2.2 Future Development Projects

Most parcels along the Route 5 corridor frontage are presently developed, but a small number of vacant developable parcels exist along the Wallingford corridor segment. There were no parcels in Meriden along Route 5 that were identified as likely candidates for development. In the consideration of future traffic volumes, it was important to study these

parcels and consult with the Town of Wallingford to determine if any parcels could be built into major traffic generators.

VHB met with the Town of Wallingford to identify potential future development parcels along the Wallingford section of the corridor. The following parcels and potential uses were discussed:

- 1033 N Colony Road (previously approved for 17,700 square feet of office space and 5,700 square feet of retail/bank space)
- Parcel opposite Staples Plaza at 1145 N Colony Road (potential car dealership)
- 1195 1197 S Broad Street (approved for 11,600 square feet of storage unit space)
- 1241 1269 S Broad Street (potential office, medical, or storage space)

Utilizing the information from the Town, vehicle trips that could be generated by potential developments were approximated using the *Institute of Transportation Engineers Trip Generation Manual, 10th Edition.* It was determined that potential future developments identified would generate approximately 120 total peak hour vehicle trips, a low number of trips relative to through volumes along the Route 5 corridor.

For the purposes of this study, these trips were assumed to be included in the 20-year traffic growth calculated by CTDOT. Therefore, the traffic volumes used in the 2040 No-Build Condition are the volumes provided by CTDOT without any further adjustments.

3.2.3 Future Roadway Projects

Based on discussions with CTDOT, the Town of Wallingford, and the City of Meriden, there are no significant transportation improvements currently planned along the corridor in the foreseeable future. Aside from expected maintenance of pavement conditions with typical milling and overlay of the Route 5 roadway under CTDOT's Vendor In Place paving program, as was recently completing in Meriden, no other major projects are known at this time that would affect the No-Build Conditions. In addition, it can be expected that CTDOT may replace traffic control signal equipment at various locations during the No-Build period, however those improvements are considered to be typical maintenance type improvements. Therefore, the 2040 No-Build condition was assumed to maintain existing roadway conditions.

3.2.4 2040 No-Build Traffic Operations

Capacity analyses were performed to evaluate traffic operations at the study intersections during the weekday morning and weekday evening peak traffic periods under the 2040 No-Build scenario. These analyses were performed by inputting the 2040 peak hour traffic volumes provided by CTDOT into the existing conditions Synchro model discussed in the previous chapter to forecast future traffic operating conditions in 2040 if no transportation improvements or signal timing modifications are implemented.

The capacity analysis documented in the Existing Conditions identified four intersections within the study area that operate with an overall LOS E or F during the peak periods under

existing conditions. As expected, the approximately 15-percent traffic growth forecast under the 2040 No-Build condition is expected to further exacerbate existing capacity issues along the corridor, with delays and vehicle queues increasing at all study intersections. Under the 2040 No-Build condition, nine intersections are projected to operate at overall LOS E or F conditions.

The overall intersection LOS at each intersection during the weekday morning and evening peak traffic periods under 2040 No-Build conditions is shown on Figure 3-1. A detailed summary of the capacity analysis results, including LOS, delays, and vehicle queue lengths by lane group, is included in the Appendix.

3.3 Transportation Improvement Alternatives

The recommended transportation improvements presented herein were developed for locations identified during the public information meetings, including input from the City of Meriden and Town of Wallingford as well as from SCRCOG, CTDOT representatives. These recommendations were verified with traffic operations analyses by VHB to mitigate known mobility, safety, and operational issues. Many concepts were vetted over several Study Advisory Committee meetings and with the public and with the municipal, regional, and state agencies. The chosen alternatives include both short-term and long-term improvements. The short-term improvements are intended to address existing deficiencies and generally consist of lower-cost options with limited design and permitting efforts that can be substantially completed in a shorter timeframe (1-5 years). The long-term improvements are generally more costly than the short-term improvements, and they require more substantial design, permitting, and construction efforts that would require a longer timeframe (5+ years) to complete.

The deficiencies identified along the corridor and the corresponding recommended improvement alternatives are described in the following section. An overall map of the study area depicting the location of the recommended improvements is shown on Figures 3-2A to 3-2I.

3.3.1 Corridor-Wide Improvements

3.3.1.1 Pedestrian Facility Improvements

Sidewalk Connectivity

The November 2019 and Updated December 2020 Existing Conditions Report identified many gaps in the sidewalk network along Route 5 spanning from the southern end of the corridor study area at the Route 15 North ramps in Wallingford to a location approximately 500 feet north of Hall Avenue in Meriden. Treaded foot paths were observed at some of these locations indicating frequent pedestrian use despite a lack of facilities.

➤ Proposed short-term improvement: Figures 3-2A through 3-2I indicate all locations along the corridor where sidewalk infill is proposed in order to fill the gaps in connectivity. On Figure 3-2B, sidewalk infill is proposed only on the west side of

Route 5 opposite the Staples Plaza due to the grade of the undeveloped land on the east side. If the parcel is developed in the future, a long-term improvement can include the installation of sidewalk on the east side in conjunction with the development.

Sidewalk Conditions

The sidewalk field inventory identified sidewalks along the Route 5 corridor in good, fair, and poor condition, as shown on Figure 2-11 in Existing Conditions. Sidewalks in poor condition appeared to present walking hazards or mobility difficulties.

Proposed short-term improvement: replace sidewalks along the corridor that are in poor condition.

3.3.1.2 Transit Improvements

The Route 5 corridor's transit system is primarily served by CTTransit Bus Route 215, but also offers connections to CTTransit Bus Route 563, 566, MAT Route 590, and the CTRail Hartford Line. The following areas of improvement and recommendations were identified.

Bus Stop Conditions

CTtransit bus stops along the Route 5 corridor study area do not typically provide passenger amenities such as shelters or platforms and are only indicated by a sign along the sidewalk or grass belt. One bus stop location along the southbound side of the corridor between the Town Line Plaza intersections in Meriden (photo below) was noted to have a bus shelter.



Proposed short-term improvement: Figures 3-2A through 3-2I illustrate locations where bus stops are recommended to be upgraded to have shelters and platforms installed compliant with ADA standards to better serve transit users. Proposed long-term improvement: Further study of the bus stop locations is recommended to consolidate nearby stops and thereby improve travel time. This would impact the selection of locations to upgrade with new shelters and platforms.

Bus Service Operations

CTtransit Bus Route 215 currently runs with 40 – 60-minute headways during weekdays, 80 – 90-minute headways on Saturdays, and 30-minute headways with very limited service on Sundays during the early morning and evening peaks.

- Proposed short-term improvement: Improve weekday and Saturday headways to 30 minutes or shorter. If ridership demand exists on Sundays, extend and simplify hours of operation. More frequent and easier-to-use transit will help better serve existing users and potentially attract new users.
- Consider improving transit service between Route 5 and Meriden Train Station to improve the last mile connectivity. Previous studies of transit service have not addressed the potential for improving these connections and should be reviewed.

Transportation Demand Management (TDM)

The goal of TDM is to reduce single-occupancy motor vehicle trips by encouraging use of transit, walking, and biking through various programs. The following long-term measures may be considered to encourage residents and commuters along the Route 5 corridor area to use transit.

- Coordinate with employers along the Route 5 corridor to offer free or subsidized Go CT cards or monthly passes for CTTransit and CTRail to employees.
- Offer education on how to use mobile apps for transit fares and route planning. Existing apps include the Go CT Card Mobile app, the CTRail eTix app, the Transit app, and Google Maps app.
- Create a brochure of transportation options to distribute to employers along the Route 5 corridor to be supplemented with information on transportation benefits the employer may offer for employees.
- > Increase advertisement of CTRides services to help nearby residents and commuters connect to transportation resources.
- Convert preferential parking spaces into designated carpool/vanpool parking spaces.
- Employers that offer subsidized/free parking to employees may offer a parking cashout program that allows employees to exchange their parking space for cash equivalent to the monthly cost of that parking space.

3.3.1.3 Traffic Operations Improvements

Capacity analyses were conducted for each signalized intersection evaluated along the Route 5 corridor. The intersections were assessed to determine if they would benefit from optimizing signal timings.

Proposed short-term improvement: Optimize signal timing splits at signalized intersections to reduce delays and queueing and improve progression along coordinated systems.

3.3.2 Intersection and Roadway Improvements

The following section describes existing deficiencies and transportation improvement recommendations for the study intersections sequentially numbered from the north end of the corridor in Meriden (northern Route 15 junction) to the south end of the corridor in Wallingford (southern Route 15 junction). This summary is based upon the original intersection list provided in the early scoping of the project.

1) Route 5 at Stoneycrest Drive to Route 15

Excessive speeds were identified on the northern segment of the Route 5 corridor, between Stoneycrest Drive and Route 15, just south of the beginning of the interchange ramps with Route 15 northern junction, Berlin Turnpike. This segment is essentially an exit ramp from Route 15, and motorists maintain higher speeds after exiting Route 15 and entering the primarily residential areas to the south and accelerating to enter the interchange heading north.

Proposed short-term improvements: reduce the pavement widths on these segments and restripe the pavement with a single 11' lane as a traffic calming measure to encourage reduced speeds. This is most critical for the southbound direction.

2) Route 5 at Golden Street & Edison Middle School Driveway

Lighting conditions at night were noted as being inadequate.

Proposed short-term improvements: review lighting levels with CTDOT and if necessary install additional lighting along this segment.

4) Route 5 at Britannia Street & Westfield Road

Stakeholders have noted that the sidewalks have inadequate lighting along the segment of Route 5 between the Edison Middle School Street and Britannia Street/Westfield Road.

Proposed short-term improvements: review lighting levels with CTDOT and if necessary install additional lighting along this segment.

- 6) Route 5 at Pratt Street Extension/I-691 Westbound Off Ramp and
- 7) Route 5 at Camp Street/I-691 Eastbound Ramps/Yale Acres Road

Short-Term Improvements: Lane Configuration and Yale Acres Road Restricted Movements

The intersection of Yale Acres Road immediately south of the Camp Street/I-691 Eastbound ramps intersection results in left turning vehicles into and exiting the side street of Yale Acres Road. These turning vehicles, across the Route 5 through lanes, cause backups in the Camp Street intersection and reduces the intersection operations during peak periods. This also results in additional crashes.

Proposed improvements: Restripe Route 5 lanes at Camp Street intersection and install right turn in/right turn out only restricted movement raised island on Yale Acres Road approach. This improvement will prevent the conflicting left turning movements at Yale Acres Road and redirect those vehicles to the southerly intersection of Route 5 at Wall Street. This intersection can accommodate the redirected traffic.

Long-Term Improvements: Modern Roundabout

The intersection operations during the peak hours are expected to worsen in the No-Build 2040 Conditions despite the short term improvements. Widening Route 5 under the I-691 overpass limits the capacity improvements at the intersection.

Proposed improvements: Construct a multilane modern roundabout with a single circulating lane, to address the congestion and crash history of the intersection. The roundabout includes a sidewalk network to improve pedestrian connectivity through the intersection. The multilane roundabout should be designed to initially operate as a single lane with additional lanes added as traffic conditions warrant.

Route 5 at Myrtle Street

There are no crosswalks across Route 5 along the approximately ½ mile segment between Liberty Street and Camp Street. Stakeholders have identified a need for a crosswalk in this segment.

Proposed improvements: install a crosswalk with Rectangular Rapid Flashing Beacons (RRFB) at the intersection with Myrtle Street. The installation of the crosswalk will require the removal of some existing on-street parking spaces.

8) Route 5 at Liberty Street

This intersection is projected to operate at an overall LOS F during the weekday evening peak traffic period under 2040 No-Build conditions.

Proposed short-term improvements: widen and restripe Liberty Street to provide an eastbound left-turn lane. This widening will require an easement for installation of

sidewalk. Replace all traffic signal equipment at the intersection and optimize traffic signal timing settings.

With these improvements, the intersection improves to an overall LOS E during the weekday evening peak traffic period under Future 2040 Build Conditions.

9) Route 5 at East Main Street

This intersection is one of the most congested intersections along the corridor, as it operates at an overall LOS F during the weekday evening peak traffic period. This intersection was also identified as a high crash location, with 58 crashes reported during the four-year analysis period from 2016-2019.

The atypical geometry of this intersection contributes to both the poor traffic operating conditions and crash history. The eastern and western legs of East Main Street intersect with Route 5 at an offset, which requires the intersection to operate with inefficient split phasing on the side streets, causing excess delays for motorists. Additionally, the southern leg of Route 5 has a wide median, and southbound through traffic on Route 5 is aligned to lead motorists directly into this median. The westbound approach on East Main Street provides a single lane to the east, and auxiliary left and right turning lanes are added the intersection with Route 5. However, the pavement markings do not provide tapers for these turn lanes to help guide motorists into the proper lane.

The following short-term intersection improvements are recommended to address the deficiencies noted above:

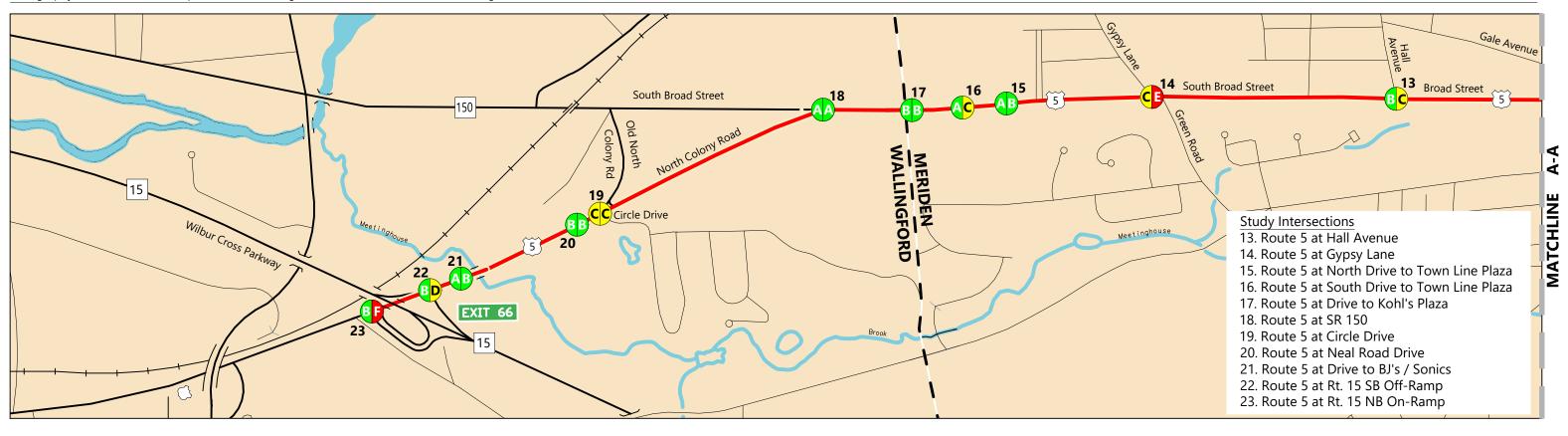
- Realign the eastern leg of East Main Street further south to align opposite of the western leg. This realignment will require an easement and/or right-of-way acquisition from the Stop & Shop property on the southeast corner.
- Restripe the eastern leg of East Main Street to clearly delineate the lane usage and provide tapers in accordance with current CTDOT and MUTCD guidelines.
- Narrow the nose of the median island on the southern leg of Route 5 to reduce the offset for southbound through traffic and improve the turning path of westbound left-turns.
- Replace all traffic signal equipment at the intersection to provide signal heads in the proper configuration and upgrade pedestrian signal equipment.

These improvements are projected to reduce average delays by 40-seconds and improve the overall LOS from an F to E during the weekday evening peak traffic period.

The installation of two roundabouts at this intersection was also considered as a long-term improvement. However, it was determined that the roundabout alternative would require excessive right-of-way impacts, so it was not recommended under this study.

10) Route 5 at Charles Street

The sidewalk ramps and pedestrian traffic signal equipment at this intersection no longer meets current ADA guidelines.



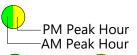


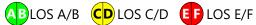
LEGEND

Intersection Number

Study Corridor

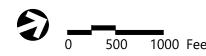
Level of Service (LOS)*













2040 Build Conditions Level of Service Route 5 Corridor Study Meriden and Wallingford, CT

Figure 3-1

Proposed short-term improvements: install ADA-accessible sidewalk ramps and pedestrian traffic signal equipment

11) Route 5 at Curtis Street and Olive Street

Curtis Street intersects with Route 5 at an acute angle to form a very wide intersection with a pedestrian crossing distance of over 150-feet across Curtis Street. Due to this excessive crossing distance, there is currently no crosswalk across Curtis Street.

Proposed short-term improvements: construct a raised island on Curtis Street to channelize right-turns onto Curtis Street and break up the Curtis Street pedestrian crossing into two stages.

The Route 5 at Curtis Street intersection currently operates under the same controller as the signalized intersection of Route 5 at Olive Street, located approximately 150-feet to the north. However, traffic volumes at the Curtis Street intersection do not appear to meet the traffic signal warrants documented in the Manual on Uniform Traffic Control Devices (MUTCD), as virtually all traffic on Curtis Street turns right onto Route 5.

Proposed long-term improvements: remove the unwarranted traffic signal and replace with a stop-sign on Curtis Street. Realign Curtis Street to intersect with Route 5 at closer to a 90-degree angle and reduce the pedestrian crossing distance. Replace all existing traffic signal equipment at the intersection of Route 5 at Olive Street.

Route 5 at Silver Street

There is an existing uncontrolled crosswalk across Route 5 at the intersection with Silver Street.

Proposed improvements: install Rectangular Rapid Flashing Beacons (RRFB) to improve visibility and encourage motorists to yield to pedestrians crossing the crosswalk.

12) Route 5 at Gale Avenue & Ann Street

Ann Street intersects with Route 5 from the east, and Gale Avenue intersects with Route 5 from the west at an acute angle approximately 25-feet south of Ann Street to form an offset intersection with atypical geometry. Due to the offset, the City-owned traffic signal operates with split phasing for the side street approaches, which results in inefficient traffic operating conditions. Additionally, the crosswalk across Gale Avenue is very long, at almost 100-feet.

Proposed short-term improvement: construct a raised island on Gale Avenue to channelize right-turns onto Route 5 and break up the Gale Avenue pedestrian crossing into two stages with reduced crossing distances.

Various options were also explored to further improve the alignment of this intersection and improve traffic operating conditions. However, it was determined that realigning either Gale Avenue or Ann Street to intersect directly opposite of the other street in a standard configuration would involve extensive right-of-way impacts. As such, this study does not

include recommendations for a more significant intersection realignment. However, intersection realignment may be considered in the future if right-of-way becomes available.

13) Route 5 at Hall Avenue

Pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic. There is no crosswalk provided across Hall Avenue.

Proposed short-term improvements: install new crosswalk across Hall Avenue and install ADA-accessible sidewalk ramps and pedestrian traffic signal equipment

14) Route 5 at Gypsy Lane & Green Road

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed short-term improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

15) Route 5 at Silver Hill North Dr. & North Dr. to Townline Square

Crosswalks are provided at the intersection except for the western driveway approach. Pedestrian signal heads are not provided. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

> Proposed short-term improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

16) Route 5 at South Driveways to Townline Square and Silver Hill Business Center

Crossing facilities are provided at the intersection but are absent for the western driveway approach.

> Proposed short-term improvement: Install ADA-accessible crosswalks and pedestrian signals for the western driveway approach.

17) Route 5 at Driveway to Kohl's Plaza

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the northern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed short-term improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

18) Route 5 at Route 150

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

19) Route 5 at Route 71 & Circle Drive

This intersection was identified as a high crash location, with 46 crashes reported during the four-year analysis period from 2016-2019. A potential contributing factor may be the lack of proper delineation for the lane usage on Route 71. Stakeholders have reported that the current lane-use on Route 71 (Old North Colony Road) is confusing, and drivers frequently turn right from the left lane.

Proposed short-term improvement: Restripe Route 71, install lane-use signs, and replace existing signal heads with left arrow and 45-degree right arrow signal heads to reinforce the intended lane usage.

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed short-term improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

20) Route 5 at Home Depot Drive & Neal Road

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed short-term improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

21) Route 5 at Sonic Dr. and BJ's Driveway

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the southern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing locations.

22) Route 5 at Route 15 Southbound Off-Ramp

Short-Term Improvements

This intersection was identified as a high crash location, with 74 crashes reported in the four-year analysis period from 2016-2019. A potential contributing factor may be inadequate sight lines to the left from the Route 15 Southbound off-ramp. These sight lines are obstructed by parked cars within the park & ride lot.

Proposed short-term improvements: shift park & ride fence to the east and eliminate two parking spaces to improve sight lines.

Crosswalks and pedestrian signal heads are not provided at the signalized intersection. Pedestrian push buttons with "PUSH BUTTON FOR GREEN LIGHT" signs are provided on the northern side of the intersection to place a call for the side street signal phase when actuated. Pedestrians must cross concurrently with vehicle traffic.

Proposed short-term improvement: Install ADA-accessible sidewalk ramps, crosswalks, and pedestrian signals at the identified crossing location.

Long-Term Improvements

Further safety improvements can be realized through a realignment of the Route 15 Southbound off-ramp, as described below.

- Reconstruct the Route 15 Southbound off-ramp further south to align opposite of the southbound on-ramp and reconstruct the park & ride lot north of the Route 15 Southbound off-ramp.
- ➤ Restrict the new park & ride driveway on Route 5 to be right-in/right-out only. Connect the park & ride lot to the adjacent shopping center parking lot to accommodate left-turns entering and exiting the park & ride.
- ➤ Widen Route 5 along the eastern side to provide a third northbound through lane beginning after the Route 15 overpass.

The long-term improvements noted above are expected to improve overall traffic operating conditions and reduce potential conflicts at the intersection. However, these improvements will shift the Route 15 Southbound ramps intersection closer to the signalized intersection with the Route 15 Northbound ramps and Yale Avenue, thus reducing the available storage between these signalized intersections. Therefore, this realignment of the Route 15 Southbound Off-ramp should be contingent upon implementation of traffic operational improvements to the Route 15 northbound ramps/Yale Avenue intersection, such as the improvements identified in the 2006 "U.S. Route 5 Planning/Preliminary Design Study". The realignment of the southbound ramp, combined with improvements to the Route 15 northbound ramps/Yale Avenue intersection, would significantly improve traffic operating conditions along this corridor.

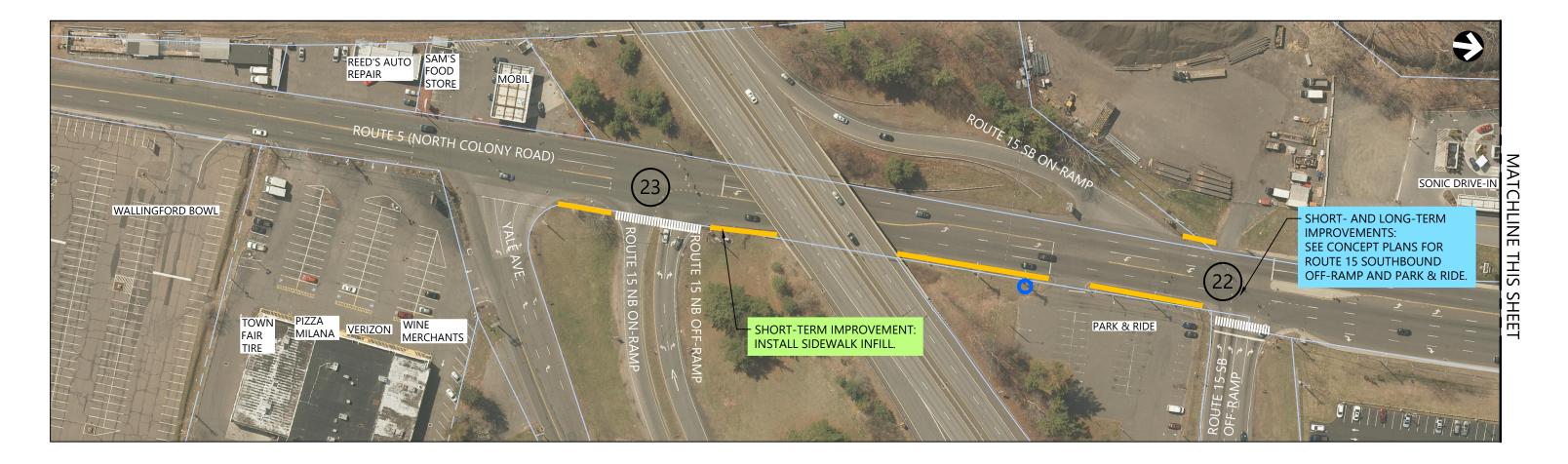
3.3.3 2040 Build Condition Traffic Operations

Capacity analyses were conducted during the weekday morning and weekday evening peak traffic periods to evaluate the benefits of the recommended transportation improvement alternatives. These analyses were performed by modifying the Synchro models of the 2040 No-Build condition to include the recommended signal timing optimization and transportation improvement alternatives.

The overall intersection LOS at each intersection during the weekday morning and evening peak traffic periods under 2040 Build conditions is shown on Figure 3-3. A detailed summary of the capacity analysis results, including LOS, delays, and vehicle queue lengths by lane group, is included in the Appendix.

3.3.4 Transportation Improvement Alternatives Summary

The improvement alternatives detailed in the preceding section, with deficiencies noted in the Existing Conditions Report, have been thoroughly vetted with the project stakeholders, Study Advisory Committee and verified with supporting design concepts and analyses for 2040 Future Conditions. With the varying conditions in the corridor, from the north section, to the midsection in center of Meriden to the southerly heavily developed section in southern Meriden and northern Wallingford, there is no one size fits all improvement across the corridor. Rather, the stakeholders and Study Advisory Committee members identified several intersection focused improvements for the future of the Route 5 corridor. This includes roadway infrastructure, transit and bicycle and pedestrian amenities. These other vehicle improvements do have corridor-wide implications with improved transit services and sidewalks connected along the entire corridor.





MATCHLINE FIGURE

























MATCHLINE FIGURE 3-2I





4

Public Engagement

Public engagement for the Route 5 Corridor Study included a dedicated Study Advisory Committee with several meetings and two public information meetings. All meetings were documented and are included in the Appendix.

4.1 Study Advisory Committee Meetings

With the commencement of the project efforts, a Study Advisory Committee (SAC) was convened to guide the project study team through the process and provide critical input on the project results. The SAC was comprised of the following representatives:

- SCRCOG Stephen Dudley
- City of Meriden Howard Weissberg, Renata Bertotti, Joseph Feest
- Town of Wallingford Chief Wright, Lt. Demaio, Rob Baltramaitis, Kacie Costello
- Chamber of Commerce Ralph Mesite, Rosanne Ford
- CTDOT Edgar Wynkoop, Fred Kulakowski, Kevin Ng

The project study team met with the SAC across five meetings, three in person meetings and presentations and two virtual conference calls given the pandemic conditions limited in person meetings.

The SAC meetings were held on the following dates:

- 1. June 6, 2019 Project study kickoff (Midstate Chamber of Commerce office)
- 2. September 20, 2019 Review of Existing Conditions (MCC office)
- 3. October 4, 2019 Conference call to prepare for 1st public information meeting
- 4. March 13, 2020 Review of proposed recommendations (MCC office)
- 5. June 9, 2020 Conference call to prepare for 2nd public information meeting

All meeting materials are provided in the Appendix.

4.2 Public Information Meetings

With the ongoing SAC meetings progressing through the project study efforts, two Public Information Meetings were held to review Existing Conditions and Future Conditions. The first public meeting was held on November 12, 2019 in person at Maloney High School in Meriden. The second public meeting was held virtually due to the pandemic restrictions, on

June 25, 2020 and hosted by the City of Meriden. Both meetings included presentations and graphics utilized to solicit public comments.

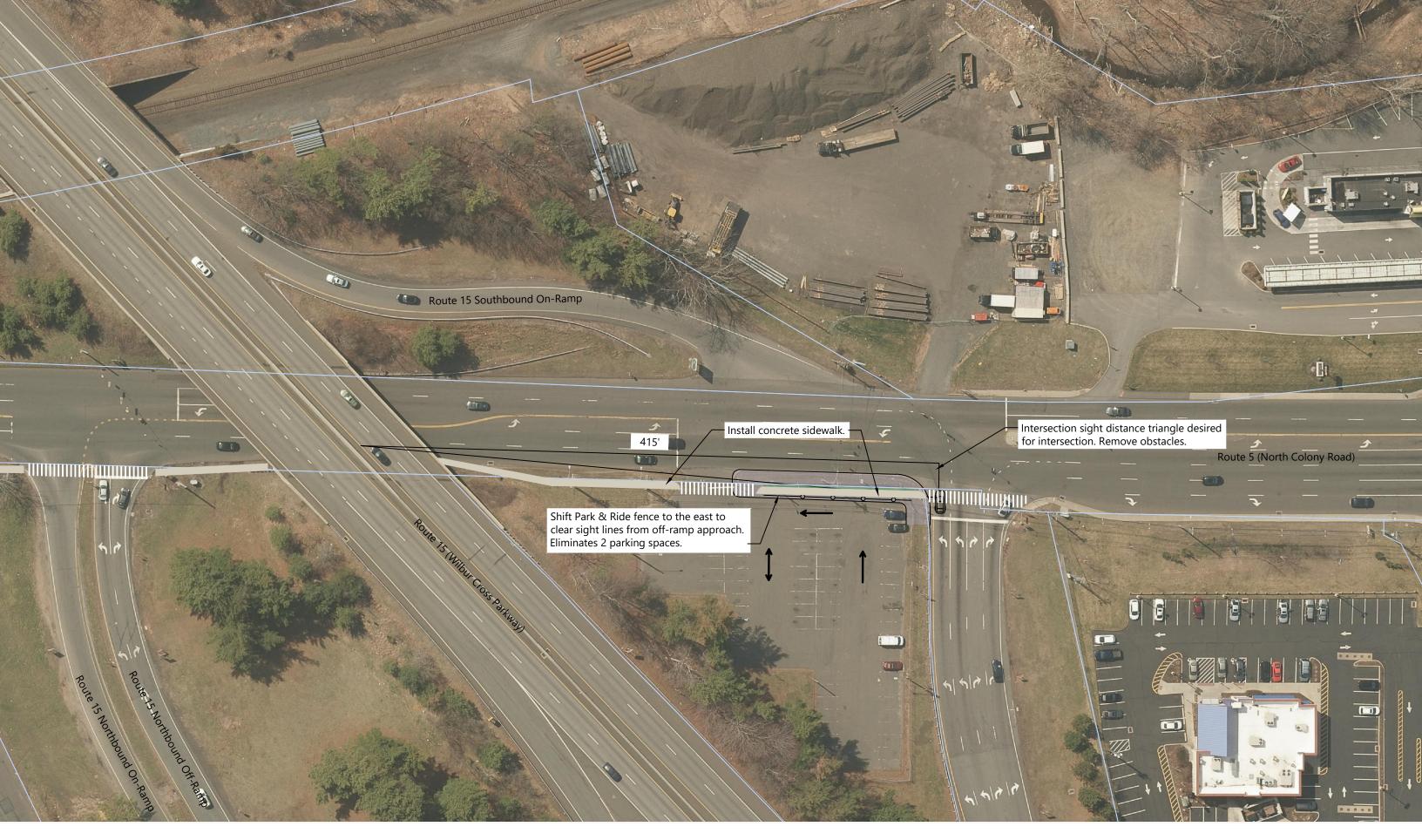
The November public information meeting involved extensive public input with three sections of corridor graphically represented and comments affixed to the graphics for incorporation into the study efforts and recommendations.

Public information meeting documents are included in the Appendix.

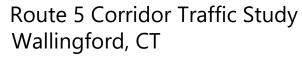
Future Conditions Appendix

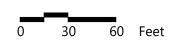
- G. Concept Improvement Plans
- H. Public Engagement Materials
- I. Capacity/Queue Analysis Summaries
- J. Analysis Reports (Synchro)

Appendix G: Concept Improvement Plans



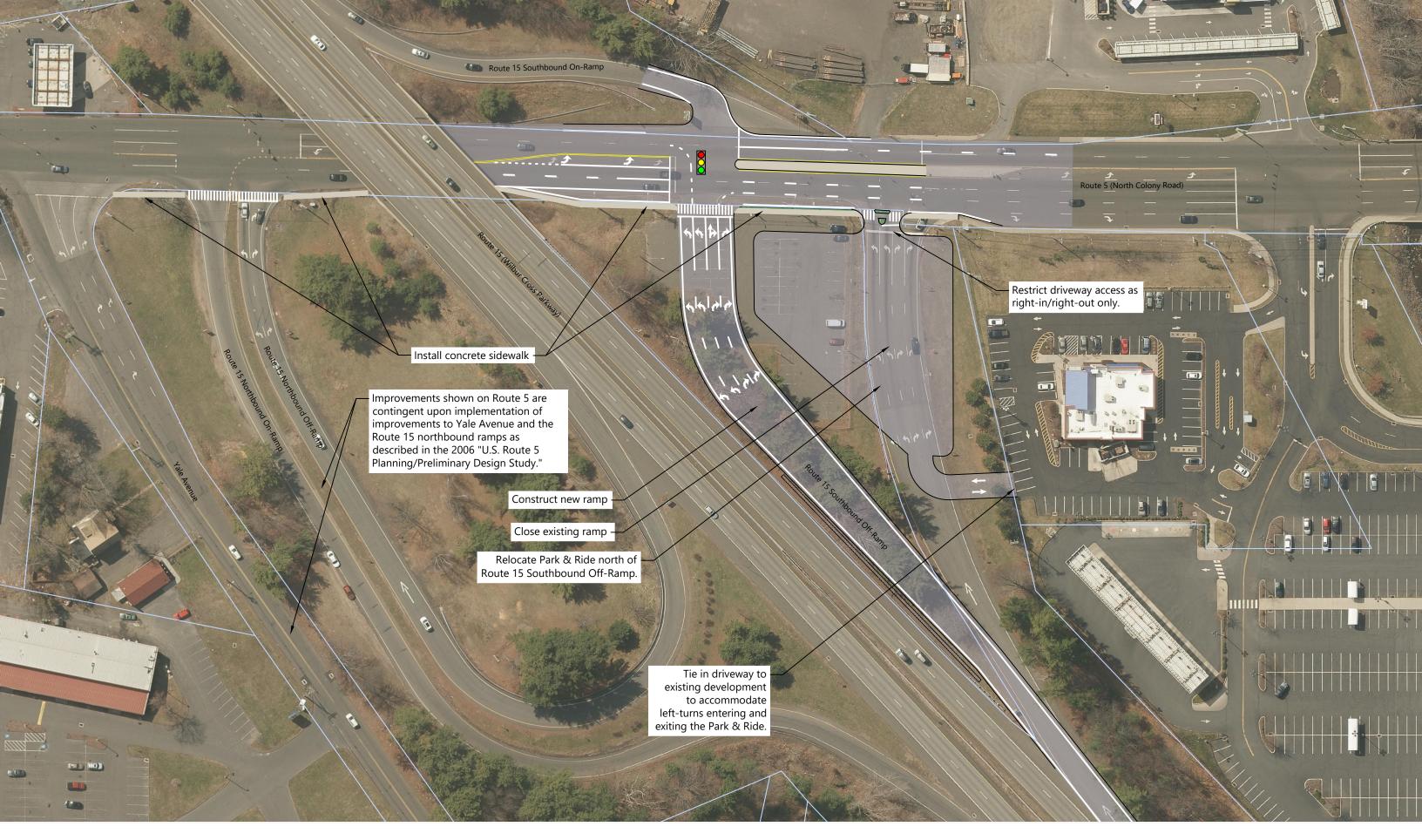






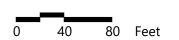






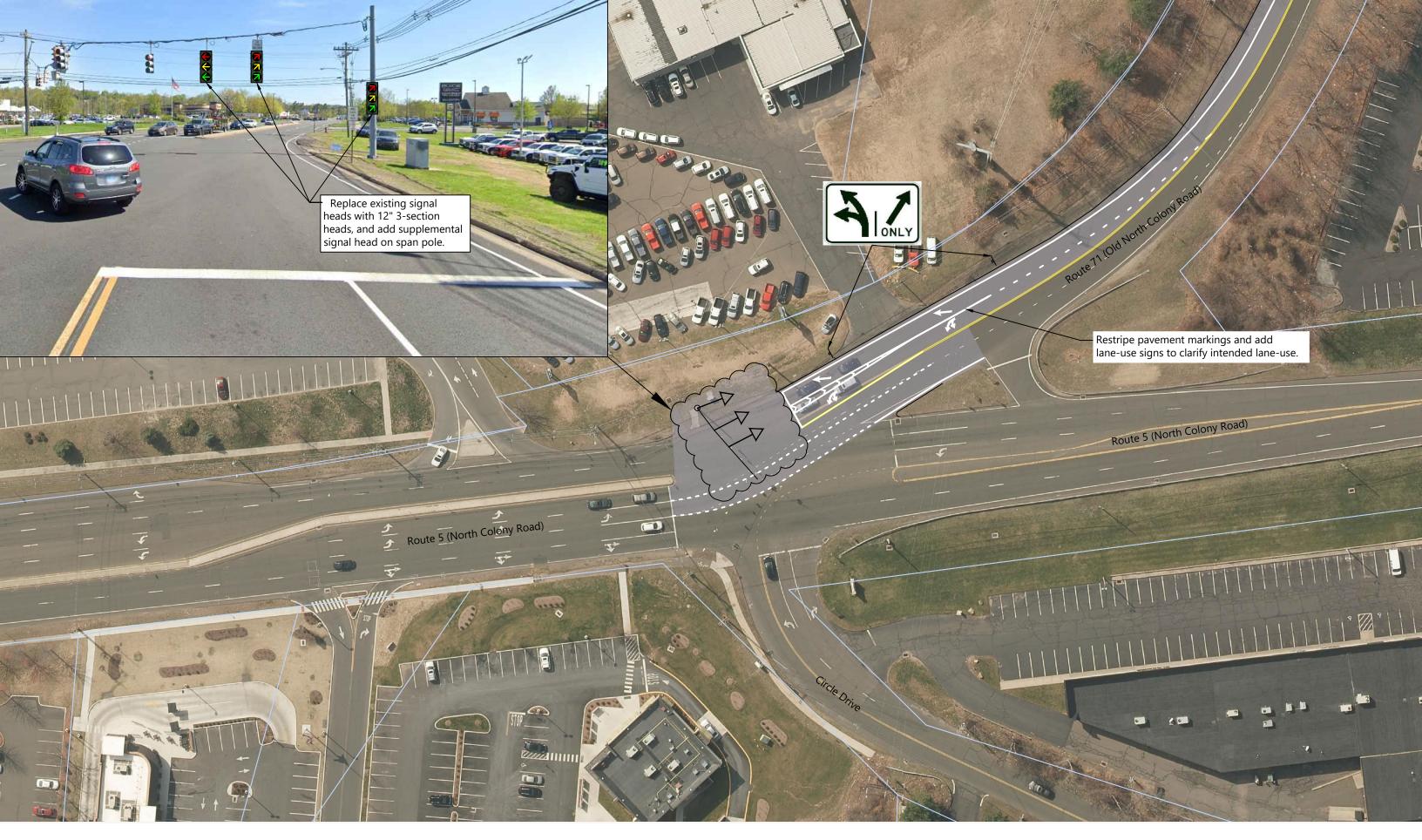


Route 5 Corridor Traffic Study Wallingford, CT







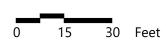








Route 5 Corridor Traffic Study Meriden, CT



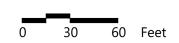
Short-Term Improvement Concept Plan
Broad Street at Gale Avenue & Ann Street
November 2020







Route 5 Corridor Traffic Study Meriden, CT



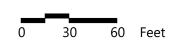
Short-Term Improvement Concept Plan Route 5 (Broad Street) at Curtis and Olive Street November 2020





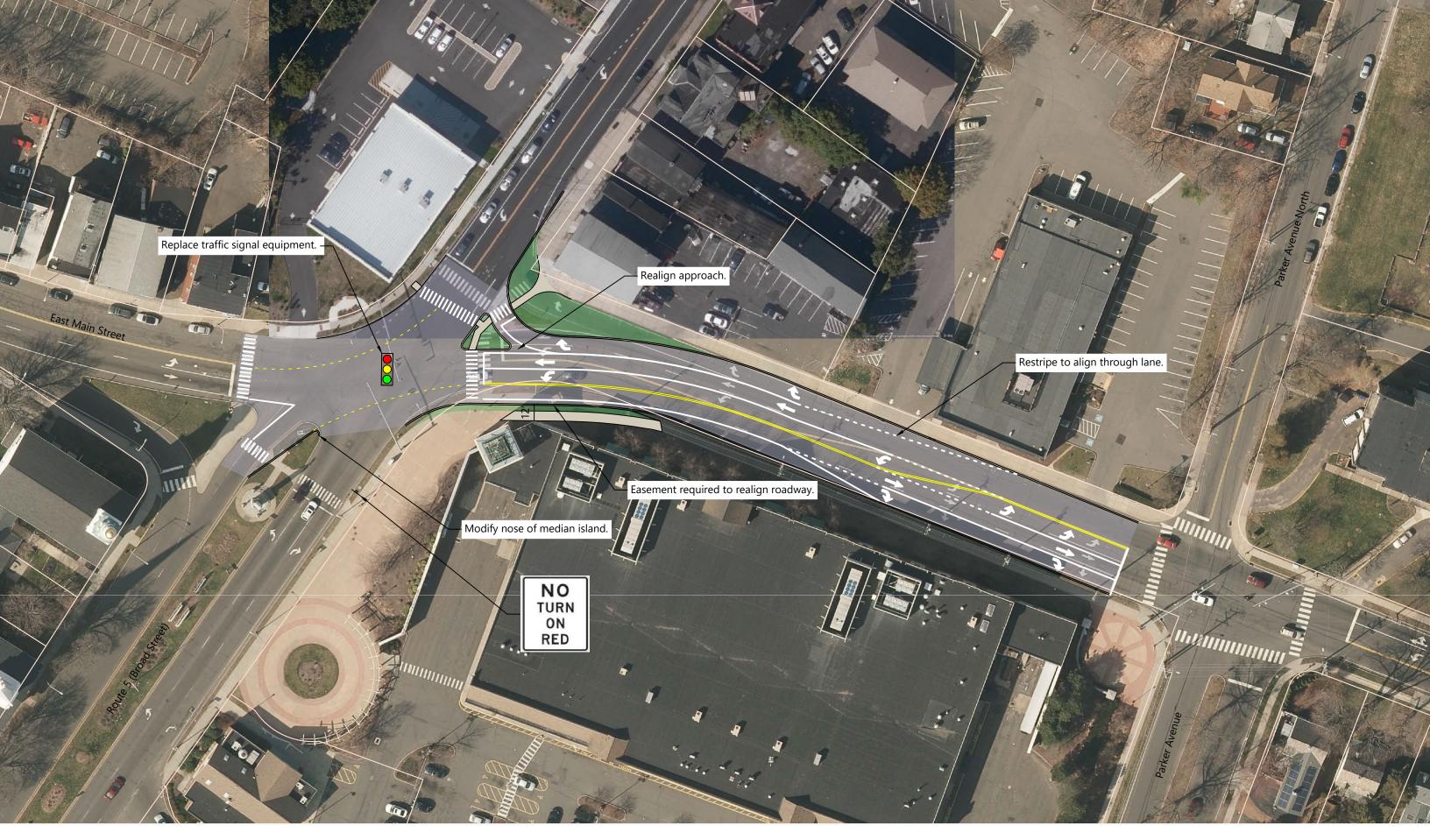


Route 5 Corridor Traffic Study Meriden, CT



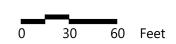
Long-Term Improvement Concept Plan Route 5 (Broad Street) at Curtis and Olive Street November 2020







Route 5 Corridor Traffic Study Meriden, CT



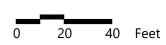
Short-Term Improvement Concept Plan Route 5 (Broad Street) at East Main Street November 2020





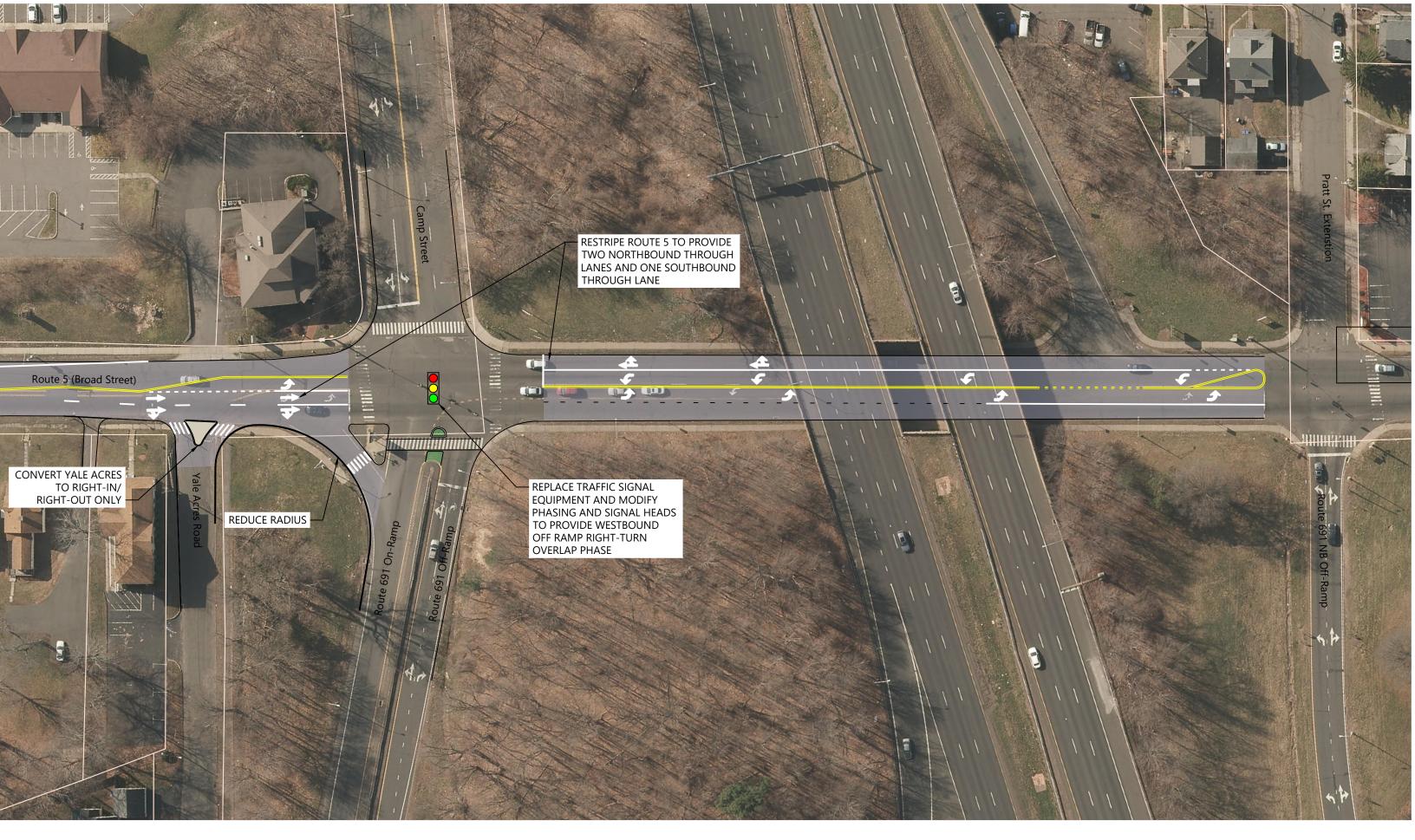


Route 5 Corridor Traffic Study Meriden, CT



Long-Term Improvement Concept Plan Route 5 (Broad Street) at Liberty Street November 2020







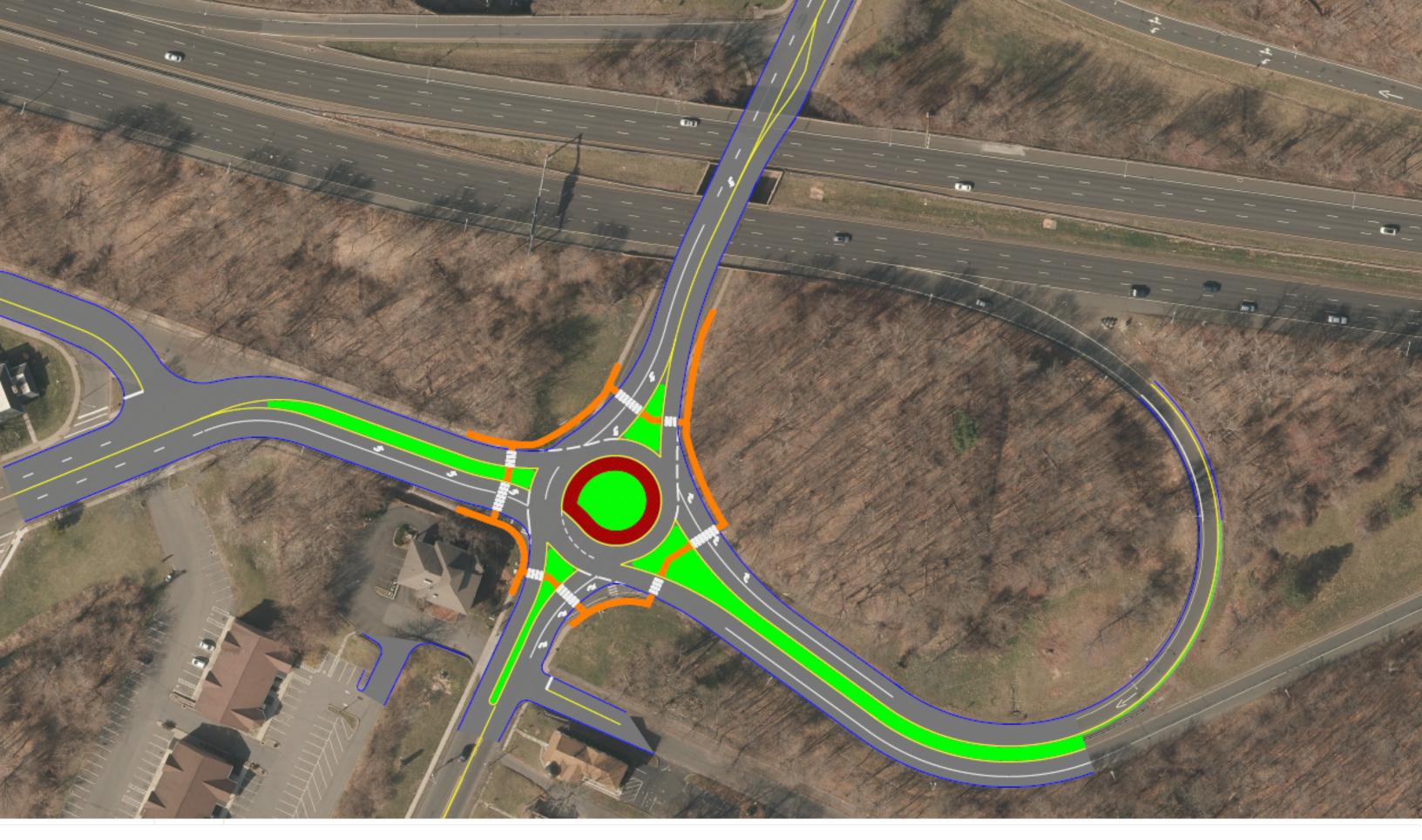
Meriden, CT

Route 5 Corridor Traffic Study



Short-Term Improvement Concept Plan Route 5 (Broad Street) at Camp Street, I-691 Ramps, Yale Acres Road November 2020













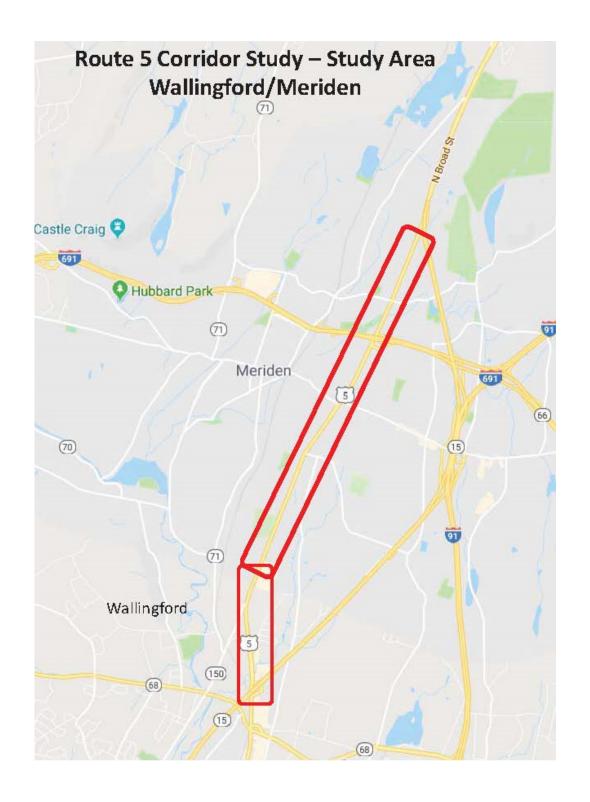
Appendix H: Public Engagement Materials

Route 5 Corridor Study

VHB

In Association with: VN Engineers

For: South Central Region Council of Governments



The Team











Project Initiation Meeting Agenda

- Introductions
- SAC Members Confirmation
- Study Overview
- Scope of Work/Limits
- Data Collection
- Study Issues/Focus Areas
- Public Engagement/Outreach/SAC Meetings
- Schedule
- Next Steps



Meet VHB

1,500 passionate professionals including engineers, scientists, planners, and designers

Founded in 1979

30 locations on the East Coast

Core services

Transportation planning & engineering Land development Planning & design Environmental

Markets

Transportation agencies

Real estate

County and local governments

Institutions

Federal government

Energy

Applied technologies

Your Role

The **Study Advisory Committee (SAC)** is asked to:

 Offer information and expertise about local conditions and issues

- Brainstorm with project team on solutions
- Review and comment on study products
- Act as liaison to the community about the study
- Support the consensus of this group within the community



Study Overview

2006 Route 5 Study - Update

SCRCOG

City of Meriden

Town of Wallingford

U.S. Route 5 Planning / Preliminary Design Study

Wallingford & Meriden, Connecticut

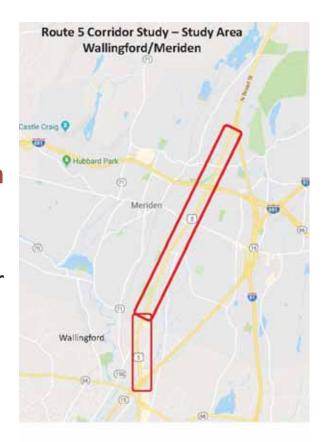
sponsored by the South Central Regional Council of Governments and the Connecticut Department of Transportation

June 2006

URS Corporation in association with the South Central Regional Council of Governments

Study Purpose

- Establish a vision for the corridor
- Evaluate current transportation and land use conditions and investigate opportunities to make improvements
- Develop recommendations & implementation plan for transportation aimed to achieve the vision for the corridors
- Develop short and long term improvements for funding



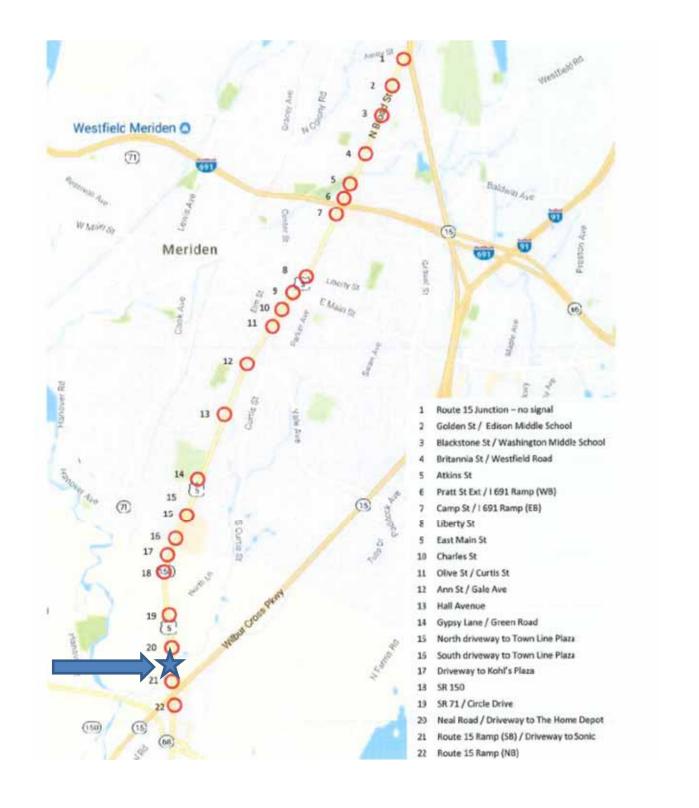
Scope of Work

- Existing Conditions Technical Memorandum
- Future Conditions Technical Memorandum
- Immediate Improvements Technical Memorandum
- Analysis of Corridor Alternatives Technical Memorandum
- Final Report

Traffic Counts:

Every Signalized Intersection

And then some...



Review of Corridor

- Project Map
 - Video
 - 2

Study Process

Data Collection and Base Mapping Future Conditions Analyses and Land Use

Recommend Improvements













Existing Conditions Analyses

Develop Alternatives Implementation
Plan: Priorities
and Funding

How Do We Get There?

Spring

- Contract Finalization
- Kickoff Meeting
- Traffic Counts
- DOT VIP Plan
- SAC Meeting 1

Summer

- Data Collection
- Transportation Network
- Travel Pattern Analysis
- Land Use
- Environmental
- Previous Plans



Existing Conditions

SAC Meeting 2

Fall

- Design Concepts
- Analysis/Testing
- Simulation
- Renderings
- Refinement
- Public/Govt Meetings



Plan Recommendations

SAC Meeting 3

Winter

- Priorities
- Order of Magnitude Costs
- Regulatory Framework
- Action Plan
- Timeline
- Public/Govt Meetings



Implementation Plan

SAC Meeting 4

Public Outreach Activities

Public Engagement – 8 Meetings Total

SAC Meetings – 4

Public Information Meetings – 2

Government Meetings - 2

Corridor Issues

What Concerns Do You Have?

Traffic? Vehicles? Other Modes?

Land Use – Future Development

Crash History

Visioning Exercise

"What do you value most about the corridors today?

Thoughts on a corridor vision?

Multiple Visions?

Wallingford?

Meriden?

Next Steps

- Develop draft vision statement based on today's input
- Finish collecting data
- Assess and document existing conditions
- Draft Existing Conditions memo (August)
- 2nd SAC Meeting (September)



Joe Balskus, PE, PTOE | jbalsksu@vhb.com | 860.807.4405





Sign-In Sheet



Route 5 Corridor Study Project Initiation Meeting June 6, 2019

Name	Organization	Email Address	Phone Number		
Joe Balskus	VHB	jbalskus@vhb.com	860-807-4405		
EDGAR WYHKOOD	CIDET PLANNING	ETGTR. WYNKOOP @ CT.GOV	(860) 594 - 2036		
Rob Baltranaitis	Wallingford	walling ford town engine	203-294-2035 er @ gmail.com		
Kacie Hand	Wayingford P+Z	Kacie Costerlo Owning Ford			
William Wright	Wallingted PD	www.rightewallingtone	d.org 203-294-2828		
Anthony Damais	Wallington P.D.	ademaio a wellinghides	N		
double Berton	MERIDEN PLANN	V			
SOE FERST	MERIORA FLO	STERST @ MERIORI	1c1.80V		
SBAP W. MOUNS	MIDSTANE CAMBON	5. mount e musiate at	TWM, CM 207. 275 790		
HOWARD WEISSBARG	MERIDON DPW	HWEISSBERG @MERID	ewet. Gov		
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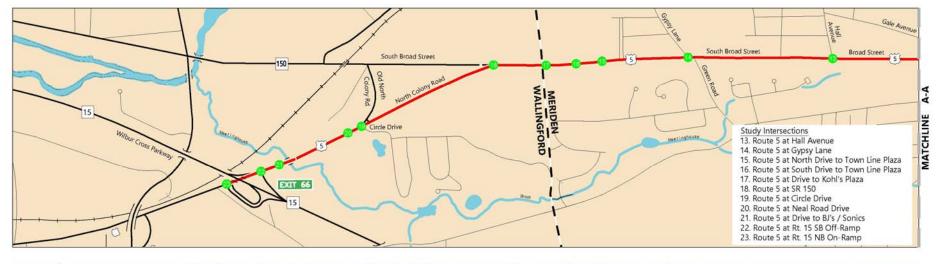


Route 5 Corridor Study SAC Meeting # 2

VHB

In Association with: VN Engineers

For:
South Central Region Council of
Governments





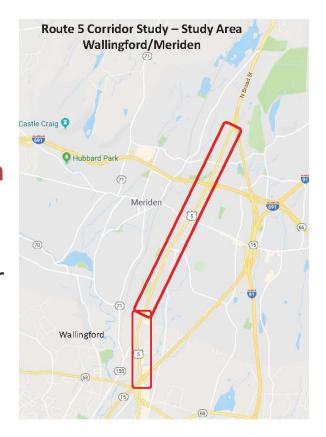
SAC #2 Meeting Agenda

- Introductions
- SAC Confirmation
- SAC #1 Meeting Notes
- Study Visioning Statement
- Existing Conditions Review
- Figures
- SAC Comments
- Open Discussion Items
- Next Steps
 - Finalization of Existing Conditions
 - Future Conditions No Build
 - Public Information Meeting October



Study Purpose

- Establish a vision for the corridor
- Evaluate current transportation and land use conditions and investigate opportunities to make improvements
- Develop recommendations & implementation plan for transportation aimed to achieve the vision for the corridors
- Develop short and long term improvements for funding



Scope of Work

- Existing Conditions Technical Memorandum
- Future Conditions Technical Memorandum
- Immediate Improvements Technical Memorandum
- Analysis of Corridor Alternatives Technical Memorandum
- Final Report

Study Process

Data Collection and Base Mapping Future Conditions Analyses and Land Use

Recommend Improvements













Existing Conditions Analyses

Develop Alternatives Implementation
Plan: Priorities
and Funding

How Do We Get There?

Spring

- Contract Finalization
- Kickoff Meeting
- Traffic Counts
- DOT VIP Plan
- SAC Meeting 1

Summer

- Data Collection
- Transportation Network
- Travel Pattern Analysis
- Land Use
- Environmental
- Previous Plans



Existing Conditions

SAC Meeting 2

Fall

- Design Concepts
- Analysis/Testing
- Simulation
- Renderings
- Refinement
- Public/Govt Meetings



Plan Recommendations

SAC Meeting 3

Winter

- Priorities
- Order of Magnitude Costs
- Regulatory Framework
- Action Plan
- Timeline
- Public/Govt Meetings

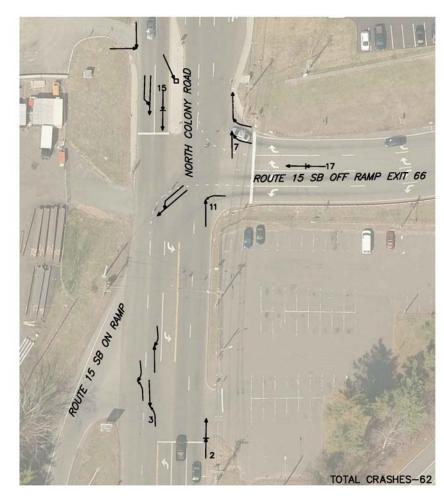


Implementation Plan

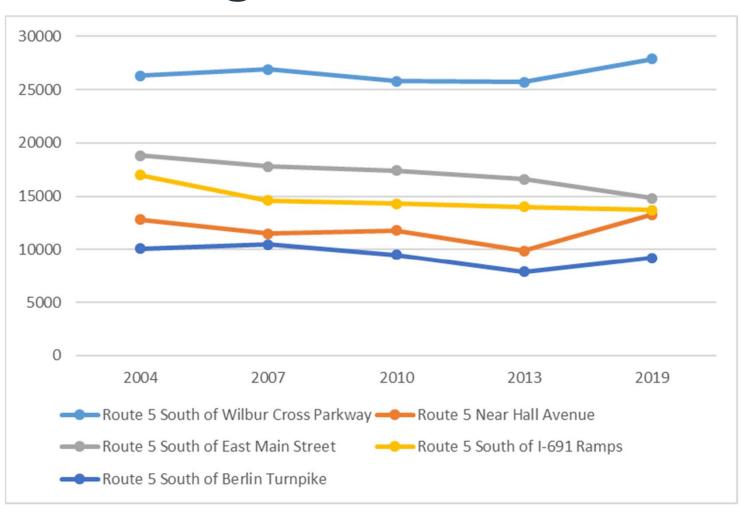
SAC Meeting 4

Existing Conditions

- Summary of Results
 - Figures
 - Analyses
- Improvement Ideas?



Existing Conditions



Existing Conditions

Table 2-1
2019 Existing Weekday Average Daily Traffic Volume Summary

		Weekday Morning Peak Hour				Weekday Evening Peak Hour			
Location	Weekday	Vehicles			"K" ³	Vehicles			"K"
	ADT ¹	Per Hour	Dir. D	Dist. ²	Factor	Per Hour	Dir.	Dist.	Factor
Route 5, south of Wilbur Cross Parkway	27,900	1,609	51%	NB	5.77%	2,242	55%	NB	8.04%
Wilbur Cross Farkway	27,900	1,009	J1/0	IND	3.77/0	2,242	33/0	IND	0.04/0
Route 5, near Hall Avenue	13,300	743	56%	SB	5.59%	1,028	56%	NB	7.73%
Route 5, south of East Main Street	14,800	865	60%	NB	5.84%	1,068	61%	NB	7.22%
Route 5, south of I-691 Ramps	13,700	821	52%	SB	5.99%	1,016	54%	SB	7.42%
Route 5, south of Berlin Turnpike	9,200	609	58%	NB	6.62%	739	63%	SB	8.03%

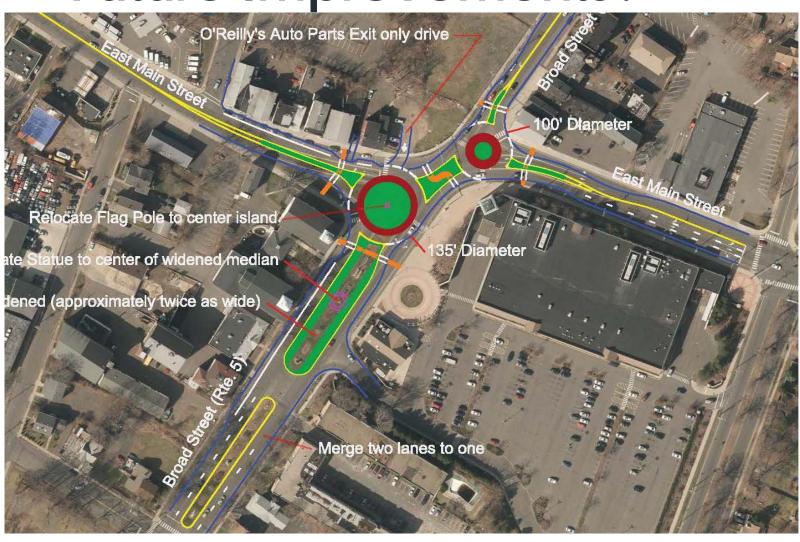
Source: ATR counts conducted by VHB in April 2019.

¹ ADT = Average Daily Traffic

² Directional distribution

^{3 &}quot;K" factor is the percentage of total daily traffic occurring during the peak hour

Future Improvements?



Visioning

Wallingford Vision

The Route 5 corridor study shall ensure that excellent access for area residents to the retail development is maintained while recommending improvements to reduce the crash history and maximize multimodal mobility.

Meriden

The Route 5 corridor study shall ensure the corridor remains a two lane roadway while connecting neighborhoods and retail/commercial development with transportation improvements for all modes to maximize multimodal mobility.

Next Steps

- Finalize Existing Conditions memo
- Future Conditions (No Build)
- Public Information Meeting (October)



Sign-In Sheet



Route 5 Corridor Study Project SAC Meeting #2 September 20, 2019

Name	Organization	Email Address	Phone Number
Charlie Baker	VHB	charlesbakere ubb.com	860-398-4380
Joe Balskus	VHB	j balskus @ Uhb. com	860-398-4450
EDGAR WYNKOOP	CTDOT	edgas, Wywx oop@CT.G	nov (860) 574-2036
HOWARD WEISSBORG	WLFDPD	Hwersserver @ were f www.ightewallingtood	CWCT.GOV 630-4022
Kevin Ng	CT-DOT-Traffic	tiu ng@ct.gov	
Frederick Kulakowski	11 "	Frederick, Kulakovskie	
Rosanne Ford	Midstate Chamber of Commerce	r. ford pmid state chamber	. com 203 235.79
Rob Battranarts	WKO DPW	walling ford town engineer egr	nal. com 203 294-2105







Sign-In Sheet



Route 5 Corridor Study Project SAC Meeting #2 September 20, 2019

Name	Organization	Email Address	Phone Number
Joe Balskus	VHB	jbalskus@vhb.com	860-807-4405
Charles Baker	VHB	charlesbaker@vhb.com	860-807-4380
RENOTA BERTOTTI SOE FEEST RAIPH Mes H	MIDSHAPCHAMBER	REPROTTI CHERIJENCI. GOV SFRAST CHERISAL CI. 800 Ralph & Villacapril	203-630-404 203-630-4152 203379-7311
	•		







Meeting Notes

Date: June 6, 2019 Notes Taken by: Joe Balskus

Project #: 42512.00 Re: Route 5 Corridor Study Advisory Committee Meeting

ATTENDEES

Joe Balskus, VHB Edgar Wynkoop, CTDOT Planning Rob Baltramaitis, Wallingford

Town Engineer

Kacie Hand, Wallingford P&Z William Wright, Wallingford PD Anthony Demaio, Wallingford PD

Howard Weissberg, Meriden DPW

Place: Midstate Chamber of Commerce

The first Study Advisory Committee meeting was held for the referenced project. The following represents a summary of the meeting discussions.

VHB provided and overview of the project study area and scope of work for the study. The SAC was confirmed and a discussion on the project visioning commenced. A summary vision statement will be finalized at the next meeting.

Issues in the project corridor were then reviewed as follows:

Wallingford

Concerns raised by the Town for the area of Route 5 south of Wilbur Cross highway interchange, up to Route 68 overpass

It was noted the success of the Route 5 retail areas to the north of Wilbur Cross interchange has caused problems with traffic flow to the south

The SCRCOG 2006 study was referenced and the Town noted that the 2006 recommendations haven't been implemented and the Town expressed concern with this study becoming the focus and not route 5 to the south

CTDOT recommended the Town to continue pursuing future work on that section

It was noted that the Route 15 SB off ramp has a significant intersection sight line constraint due to the commuter parking lot adjacent to the ramp

It was noted there is also a NB right turn lane trap to the north of the interchange which may have involved the 1 fatality in this area (to be confirmed)

Study should consider as a future improvement moving the commuter parking lot to a better location or removing the parking spaces in the sight line

The Town noted there is an approved plan for the former Yankee Silversmith site across from the SB off ramp for a proposed retail/bank development with a site driveway to be signalized by the ramp signal

100 Great Meadow Road Suite 200 Wethersfield, CT 06109-2377 P 860.807.4300 Ref: 42512.00 June 6, 2019 Page 2

The Route 15 NB ramp intersection was noted for improvements in the 2006 study and perhaps should be considered in a separate study that includes the Yale Avenue intersection

The Town noted that Route 5 Wallingford regulations require sidewalks along both sides of roadway

Vacant parcel on the east side approved, zoned commercial north of BJ's

Need to map out the transit stops as part of existing conditions

Staples plaza – likely to be redeveloped in future

Interconnections of shopping center developments should be considered in all future recommendations

NB route 5 at old colony/circle intersection crash history should be reviewed as it has unique geometry and operations

Meriden

Townline Square north drive – southbound left turn trap should be addressed (Meriden)

Merging lanes are substandard north of Town Line Square should be reviewed

Need to verify in future conditions if two lane section sufficient northbound

It was suggested that the future conditions recommend maintaining the two lane cross section of Route 5

Need to consider the Meriden Plan of Conservation and Development that is underway

Eliminate on street parking - mid/long term goal of the corridor

Add bike lanes if possible

Ann/Gale Street intersection, was noted to have a fatality

East Main Street intersection was noted as having a high number of crashes

Monument at intersection may be a constraint to reconfiguration

On street parking at Wall Street intersection should be reviewed

Is it the city's goal to maintain onstreet parking in this area?

To be reviewed whether on street parking can be supported without impacting capacity

Yale Acres intersection considerations to be noted

SB right turn into Pratt street needed under I-691 overpass and should be a near term recommendation

On street parking to the south to be maintained

Ref: 42512.00 June 6, 2019 Page 3

North of off ramp and up to Atkins Street – TWLTL plan being added by DOT

It was noted the Dunkin donuts with the gas station was being built in the same area

A new car wash between Orchard and Twiss was also planned

Buses need more obvious bus stops

Meriden New Haven bus routes may be revised as part of the service study

MOVE New Haven recommendation? Reprogram bus routes in NH region to match with demand

Latest draft of report includes revisions to the routes in the study area and should be considered in future

It was felt the study was not improving the region transit service along the corridor

It was noted that the corridor has essentially two distinct sections

In Meriden

Smaller scale roadway cross section existing and anticipated to remain north of cemetery

In Wallingford - crash reduction is needed and providing recommendations for Route 15 interchange/ramps

There is need for addressing pedestrian connectivity throughout the corridor with one possibility involving taking the bike routing to the east of the corridor in Wallingford, north of Route 15 interchange

It was noted there is a need for a bus stop in front of Walmart

Next steps

Prepare existing conditions and present at SAC #2 meeting in late summer



Anthony Demaio, Wallingford PD

Place: Midstate Chamber of Commerce Meeting Notes

Date: September 20, 2019 Notes Taken by: Joe Balskus

Project #: 42512.00 Re: Route 5 Corridor Study Advisory Committee Meeting

ATTENDEES

Joe Balskus, VHB Edgar Wynkoop, CTDOT Planning Rob Baltramaitis, Wallingford

Town Engineer

Kacie Hand, Wallingford P&Z William Wright, Wallingford PD

Joe Feest, Meriden ECO Sean Moure, Midstate Chamber

Renate Bertotti, Meriden Planning

Joe Feest, Meriden E

Howard Weissberg, Meriden DPW

Speed data

Evaluate comparison of DOT, consider Meriden location and field check

Yale Avenue data

Commuter parking lot usage

Look at minimal changes to address the issues

Commuter parking relocation

East Main Street southbound maneuver

Circle – north bound left turns

Crashes between intersections

Home Depot

Bike ped connection from circle to Meriden

Pedestrian issues

We need to review

New ADA guidelines?

100 Great Meadow Road Suite 200 Wethersfield, CT 06109-2377 P 860.807.4300 Ref: 42512.00 June 6, 2019 Page 2

Non participation for sidewalks in the past, now changed for DOT reconstruction project

Add new construction developments to the aerial

Proximity to the church – avoid on church

North end corridor of Route 5

Meriden city library

November 7, 12 or 14

6pm – Renatta

Conference call

Municipality to figure how to disseminate information within the municipality

Who else to have notice of this?

Each town needs

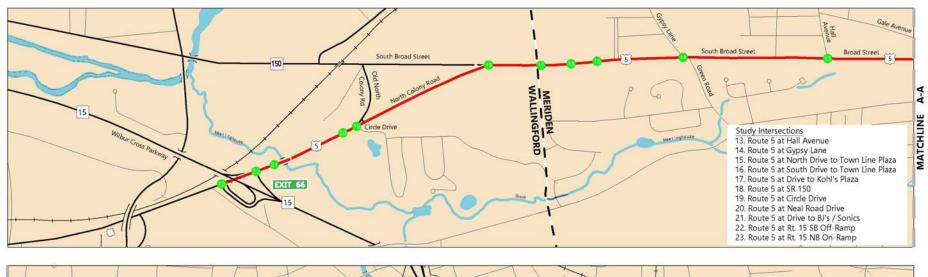
11am conference call

Route 5 Corridor Study Public Meeting

VHB In Association with: VN Engineers

For:

South Central Region Council of Governments





Meeting Agenda

- Introductions
- Study Advisory Committee Members
- Study Visioning Statements
- Existing Conditions Review
- Workshop Formations
 - Review Issues
 - Rotate
 - Summarize
- End of Meeting
- Next Steps



Study Advisory Committee

SCRCOG

Stephen Dudley

Meriden

- Renata Bertotti
- Joe Feest
- Howard Weissberg

Wallingford

- Robert Baltramaitis
- Kacie Costello
- Chief William Wright
- Lt. Anthony Demaio

Midstate Chamber

- Rosanne Ford
- Ralph Mesite

CTDOT

- Fred Kulakowski
- Kevin Ng
- Ed Sabourin
- Edgar Wynkoop

Study Consultant Team

VHB/VN Engineers

Visioning

North Wallingford

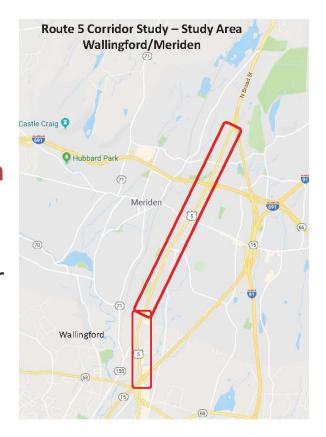
The Route 5 corridor study shall ensure that excellent access for area residents to the retail development is maintained while recommending improvements to reduce the crash history and maximize multimodal mobility.

Meriden

The Route 5 corridor study shall ensure that access, traffic flow, and safety measures for the City's main North-South corridor provide intuitive connections to residents and businesses to services and destinations that support the area's economic growth and prosperity. The goal of the study is to identify improvements that can be implemented in the near- and long-term.

Study Purpose

- Establish a vision for the corridor
- Evaluate current transportation and land use conditions and investigate opportunities to make improvements
- Develop recommendations & implementation plan for transportation aimed to achieve the vision for the corridors
- Develop short and long term improvements for funding



Scope of Work

- Existing Conditions Technical Memorandum
- Future Conditions Technical Memorandum
- Immediate Improvements Technical Memorandum
- Analysis of Corridor Alternatives Technical Memorandum
- Final Report

Study Process

Data Collection and Base Mapping Future Conditions Analyses and Land Use

Recommend Improvements













Existing Conditions Analyses

Develop Alternatives Implementation
Plan: Priorities
and Funding

How Do We Get There?

Spring

- Contract Finalization
- Kickoff Meeting
- Traffic Counts
- DOT VIP Plan
- SAC Meeting 1

Summer

- Data Collection
- Transportation Network
- Travel Pattern Analysis
- Land Use
- Environmental
- Previous Plans



Existing Conditions

SAC Meeting 2

Fall

- Design Concepts
- Analysis/Testing
- Simulation
- Renderings
- Refinement
- Public/Govt Meetings



Plan Recommendations

SAC Meeting 3

Winter

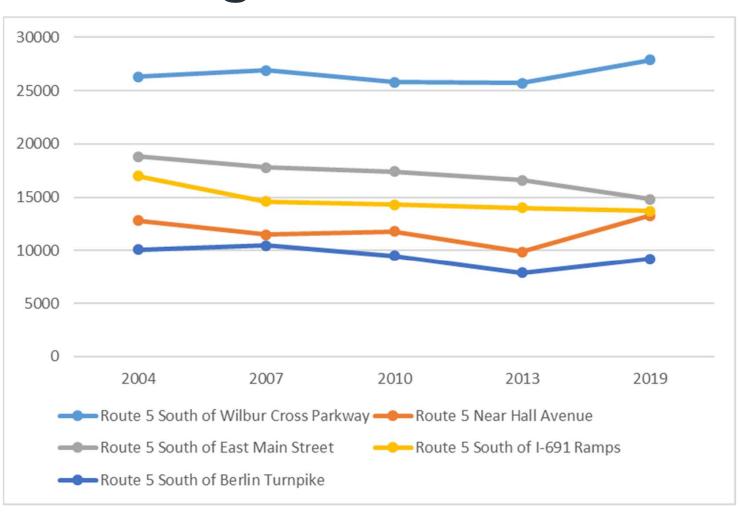
- Priorities
- Order of Magnitude Costs
- Regulatory Framework
- Action Plan
- Timeline
- Public/Govt Meetings



Implementation Plan

SAC Meeting 4

Existing Conditions –Volumes



Existing Conditions- Volumes

Table 2-1
2019 Existing Weekday Average Daily Traffic Volume Summary

		Weekday Morning Peak Hour				Weekday Evening Peak Hour			
Location	Weekday	Vehicles			"K" ³	Vehicles			"K"
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Route 5, south of East Main Street	14,800	865	60%	NB	5.84%	1,068	61%	NB	7.22%
Route 5, south of I-691 Ramps	13,700	821	52%	SB	5.99%	1,016	54%	SB	7.42%
Route 5, south of Berlin Turnpike	9,200	609	58%	NB	6.62%	739	63%	SB	8.03%

Source: ATR counts conducted by VHB in April 2019.

¹ ADT = Average Daily Traffic

² Directional distribution

^{3 &}quot;K" factor is the percentage of total daily traffic occurring during the peak hour

Existing Conditions - Speeds

		Northk	ound	Southbound		
Location		Average Speed (mph)	85 th % Speed (mph)	Average Speed (mph)	85 th % Speed (mph)	
Wallingford						
US Route 5, south of Yale Avenue ¹	35	33	39	28	36	
US Route 5, south of Route 15 SB Off Ramp (Exit 66) 1	35	36	44	29	34	
US Route 5, south of Route 150 (northern junction) ¹	40	40	47	41	47	
Meriden						
US Route 5, at Wallingford Town Line ¹	40	37	44	39	44	
US Route 5, north of Green Road ¹	40	40	45	40	47	
US Route 5, south of Hall Avenue, ²	35	30	34	32	35	
US Route 5, north of Hall Avenue ¹	35	32	37	27	36	
US Route 5, south of Curtis Street ¹	35	36	42	39	45	
US Route 5, south of East Main Street, ²	35	28	35	23	35	
US Route 5, south of East Main Street ¹	35	29	34	31	37	
US Route 5, north of East Main Street ¹	35	22	29	26	34	
US Route 5, south of Yale Acres Road ¹	35	24	31	33	37	
US Route 5, south of I-691 Ramps, ²	35	33	39	39	45	
US Route 5, north of I-691 Eastbound Off Ramp (Exit 8) ¹	35	26	29	24	31	
US Route 5, north of I-691 Westbound Off Ramp (Exit 8) ¹	35	25	31	25	31	
US Route 5, south of Westfield Road ¹	35	31	37	33	41	
US Route 5, north of Westfield Road ¹	35	38	44	Data not provided		
US Route 5, north of Stoneycrest Drive ¹	35	47	54	41	49	
US Route 5, south of Berlin Turnpike, ²	35	43	47	40	47	
Route 15, southbound Off Ramp to US 5 ¹	35	-	-	41	49	
Route 15, northbound On Ramp from US 5 ¹	35	42	47	-	-	

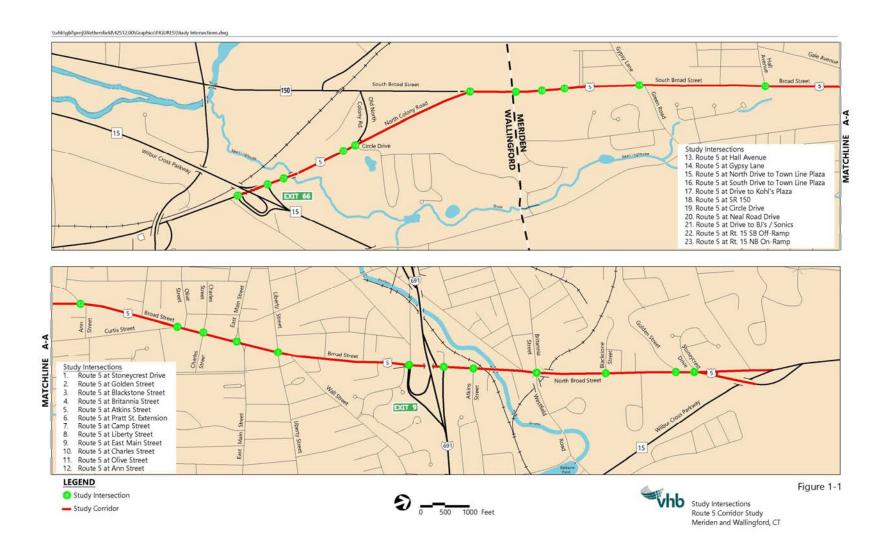
¹ Speed data collected by CTDOT in April 2019 through August 2019.

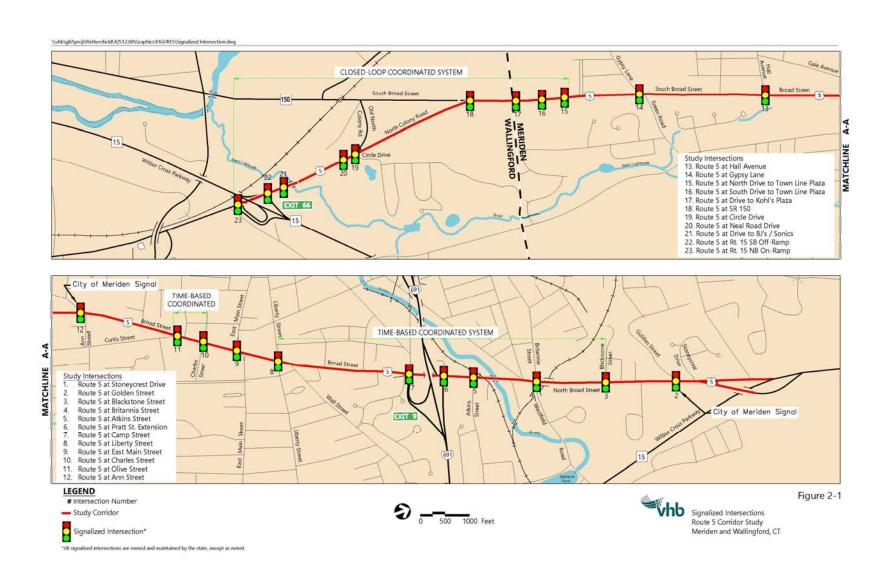
Shaded cells indicate 85th percentile speeds greater than or equal to 10 mph above the posted speed limit.

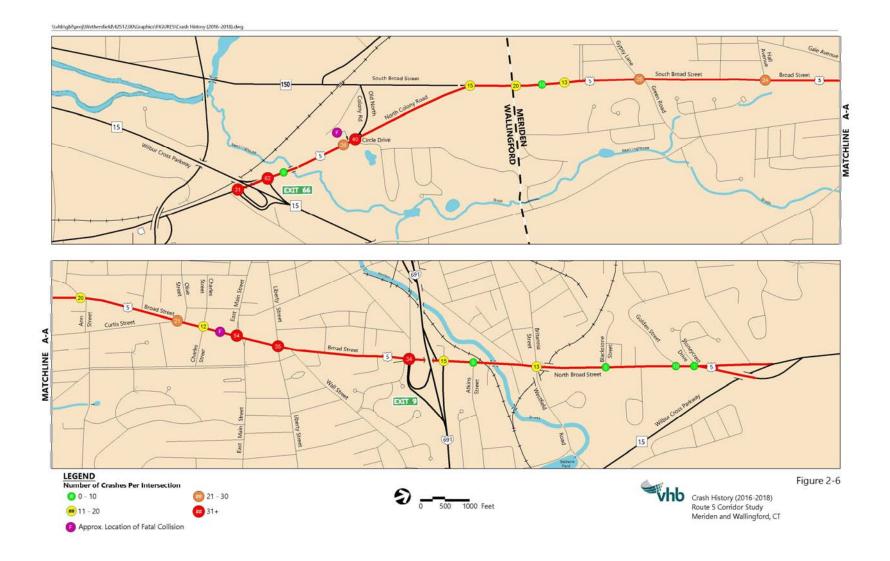
² Speed data obtained from ATR counts conducted by VHB in April 2019.

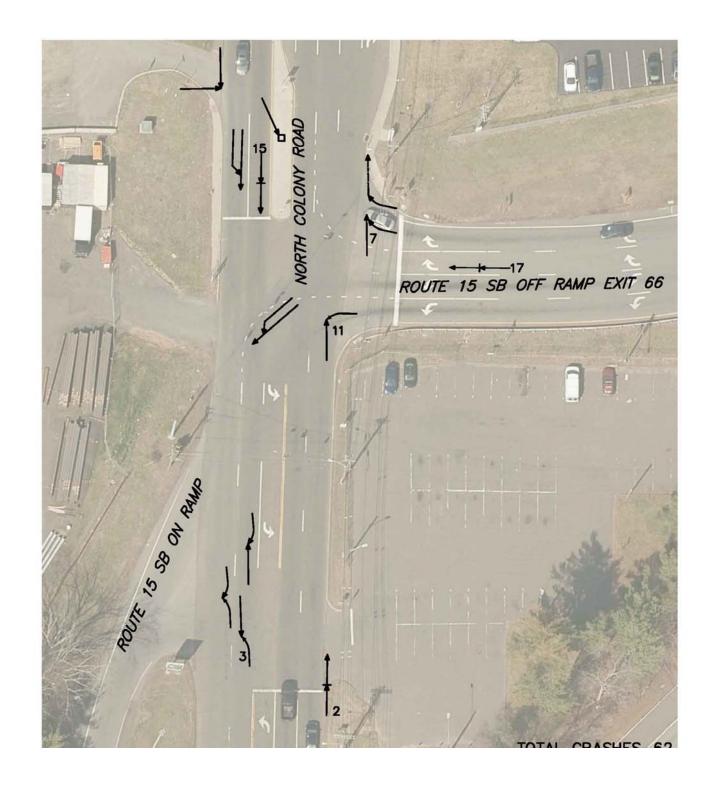
Existing Conditions - Crashes

	2016	2017	2018		
Type of Collision				Total Collisions	Percent
Rear End	152	118	134	404	50.1%
Angle	80	56	81	217	26.9%
Fixed Object	8	9	8	25	3.1%
	48	31	38		
Sideswipe, Same Dir.				117	14.5%
Animal	0	2	0	2	0.2%
Head On	1	2	2	5	0.6%
	6	6	2		
Sideswipe, Opposite Dir.				14	1.7%
Bicycle	0	1	1	2	0.2%
Pedestrian	3	2	3	8	1.0%
Other	2	1	1	4	0.5%
Not Applicable	3	1	2	6	0.7%
Unknown	0	1	1	2	0.2%
Rear to Side	0	1	0	1	0.1%
Total	303	231	273	807	100%

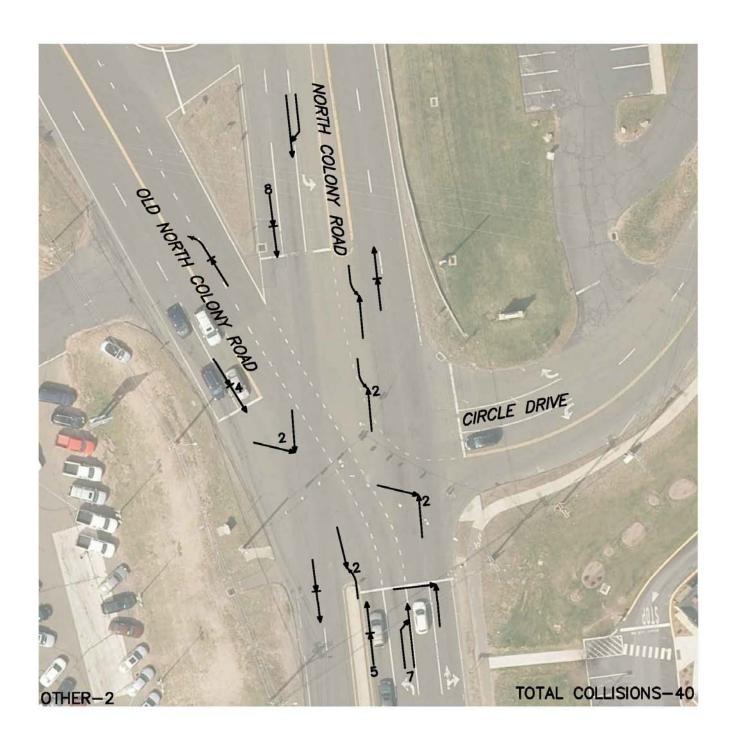


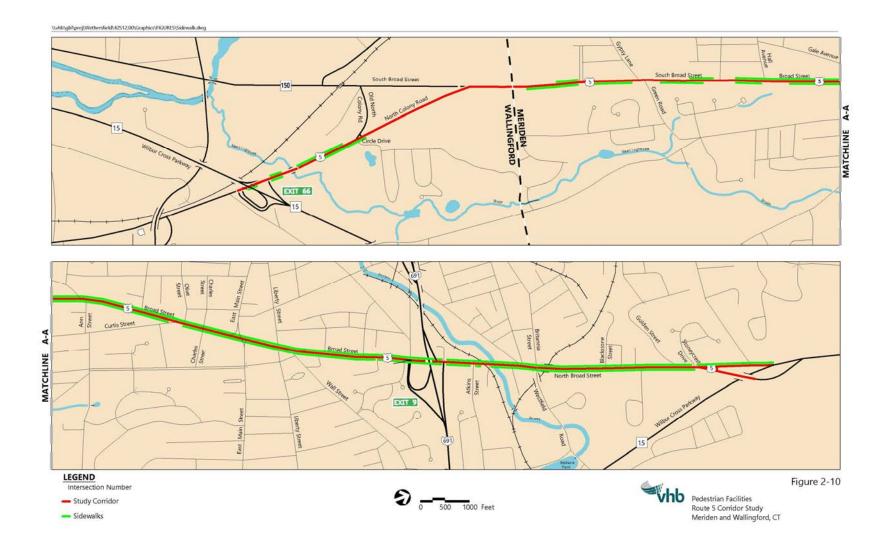


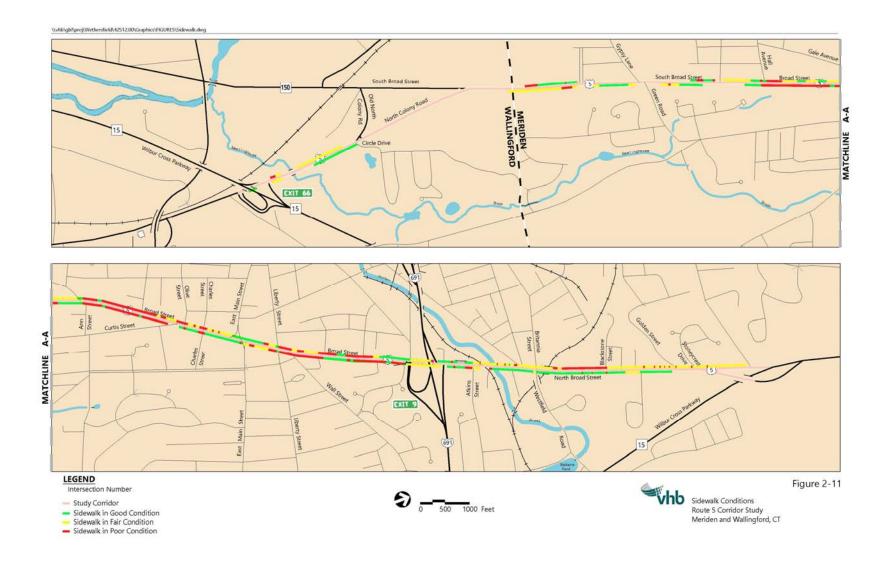












Next Steps

- Future Conditions
- Alternative Development
- 2nd Public Information Meeting Winter/Early Spring 2021

News Release

South Central Regional Council Of Governments (SCRCOG) Route 5 Corridor Study Project Meriden/Wallingford

Public Information Meeting

Tuesday November 12, 2019

SCRCOG, in conjunction with the City of Meriden and Town of Wallingford and the Connecticut Department of Transportation is conducting a study of the Route 5 corridor from the Wilbur Cross Parkway interchange in north Wallingford to the Berlin Turnpike interchange in north Meriden. The project study efforts are in the Existing Conditions phase.

This project is intended to provide an assessment of existing conditions and recommend short and long term improvements to improve traffic operations and safety through this area.

In order to afford the public the opportunity to review project study information and provide input to the study efforts, a Public Information Meeting will be held on Tuesday November 12, 2019, 6pm at Francis T. Maloney High School, 121 Gravel Street in Meriden, CT. Plans and information developed for the project study efforts will be on display and staff available to discuss the project study efforts.

It is anticipated that the Federal Highway Administration will provide 80% of the funds and the rest 10% state and 10% local (SCRCOG) funds.

Anyone interested in obtaining further information or providing input may do so by contacting

Stephen Dudley

Deputy Director/Director of Transportation

SCRCOG, Washington Avenue, 4th Floor West

North Haven, CT 06473

Also via telephone at 203-234-7555 and electronic mail at Sdudley@scrcog.org

Public comments should be received by November 30, 2019 to be included in the record of the meeting. The high school is ADA accessible.





Public Informational Meeting

South Central Regional Council Of Governments

Route 5 Corridor Study

Meriden/Wallingford

Meeting Location - Meriden
Tuesday, November 12, 2019
at 6:00 p.m.
Francis T. Maloney High School
Cafeteria
121 Gravel Street
Meriden, CT

- 1. Public viewing/open house of study graphics and materials
- 2. <u>Introductions</u>
 Stephen Dudley, SCRCOG
 Howard Weissberg, City of Meriden
 Robert Baltramaitis, Town of Wallingford
- General Project Information and Design Presentation
 Charles Baker, VHB
 Bridget Boucaud, VN
- 4. <u>Public Participation</u> Comments

SCRCOG, Meriden and Wallingford officials and VHB representatives will be available after the presentation for an informal question and answer session.

South Central Regional Council Of Governments - Route 5 Corridor Study Meriden/Wallingford

Project Summary

Route 5 project study area runs from Wilbur Cross Parkway interchange in North Wallingford northerly to the Berlin Turnpike interchange in North Meriden, approximately 5 miles.

The corridor study will evaluate current transportation and land use conditions and investigate opportunities to make improvements. The study will develop recommendations & implementation plan for transportation aimed to achieve the vision for the corridors.

Project Public Information Meeting

The public information meeting is being held to introduce the project study efforts to the community and solicit feedback, comments, suggestions on existing conditions along the corridor to assist the study team in understanding traffic operations issues.

Project Funding

It is anticipated that the Federal Highway Administration will provide 80% of the funds and the rest 10% state and 10% local (SCRCOG) funds.

Schedule

The study is expected to be completed in the Spring 2020.

Please provide comments on the project by November 30, 2019 via mail, telephone or email at the following:

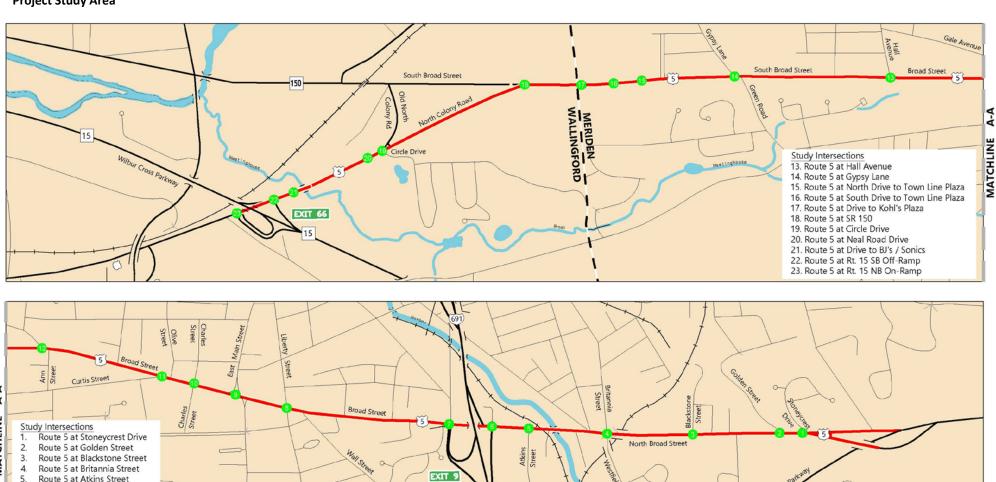
Stephen Dudley
Deputy Director/Director of Transportation
SCRCOG
Washington Avenue, 4th Floor West
North Haven, CT 06473
203-234-7555
Sdudley@scrcog.org



South Central Regional Council Of Governments - Route 5 Corridor Study Meriden/Wallingford

Project Study Area

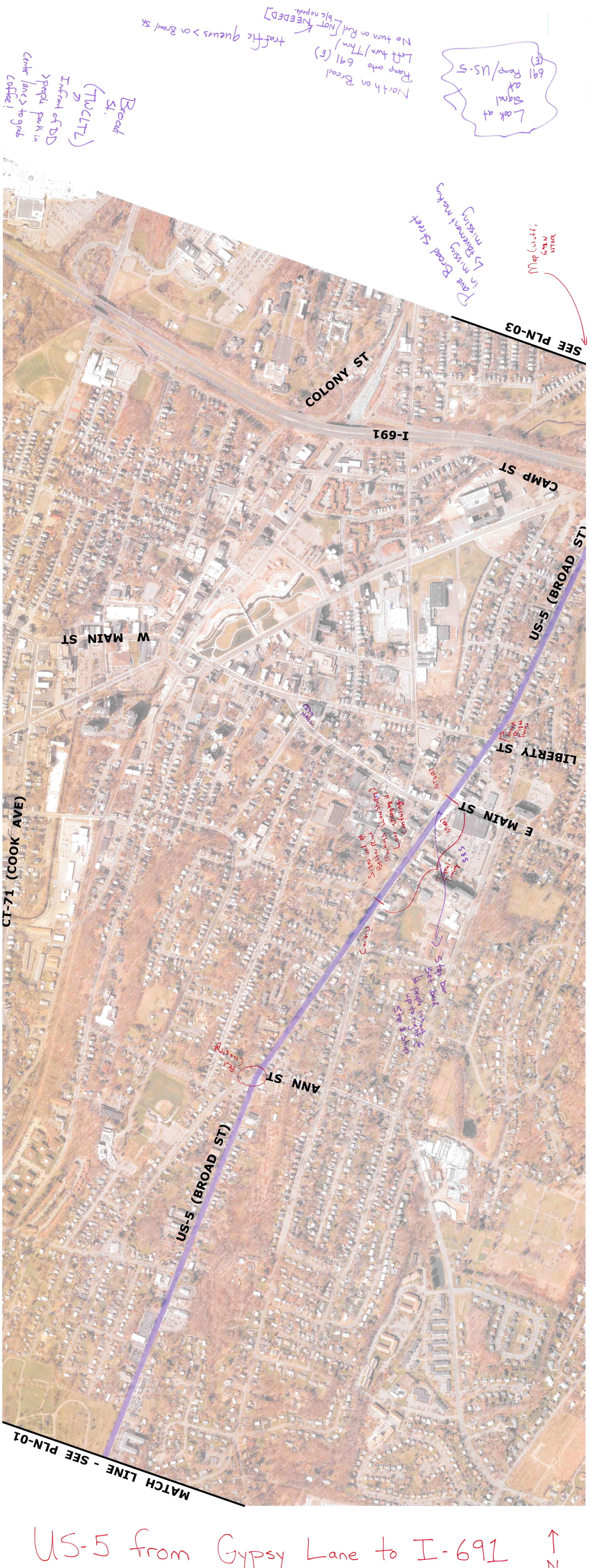
Route 5 at Pratt St. Extension
 Route 5 at Camp Street
 Route 5 at Liberty Street
 Route 5 at East Main Street
 Route 5 at Charles Street
 Route 5 at Olive Street
 Route 5 at Ann Street



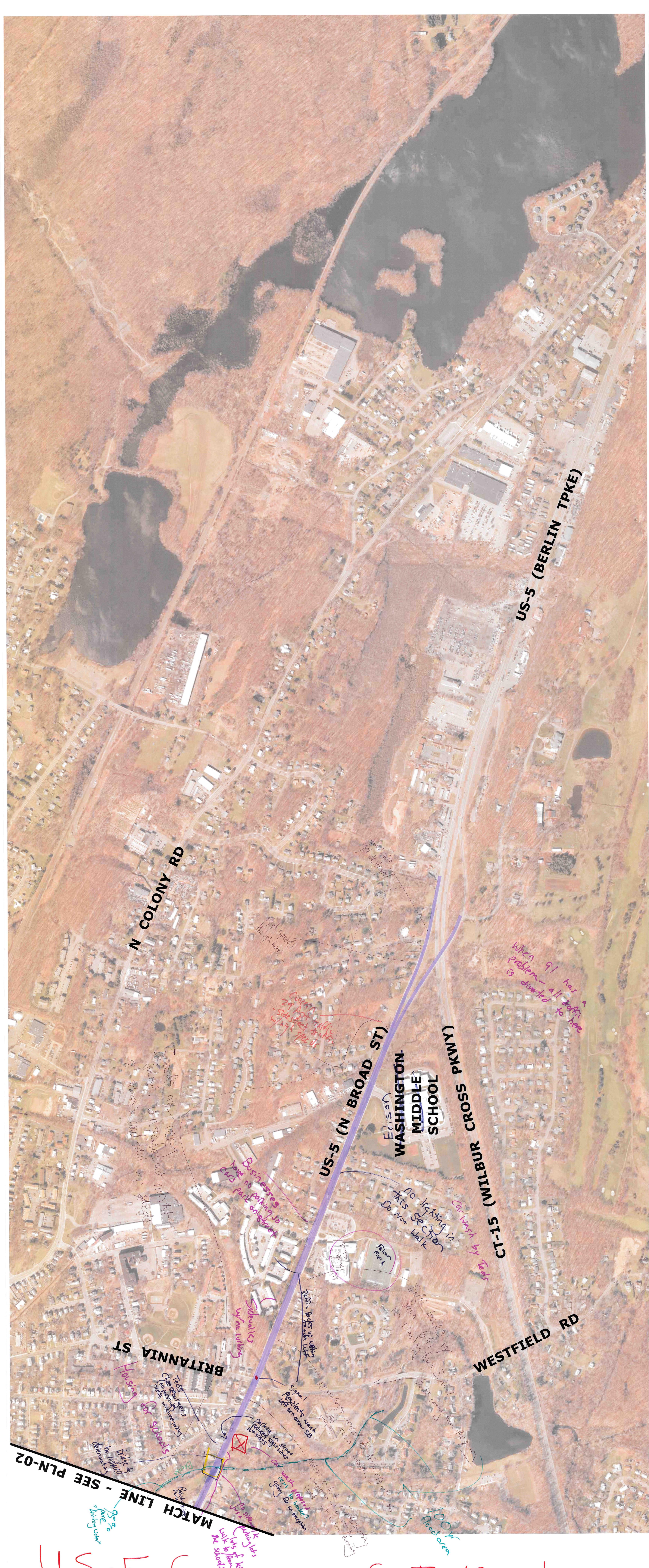


Des From Wilbur Cross Phyy to Cypsy Land CAGO (BARNES RO) CT-68 (CHURCH ST) Child South and Links St. L. W. W. St. L. W. W CHANOVER ER ASdAS MATCH LINE - SEE PLN-02 De Maria and back in Manider. source out of this area Lugs In Lethy 2, nox 5

July



US-5 from Gypsy Lane to I-691 N



US-5 from north of I-691 to
Wilbur Cross Pkwy

Summary of comments received from the public after 6/25/2020 virtual PIM

- Meriden resident
 - Need to widen widths of sidewalks especially the bottleneck south of the Route 15 overpass and north of the Big Y plaza to Ann Street near CVS
- Center Congregational Church of Meriden minister
 - Finds concept plans beneficial
 - o Concerned about roundabouts particularly at E Main St
 - Church members use Stop and Shop parking lot and must cross Route 5. Concerned that
 proposed crosswalks do not offer a way for traffic to stop for crossing pedestrians by the
 front corner of the church
 - Concerned about losing street parking. Parking behind the church building is already limited
 - Concerned about current declining membership due to pandemic and that the roundabout plan would worsen access to the church
 - Concerned that roundabouts in high vehicle and pedestrian traffic areas could be more difficult to navigate and more dangerous than anticipated
 - Concerned that an accident would block the route
- Funeral home owner by E Main St
 - Opposed to roundabout at E Main St
 - o Concerned about narrowing lanes and creating traffic hazards
 - o In favor of reducing speed limit to 25 mph
 - Concerned about losing street parking and hindered access to his building and the churches from Route 5
 - Concerned about war memorial statues being "dishonored by the congestion and hazardous conditions created"
 - Concerned about parades and Memorial Day ceremonies connected to the monuments being denied space to conduct their services
 - Noted the street was recently repaved and had new curbs installed



Place: VHB Wethersfield Office Meeting Notes

Date: January 22, 2020 Notes Tushar Gaddi, Carl Giordano,

Taken by: Will Kresic

Project #: 42512.00 Re: Route 5 – Concept Design Meeting Notes

VHB convened a meeting to review potential concept design alternatives for the Route 5 Corridor Study, with a focus on critical intersection locations. The following summarizes the discussions at the meeting and potential recommendations to be further explored by the VHB team.

ATTENDEES

Steve Dudley, SCRCOG Howard Weissberg, City of Meriden Charles Baker, VHB

Joe Balskus, VHB William Britnell, VHB Tushar Gaddi, VHB

Carl Giordano, VHB William Kresic, VHB

North Colony Road at Route 15 Southbound ramps - Wallingford

- · Question of sight line at ramp looking left
- Sidewalk needed
- Long term: location of park and ride
- Expecting approved plan across street?
- This intersection had the highest number of crashes which was 62.
- Need to look at crashes to see whether there were a significant number of sideswipes or turning related accidents around that area.
- Queues on the ramp are not backing up into the highway so more green time for the off ramp is not needed.
- The biggest issue seems to be the location of the commuter parking lot and how they pull out. A temporary
 solution to this problem is put a stop bar in an appropriate location. There seems to be no stop bar for the
 drivers that go right out of the lot which creates a lot of confusion. Another solution could be to signalize the
 drive through for the commuter lot. Also, to increase sight line for the drivers turning left from the off ramp,
 the fence could be pulled back.
- A long-term potential change that should be looked at is moving the lot to a different nearby location. One
 idea that was brought up was to flip flop the existing off ramp and lot location. A roundabout can also be
 considered at this location if the geometry works out.
- Short-term
 - remove parking spaces in lot to improve sight distance
- <u>Long-term</u>
 - o reconstruct intersection; potentially swap position of ramp & parking lot
 - o review 2006 report



Ref: 42512.00 January 21, 2020 Page 2

Broad Street at East Main Street - Meriden

- This intersection had the second highest number of crashes at 54 crashes.
- A key observation made was that the queues were bad at each approach except for eastbound approach since it is right turn channelized. One suggestion was to add more lanes on each approach. On the westbound approach, the lane change can happen sooner so more cars can fill in the west bound through and west bound left lane.
- There should be a clearer indication if there is NTOR for the Northbound approach. Since the radii to turn onto East Main Street is large, drivers creep too far out front which is a hazard for drivers going East Bound
- Add lane use signs (West bound in particular)
- CAT tracks or tape from the shoulder to channel people into through lane
- CAT tracks South bound through intersection
- Evidence of repeat ped button usage without crossing note in report
- Shift West bound alignment south toward Stop & Shop, Add second West bound through lane
- Can we do concurrent phasing? No. Keep excl. ped
- Realign intersection to accommodate the intersection Veterans Memorial Blvd
- Another option is to pulling East Main Street to the South a bit more so that the roads are more aligned.
- East bound approach and West bound approach are misaligned in existing condition
- East bound/West bound protected lefts possible? Marginal improvement, but decrease in safety
- Double roundabout concept
 - Move to encroach into plaza space?
 - Public acceptance issue
 - Remove median monuments and put in plaza space, freeing up median space
 - Of Get rid of median?
 - Can increase church green space

Short-term

- Add lane-use signs
- Improve alignment of westbound pavement markings; lane shift taper to direct vehicles into through lane instead of right-turn lane, and add drop-in taper for right-turn lane
- Change from split phase to protected/prohibited left-turn phasing on side streets would provide marginal improvement in capacity, but not an option due to interlocking left-turns Long-term
- Realign westbound approach and widen to better align
- Consider roundabout
- Possible reduce width of median (doesn't improve capacity but addresses perceived safety issue



Ref: 42512.00 January 21, 2020 Page 3

Broad Street at Camp Street/I-691 ramps/Yale Acres

- CAT tracks through intersection
- South bound Right lane, shift South bound through lane to line up to create a LT pocket into Yale Acres
- Pull back northbound right radius and create an exclusive right lane further back
- Eliminate southbound on street parking south on intersection
- Make Yale Acres Road a right turn entry and a right turn exit only road. This could have potential issues with the transit system, however. Need to look further in depth on transit around this intersection.
- southbound left lane into Yale Acres needed?
- Need 2 southbound through lanes
- Review lane use changes
- Northbound right turn lane. Shouldn't be an issue with street parking
- Issues at this intersection are independent of nearby intersections
- Restrict lefts at Yale Acres?
- Roundabout just north of intersection

Short term

- Reduce South bound to one lane, and add a North bound lane (either Right lane or TH-RT lane)
- Add don't block the box markings at Yale Acres intersection

Long term

Consider roundabout concept (completed)

Transit

- Move New Haven study
- Creating "hubs" tying into Meriden Transit Center
- Improving important "nodes" Kohl's, Shop & Shop
- Public transit user enhancement

Remaining Action Items

- Need undeveloped parcel info
- List/figure of potential parcels
- Future no build
- Summarize notes
- Prioritize important areas
- Consider bus shelters and pull offs
- Sidewalk plan

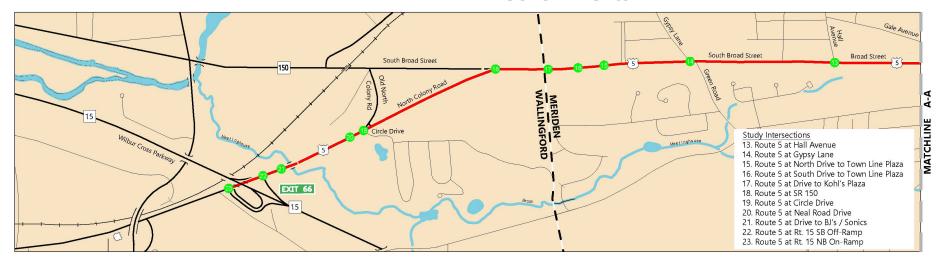
Route 5 Corridor Study SAC Meeting # 3

VHB

In Association with: VN Engineers

For:

South Central Region Council of Governments





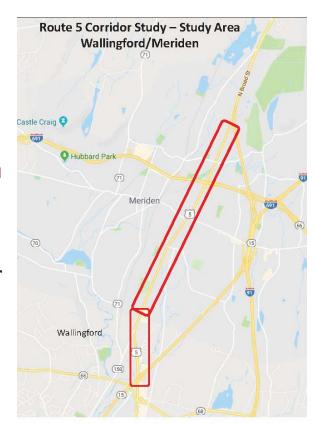
SAC #3 Meeting Agenda

- Public Information Meeting Notes
- Existing Conditions Report Comments?
- Future No-Build Conditions
- Future Build Alternatives
 - Review Locations/Concepts
- Open Discussion Items
- Next Steps
 - Finalization of Future Conditions
 - Public Information Meeting April?



Study Purpose

- Establish a vision for the corridor
- Evaluate current transportation and land use conditions and investigate opportunities to make improvements
- Develop recommendations & implementation plan for transportation aimed to achieve the vision for the corridors
- Develop short and long term improvements for funding



Scope of Work

- Existing Conditions Technical Memorandum
- Future Conditions Technical Memorandum
- Immediate Improvements Technical Memorandum
- Analysis of Corridor Alternatives Technical Memorandum
- Final Report

Study Process

Data Collection and Base Mapping Future
Conditions
Analyses and
Land Use

Recommend Improvements













Existing Conditions Analyses <u>Develop</u> <u>Alternatives</u>

Implementation Plan: Priorities and Funding

EXISTING CONDITIONS REPORT

Route 5 Corridor Study







PREPARED FOR

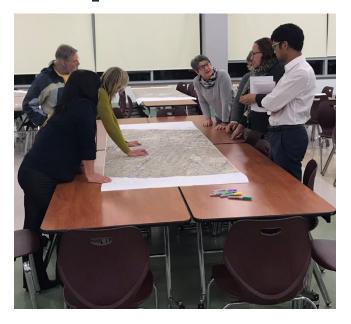
South Central Regional Council of Governments (SCRCOG)

City of Meriden

Town of Wallingford

NOVEMBER 22, 2019

Existing Conditions Report



PIM Comments - South

- o Drivers on Old North Colony Road that have a left turn arrow disobey that signal and maneuver right or straight into US-5.
- Old North Colony Road merge reduces from two lanes to one travel lane and is Stop Controlled at CT-71.
- Lots of Lane Jockeying and signal confusion on Old North Colony Road when entering US-5. There should be more indication of lane usage to drivers.
- There is not a left turn lane to enter Staples Plaza at the first and second driveway
 NB from Wallingford to Meriden.
- Limited sight distance at the second Staples Plaza entrance (going NB from Wallingford to Meriden).
- Delivery trucks park illegally in front of the KIA dealership.
- Lots of traffic along this section because of the all the stores.
- Lack of consistent lanes when driving from Kohl's Plaza to Gypsy Lane.

PIM Comments - Middle

- o Residents raised concerns about the pedestrian crossing at Gale Avenue.
- o There needs to be better lane usage signs and better road markings from Curtis Street to East Main Street intersection. Look at the signal timing.
- o The stop bar is set too far back at the NB approach at Broad Street. Drivers will inch forward too much to make a right turn which blocks drivers continuing EB to East Main Street. Residents are confused if it is a NTOR at that intersection.
- o Residents noted that drivers have to make sharp right turn to turn out of Liberty Street and enter US-5. The wheels hit the curb along the side.
- o Residents complained that people park in center lane to grab coffee from Dunkin'
- o Lots of queuing at Camp Street Intersection.
- o Cars back up on I-691 EB Off Ramp because of the NTOR indication. Residents questioning why that is in place.

PIM Comments - North

- o Whenever there is a problem with I-91, all the traffic is diverted to US-5.
- o Drivers go very fast coming from Wilbur Cross Parkway and it is concerning given that there are 2 schools near the vicinity. They also wear down the guardrails beginning from Amity Street.
- o A new apartment complex is being built close to Stoneycrest Drive. This is concerning due to the high speeds of cars coming off Wilbur Cross Parkway and entering US-5.
- o Businesses such as Ted's Cheeseburgers and others have limited to no parking which makes drivers park their cars on the street.
- o Very limited lighting near Thomas Edison Middle School which makes it hard for drivers to see pedestrian walking around there at night.
- o Lots of congestion near the intersections of Washington Middle School. Traffic backs up from I-691 to Blackstone Street. Major queuing occurs due to cars waiting to turn left at Blackstone Street.

PIM Comments - North

- o Trucks come from quarry and enter the corridor.
- o Sidewalks near Washington Middle don't have curbing.
- o Residents want a protected left turn SB at Britannia St. Intersection.
- o On Street parking in front of Residential Management Services reduces sight lines on both sides.
- o Lots of intersecting roadways which can make it confusing to turn at Bunker and Sherman Avenue.
- o A proposed car wash on the corridor will bring more traffic along the corridor and could cause more delays.
- o Better lighting is required near the schools and better parking for businesses will alleviate many problems on this section of the corridor.

Design Concept Meeting

North Colony Road at Route 15 Southbound ramps – Wallingford

- Question of sight line at ramp looking left
- Expecting approved plan across street?
- This intersection had the highest number of crashes which was 62.
- The biggest issue seems to be the commuter parking lot and exiting.
- Signalize the drive through for the commuter lot?
- A long-term potential change that should be looked at is moving the lot to a different nearby location. A roundabout can also be considered at this location if the geometry works out.
- Short-term remove parking spaces in lot to improve sight distance
- Long-term reconstruct intersection; potentially swap position of ramp & parking lot

Design Concept Meeting

Broad Street at East Main Street - Meriden

- This intersection had the second highest number of crashes at 54 crashes.
- On the westbound approach, the lane change can happen sooner
- There should be a clearer indication if there is NTOR for the Northbound approach.
- Evidence of repeat ped button usage without crossing note in report
- Realign intersection to accommodate the intersection Veterans Memorial Blvd
- EB/WB protected lefts possible? Marginal improvement, but decrease in safety

Short-term

- Add lane-use signs
- Improve alignment of westbound pavement markings; lane shift taper to direct vehicles into through lane instead of right-turn lane, and add drop-in taper for right-turn lane
- Change from split phase to protected/prohibited left-turn phasing on side streets

Long-term

- Realign westbound approach and widen to better align
- Double roundabout concept move to encroach into plaza space?
- Possible reduce width of median (doesn't improve capacity but addresses perceived safety issue

Design Concept Meeting

Broad Street at Camp Street/I-691 ramps/Yale Acres

- CAT tracks through intersection
- SB Right lane, shift SB through lane to line up to create a LT pocket into Yale Acres
- Pull back northbound right radius and create an exclusive right lane further back
- Eliminate southbound on street parking south on intersection
- Make Yale Acres Road a right turn entry and a right turn exit only road.
- Need 2 southbound through lanes, review lane use changes
- Northbound right turn lane. Shouldn't be an issue with street parking
- Restrict lefts at Yale Acres?

Short term

- Reduce SB to one lane, and add a NB lane (either Right lane or TH-RT lane)
- Add don't block the box markings at Yale Acres intersection

Long term

Consider roundabout concept



			20	20 Existin	g Condit	ions			204	40 No-Bui	ld Cond	itions			20				
		Week	day Mornir	ng Peak	Weel	day Evenir	g Peak	Wee	kday Momin	g Peak	Wee	kday Evenir	ng Peak	Weekday Morning Peak Weekday Evening Peak					
Intersection	Lane Group	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay v/c	
) Route 5 at Stoneycrest Drive	Eastbound LT-RT	В	12.0	0.09	В	14.1	0.14	В	12.9	0.10	C	15.4	0.16						7
(Unsignalized)	Northbound LT-TH	Α	0.3	0.01	А	1.1	0.03	Α	0.3	0.01	Α	1.1	0.03						
	Overall	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					1	7
2) Route 5 at Golden St. & Edison Middle School	Eastbound LT-TH-RT	С	27.3	0.31	С	34.6	0.25	С	27.3	0.31	С	25.8	0.21					80	
	Westbound LT	F	104.8	1.06	D	36.1	0.29	F	134.2	1.15	С	26.6	0.23						
	Westbound TH-RT	C	27.7	0.34	С	32.1	0.08	С	27.7	0.34	С	24.1	0.07				Ur		
	Northbound LT	С	32.1	0.10	D	40.5	0.13	С	32.1	0.10	С	32.8	0.16						
	Northbound TH-RT	D	40.3	0.89	D	37.5	0.72	E	64.3	1.01	С	26.9	0.69		U	/ L \			
	Southbound LT	D	37.2	0.38	D	39.5	0.06	D	38.5	0.43	С	31.3	0.05				_		
	Southbound TH-RT	С	20.3	0.40	E	74.6	1.01	С	21.1	0.45	D	46.1	0.93						
	Overall	D	45.5	0.82	D	54.1	0.47	E	60.5	0.91	D	35.7	0.54						ion
3) Route 5 at Blackstone Street	Eastbound LT-RT	D	45.6	0.59	С	33.9	0.58	D	45.6	0.59	D	48.3	0.65				9		
	Northbound LT-TH	A	7.3	0.46	Α	4.6	0.44	В	11.5	0.51	В	16.2	0.75						
	Southbound TH-RT	C	22.2	0.60	С	20.4	0.74	С	24.2	0.68	D	35.4	0.88					\prec \Box \Box	
	Overall	В	16.5	0.49	В	15.0	0.63	В	19.3	0.55	C	28.3	0.72					_	
1) Route 5 at Britannia Street & Westfield Road	Eastbound LT-TH-RT	F	140.4	1.13	D	49.4	0.84	F	214.9	1.32	F	25.6.6	1.44						
	Westbound LT-TH-RT	F	201.9	1.30	F	140.1	1.16	F	286.7	1.50	F	637.2	2.29						
	Northbound LT	C	29.1	0.35	F	383.7	1.72	С	26.4	0.38	F.	115.4	1.13						لم انرار
	Northbound TH-RT	D	47.2	0.94	D	39.4	0.88	E	75.6	1.06	C	26.3	0.86			V			vild
	Southbound LT	Ε	75.3	0.78	E	77.1	0.78	E	73.4	0.78	D	35.4	0.65			1			VIIU
	Southbound TH-RT	F	107.4	1.14	F	130.8	1.18	F	178.7	1.31	F	171.2	1.31						_
	Overall	F	99.5	0.85	F	123.7	1.08	F	15 2.7	0.98	F	202,3	1.13						
5) Route 5 at Atkins Street	Westbound LT-RT	D	43.1	0.63	С	32.6	0.65	D	44.3	44.30	D	50.3	0.77						
	Northbound TH-RT	В	16.9	0.58	Α	7.0	0.65	В	19.8	19.80	C	30.5	0.75						
	Southbound LT-TH	В	14.3	0.70	Α	6.9	0.74	С	33.9	33.90	F	97.8	1.13						_
V990, V9 - 0 - 10 - 10 - 10 - 10 - 10 - 10 - 10	Overall	В	18.3	0.66	А	9.9	0.72	C	28.7	0.81	E	63.7	1.03						
S) Route 5 at I-691 WB Off-ramp and	Eastbound LT-TH-RT	C	27.5	0.04	В	19.3	0.02	С	25.0	0.04	В	19.1	0.02						
Pratt Street Extension	Westbound LT	D	49.9	0.84	D	47.6	0.89	E	60.6	0.92	С	30.9	0.74						
	Westbound TH-RT	С	28.1	0.14	С	20.3	0.20	С	25.8	0.15	С	20.3	0.18						
	Northbound LT	В	10.3	0.13	A	8.4	0.15	В	19.9	0.28	С	24.3	0.28						
	Northbound TH-RT	В	13.3	0.52	В	12.0	0.63	В	17.3	0.62	D	41.3	0.93						
	Southbound TH-RT	C	20.1	0.71	В	11.0	0.76	С	25.3	0.85	F	80.0	1.11						
	Overall	C	23.3	0.71	В	17.5	0.80	C	28.0	0.82	D	53.2	0.90						
") Route 5 at Camp Street & I-691 Ramp (EB)	Eastbound LT	E	55.8	0.70	E	63.3	0.85	E	58.7	0.74	F	110.5	1.02						
	Eastbound TH-RT	D	53.7	0.67	E	69.8	0.89	E	56.9	0.72	F	124.9	1.07						
	Westbound LT-TH	D	49.5	0.65	F	120.7	1.07	D	52.8	0.70	E	215.2	1.31						
	Westbound RT	E	79.9	0.89	F	106.0	1.00	F	109.3	1.00	F	175.4	1.20						
	Northbound LT	С	26.3	0.09	С	24.7	0.14	С	26.9	0.11	С	30.0	0.18						
	Northbound TH-RT	F	150.2	1.22	F	219.3	1.39	F	217.2	1.38	F.	35 9.3	1.70						
	Souhtbound LT	F	355.1	1.68	F	173.2	1.25		455.6	1.91	F	288.9	1.52						
	Southbound TH-RT	C	22.0	0.50	B	19.6	0.49	C	23.3	0.56	C	25.4	0.59						_
2). Douto 6 at Libouty Ptro-4	Overall	- 10	113.6	1.15		117.8	1.14	F	151.0	1.29	E	195.9	1.25						-
3) Route 5 at Liberty Street	Eastbound LT-TH-RT	C C	26.6	0.62	E	56.6	0.91	С	30.7	0.69	-	87.5	1.03						
	Westbound LT-TH-RT	- 8	27.7	0.66	C	29.2	0.57	C B	32.0	0.73	C F	31.0	0.64						
	Northbound LT-TH-RT	B C	13.0	0.60	E	56.8 57.6	1.01 0.99	C	14.5	0.66	F.	102.2 88.9	1.15 1.10						
	Southbound LT-TH-RT Overall	C C	23.0	0.75	D	57.6	0.99	C	24.5 22.9	0.78	F	88.9	1.10						-
9) Route 5 at East Main Steet	Eastbound LT	D D	45.9	0.87	D	48.0	0.55	D	49.8	0.71	D	52.0	0.40	D	36.7	0.34	E	77.4 0.78	9
) route 5 at East Main 51881	Eastbound LI Eastbound TH	E	67.4	0.83	F	116.4	0.90	D E	112.0	1.00	U	180.0	1.20		54.9	0.76	_	117.5 1.0	
	Eastbound RT	D	44.3	0.10	D	46.0	0.30	D	48.1	0.12	D	50.2	0.18		40.3	0.12	D	50.7 0.19	
	Westbound LT	D	44.3	0.10	D	44.9	2.86	D	47.6	0.12	D	52.5	0.18		38.1	0.12		168.1 1.1	MATERIAL PROPERTY.
	Westbound TH	E	63.4	0.81	E	72.3	1.16	E	75.8	0.40	E	118.8	1.06	_	59.5	0.80		144.3 1.1.	
	Westbound RT	D	42.6	0.06	D	39.7	0.13	D	44.7	0.06	D	43.4	0.15	D	39.9	0.06	D	47.2 0.15	
		D		0.84	F		0.95	D	94.4	1.01	F		SATURATE OF	D	40.8		575.1		particular and the second seco
	Northbound LT Northbound TH	D	48.9 35.6	0.63	E	25 8.2 60.5	0.95	D	37.1	0.67	E .	389.2 114.7	1.74 1.11		28.5	0.82	D	181.0 1.24 35.9 0.77	
	Northbound RT	C	27.1	0.63	C	28.8	0.83	C	26.9	0.08	-		TANGERS.	c	21.4	0.08	C	22.3 0.20	and the second s
		C			C			C			C	33.1	0.28	G G			C		
	Southbound LT Southbound TH-RT	C	26.8 56.6	0.25	C F	29.5 11.6.6	0.42	C	26.5 58.2	0.27	D F	41.1 203.5	0.68 1.32		25.6 57.5	0.24		30.4 0.49 112.9 1.11	
	Journal of the Classical Control of the Classi	C.	20.0	0.89		110.0	1.20		60.8	0.90		203,3	1.32	- C	44.0	0.76		1.1.	-

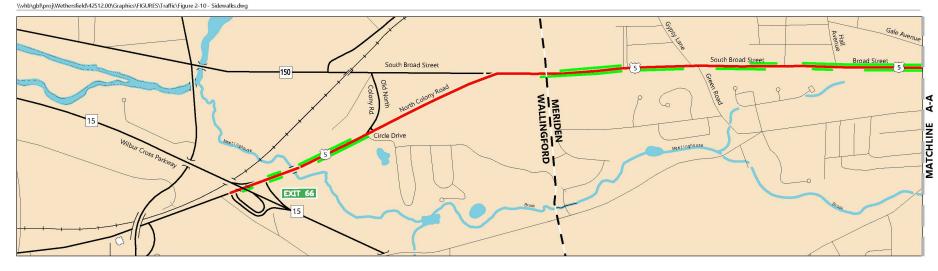
Future Conditions - No Build

	-	- 50	0.00	0.30			-	- 165		778677		10,000,000		200 AAAAAA AAAAAA	
10) Route 5 at Charles Street	Eastbound LT-TH-RT	C	35.0	0.11	С	30.2	0.09	С	35.0	0.11	C	30.2	0.09		
	Westbound LT-TH-RT	D	35.9	0.29	D	38.4	0.66	D	35.9	0.29	D	38.4	0.66		
	Northbound LT-TH-RT	Α	4.7	0.29	Α	7.1	0.51	Α	4.8	0.33	A	8.6	0.56		
	Southbound LT-TH-RT	A	5.6	0.28	A	9.2	0.44	A	5.8	0.31	Α	9.8	0.49		
	Overall	A	7.1	0.27	В	10.6	0.49	A	7.0	0.29	В	11.4	0.53		
11) Route 5 at Olive Street	Eastbound LT-RT	D	35.3	0.56	С	34.0	0.54	С	34.9	0.57	C	34.0	0.55		
	Northbound LT-TH	A	2.8	0.34	Α	8.4	0.61	Α	3.2	0.39	В	15.0	0.72		
	Souhtbound TH-RT	В	14.7	0.31	В	18.1	0.54	В	16.2	0.37	В	19.9	0.63		
	Overall	В	11.2	0.37	В	14.3	0.60	В	11.7	0.42	В	18.4	0.69		
12) Route 5 at Gale Avenue & Ann Street	Eastbound LT-TH	D	37.6	0.71	D	51.3	0.81	D	38.7	0.74	D	47.4	0.80		,
	Eastbound RT	Α	200	0.00	С	32.5	0.05	А	323	0.00	С	30.1	0.04		
	Westbound LT	C	31.8	0.32	С	31.9	0.23	С	32.1	0.30	С	30.8	0.23		
	Westbound TH-RT	D	35.4	0.58	D	54.9	0.87	D	38.4	0.65	E	63.6	0.92		
	Northbound LT-TH-RT	C	21.9	0.55	F	94.3	1.08	С	25.1	0.63	F	126.5	1.17		
	Southbound LT-TH-RT	С	28.8	0.77	F	191.8	1.33	D	42.9	0.90	F	25 6.5	1.48		
	Overall	C	29.5	0.68	F	113.1	0.96	D	36.3	0.76	F.	148.1	1.08		
13) Route 5 at Hall Avenue	Eastbound LT-RT	В	16.6	0.25	С	32.5	0.66	В	17.8	0.36	С	34.5	0.71		
	Northbound LT-TH	A	7.1	0.38	В	11.8	0.72	Α	7.4	0.43	D	48.8	1.00		
	Souhtbound TH-RT	В	13.8	0.58	В	12.0	0.56	В	14.3	0.62	В	14.3	0.65		
	Overall	В	12.0	0.44	В	15.8	0.71	В	12.7	0.51	C	32.0	0.93		
14) Route 5 at Gypsy Lane & Green Road	Eastbound LT-TH-RT	С	32.5	0.62	E	64.7	0.85	D	42.6	0.75	F	108.0	1.03		
	Westbound LT-TH	C	31.1	0.59	E	56.9	0.83	D	38.7	0.68	E	66.6	0.89		
	Westbound RT	С	26.1	0.03	С	34.6	0.04	С	29.6	0.03	С	34.7	0.05		
	Northbound LT-TH-RT	В	17.8	0.61	E	56.5	1.01	С	20.8	0.67	F	129.4	1.20		
	Souhtbound LT-TH-RT	C	21.0	0.73	С	20.2	0.67	С	26.7	0.82	С	28.6	0.82		
	Overall	C	22.6	0.68	D	45.4	0.94	C	28.4	0.78	F	86.1	1.10		,
15) Route 5 at Silver Hill North Dr. &	Eastbound LT-TH	D	36.8	0.59	D	52.1	0.77	D	36.8	0.59	D	43.6	0.76		
North Dr. to Townline Square	Eastbound RT	C	30.8	0.02	C	32.6	0.07	C	30.8	0.02	C	27.0	0.07		
	Westbound LT-TH	C	31.5	0.18	D	35.5	0.47	С	31.5	0.18	С	29.1	0.42		
	Westbound RT	C	27.2	0.04	С	27.6	0.18	С	27.2	0.04	С	23.3	0.29		
	Northbound LT	A	5.3	0.11	Α	6.0	0.12	Α	6.8	0.12	Α	7.6	0.16		
	Northbound TH-RT	A	7.2	0.13	А	7.5	0.33	А	7.9	0.15	Α	9.5	0.40		
	Souhtbound LT	A	3.4	0.15	А	4.8	0.43	Α	3.4	0.16	Α	5.3	0.49		
	Southbound TH-RT	A	7.1	0.40	В	10.2	0.50	Α	7.6	0.45	В	12.6	0.63		
	Overall	В	10.9	0.42	В	15.6	0.56	В	11.1	0.45	В	15.1	0.67		
16) Route 5 at Silver Hill South Drive &	Eastbound LT-TH-RT	С	31.9	0.21	С	32.2	0.16	С	31.9	0.21	С	25.5	0.13		
South Drive to Townline Sqaure	Westbound LT-TH	D	39.2	0.62	F	155.6	1.18	D	39.2	0.62	E	84.0	0.99		

Capacity Analysis Summary																
			20	20 Existin	g Condit	ions			204	0 No-Bu	ild Condit	ions		2040 Build		
55(0) 3d	85 830	492,436	day Mornin	-	and California	day Evenir		100 100 100	kday Momin		3325000	day Eveninç	225	Weekday Morning Peak	Weekday Evening Peak	
Intersection	Lane Group	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS Delay v/c	LOS Delay v/c	:
	Northbound LT Northbound TH-RT	A A	2.2 1.1	0.13 0.22	A A	9.4 9.1	0.15 0.56	A A	1.6 0.6	0.14	B B	14.8 14.7	0.23 0.70			
	Southbound LT	A	3.0	0.05	A	6.8	0.14	A	2.9	0.05	A	6.7	0.17		Ira	
	Southbound TH-RT	A	2.2	0.29	А	6.5	0.50	А	2.1	0.33	Α	6.6	0.63	Futu		
	Overall	A	7.6	0.33	С	28.1	0.66	A	6.9	0.37	С	20.8	0.74			
17) Route 5 at Driveway to Kohl's Plaza	Eastbound TH	А	<u> </u>	0.00	С	32.1	0.38	А	(44)	0.00	С	26.7	0.35		,	
	Westbound LT-TH	D	35.8	0.23	F	87.8	0.92	D	35.8	0.23	E	72.6	0.89			
	Westbound RT Northbound LT-TH-RT	D C	36.1 34.7	0.27 0.68	C B	31.3 19.5	0.27 0.74	D C	36.1 32.5	0.27 0.68	C	26.3 23.3	0.27 0.84		nditi	ang
	Southbound LT-TH-RT	A	3.0	0.15	A	4.2	0.40	A	2.9	0.17	Ä	6.2	0.48	COI		
	Overall	C	21.1	0.32	В	18.7	0.72	В	19.7	0.36	В	19.5	0.79			
18) Route 5 at Route 150	Eastbound LT-RT	С	32.0	0.39	D	38.5	0.57	С	30.3	0.34	С	30.8	0.57			
	Northbound LT-TH	Α	4.8	0.20	Α	0.9	0.41	Α	6.9	0.25	Α	7.6	0.52		_ D	9
5	Southbound TH-RT	A	1.9	0.17	A	4.1	0.35	A	3.1	0.21	A	4.5	0.44		o Bu	
19) Route 5 at Route 71 and Circle Drive	Overall Eastbound LT-TH-RT	A F	7.0 122.8	1.10	A D	6.5 42.4	0.43	A	8.1 240.3	0.26	A D	8.8 41.4	0.53		<u> </u>	IIU
10) Totale of all route 11 and office of the	Eastbound RT	В	18.5	0.38	c	25.3	0.29	В	19.5	0.46	c	21.2	0.34			
	Westbound LT	D	55.0	0.79	D	50.7	0.65	Е	70.1	0.87	D	48.1	0.71			
	Westbound TH	С	28.9	0.18	D	37.7	0.17	С	28.8	0.24	С	31.0	0.23			
	Westbound RT	С	28.7	0.14	D	39.7	0.42	C	28.7	0.21	С	32.8	0.46			
	Northbound LT-LT	D	37.8	0.38	D	54.3	0.72	D	38.2	0.41	D	43.9	0.85			
	Northbound TH-RT Southbound LT	B D	17.7 44.7	0.39 0.41	A D	9.3 48.1	0.59	B D	18.5 42.9	0.45 0.41	B C	19.7 31.9	0.80 0.43			
	Southbound TH	C	34.1	0.44	В	18.2	0.51	D	38.5	0.52	c	24.2	0.70			
	Overall	D	40.5	0.73	С	23.4	0.66	E	57.8	0.88	C	27.1	0.85			
20) Route 5 at Home Depot Dr. and Neal Road	Eastbound LT	C	33.0	0.35	D	39.6	0.43	С	33.0	0.35	С	33.7	0.46		D	
	Eastbound LT-TH	С	33.0	0.35	D	39.6	0.43	С	33.0	0.35	С	33.8	0.47			
	Eastbound RT	С	28.1	0.33	C	33,3	0.41	C	28.1	0.33	C	27.7	0.41			
	Westbound LT Westbound LT-TH	C C	33.1 33.1	0.31 0.31	D D	50.3 49.6	0.71 0.71	C C	33.1 33.1	0.31 0.31	D D	43.1 42.8	0.71 0.70			
	Westbound RT	c	28.5	0.01	c	29.7	0.03	c	28.5	0.01	c	25.0	0.04			
	Northbound LT	С	34.1	0.42	Е	59.8	0.42	С	32.5	0.42	С	22.0	0.38			
	Northbound TH	В	11.8	0.30	Α	9.6	0.76	В	12.5	0.35	D	44.7	0.95			
	Northbound RT	А	0.0	0.04	Α	0.1	0.14	Α	0.3	0.04	С	22.8	0.14			
	Southbound LT	С	33.9	0.34	D	40.0	0.44	C	33.8	0.34	D	35.2	0.47			
	Southbound TH Southbound RT	B A	11.3 7.1	0.41	B B	12.8 16.4	0.50	B A	10.5 4.9	0.49	B B	12.2 15.7	0.64			
	Overall	В	15.8	0.39	В	18.3	0.68	В	15.0	0.44	C	31.2	0.81		P	
21) Route 5 at Sonic Dr. and BJ's Driveway	Eastbound LT	С	30.4	0.21	С	31.1	0.39	С	30.4	0.21	С	25.8	0.37			
	Eastbound TH-RT	С	29.5	0.02	С	28.0	0.02	С	29.5	0.02	С	23.4	0.02			
	Westbound LT-TH	D	36.5	0.62	D	54.9	0.86	D	36.5	0.62	D	49.2	0.86			
	Westbound RT Northbound LT	C D	29.5 43.8	0.02 0.41	C D	28.6 45.0	0.11	C D	29.5 44.5	0.02	C D	23.9 38.4	0.11 0.36			
	Northbound TH	A	7.6	0.23	В	12.5	0.42 0.58	A	7.2	0.41 0.26	В	15.4	0.73			
	Northbound RT	A	8.0	0.06	A	5.4	0.20	Α	6.7	0.06	A	6.9	0.20			
	Southbound LT	D	42.6	0.39	С	34.2	0.54	D	41.7	0.39	D	41.8	0.49			
	Southbound TH-RT	A	2.4	0.40	В	14.4	0.55	Α	2.5	0.47	Α	7.2	0.68			
	Overall	A	8.5	0.44	В	17.2	0.64	A	7.9	0.50	В	15.3	0.73		<u></u>	
22) Route 5 at Route 15 SB Off-Ramp	Westbound LT	D C	37.1	0.82	D	45.5	0.83	D	46.8	0.92	C E	34.6	0.80			
	Westbound RT Northbound LT	c	25.1 31.6	0.09 0.61	E F	61.4 108.4	0.93	C	24.5 34.2	0.10 0.67	E	61.0 314.6	0.98			
	Northbound TH	A	8.5	0.27	A	9.5	0.58	C	8.9	0.31	В	13.2	0.73			
	Southbound TH-RT	Α	6.9	0.58	С	22.0	0.80	А	9.9	0.71	D	37.5	1.00			
	Overall	В	16.9	0.64	C	33.7	0.91	A	20.5	0.76	E	57.7	1.12			
23) Route 5 at Route 15 (NB) Ramp	Westbound LT	F	80.5	1.01	F	88.9	0.99	F	164.0	1.25	E	74.9	0.98			
	Westbound RT Northbound TH-RT	B A	18.4	0.16	D D	44.0 46.9	0.86 1.09	В	19.1	0.20	E F	76.0 160.7	1.03			
	Southbound LT	C	1.3 21.6	0.51 0.70	E	71.5	0.99	A D	2.8 38.4	0.90	F	145.5	1.32			
	Southbound TH	В	16.9	0.59	В	11.9	0.59	В	18.5	0.70	В	17.3	0.79			
	Overall	C	21.0	0.77	D	41.5	1.13	C	34.9	0.96	F	105.2	1.35			

Capacity Analysis Summary								·							I i	
		Monte		20 Existin			a Dook	Money		0 No-Bui			n Dook	2040 Build	Ę.	
Intersection	Lane Group	Weekday Morning Peak LOS Delay v/c			Weekday Evening Peak LOS Delay v/c			LOS	kday Momin; Delay	g Peak v/c	Weekday Evening Peak LOS Delay v/c			Weekday Morning Peak LOS Delay v/c	Weekday Evening Peak LOS Delay v/c	
ERCISCUOII	Northbound LT	A	2.2	0.13	A	9.4	0.15	A	1.6	0.14	В	14.8	0.23	200 Body 100	Loo body w	(c
	Northbound TH-RT	A	1.1	0.22	A	9.1	0.56	А	0.6	0.25	В	14.7	0.70			
	Southbound LT	А	3.0	0.05	А	6.8	0.14	Α	2.9	0.05	Α	6.7	0.17			
2	Southbound TH-RT	Α	2.2	0.29	Α	6.5	0.50	A	2.1	0.33	A	6.6	0.63		Ira-	
3	Overall	A	7.6	0.33	C	28.1	0.66	A	6.9	0.37	C	20.8	0.74			
17) Route 5 at Driveway to Kohl's Plaza	Eastbound TH	Α	22	0.00	С	32.1	0.38	Α	122	0.00	С	26.7	0.35			
	Westbound LT-TH	D	35.8	0.23	F	87.8	0.92	D	35.8	0.23	E	72.6	0.89			
	Westbound RT	D	36.1	0.27	С	31.3	0.27	D	36.1	0.27	C	26.3	0.27			
	Northbound LT-TH-RT Southbound LT-TH-RT	C A	34.7 3.0	0.68 0.15	B A	19.5 4.2	0.74	C A	32.5 2.9	0.68	C A	23.3 6.2	0.84			
	Overall	C	21.1	0.13	В	18.7	0.72	B	19.7	0.17	B	19.5	0.79		nditio	
18) Route 5 at Route 150	Eastbound LT-RT	C	32.0	0.39	D	38.5	0.57	C	30.3	0.34	C	30.8	0.57		 	
10,712410 0 41,12410 100	Northbound LT-TH	Ä	4.8	0.20	A	0.9	0.41	Ā	6.9	0.25	A	7.6	0.52			
	Southbound TH-RT	А	1.9	0.17	А	4.1	0.35	Α	3.1	0.21	Α	4.5	0.44	l		
9	Overall	А	7.0	0.22	А	6.5	0.43	А	8.1	0.26	А	8.8	0.53		o Bu	
19) Route 5 at Route 71 and Circle Drive	Eastbound LT-TH-RT	F	122.8	1.10	D	42.4	0.64	F	240.3	1.40	D	41.4	0.73			
	Eastbound RT	В	18.5	0.38	С	25.3	0.29	В	19.5	0.46	С	21.2	0.34			
	Westbound LT	D	55.0	0.79	D	50.7	0.65	E	70.1	0.87	D	48.1	0.71			
	Westbound TH	C	28.9	0.18	D	37.7	0.17	С	28.8	0.24	C	31.0	0.23			
	Westbound RT	С	28.7	0.14	D	39.7	0.42	C	28.7	0.21	C	32.8	0.46			
	Northbound LT-LT Northbound TH-RT	D B	37.8 17.7	0.38	D A	54.3 9.3	0.72 0.59	D B	38.2 18.5	0.41	D B	43.9 19.7	0.85			
	Southbound LT	D	44.7	0.41	D	48.1	0.40	D	42.9	0.41	C	31.9	0.43			
	Southbound TH	C	34.1	0.44	В	18.2	0.51	D	38.5	0.52	C	24.2	0.70			
ў А	Overall	D	40.5	0.73	C	23.4	0.66	E	57.8	0.88	C	27.1	0.85			
20) Route 5 at Home Depot Dr. and Neal Road	Eastbound LT	С	33.0	0.35	D	39.6	0.43	C	33.0	0.35	С	33.7	0.46		3	
	Eastbound LT-TH	С	33.0	0.35	D	39.6	0.43	С	33.0	0.35	С	33.8	0.47			
	Eastbound RT	C	28.1	0.33	С	33,3	0.41	С	28.1	0.33	С	27.7	0.41			
	Westbound LT	C	33.1	0.31	D	50.3	0.71	С	33.1	0.31	D	43.1	0.71			
	Westbound LT-TH	С	33.1	0.31	D	49.6	0.71	С	33.1	0.31	D	42.8	0.70			
	Westbound RT	C	28.5	0.01	С	29.7	0.03	C	28.5	0.01	C	25.0	0.04			
	Northbound LT Northbound TH	C B	34.1 11.8	0.42	E	59.8 9.6	0.42	C B	32.5 12.5	0.42	C D	22.0 44.7	0.38			
	Northbound RT	A	0.0	0.04	A A	0.1	0.14	A	0.3	0.04	C	22.8	0.33			
	Southbound LT	c	33.9	0.34	D	40.0	0.44	c	33.8	0.34	D	35.2	0.47			
	Southbound TH	В	11.3	0.41	В	12.8	0.50	В	10.5	0.49	В	12.2	0.64			
	Southbound RT	Α	7.1	0.05	В	16.4	0.03	Α	4.9	0.05	В	15.7	0.03		©	
\$ \$	Overall	В	15.8	0.39	В	18.3	0.68	В	15.0	0.44	C	31.2	0.81		Ē.	
21) Route 5 at Sonic Dr. and BJ's Driveway	Eastbound LT	С	30.4	0.21	С	31.1	0.39	С	30.4	0.21	С	25.8	0.37			
	Eastbound TH-RT	С	29.5	0.02	С	28.0	0.02	С	29.5	0.02	С	23.4	0.02			
	Westbound LT-TH	D	36.5	0.62	D	54.9	0.86	D	36.5	0.62	D	49.2	0.86			
	Westbound RT Northbound LT	C D	29.5	0.02	C D	28.6	0.11	C D	29.5	0.02	C	23.9	0.11			
	Northbound TH	A	43.8 7.6	0.41 0.23	В	45.0 12.5	0.42 0.58	A	44.5 7.2	0.41 0.26	D B	38.4 15.4	0.36 0.73			
	Northbound RT	A	8.0	0.06	A	5.4	0.20	A	6.7	0.06	A	6.9	0.20			
	Southbound LT	D	42.6	0.39	c	34.2	0.54	D	41.7	0.39	D	41.8	0.49			
	Southbound TH-RT	А	2.4	0.40	В	14.4	0.55	Α	2.5	0.47	А	7.2	0.68			
) (Overall	A	8.5	0.44	В	17.2	0.64	А	7.9	0.50	В	15.3	0.73			
22) Route 5 at Route 15 SB Off-Ramp	Westbound LT	D	37.1	0.82	D	45.5	0.83	D	46.8	0.92	С	34.6	0.80			
	Westbound RT	C	25.1	0.09	E	61.4	0.93	С	24.5	0.10	E	61.0	0.98			
	Northbound LT	С	31.6	0.61	F	108.4	1.16	С	34.2	0.67	F	314.6	1.63			
	Northbound TH	A	8.5	0.27	A	9.5	0.58	C	8.9	0.31	В	13.2	0.73			
3	Southbound TH-RT Overall	A B	6.9 16.9	0.58 0.64	C	22.0 33.7	0.80 0.91	A	9.9 20.5	0.71 0.76	D E	37.5 57.7	1.00		>	
23) Route 5 at Route 15 (NB) Ramp	Westbound LT	F	80.5	1.01	F	88.9	0.91	A	164.0	1.25	E	74.9	0.98			
20) Teate of at reads to (ND) Namp	Westbound RT	В	18.4	0.16	D	44.0	0.86	В	19.1	0.20	E	76.0	1.03	l		
	Northbound TH-RT	A	1.3	0.51	D	46.9	1.09	A	2.8	0.58	F	160.7	1.32	l		
	Southbound LT	c	21.6	0.70	E	71.5	0.99	D	38.4	0.90	F	145.5	1.24	l		
	Southbound TH	В	16.9	0.59	В	11.9	0.59	В	18.5	0.70	В	17.3	0.79			
>	Overall	C	21.0	0.77	D	41.5	1.13	C	34.9	0.96	F	105.2	1.35			

Future Conditions - Bike/Ped





Intersection Number

- Study Corridor

Sidewalks

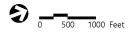




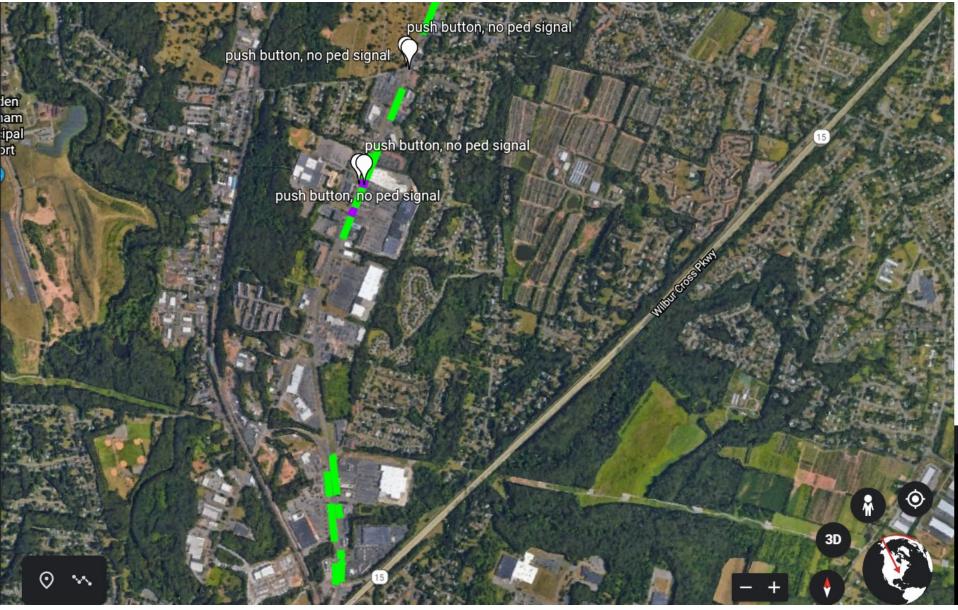
Figure 2-10

Route 5 Corridor Study Meriden and Wallingford, CT

Future Conditions - Bike/Ped

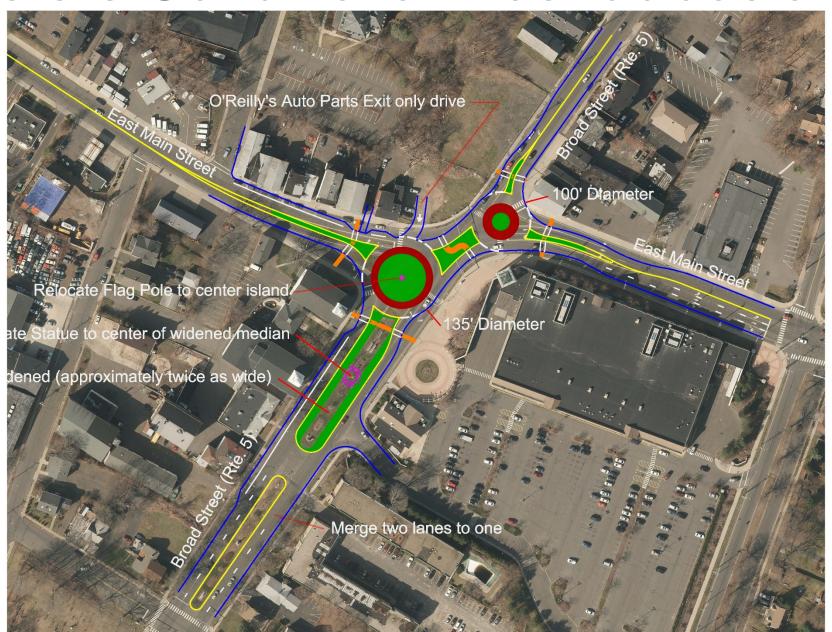


Future Conditions - Bike/Ped

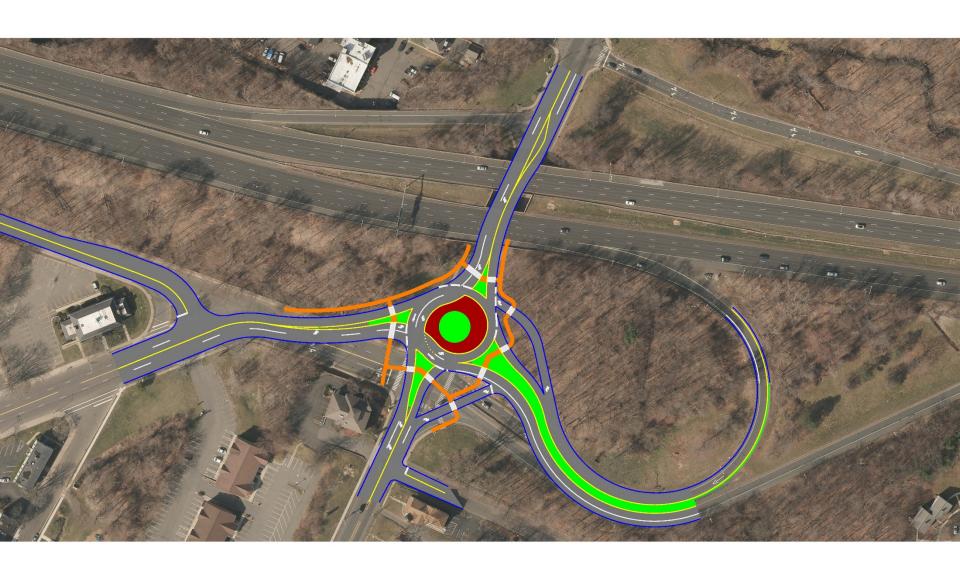


Future Conditions - Concepts

Future Conditions - Roundabouts



Future Conditions - Roundabouts



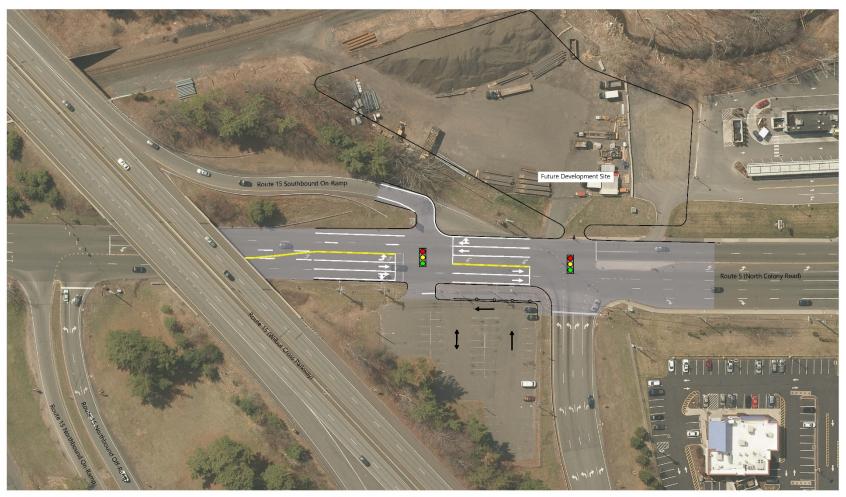


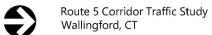








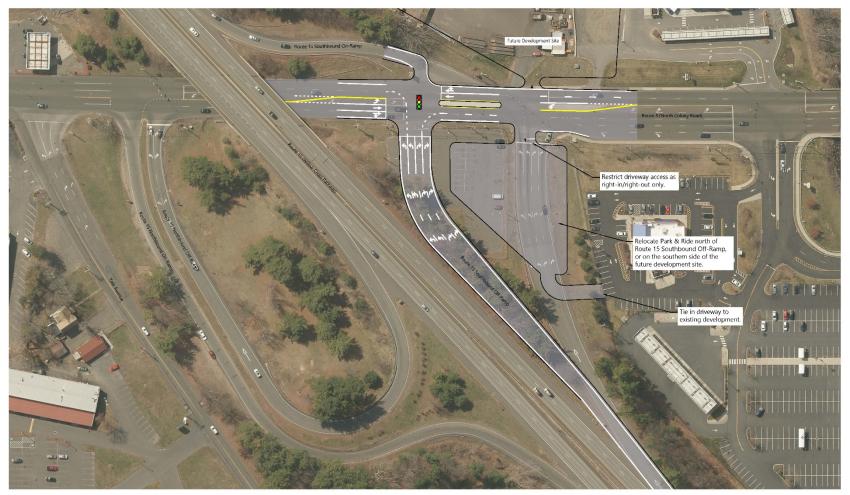


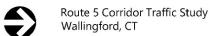










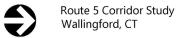








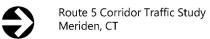








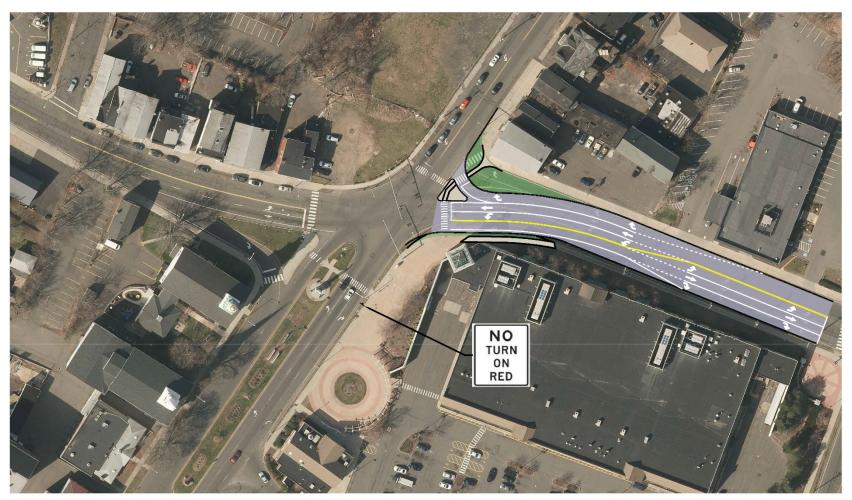


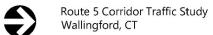










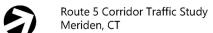










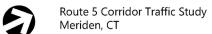
















Visioning

Wallingford Vision

The Route 5 corridor study shall ensure that excellent access for area residents to the retail development is maintained while recommending improvements to reduce the crash history and maximize multimodal mobility.

Meriden

The Route 5 corridor study shall ensure the corridor remains a two lane roadway while connecting neighborhoods and retail/commercial development with transportation improvements for all modes to maximize multimodal mobility.

Next Steps

- Finalize Future Conditions
- Future Conditions Concepts
- Public Information Meeting (April)
- Final Report



Place: Midstate Chamber of Commerce Meeting Notes

Date: March 13, 2020 Notes Taken by: Joe Balskus

Project #: 42512.00 Re: Route 5 Corridor Study

Study Advisory Committee Meeting #3

ATTENDEES

Charlie Baker, VHB
Joe Balskus, VHB
Howard Weissberg, City of Meriden
Joe Feest, City of Meriden

Renata Bertotti, City of Meriden Ralph Mesite, Midstate Chamber of Commerce Kevin Ng, CTDOT-Traffic Frederick Kulakowski, CTDOT-Traffic

The third Study Advisory Committee meeting was held in the Midstate Chamber of Commerce for the referenced project. The following represents a summary of the meeting discussions.

VHB provided an overview of study process and progress to date. VHB then presented a summary of the findings of the future conditions review:

The study is progressing in the Future Conditions phase, with land use review completed and Future Conditions analyses and recommendations underway.

The 2040 No-Build traffic volume forecast includes the annual growth rate projected by CTDOT without separately calculating trips that could be generated by future developments. The background growth rate projected by CTDOT is conservative enough to account for future developments at undeveloped parcels in the study area.

Howard suggested investigating TDM management for surrounding schools, such as staggering release times. Specific TDM strategies do not need to be investigated under this project, but a note should be added to the report recommending future investigation.

Public Information Meeting #1 November 12, 2019

VHB review the comments gathered at the meeting for the three sections of the corridor and highlighted the responses to them comments with the future conditions concept plans.

Concept Design Meeting January 21, 2020

VHB reviewed the discussions and concept ideas presented to the attendees and the results of the concepts.

Route 5 at Camp Street

Howard noted that the peak traffic period for this intersection is likely 3-3:30 due to nearby schools. The current weekday evening traffic analysis was based on traffic counts collected from 4-6pm. VHB will review school peak hour volumes with 24 hour count data to ascertain school peak hour versus commuter peak hour

Ref: 42512.00 March 13, 2020 Page 2

Short Term-

Review restriping of Route 5 northbound approach, tighten radius onto ramp, potentially signalized Yale Acres approach.

NTOR for channelized northbound right-turn onto ramp was originally added to address pedestrian safety concerns due to the nearby schools. This NTOR should remain.

Long Term -

Relocation of Yale Acres south with removal of dwelling should be reviewed.

Roundabout concept should be revised to remove bypass lanes as much as possible, and move southerly as well, consider Yale Acres approach

Howard noted that moving the roundabout further from the bridge would be desirable due to poor lighting under the bridge. Consideration could be given to changing Yale Acres to right-in/right-out only.

Route 5 at East Main Street

Short Term-

Maintain monument location if at all possible, with nose of median island adjusted to accommodate east/west opposing left turning movements

Narrow median and widen greenbelts on south leg

Confirm phasing operation with concurrent opposing left turn movements

Long Term -

Relocate monument to center of roundabout

Roundabout concept should be revised to shift circle southeasterly and narrow median and widen greenbelts on south leg

Route 5 at Liberty Street

Review property ownership on northwest corner/approach

Short Term-

Review sliver widening of Liberty Street eastbound approach for left turn lane. Increase curb radii if needed.

Ref: 42512.00 March 13, 2020 Page 3

Route 5 at Gale Avenue

Review 2006 Study for information related to relocation of Gale Avenue, update figure numbering and title (City)

Long Term -

Review a better east/west through movement alignment while reducing pedestrian crosswalk distance on west leg

Route 5 at North Colony Road - Wallingford

Short Term-

Add lane use signing ahead of lane reconfiguration

Route 5 at Route 15 SB ramps

Short Term-

Confirm proposed signal operations will not impact queueing and need for signalization of park and ride lot to address crash history

Long Term -

Swapping off-ramp with park and ride should be contingent upon the out of study intersection of Yale Avenue and Route 15 NB ramps being reconstructed as proposed in 2006 study

Connection to IHop parking lot is favorable

Next Steps

Update concept plans per meeting and distribute to SAC

Confirm schedule of contract with SCROCG (pending)

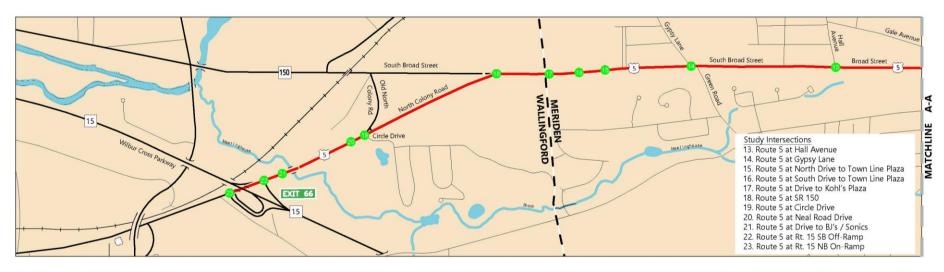
Hold on scheduling PIM #2 until current virus situation is further along

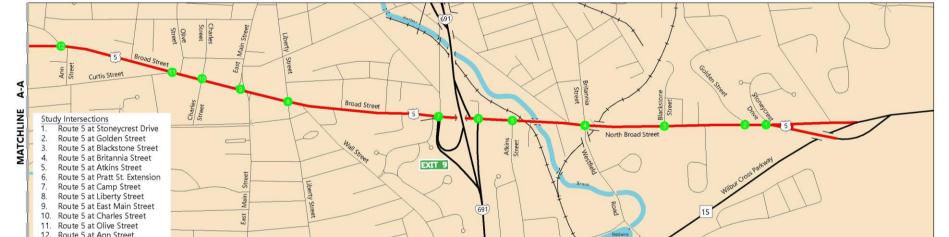
Route 5 Corridor Study Public Meeting #2











Meeting Presenters

Stephen Dudley, SCRCOG

Howard Weissberg, City of Meriden

Joe Balskus, VHB – Design Consultant and Project Manager

Meeting Agenda

- Introductions
- Virtual Meeting Format
- Study Team
- Public Info Meeting 1 Review
- Future Conditions Assessment
 - Review Improvement Concepts
 - Traffic Analysis
- Questions
- Next Steps



Virtual Meeting Format

- Presentations by Study Team
 - SCRCOG
 - City/Town
 - VHB/VN Engineers Consultants
- Public Participation
- Listen and View Mode During Presentation
- Questions Submitted to Presentation Moderator City of Meriden
- Answers Provided by Study Team
- Additional Comments Can Be Provided Directly to SCRCOG

sdudley@scrcog.org



Study Advisory Committee

SCRCOG

Stephen Dudley

Meriden

- Renata Bertotti
- Joe Feest
- Howard Weissberg

Wallingford

- Robert Baltramaitis
- Kacie Costello
- Chief William Wright
- Lt. Anthony Demaio

Midstate Chamber

- Rosanne Ford
- Ralph Mesite

CTDOT

- Fred Kulakowski
- Kevin Ng
- Ed Sabourin
- Edgar Wynkoop

Study Consultant Team

VHB/VN Engineers

Visioning

North Wallingford

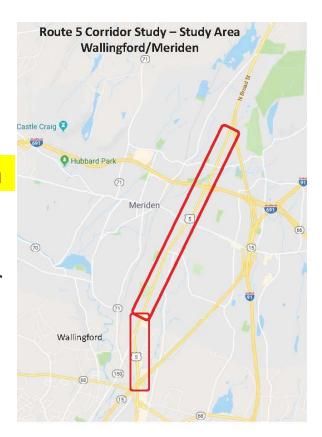
The Route 5 corridor study shall ensure that excellent access for area residents to the retail development is maintained while recommending improvements to reduce the crash history and maximize multimodal mobility.

Meriden

The Route 5 corridor study shall ensure that access, traffic flow, and safety measures for the City's main North-South corridor provide intuitive connections to residents and businesses to services and destinations that support the area's economic growth and prosperity. The goal of the study is to identify improvements that can be implemented in the near- and long-term.

Study Purpose

- Establish a vision for the corridor
- Evaluate current transportation and land use conditions and investigate opportunities to make improvements
- Develop recommendations & implementation plan for transportation aimed to achieve the vision for the corridors
- Develop short and long term improvements for funding



Scope of Work

- Existing Conditions Technical Memorandum
- Future Conditions Technical Memorandum
- Immediate Improvements Technical Memorandum
- Analysis of Corridor Alternatives Technical Memorandum
- Final Report

Study Process

Data Collection and Base Mapping Future Conditions Analyses and Land Use

Recommend Improvements











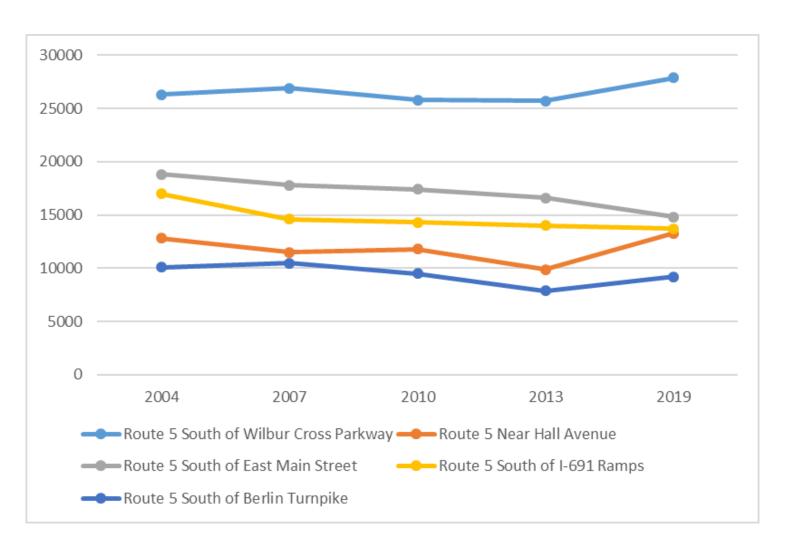


Existing Conditions Analyses

Develop Alternatives

Implementation Plan: Priorities and Funding

Existing Conditions Traffic Volumes: Pre-Pandemic



Existing Conditions Traffic Volumes: Pre-Pandemic

Table 2-1
2019 Existing Weekday Average Daily Traffic Volume Summary

		Weekda	y Morn	ing Pea		Weekday Evening Peak Hour			
Location	Weekday	Vehicles			"K" ³	Vehicles			"K"
	ADT ¹	Per Hour	Dir. [Dist. ²	Factor	Per Hour	Dir.	Dist.	Factor
Route 5, south of Wilbur Cross Parkway	27,900	1,609	51%	NB	5.77%	2,242	55%	NB	8.04%
Route 5, near Hall Avenue	13,300	743	56%	SB	5.59%	1,028	56%	NB	7.73%
Route 5, south of East Main Street	14,800	865	60%	NB	5.84%	1,068	61%	NB	7.22%
Route 5, south of I-691 Ramps	13,700	821	52%	SB	5.99%	1,016	54%	SB	7.42%
Route 5, south of Berlin Turnpike	9,200	609	58%	NB	6.62%	739	63%	SB	8.03%

Source: ATR counts conducted by VHB in April 2019.

¹ ADT = Average Daily Traffic

² Directional distribution

^{3 &}quot;K" factor is the percentage of total daily traffic occurring during the peak hour

Existing Conditions - Crashes

Type of Collision	2016	2017	2018	2019	Total Collisions	Percent
Rear End	152	118	134	114	518	48.8%
Angle	80	56	81	70	287	27.0%
Fixed Object	8	9	8	8	33	3.1%
Sideswipe, Same Dir.	48	31	38	42	159	15.0%
Animal	0	2	0	1	3	0.3%
Head On	1	2	2	6	11	1.0%
Sideswipe, Opposite Dir.	6	6	2	2	16	1.5%
Bicycle	0	1	1	0	2	0.2%
Pedestrian	3	2	3	5	13	1.2%
Other	2	1	1	2	6	0.6%
Not Applicable	3	1	2	3	9	0.8%
Unknown	0	1	1	1	3	0.3%
Rear to Side	0	1	0	1	2	0.2%
Total	303	231	273	255	1062	100%



LEGEND

Study Intersection

- Study Corridor

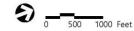
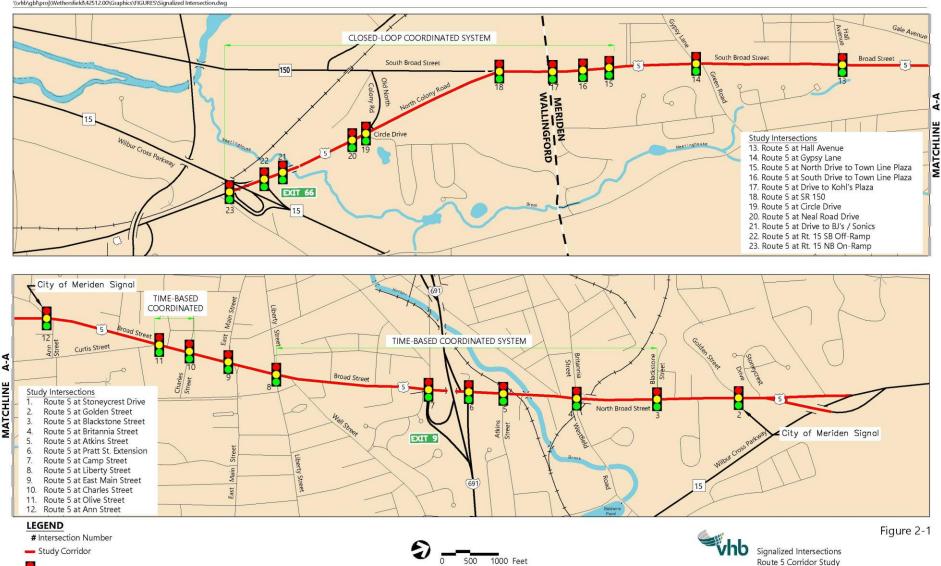




Figure 1-1

Study Intersections
Route 5 Corridor Study Meriden and Wallingford, CT

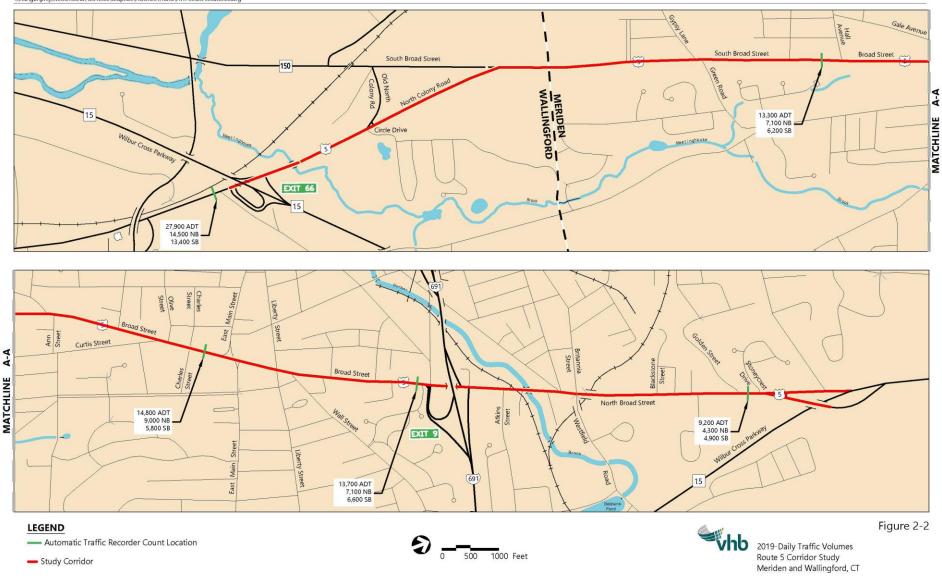


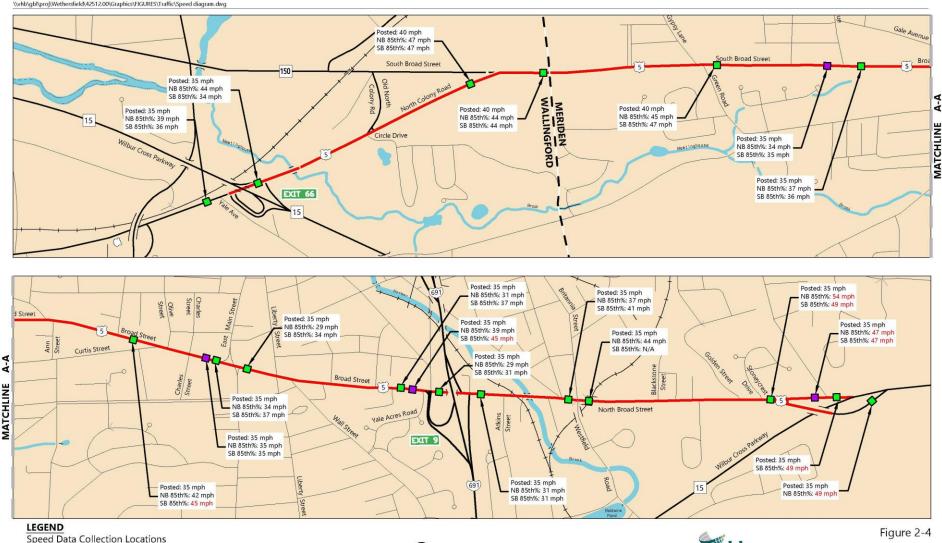
Meriden and Wallingford, CT

*All signalized intersections are owned and maintained by the state, except as noted.

Signalized Intersection*

- Study Corridor





Speed data collected by CTDOT (2019)

Speed data collected by VHB (April 2019)

Study Corridor

Red Text 85th percentile speed exceeds posted speed limit by more than 10 mph.



Vehicle Speed Observations Route 5 Corridor Study

Meriden and Wallingford, CT

LEGEND

12. Route 5 at Ann Street # Intersection Number

11. Route 5 at Olive Street

- Study Corridor

Level of Service (LOS)*

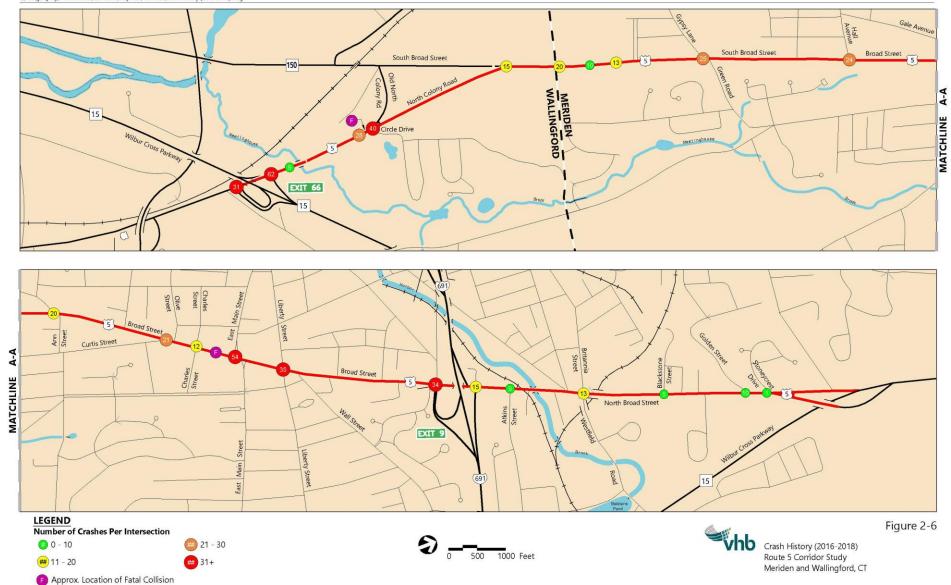
PM Peak Hour AM Peak Hour

ABLOS A/B CD LOS C/D ED LOS E/F



Route 5 Corridor Study Meriden and Wallingford, CT

Figure 2-5 Intersection Level of Service



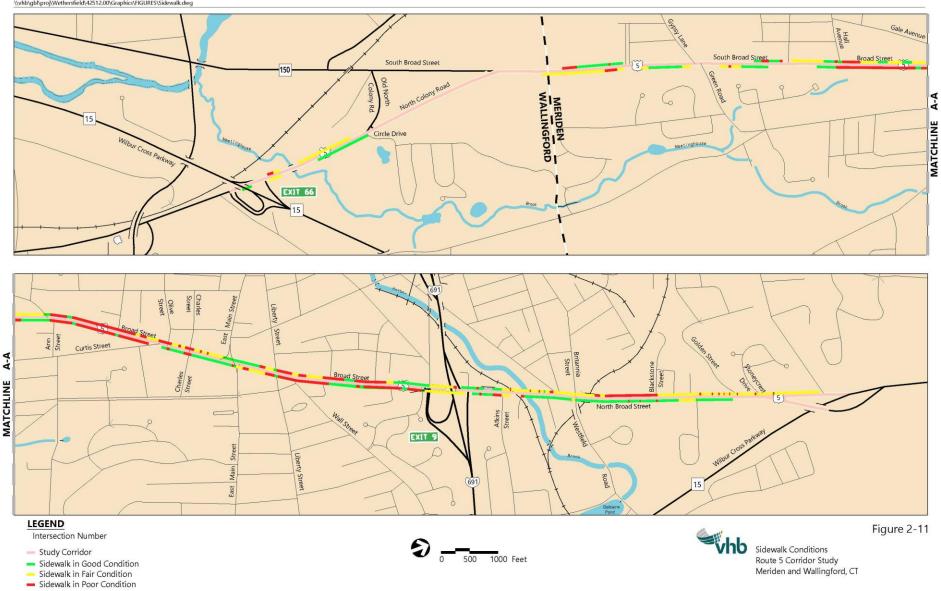


Intersection Number - Study Corridor

Sidewalks

Pedestrian Facilities

Route 5 Corridor Study Meriden and Wallingford, CT

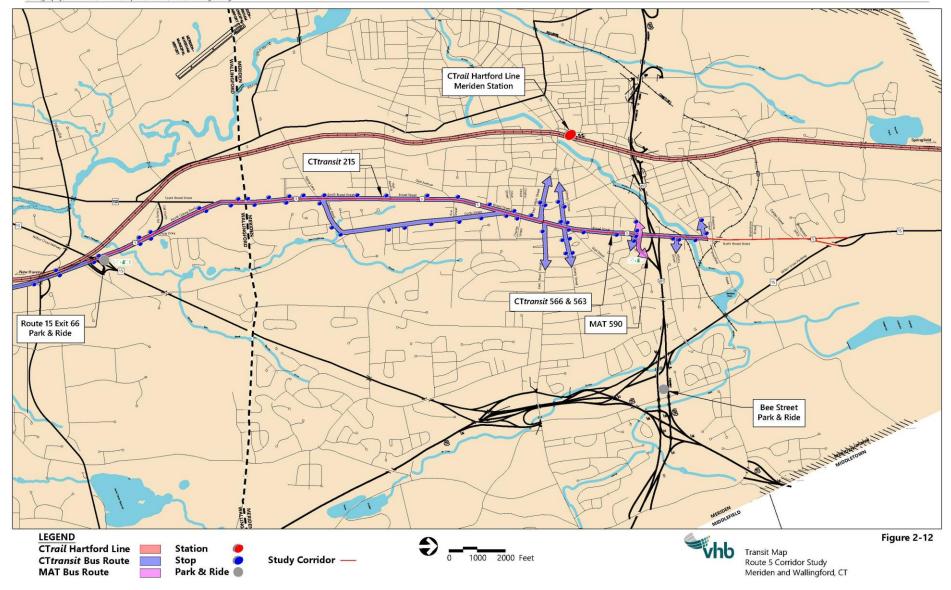


Sidewalk in Good Condition

Sidewalk in Fair Condition

- Sidewalk in Poor Condition



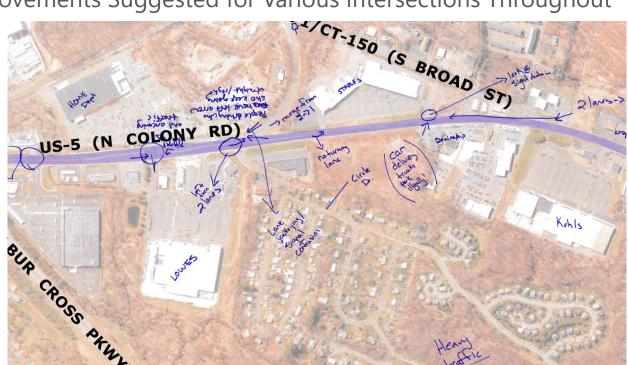


Public Information Meeting 1 – November 2019

- Three Sections of Route 5 Corridor Reviewed for Existing Conditions
- Comments Provided by Public
 - Speed Concerns
 - Congestion Noted as Critical Intersections

Specific Improvements Suggested for Various Intersections Throughout

Corridor



Concept Improvement Alternatives

- Existing Conditions 2020 (Pre-Pandemic)
- 20 Year Design Horizon 2040
- 2040 No Build No Improvements
- 2040 Build With Improvements
- Critical Intersections

Transit and Pedestrian Connectivity

Concept Improvement Intersections

- Wilbur Cross Parkway (Route 15) Ramps
- Circle Drive/Route 150 (South Junction)
- Curtis Road
- Gypsy Lane
- East Main Street
- Liberty Street
- Camp Street/Yale Acres
- Corridor-Wide Curb Cuts
- Corridor-Wide Pedestrian Connectivity







Short-Term Improvement Concept Plan #1 Route 5 (Broad Street) at Camp Street and I-691 Ramps June 2020



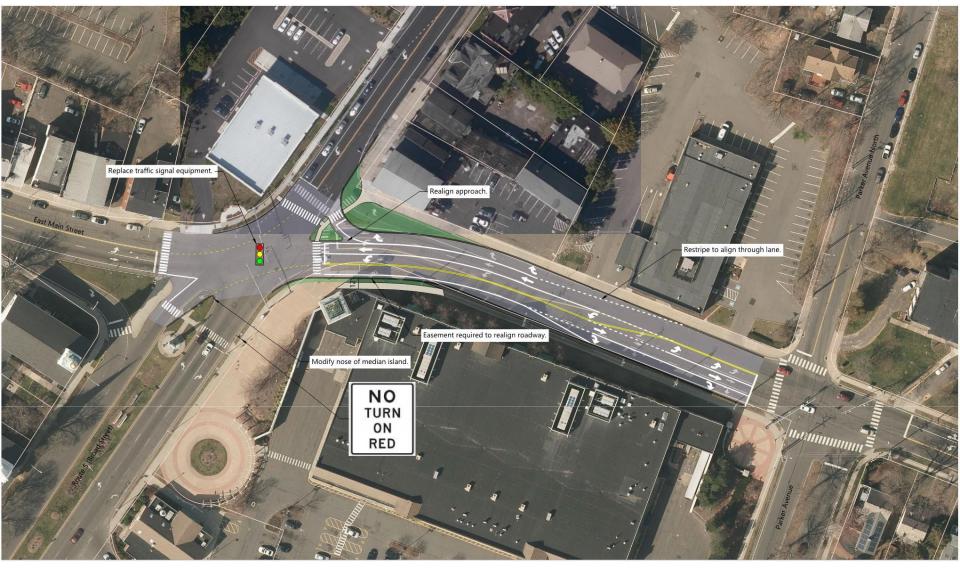






Long-Term Improvement Concept Plan Route 5 (Broad Street) at Liberty Street June 2020









Short-Term Improvement Concept Plan Route 5 (Broad Street) at East Main Street June 2020









Concept Plan Route 5 (Broad Street) at Curtis and Olive Street June 2020







Route 5 Corridor Traffic Study Meriden, CT



Concept Plan
Route 5 (Broad Street) at Curtis and Olive Street
June 2020





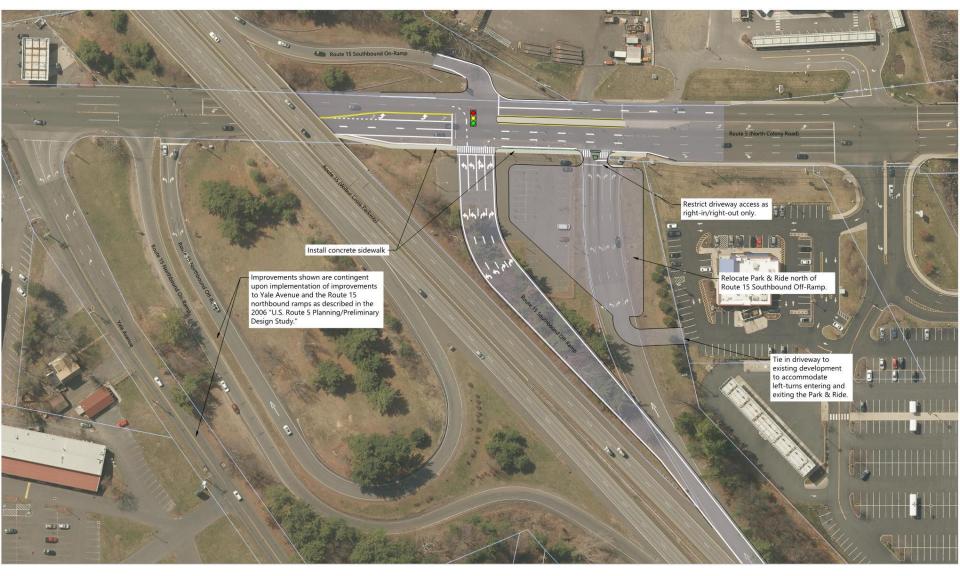


Route 5 Corridor Traffic Study Meriden, CT



Short Term Improvement Concept Plan #1 Broad Street at Gale Avenue & Ann Street June 2020

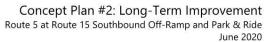






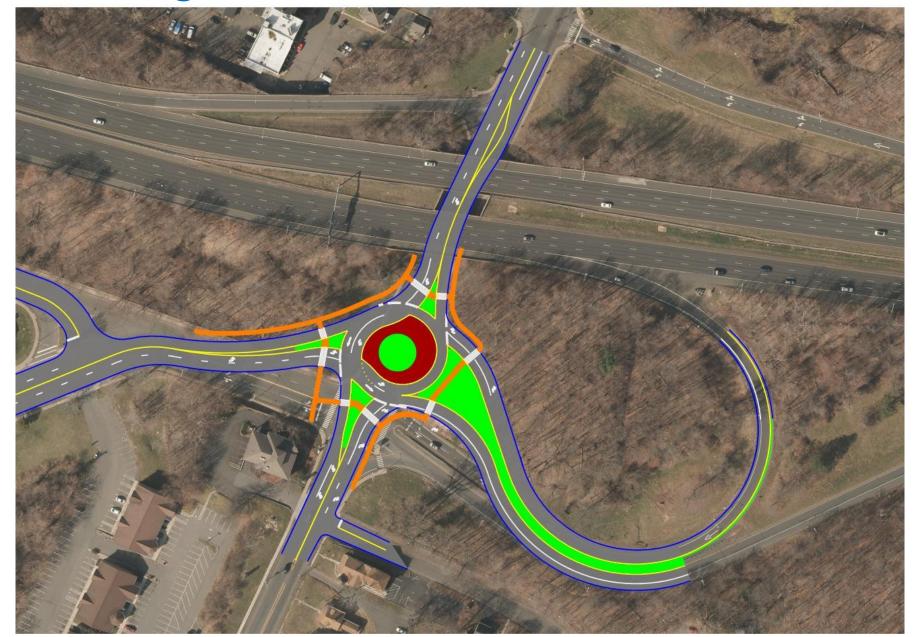
Route 5 Corridor Traffic Study Wallingford, CT



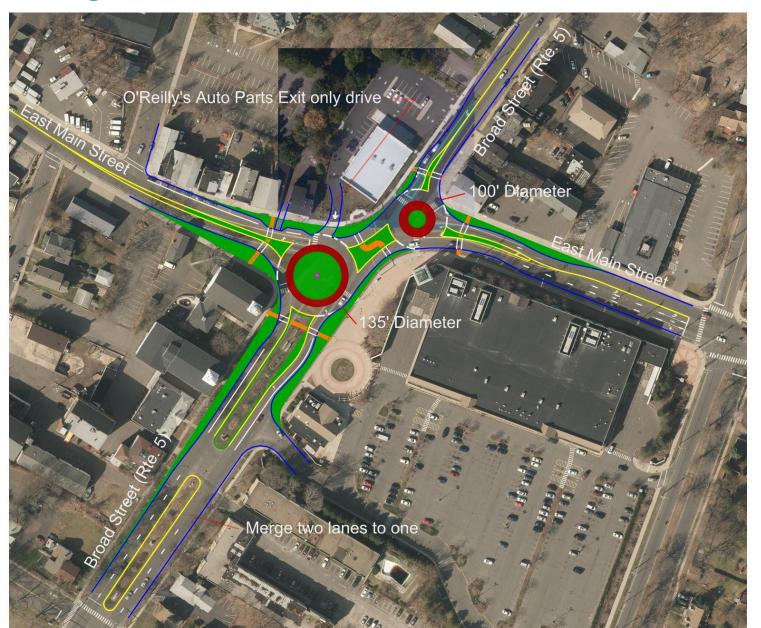




Long Term Alternatives - Roundabouts



Long Term Alternatives - Roundabouts



Operations Summary – North End

Capacity Analysis Summary	2020 Existing	g Conditions	2040 No-Buil	ld Conditions	2040 Build Conditions		
Intersection	AM	PM	AM	PM	АМ	PM	
1) Route 5 at Stoneycrest Drive	В	В	В	С	В	С	
2) Route 5 at Golden St. & Edison Middle School	D	D	E	D	E	E	
3) Route 5 at Blackstone Street	В	В	В	С	С	В	
4) Route 5 at Britannia Street & Westfield Road	F	F	F	F	С	D	
5) Route 5 at Atkins Street	В	А	С	E	С	D	
6) Route 5 at I-691 WB Off-ramp and Pratt Street Extension	С	В	С	D	С	С	
7) Route 5 at Camp Street & I-691 Ramp (EB)	F	F	F	F	D	E	
8) Route 5 at Liberty Street	С	D	С	F	D	F	

Operations Summary – Middle

Capacity Analysis Summary	2020 Existin	g Conditions	2040 No-Buil	d Conditions	2040 Build Conditions		
Intersection	АМ	PM	АМ	PM	AM	PM	
9) Route 5 at East Main Street	D	F	E	F	D	Е	
10 Route 5 at Charles Street	А	В	А	В	А	В	
11) Route 5 at Olive Street	В	В	В	В	А	В	
12 Route 5 at Gale Avenue & Ann Street	С	F	D	F	D	F	
13 Route 5 at Hall Avenue	В	В	В	С	В	С	
14 Route 5 at Gypsy Lane & Green Road	С	D	С	F	С	F	
15 Route 5 at Silver Hill North Dr. & North Dr. to) Townline Square	В	В	В	В	А	В	
16 Route 5 at Silver Hill South Drive & South Drive to) Townline Sqaure	А	С	А	С	А	С	

Operations Summary – South

Capacity Analysis Summary	2020 Existing	g Conditions	2040 No-Buil	d Conditions	2040 Build Conditions		
Intersection	AM	PM	AM	PM	AM	PM	
17 Route 5 at Driveway to Kohl's Plaza	С	В	В	В	В	В	
18 Route 5 at Route 150	А	А	А	А	А	А	
19 Route 5 at Route 71 and Circle Drive	D	С	Е	С	С	С	
20 Route 5 at Home Depot Dr. and Neal Road	В	В	В	С	В	В	
21 Route 5 at Sonic Dr. and BJ's Driveway	А	В	А	В	А	В	
22 Route 5 at Route 15 SB Off-Ramp	В	С	А	E	В	D	
Route 5 at Route 15 (NB) Ramp	С	D	С	F	В	F	

Comments

During This Meeting, Or To:

Stephen Dudley

Deputy Director/Director of Transportation

SCRCOG

Washington Avenue, 4th Floor West

North Haven, CT 06473

203-234-7555

Sdudley@scrcog.org



Planning for Our Region's Future





Next Steps

- Finalize Improvement Concepts
- Finalize Report
- Issue Report for Future Funding

Route 5 Corridor Study - Comment Card
Name/ Address / Phone / Email
Santo Antonio Terranera
Sewillaushort Merden c7 06430
Comment (include number in upper left corner)
NEEDS TO WIDEN WITH SIDEWALKS
ESPUBLY THE BOHLR NECK SOUTH OF THE
Route 15 Over pass.
AND NORTH UK THE BIGY PLAZE TO
ANN spect Near CVS!

Place comments in box at end of display boards or email to sdudley@scrcog.org

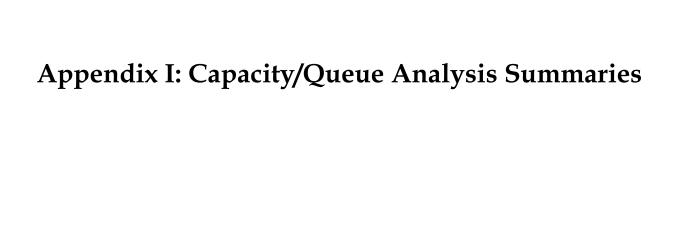


Table 3-1 Capacity Analysis Summary

			204	0 No-Bui	ld Conditi	ons			20	040 Build	Conditio	ns	
		Week	day Morning	y Peak	Weeko	lay Evening	g Peak	Weekd	ay Morning	g Peak	Week	day Evening	g Peak
Route 5 Intersection	Lane Group	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c
Stoneycrest Drive	Eastbound LT-RT	В	12.9	0.10	С	15.4	0.16	В	12.9	0.10	С	15.3	0.16
(Unsignalized)	Northbound LT-TH	Α	0.3	0.01	Α	1.1	0.03	Α	0.3	0.01	Α	1.1	0.03
	Overall	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2) Golden St./Edison MS	Eastbound LT-TH-RT	С	27.3	0.31	С	34.6	0.25	С	26.3	0.24	С	24.4	0.38
	Westbound LT	F	134.2	1.15	D	36.1	0.29	D	50.9	0.85	С	24.9	0.42
	Westbound TH-RT	С	27.7	0.34	С	32.1	0.08	С	26.5	0.26	С	22.6	0.13
	Northbound LT	С	32.1	0.10	D	41.7	0.19	В	14.4	0.05	Α	3.9	0.0
	Northbound TH-RT	Е	64.3	1.01	D	44.4	0.83	D	41.4	0.90	Α	6.2	0.43
	Southbound LT	D	38.5	0.43	D	39.5	0.06	С	23.0	0.53	Α	3.4	0.0
	Southbound TH-RT	С	21.1	0.45	F	111.8	1.13	С	20.8	0.40	Α	7.6	0.5
	Overall	E	60.5	0.91	Е	73.7	0.53	D	35.3	0.82	Α	9.7	0.5
3) Blackstone Street	Eastbound LT-RT	D	45.6	0.59	С	33.9	0.58	Е	75.2	0.72	D	48.9	0.7
o) Blacketone ou out	Northbound LT-TH	В	11.4	0.51	A	6.3	0.52	A	8.8	0.45	A	4.2	0.5
	Southbound TH-RT	C	24.2	0.68	C	20.5	0.78	C	33.6	0.71	C	22.5	0.8
	Overall	В	19.2	0.55	В	28.3	0.69	C	24.0	0.56	В	16.6	0.70
4) Britannia St/Westfield Rd	Eastbound LT-TH-RT				E			D	49.2	0.73	D	35.9	
4) Britannia Strivestileio Ro		F	214.9	1.32	F	67.8	0.95				F		0.8
	Westbound LT-TH-RT	F	286.7	1.50		2014.3	1.32	E	70.7	0.92		85.7	1.0
	Northbound LT	С	26.4	0.38	F	461.7	1.90	В	13.1	0.26	E	75.7	0.9
	Northbound TH-RT	E	75.6	1.06	E	64.5	1.00	A	8.9	0.71	В	13.2	0.6
	Southbound LT	E	73.4	0.78	F	117.1	0.94	В	12.3	0.25	Α	8.0	0.2
	Southbound TH-RT	F	178.7	1.31	F	186.4	1.31	С	20.0	0.82	С	30.7	0.9
	Overall	F	152.7	0.98	F	168.0	1.20	С	26.3	0.84	D	39.3	1.0
5) Atkins Street	Westbound LT-RT	D	44.3	0.66	С	33.9	0.68	E	59.5	0.71	E	77.3	0.8
	Northbound TH-RT	В	19.8	0.65	Α	8.9	0.74	D	40.0	0.90	Α	5.6	0.6
	Southbound LT-TH	С	33.9	0.88	С	31.0	0.96	С	34.5	1.02	В	10.0	0.7
	Overall	С	28.7	0.81	С	21.8	0.91	D	39.3	0.94	В	15.4	0.7
6) I-691 WB Off-ramp and	Eastbound LT-TH-RT	С	25.0	0.04	В	18.5	0.02	С	32.8	0.04	D	36.1	0.0
Pratt Street Extension	Westbound LT	Е	60.6	0.92	Е	55.5	0.94	Е	58.8	0.85	Е	73.9	0.9
	Westbound TH-RT	С	25.8	0.15	С	20.3	0.32	С	33.9	0.15	D	39.2	0.2
	Northbound LT	В	19.9	0.28	В	12.1	0.22	Α	6.6	0.21	Α	8.7	0.1
	Northbound TH-RT	В	17.3	0.62	В	15.0	0.72	Α	8.6	0.57	В	12.3	0.6
	Southbound TH-RT	С	25.3	0.85	В	15.0	0.87	В	12.7	0.78	В	18.9	0.7
	Overall	C	28.0	0.82	C	21.3	0.89	C	20.8	0.77	C	26.9	0.8
7) Camp St/I-691 Ramp (EB)	Eastbound LT	Е	58.7	0.74	F	82.0	0.94	F	110.1	0.95	F	152.5	1.1
· / · • · · · · · · · · · · · · · · · ·	Eastbound TH-RT	E	56.9	0.72	F	93.5	0.99	F	104.0	0.93	F	173.5	1.1
	Westbound LT-TH	D	52.8	0.70	F	167.1	1.20	F	111.7	0.96	F	117.1	1.0
	Westbound RT	F	109.3	1.00	F.	135.8	1.11	D	37.9	0.52	D	42.5	0.5
	Northbound LT	С	26.9	0.11	С	25.1	0.15	C	23.6	0.32	D	43.0	0.5
	Northbound TH-RT	F	217.2	1.38	F	296.0	1.56	C	34.4	0.75	C	34.3	0.8
		-						E			F		
	Souhtbound LT	F	455.6	1.91	F	229.6	1.39		60.6	0.95	•	110.8	1.0
	Southbound TH-RT	С	23.3	0.56	С	20.4	0.55	С	29.8	0.93	D	54.0	0.9
	Overall	F	151.0	1.29	F	157.3	0.28	D	50.3	0.84	Е	76.4	0.9
8) Liberty Street	Eastbound LT							D	45.0	0.38	D	38.5	0.2
	Eastbound TH-RT	С	30.7	0.69	F	87.5	1.03	D	48.5	0.61	D	48.9	0.7
	Westbound LT-TH-RT	С	32.0	0.73	С	31.0	0.64	F	80.5	0.92	D	46.2	0.6
	Northbound LT-TH-RT	В	14.5	0.66	F	102.2	1.15	Α	9.1	0.50	F	92.6	1.1
	Southbound LT-TH-RT	С	24.5	0.78	F	88.9	1.10	D	36.1	0.90	D	44.6	0.9
	Overall	С	22.9	0.71	F	87.0	1.06	D	34.9	0.72	E	63.6	0.9
9) East Main Street	Eastbound LT	D	49.8	0.33	D	48.0	0.38	D	40.6	0.44	D	50.7	0.5
	Eastbound TH	F	112.0	1.00	F	148.8	1.13	E	77.3	0.89	F	143.6	1.1
	Eastbound RT	D	48.1	0.12	D	46.4	0.18	D	43.9	0.12	D	52.7	0.1
	Westbound LT	D	47.6	0.40	D	47.2	0.63	D	43.5	0.62	F	155.5	1.1
	Westbound TH	Е	75.8	0.87	F	97.5	1.00	Е	71.7	0.87	F	191.9	1.2
	Westbound RT	D	44.7	0.06	D	39.8	0.15	D	42.2	0.06	D	49.9	0.1
	Northbound LT	F	94.4	1.01	F	343.0	1.64	С	31.0	0.69	F	169.6	1.1
	Northbound TH	D	37.1	0.67	F	87.7	1.04	В	18.3	0.52	C	23.7	0.6
	Northbound RT	C	26.9	0.08	С	29.4	0.27	A	7.4	0.08	В	14.8	0.1
	Southbound LT	C	26.5	0.00	D	35.4	0.65	В	12.7	0.00	В	10.0	0.1
					F								
	Southbound TH-RT	E E	58.2 60.8	0.90	F	168.7	1.25	C D	24.9	0.75	C E	31.4	0.9
(I) Charles Chroat	Overall			0.90		119.7			37.3	0.68		78.1	1.1
0) Charles Street	Eastbound LT-TH-RT	С	35.0	0.11	С	30.2	0.09	D	54.7	0.19	D	54.3	0.1
	Westbound LT-TH-RT	D	35.9	0.29	D	38.4	0.66	E	55.8	0.37	E	74.6	0.7
	Northbound LT-TH-RT	Α	4.8	0.33	Α	8.6	0.56	Α	2.8	0.28	Α	4.9	0.4
	Southbound LT-TH-RT	Α	5.8	0.31	Α	9.8	0.49	Α	2.1	0.28	Α	4.5	0.4
	Overall	Α	7.0	0.29	В	11.4	0.53	Α	5.6	0.27	В	10.0	0.4

Table 3-1 Capacity Analysis Summary

Capacity Analysis Summary			204	0 No-Bui	uild Conditions 2040 Build Condition				tions				
		Week	day Mornin	g Peak	Week	day Evening	g Peak	Week	day Morning	J Peak	Weeko	day Evening	Peak
Route 5 Intersection	Lane Group	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c
11) Olive Street	Eastbound LT-RT	С	34.9	0.57	С	34.0	0.55	Е	60.1	0.70	Е	70.1	0.73
	Northbound LT-TH	Α	3.2	0.39	В	15.0	0.72	Α	2.7	0.37	В	12.2	0.67
	Souhtbound TH-RT	В	16.2	0.37	В	19.9	0.63	Α	3.9	0.30	В	10.3	0.47
	Overall	В	11.7	0.42	В	18.4	0.69	Α	9.4	0.41	В	15.9	0.68
12) Gale Avenue/Ann Street	Eastbound LT-TH	D	38.7	0.74	D	53.3	0.83	D	38.7	0.74	D	53.3	0.83
	Eastbound RT	Α		0.00	С	32.0	0.04	Α		0.00	С	32.0	0.04
	Westbound LT	С	32.1	0.30	С	32.7	0.24	С	32.1	0.30	С	32.7	0.24
	Westbound TH-RT	D	38.4	0.65	E	73.4	0.96	D	38.4	0.65	E	73.4	0.96
	Northbound LT-TH-RT	С	25.1	0.63	F	149.4	1.22	С	25.1	0.63	F	149.4	1.22
	Southbound LT-TH-RT	D	42.9	0.90	F	290.5	1.55	D	42.9	0.90	F	290.5	1.55
	Overall	D	36.3	0.76	F	169.7	1.08	D	36.3	0.76	F	169.7	1.08
13) Hall Avenue	Eastbound LT-RT	В	17.8	0.36	С	34.5	0.71	В	17.8	0.36	С	34.5	0.71
	Northbound LT-TH	Α	7.4	0.43	D	48.8	1.00	Α	7.4	0.43	D	48.8	1.00
	Souhtbound TH-RT	В	14.3	0.62	В	14.3	0.65	В	14.3	0.62	В	14.3	0.65
	Overall	В	12.7	0.51	С	32.0	0.93	В	12.7	0.51	С	32.0	0.93
14) Gypsy Lane /Green Road	Eastbound LT-TH-RT	D	42.6	0.75	F	108.0	1.03	D	42.6	0.75	F	143.8	1.11
	Westbound LT-TH	D	38.7	0.68	E	66.6	0.89	D	38.7	0.68	F	125.3	1.06
	Westbound RT	С	29.6	0.03	С	34.7	0.05	С	29.6	0.03	D	43.4	0.05
	Northbound LT-TH-RT	С	20.8	0.67	F	129.4	1.20	С	20.8	0.67	Е	69.5	1.05
	Souhtbound LT-TH-RT	С	26.7	0.82	С	28.6	0.82	С	26.7	0.82	С	22.1	0.71
	Overall	С	28.4	0.78	F	86.1	1.10	С	28.4	0.78	Е	68.7	1.06
15) Silver Hill North Dr./North Dr	Eastbound LT-TH	D	36.8	0.59	D	52.1	0.77	С	33.9	0.57	D	50.5	0.76
to Townline Square	Eastbound RT	С	30.8	0.02	С	32.6	0.07	С	28.6	0.02	С	32.4	0.07
	Westbound LT-TH	С	31.5	0.18	D	35.5	0.47	С	29.3	0.18	D	35.3	0.46
	Westbound RT	C	27.2	0.04	С	28.4	0.28	C	25.1	0.04	C	28.8	0.39
	Northbound LT	A	6.8	0.12	A	6.9	0.14	A	0.6	0.12	A	1.8	0.14
	Northbound TH-RT	A	7.9	0.15	A	8.2	0.38	A	1.3	0.15	A	2.5	0.38
	Souhtbound LT	A	3.4	0.16	A	5.0	0.47	A	3.6	0.16	A	5.1	0.47
	Southbound TH -RT	А В	7.6	0.45	В В	11.5	0.58	A	7.9	0.46	В В	11.6	0.58
40) 01 Hill 0 II- D (0 II- D	Overall		11.1	0.45		15.8	0.63	A	8.9	0.46		13.8	0.63
16) Silver Hill South Dr/South Dr	Eastbound LT-TH-RT	С	31.9	0.21	C F	32.2	0.16	С	29.2	0.20	С	28.8	0.11
Townline Square	Westbound LT-TH	D C	39.2	0.62		155.6	1.18	C C	32.6 28.5	0.55	E	70.7	0.93
	Westbound RT	_	31.1	0.01	C B	31.6	0.06 0.19	A	26.5	0.01	C B	28.5 13.0	0.06
	Northbound LT Northbound TH-RT	A A	1.6 0.6	0.14 0.25	В	11.1 10.8	0.19	A	1.9	0.16 0.30	В	15.8	0.23 0.79
			2.9	0.25	A	6.4	0.02	A	4.6	0.05	В	10.7	0.79
	Southbound LT Southbound TH-RT	A A	2.9	0.03	A	6.5	0.15	A	3.4	0.05	A	9.5	0.14
	Overall	A	6.9	0.37	C	27.4	0.71	A	7.3	0.37	C	20.9	0.76
17) Driveway to Kohl's Plaza	Eastbound TH	A		0.00	С	32.1	0.38	A		0.00	С	32.0	0.38
11) Driveway to Norms Haza	Westbound LT-TH	D	35.8	0.00	F	87.8	0.92	C	33.1	0.00	F	85.5	0.92
	Westbound RT	D	36.1	0.27	C	31.3	0.27	C	33.5	0.25	C	31.2	0.27
	Northbound LT-TH-RT	C	32.5	0.68	C	23.2	0.81	В	18.5	0.66	В	15.4	0.81
	Southbound LT-TH-RT	A	2.9	0.17	A	5.2	0.47	A	3.8	0.17	A	6.7	0.47
	Overall	В	19.7	0.36	C	20.3	0.78	В	12.5	0.36	В	17.0	0.78
18) Route 150	Eastbound LT-RT	С	30.3	0.34	D	38.7	0.62	С	27.8	0.32	D	38.9	0.62
,	Northbound LT-TH	Α	6.9	0.25	Α	2.1	0.50	Α	4.4	0.26	Α	2.5	0.50
	Southbound TH-RT	Α	3.1	0.21	Α	3.7	0.42	Α	2.6	0.21	Α	4.0	0.42
	Overall	Α	8.1	0.26	Α	6.9	0.52	Α	6.5	0.27	Α	7.2	0.52
19) Route 71 and Circle Drive	Eastbound LT-TH-RT	F	240.3	1.40	D	45.5	0.71	С	34.0	0.51	D	42.9	0.41
	Eastbound RT	В	19.5	0.46	С	24.3	0.32	С	31.9	0.83	D	37.5	0.72
	Westbound LT	Е	70.1	0.87	Е	64.1	0.77	D	50.8	0.79	Е	55.2	0.71
	Westbound TH	С	28.8	0.24	D	37.9	0.25	С	27.8	0.26	D	38.2	0.26
	Westbound RT	С	28.7	0.21	D	40.2	0.50	С	27.7	0.23	D	40.9	0.51
	Northbound LT-LT	D	38.2	0.41	Е	56.4	0.79	С	26.4	0.16	D	47.3	0.73
	Northbound TH-RT	В	18.5	0.45	В	11.9	0.71	В	12.7	0.30	Α	5.1	0.59
	Southbound LT	D	42.9	0.41	D	52.8	0.48	F	159.8	0.79	Е	61.8	0.62
	Southbound TH	D	38.5	0.52	С	21.6	0.64	В	18.7	0.51	В	16.1	0.52
	Overall	Е	57.8	0.88	С	26.5	0.77	С	24.6	0.71	С	21.1	0.66

Table 3-1 Capacity Analysis Summary

			204	0 No-Bui	ild Condi	tions		2040 Build Conditions					
		Week	day Morning	J Peak	Week	day Evening	Peak	Week	day Morning	g Peak	Week	day Evening	Peak
Route 5 Intersection	Lane Group	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c
20) Home Depot Dr./	Eastbound LT	С	33.0	0.35	D	39.6	0.43	С	31.2	0.37	D	47.4	0.60
Neal Road	Eastbound LT-TH	С	33.0	0.35	D	39.6	0.43	С	31.2	0.37	D	47.9	0.61
	Eastbound RT	С	28.1	0.33	С	33.3	0.41	С	27.2	0.36	D	37.2	0.52
	Westbound LT	С	33.1	0.31	D	50.3	0.71	С	30.9	0.30	D	50.3	0.71
	Westbound LT-TH	С	33.1	0.31	D	49.6	0.71	С	30.8	0.31	D	49.6	0.71
	Westbound RT	С	28.5	0.01	С	29.7	0.03	С	27.0	0.01	С	32.0	0.04
	Northbound LT	С	32.5	0.42	E	59.2	0.42	С	30.1	0.48	D	53.0	0.49
	Northbound TH	В	12.5	0.35	В	12.4	0.89	В	11.0	0.36	Α	9.0	0.80
	Northbound RT	Α	0.3	0.04	Α	0.1	0.14	Α	1.4	0.04	Α	0.0	0.14
	Southbound LT	С	33.8	0.34	D	38.0	0.44	D	38.5	0.41	D	49.0	0.68
	Southbound TH	В	10.5	0.49	В	15.6	0.58	Α	7.1	0.49	В	12.1	0.54
	Southbound RT	Α	4.9	0.05	С	24.6	0.03	Α	4.0	0.05	В	19.1	0.03
	Overall	В	15.0	0.44	В	19.5	0.77	В	12.9	0.45	В	17.6	0.77
21) Sonic Dr. and BJ's Dr.	Eastbound LT	С	30.4	0.21	С	31.1	0.39	С	28.1	0.20	С	30.0	0.36
	Eastbound TH-RT	С	29.5	0.02	С	28.0	0.02	С	27.3	0.02	С	27.3	0.02
	Westbound LT-TH	D	36.5	0.62	D	54.9	0.86	С	33.1	0.60	D	47.8	0.81
	Westbound RT	С	29.5	0.02	С	28.6	0.11	С	27.3	0.02	С	28.6	0.21
	Northbound LT	D	44.5	0.41	D	46.2	0.42	D	47.8	0.42	E	58.5	0.54
	Northbound TH	Α	7.2	0.26	В	15.7	0.67	Α	3.0	0.26	В	15.3	0.68
	Northbound RT	Α	6.7	0.06	Α	8.1	0.20	Α	1.1	0.06	Α	7.5	0.20
	Southbound LT	D	41.7	0.39	С	33.0	0.54	D	42.2	0.58	D	39.2	0.61
	Southbound TH-RT	Α	2.5	0.47	Α	16.5	0.64	Α	5.7	0.48	В	12.0	0.65
	Overall	Α	7.9	0.50	В	19.1	0.71	Α	7.5	0.52	В	17.1	0.70
22) Route 15 SB Off-Ramp	Westbound LT	D	46.8	0.92	Е	64.4	0.96	С	32.8	0.83	D	40.4	0.80
	Westbound RT	С	24.5	0.10	F	134.9	1.17	С	21.6	0.10	E	74.5	1.00
	Northbound LT	В	17.2	0.67	E	69.5	1.08	В	14.2	0.56	D	46.3	1.04
	Northbound TH	Α	8.9	0.31	В	10.1	0.67	Α	2.4	0.23	Α	8.8	0.49
	Southbound TH-RT	Α	9.9	0.71	С	29.2	0.92	В	13.2	0.72	D	44.7	1.02
	Overall	В	19.5	0.72	D	45.0	1.10	В	15.8	0.72	D	36.3	1.03
23) Route 15 (NB) Ramp	Westbound LT	F	164.0	1.25	F	150.3	1.18	Е	68.6	1.00	F	186.8	1.27
	Westbound RT	В	19.1	0.20	F	85.9	1.05	В	13.3	0.28	F	112.2	1.12
	Northbound TH-RT	Α	2.8	0.58	F	131.3	1.25	Α	6.0	0.76	F	110.7	1.20
	Southbound LT	D	38.4	0.90	F	112.4	1.14	В	19.3	0.68	F	138.7	1.21
	Southbound TH	В	18.5	0.70	В	13.6	0.67	Α	8.1	0.73	Α	2.1	0.62
	Overall	С	34.9	0.96	F	93.8	1.30	В	17.0	0.91	F	88.1	1.30

Vehicle Queue Length Summary - 2040 No-Build Conditions

		Storage		AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
1) Route 5 at Stoneycrest Dri	Eastbound LT-RT	>300		8		14
(Unsignalized)	Northbound LT-TH	>500		1		3
2) Route 5 at Golden St. & Ed		>500	42	83	36	56
	Westbound LT	>500	~153	124	37	35
	Westbound TH-RT	>500	46	47	12	13
	Northbound LT	75	10	35	21	48
	Northbound TH-RT	>1,000	277	#648	260	#362
	Southbound LT	50	41	109	6	23
	Southbound TH-RT	>1,000	93	233	~453	#669
3) Route 5 at Blackstone Stre	Eastbound LT-RT	>500	39	62	35	55
	Northbound LT-TH	>1,000	226	m256	52	116
	Southbound TH-RT	>1,000	233	303	216	256
4) Route 5 at Britannia Street	Eastbound LT-TH-RT	>500	~191	#300	~252	#367
,	Westbound LT-TH-RT	>500	~266	#374	~309	#419
	Northbound LT	100	29	66	~189	#272
	Northbound TH-RT	>1,000	~558	#552	343	382
	Southbound LT	50	35	m#75	39	#111
	Southbound TH-RT	>1,000	~536	#673	~516	#646
5) Route 5 at Atkins Street	Westbound LT-RT	>500	75	123	74	119
,	Northbound TH-RT	550	232	#704	99	#524
	Southbound LT-TH	>1,000	339	m260	157	#412
6) Route 5 at I-691 WB Off-ra	Eastbound LT-TH-RT	>200	0	7	0	0
Pratt Street Extension	Westbound LT	375	160	#305	140	#246
	Westbound TH-RT	>500	0	0	27	67
	Northbound LT	300	6	#40	5	19
	Northbound TH-RT	>500	197	#472	221	340
	Southbound TH-RT	510	441	#886	251	m323
7) Route 5 at Camp Street &	Eastbound LT	>500	117	163	152	#321
i, italia a at admp added	Eastbound TH-RT	>500	111	158	161	#346
	Westbound LT-TH	>500	127	#241	~206	#493
	Westbound RT	200	~190	#346	~151	#410
	Northbound LT	50	13	36	13	48
	Northbound TH-RT	>1,500	~876	#1122	~797	#1407
	Souhtbound LT	200	~386	#453	~154	#325
	Southbound TH-RT	>500	230	228	150	250
1 50th percentile queue in feet				-		

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

[~]Volume exceeds capacity, queue is theoretically infinite # 95th percentile volume exceeds capacity, queue may be longer

Vehicle Queue Length Summary - 2040 No-Build Conditions

		Storage		y AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
8) Route 5 at Liberty Street	Eastbound LT-TH-RT	>500	74	202	191	#485
	Westbound LT-TH-RT	240	90	207	116	220
	Northbound LT-TH-RT	675	104	356	~321	#879
	Southbound LT-TH-RT	>1000	160	392	~385	#757
9) Route 5 at East Main Stee	Eastbound LT	>500	65	100	61	114
	Eastbound TH	>500	~249	#333	~232	#404
	Eastbound RT	200	0	38	8	48
	Westbound LT	200	83	135	139	256
	Westbound TH	490	210	#312	254	#520
	Westbound RT	300	0	16	0	59
	Northbound LT	>650	~153	#266	~275	#484
	Northbound TH	>650	336	406	443	#754
	Northbound RT	>650	0	17	39	100
	Southbound LT	200	41	66	44	94
	Southbound TH-RT	>680	~465	#572	~628	#923
10) Route 5 at Charles Street	Eastbound LT-TH-RT	250	7	18	6	18
	Westbound LT-TH-RT	>500	14	33	60	#105
	Northbound LT-TH-RT	265	25	237	80	#415
	Southbound LT-TH-RT	>500	33	195	88	#333
11) Route 5 at Olive Street	Eastbound LT-RT	>500	62	87	64	91
	Northbound LT-TH	125	22	30	102	76
	Souhtbound TH-RT	270	60	197	98	281
12) Route 5 at Gale Avenue &	Eastbound LT-TH	>500	122	#240	148	#266
	Eastbound RT	25	0	0	6	21
	Westbound LT	80	37	77	38	77
	Westbound TH-RT	>500	85	148	188	#314
	Northbound LT-TH-RT	>1000	155	341	~423	#774
	Southbound LT-TH-RT	>1000	248	#531	~584	#875
13) Route 5 at Hall Avenue	Eastbound LT-RT	>500	21	61	101	140
	Northbound LT-TH	>500	38	92	122	#476
	Souhtbound TH-RT	>500	106	155	219	300
14) Route 5 at Gypsy Lane & 0	Eastbound LT-TH-RT	>500	112	129	~183	149
	Westbound LT-TH	>500	94	165	173	#265
	Westbound RT	50	0	0	0	16
	Northbound LT-TH-RT	>1000	226	371	~871	#1123
1 50th percentile queue in feet	Souhtbound LT-TH-RT	>1000	323	441	421	503

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

[~]Volume exceeds capacity, queue is theoretically infinite # 95th percentile volume exceeds capacity, queue may be longer

Vehicle Queue Length Summary - 2040 No-Build Conditions

venicie Queue Length 3u	,	Storage		AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
15) Route 5 at Silver Hill North	Eastbound LT-TH	200	35	61	85	119
North Dr. to Townline Squa	Eastbound RT	200	0	0	0	29
	Westbound LT-TH	125	10	29	37	70
	Westbound RT	250	0	22	23	62
	Northbound LT	125	8	17	7	m10
	Northbound TH-RT	340	27	50	75	88
	Souhtbound LT	250	9	24	33	67
	Southbound TH -RT	>500	120	208	228	374
16) Route 5 at Silver Hill South	Eastbound LT-TH-RT	>500	10	44	12	49
South Drive to Townline So	Westbound LT-TH	250	37	73	~193	#321
	Westbound RT	250	0	0	0	9
	Northbound LT	125	1	5	7	m16
	Northbound TH-RT	>500	0	0	55	130
	Southbound LT	125	2	m4	4	m10
	Southbound TH-RT	>360	23	34	69	110
17) Route 5 at Driveway to Kol	Eastbound TH	40	0	0	59	4
	Westbound LT-TH	190	6	17	71	98
	Westbound RT	190	6	17	34	52
	Northbound LT-TH-RT	425	114	215	429	111
	Southbound LT-TH-RT	>500	0	40	51	m81
18) Route 5 at Route 150	Eastbound LT-RT	>500	29	56	75	111
	Northbound LT-TH	>1000	46	m169	24	7
	Southbound TH-RT	>450	13	42	46	96
19) Route 5 at Route 71 and C	Eastbound LT-TH-RT	>500	~152	#302	87	138
	Eastbound RT	>500	46	96	42	63
	Westbound LT	100	61	#101	48	71
	Westbound TH	>150	25	43	23	40
	Westbound RT	100	18	35	39	60
	Northbound LT	250	36	63	139	m169
	Northbound TH-RT	>500	91	66	103	m#440
	Southbound LT	125	6	22	21	61
	Southbound TH	>1000	117	161	211	#306
1 50th percentile queue in feet	Southbound RT	50	0	0	0	0

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

[~]Volume exceeds capacity, queue is theoretically infinite # 95th percentile volume exceeds capacity, queue may be longer

Vehicle Queue Length Summary - 2040 No-Build Conditions

		Storage	Weekday	AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
20) Route 5 at Home Depot Dr	Eastbound LT	150	22	44	33	58
	Eastbound LT-TH	150	22	44	34	61
	Eastbound RT	150	29	49	50	72
	Westbound LT	235	17	40	68	107
	Westbound LT-TH	235	18	40	69	106
	Westbound RT	200	0	0	0	4
	Northbound LT	250	26	51	38	m59
	Northbound TH	800	65	166	485	#624
	Northbound RT	800	0	0	0	m0
	Southbound LT	200	14	m23	39	62
	Southbound TH	550	111	m131	133	223
	Southbound RT	200	0	m1	1	m5
21) Route 5 at Sonic Dr. and B	Eastbound LT	50	13	12	29	22
21) Noute 5 at Solite Dr. and L	Eastbound TH-RT	50	0	0	0	0
	Westbound LT-TH	150	44	75	13	#207
	Westbound RT	150	0	0	0	37
	Northbound LT	200	6	m18	12	m17
	Northbound TH	300	60	79	301	m357
	Northbound RT	200	4	8	0	m23
	Southbound LT	250	18	42	41	m72
	Southbound TH-RT	800	23	53	265	342
				W0.40	40-	
22) Route 5 at Route 15 SB O	Westbound LT	200	151	#246	165	#269
	Westbound RT	200	0	32	~217	#337
	Northbound LT	125	45	80	~225	m166
	Northbound TH	380	71	96	221	m174
	Southbound TH-RT	300	0	30	338	421
23) Route 5 at Route 15 NB R	Westbound LT	>500	~256	#344	~221	#309
	Westbound RT	175	2	29	261	#350
	Northbound TH-RT	370	20	24	~892	#1023
	Southbound LT	175	97	m#137	~203	m#240
	Southbound TH	360	216	224	211	238

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

Vehicle Queue Length Summary - 2040 Build Conditions

		Storage		AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
1) Route 5 at Stoneycrest Dri	Eastbound LT-RT	>300		8		14
(Unsignalized)	Northbound LT-TH	>500		1		3
2) Route 5 at Golden St. & Ed		>500	51	89	20	39
	Westbound LT	>500	166	133	22	24
	Westbound TH-RT	>500	57	52	7	10
	Northbound LT	75	6	24	3	10
	Northbound TH-RT	>1,000	347	#695	86	154
	Southbound LT	50	26	#80	1	5
	Southbound TH-RT	>1,000	115	254	136	269
3) Route 5 at Blackstone Stre	Eastbound LT-RT	>500	54	80	34	#61
	Northbound LT-TH	>1,000	148	m252	22	m20
	Southbound TH-RT	>1,000	340	415	223	279
4) Route 5 at Britannia Street	Eastbound LT-TH-RT	>500	179	244	138	#228
·	Westbound LT-TH-RT	>500	246	#333	~170	#274
	Northbound LT	100	4	m15	128	#130
	Northbound TH-RT	>1,000	603	56	299	208
	Southbound LT	50	13	m21	10	m15
	Southbound TH-RT	>1,000	159	181	297	#435
5) Route 5 at Atkins Street	Westbound LT-RT	>500	111	#236	183	241
,	Northbound TH-RT	550	554	#960	179	168
	Southbound LT-TH	>1,000	40	#626	135	m373
6) Route 5 at I-691 WB Off-ra	Eastbound LT-TH-RT	>200	0	16	0	0
Pratt Street Extension	Westbound LT	375	216	#355	294	358
	Westbound TH-RT	>500	0	0	42	89
	Northbound LT	300	3	m9	7	m9
	Northbound TH-RT	>500	93	m241	233	m314
	Southbound TH-RT	510	244	m294	673	815
7) Route 5 at Camp Street &	Eastbound LT	>500	121	#203	~265	#354
,	Eastbound TH-RT	>500	115	#198	~295	#385
	Westbound LT-TH	>500	129	#269	~287	#476
	Westbound RT	200	128	202	175	261
	Northbound LT	50	11	m30	16	m39
	Northbound TH-RT	>1,500	327	#457	314	m#567
	Souhtbound LT	200	~189	#289	178	#302
	Southbound TH-RT	>500	~641	#630	376	#827

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

[~]Volume exceeds capacity, queue is theoretically infinite # 95th percentile volume exceeds capacity, queue may be longer

Vehicle Queue Length Summary - 2040 Build Conditions

	-	Storage	Weekday	/ AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
8) Route 5 at Liberty Street	Eastbound LT		22	54	34	88
	Eastbound TH-RT	>500	130	200	255	#524
	Westbound LT-TH-RT	240	196	251	198	#347
	Northbound LT-TH-RT	675	85	221	~765	#929
	Southbound LT-TH-RT	>1000	302	m376	711	m790
9) Route 5 at East Main Stee	Eastbound LT	>500	47	76	65	96
	Eastbound TH	>500	191	#265	~294	#375
	Eastbound RT	200	0	36	10	47
	Westbound LT	200	65	#111	~171	#312
	Westbound TH	490	190	#328	~396	#557
	Westbound RT	300	0	0	0	61
	Northbound LT	>650	85	126	~226	#404
	Northbound TH	>650	192	115	298	227
	Northbound RT	>650	8	4	19	36
	Southbound LT	200	14	m28	21	m27
	Southbound TH-RT	>680	104	274	147	#352
10) Route 5 at Charles Street	Eastbound LT-TH-RT	250	11	25	12	24
	Westbound LT-TH-RT	>500	21	43	127	140
	Northbound LT-TH-RT	265	30	124	54	318
	Southbound LT-TH-RT	>500	12	123	114	m187
11) Route 5 at Olive Street	Eastbound LT-RT	>500	108	137	143	173
	Northbound LT-TH	125	25	34	150	87
	Souhtbound TH-RT	270	70	17	191	85
12) Route 5 at Gale Avenue &	Eastbound LT-TH	>500	122	#240	148	#266
	Eastbound RT	25	0	0	6	21
	Westbound LT	80	37	77	38	77
	Westbound TH-RT	>500	85	148	188	#314
	Northbound LT-TH-RT	>1000	155	341	~423	#774
	Southbound LT-TH-RT	>1000	248	#531	~584	#875
13) Route 5 at Hall Avenue	Eastbound LT-RT	>500	21	61	101	140
	Northbound LT-TH	>500	38	92	122	#476
	Souhtbound TH-RT	>500	106	155	219	300
14) Route 5 at Gypsy Lane & 0	Eastbound LT-TH-RT	>500	112	129	~228	172
	Westbound LT-TH	>500	94	165	~228	#346
	Westbound RT	50	0	0	0	26
	Northbound LT-TH-RT	>1000	226	371	~895	#1154
	Souhtbound LT-TH-RT	>1000	323	441	415	479

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

[~]Volume exceeds capacity, queue is theoretically infinite # 95th percentile volume exceeds capacity, queue may be longer

Vehicle Queue Length Summary - 2040 Build Conditions

venicie Queue Length 3u	,	Storage	Weekday	AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
15) Route 5 at Silver Hill North	Eastbound LT-TH	200	32	58	85	117
North Dr. to Townline Squa	Eastbound RT	200	0	0	0	16
	Westbound LT-TH	125	10	28	37	69
	Westbound RT	250	0	22	46	81
	Northbound LT	125	1	2	2	m3
	Northbound TH-RT	340	5	11	21	39
	Souhtbound LT	250	9	23	33	70
	Southbound TH -RT	>500	117	202	227	378
16) Route 5 at Silver Hill South	Eastbound LT-TH-RT	>500	10	41	11	44
South Drive to Townline So	Westbound LT-TH	250	34	67	141	#260
	Westbound RT	250	0	0	0	8
	Northbound LT	125	1	4	8	m13
	Northbound TH-RT	>500	0	0	135	#247
	Southbound LT	125	3	m7	7	m16
	Southbound TH-RT	>360	36	53	114	184
17) Route 5 at Driveway to Ko	Eastbound TH	40	0	0	59	3
	Westbound LT-TH	190	6	16	72	96
	Westbound RT	190	6	16	35	52
	Northbound LT-TH-RT	425	80	146	116	154
	Southbound LT-TH-RT	>500	1	52	66	m121
18) Route 5 at Route 150	Eastbound LT-RT	>500	27	53	76	111
	Northbound LT-TH	>1000	13	2	24	11
	Southbound TH-RT	>450	37	1	80	122
19) Route 5 at Route 71 and C	Eastbound LT-TH-RT	>500	15	39	20	46
	Eastbound RT	>500	110	#244	91	126
	Westbound LT	100	56	#92	48	70
	Westbound TH	>150	23	41	23	40
	Westbound RT	100	17	34	40	60
	Northbound LT	250	31	57	139	m160
	Northbound TH-RT	>500	37	107	54	85
	Southbound LT	125	5	19	22	m62
	Southbound TH	>1000	101	88	193	292
1 50th percentile queue in feet	Southbound RT	50	0	0	0	0

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

[~]Volume exceeds capacity, queue is theoretically infinite # 95th percentile volume exceeds capacity, queue may be longer

Vehicle Queue Length Summary - 2040 Build Conditions

	-	Storage	Weekday	AM Peak	Weekday	PM Peak
Intersection	Lane Group	Length	50th % ¹	95th % ²	50th %	95th %
20) Route 5 at Home Depot Dr	Eastbound LT	150	20	42	34	62
	Eastbound LT-TH	150	21	42	36	64
	Eastbound RT	150	27	49	53	81
	Westbound LT	235	16	37	68	107
	Westbound LT-TH	235	16	37	69	106
	Westbound RT	200	0	0	0	5
	Northbound LT	250	25	51	38	m58
	Northbound TH	800	82	98	54	110
	Northbound RT	800	0	0	0	m0
	Southbound LT	200	13	m21	40	m#71
	Southbound TH	550	73	m111	111	175
	Southbound RT	200	1	m0	0	m10
21) Route 5 at Sonic Dr. and B	Eastbound LT	50	12	11	29	20
	Eastbound TH-RT	50	0	0	0	0
	Westbound LT-TH	150	40	71	131	181
	Westbound RT	150	0	0	22	58
	Northbound LT	200	5	m20	12	m24
	Northbound TH	300	12	46	355	m406
	Northbound RT	200	0	0	6	m20
	Southbound LT	250	18	m39	42	m70
	Southbound TH-RT	800	78	107	270	251
22) Route 5 at Route 15 SB O	Westbound LT	200	132	187	158	#233
ZZ) Noute o at Noute 10 0B 0	Westbound RT	200	0	29	~185	#314
	Northbound LT	125	12	m30	~193	m146
	Northbound TH	380	13	17	157	m131
	Southbound TH-RT	300	131	53	~81	#175
23) Route 5 at Route 15 NB R	Westbound LT	>500	182	#281	~232	#321
20) Noute 5 at Noute 15 ND K	Westbound RT	175	25	#201 49	268	#367
	Northbound TH-RT	370	24	m36	~852	#1002
	Southbound LT	175	58	m108	~201	m#239
	Southbound TH	360	102	135	35	m35
1 50th percentile queue in feet	Southboulle 111	300	102	100	JU	11100

^{1 50}th percentile queue in feet

^{2 95}th percentile queue in feet

Appendix J: Analysis Reports (Synchro)

	۶	*	4	†		4	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ર્ન	₽		
Traffic Volume (veh/h)	10	20	10	440	350	0	
Future Volume (Veh/h)	10	20	10	440	350	0	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.61	0.61	0.89	0.89	1.00	1.00	
Hourly flow rate (vph)	16	33	11	494	350	0	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (ft)				421			
pX, platoon unblocked	0.70						
vC, conflicting volume	866	350	350				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	593	350	350				
tC, single (s)	6.4	6.2	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	95	95	99				
cM capacity (veh/h)	324	693	1209				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	49	505	350				
Volume Left	16	11	0				
Volume Right	33	0	0				
cSH	506	1209	1700				
Volume to Capacity	0.10	0.01	0.21				
Queue Length 95th (ft)	8	1	0.21				
Control Delay (s)	12.9	0.3	0.0				
Lane LOS	В	A	0.0				
Approach Delay (s)	12.9	0.3	0.0				
Approach LOS	В	0.0	0.0				
Intersection Summary							
Average Delay			0.9				
Intersection Capacity Utilizati	ion		41.2%	ıc	CU Level c	f Sanica	
	011			IC	o Level C	i Selvice	
Analysis Period (min)			15				

	۶	→	•	•	←	•	1	†	~	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	1		7	1		7	1	
Traffic Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Future Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Peak Hour Factor	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	302	163	0	24	678	0	97	301	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4								
Detector Phase	4	4		4	4		1	2		1	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	24.0	24.0		24.0	24.0		15.0	35.0		15.0	35.0	
Total Split (%)	24.5%	24.5%		24.5%	24.5%		15.3%	35.7%		15.3%	35.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
v/c Ratio		0.33		1.10	0.36		0.10	0.97		0.41	0.43	
Control Delay		22.8		115.3	23.0		33.7	53.8		38.8	21.1	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		22.8		115.3	23.0		33.7	53.8		38.8	21.1	
Queue Length 50th (ft)		42		~153	46		10	277		41	93	
Queue Length 95th (ft)		83		124	47		35	#648		109	233	
Internal Link Dist (ft)		465			417			1385			341	
Turn Bay Length (ft)							75			50		
Base Capacity (vph)		440		275	449		240	696		236	699	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.33		1.10	0.36		0.10	0.97		0.41	0.43	

Cycle Length: 98

Actuated Cycle Length: 78.5

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

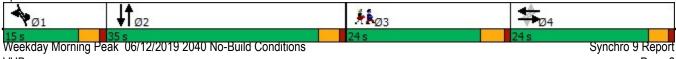
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Golden St./Edison Middle School



	~^
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.5
Total Split (s)	24.0
Total Split (%)	24%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

	۶	→	*	•	←	4	4	1	~	/	Ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	₽		*	₽		7	1	
Traffic Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Future Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	12	12	12	12	12	12	12	12
Grade (%)		5%			-3%			4%			4%	
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1735		1666	1640		1701	1710		1669	1747	
Flt Permitted		0.92		0.61	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1619		1068	1640		1701	1710		1669	1747	
Peak-hour factor, PHF	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	29	59	59	302	93	70	24	476	202	97	290	11
RTOR Reduction (vph)	0	23	0	0	26	0	0	14	0	0	1	0
Lane Group Flow (vph)	0	124	0	302	137	0	24	664	0	97	300	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4								
Actuated Green, G (s)		20.2		20.2	20.2		11.1	31.4		11.1	31.4	
Effective Green, g (s)		20.2		20.2	20.2		11.1	31.4		11.1	31.4	
Actuated g/C Ratio		0.25		0.25	0.25		0.14	0.38		0.14	0.38	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		398		262	403		229	654		225	668	
v/s Ratio Prot					0.08		0.01	c0.39		c0.06	0.17	
v/s Ratio Perm		0.08		c0.28								
v/c Ratio		0.31		1.15	0.34		0.10	1.01		0.43	0.45	
Uniform Delay, d1		25.3		30.9	25.5		31.1	25.3		32.6	18.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.0		103.2	2.3		0.9	39.0		5.9	2.2	
Delay (s)		27.3		134.2	27.7		32.1	64.3		38.5	21.1	
Level of Service		С		F	С		С	E		D	С	
Approach Delay (s)		27.3			96.9			63.2			25.3	
Approach LOS		С			F			E			С	
Intersection Summary												
HCM 2000 Control Delay			60.5	H	CM 2000	Level of S	Service		Е			
HCM 2000 Volume to Capac	ity ratio		0.91									
Actuated Cycle Length (s)			82.1		um of lost				16.5			
Intersection Capacity Utilizati	ion		60.3%	IC	U Level o	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

	٠	*	4	†	↓	1		
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3	
Lane Configurations	W			ર્લ	ĵ.			
Traffic Volume (vph)	10	40	10	550	460	10		
Future Volume (vph)	10	40	10	550	460	10		
Peak Hour Factor	0.72	0.72	0.94	0.94	0.83	0.83		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	70	0	0	596	566	0		
Turn Type	Prot		pm+pt	NA	NA			
Protected Phases	4		1	12	2		3	
Permitted Phases			12					
Detector Phase	4		1	12	2			
Switch Phase								
Minimum Initial (s)	5.0		3.0		25.0		1.0	
Minimum Split (s)	9.0		7.0		30.5		19.0	
Total Split (s)	16.0		7.0		48.0		19.0	
Total Split (%)	17.8%		7.8%		53.3%		21%	
Yellow Time (s)	3.0		3.0		4.2		4.0	
All-Red Time (s)	1.0		1.0		1.3		0.0	
Lost Time Adjust (s)	0.0				0.0			
Total Lost Time (s)	4.0				5.5			
Lead/Lag	Lag		Lead		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes		Yes	
Recall Mode	None		Max		C-Max		None	
v/c Ratio	0.52			0.48	0.64			
Control Delay	52.3			12.7	22.0			
Queue Delay	0.0			0.0	0.0			
Total Delay	52.3			12.7	22.0			
Queue Length 50th (ft)	39			226	233			
Queue Length 95th (ft)	62			m256	303			
Internal Link Dist (ft)	384			1324	1385			
Turn Bay Length (ft)								
Base Capacity (vph)	211			1241	886			
Starvation Cap Reductn	0			0	0			
Spillback Cap Reductn	0			0	0			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	0.33			0.48	0.64			

Cycle Length: 90 Actuated Cycle Length: 90

Offset: 53 (59%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Blackstone St



	٠	*	1	†	Ţ	4		
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	¥			ર્ન	ĵ⇒			
Traffic Volume (vph)	10	40	10	550	460	10		
Future Volume (vph)	10	40	10	550	460	10		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Grade (%)	7%			2%	-2%			
Total Lost time (s)	4.0			4.0	5.5			
Lane Util. Factor	1.00			1.00	1.00			
Frt	0.89			1.00	1.00			
FIt Protected	0.99			1.00	1.00			
Satd. Flow (prot)	1588			1842	1876			
Flt Permitted	0.99			1.00	1.00			
Satd. Flow (perm)	1588			1838	1876			
Peak-hour factor, PHF	0.72	0.72	0.94	0.94	0.83	0.83	 	
Adj. Flow (vph)	14	56	11	585	554	12		
RTOR Reduction (vph)	0	0	0	0	1	0		
Lane Group Flow (vph)	70	0	0	596	565	0		
Turn Type	Prot		pm+pt	NA	NA			
Protected Phases	4		1	12	2			
Permitted Phases			12					
Actuated Green, G (s)	6.7			56.8	40.1			
Effective Green, g (s)	6.7			56.8	40.1			
Actuated g/C Ratio	0.07			0.63	0.45			
Clearance Time (s)	4.0				5.5			
Vehicle Extension (s)	1.0				3.0			
Lane Grp Cap (vph)	118			1160	835			
v/s Ratio Prot	c0.04			c0.10	c0.30			
v/s Ratio Perm				0.23				
v/c Ratio	0.59			0.51	0.68			
Uniform Delay, d1	40.3			9.1	19.8			
Progression Factor	1.00			1.25	1.00			
Incremental Delay, d2	5.2			0.1	4.4			
Delay (s)	45.6			11.4	24.2			
Level of Service	D			В	С			
Approach Delay (s)	45.6			11.4	24.2			
Approach LOS	D			В	С			
Intersection Summary								
HCM 2000 Control Delay			19.2	Н	CM 2000	Level of Service	В	
HCM 2000 Volume to Capa	acity ratio		0.55					
Actuated Cycle Length (s)			90.0		um of lost		17.5	
Intersection Capacity Utiliza	ation		47.8%	IC	CU Level o	f Service	Α	
Analysis Period (min)			15					
c Critical Lane Group								

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		7	1		*	1	
Traffic Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Future Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Peak Hour Factor	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	257	0	0	334	0	92	816	0	60	711	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			1 2			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		3.0			15.0	15.0	
Minimum Split (s)	13.2	13.2		13.2	13.2		7.0			21.7	21.7	
Total Split (s)	21.0	21.0		21.0	21.0		8.0			33.0	33.0	
Total Split (%)	23.3%	23.3%		23.3%	23.3%		8.9%			36.7%	36.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0			5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		1.0			1.7	1.7	
Lost Time Adjust (s)		0.0			0.0		0.0			0.0	0.0	
Total Lost Time (s)		6.2			6.2		4.0			6.7	6.7	
Lead/Lag	Lag	Lag		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		Min			C-Max	C-Max	
v/c Ratio		1.32			1.50		0.36	0.97		0.76	1.27	
Control Delay		210.5			279.3		27.3	53.4		75.9	161.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		210.5			279.3		27.3	53.4		75.9	161.7	
Queue Length 50th (ft)		~191			~266		29	~558		35	~536	
Queue Length 95th (ft)		#300			#374		66	#552		m#75	#673	
Internal Link Dist (ft)		562			316			1219			1324	
Turn Bay Length (ft)							100			50		
Base Capacity (vph)		194			222		255	838		79	558	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.32			1.50		0.36	0.97		0.76	1.27	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

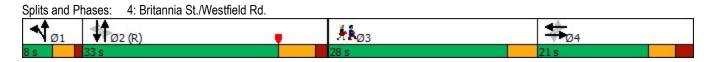
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Weekday Morning Peak Hour



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%	6)
Lane Group Flow (vph)
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reduct	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	
intersection outlinary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		7	4		7	4	
Traffic Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Future Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	14	12	10	12	12	10	13	12
Grade (%)		4%			-8%			3%			-8%	
Total Lost time (s)		6.2			6.2		4.0	4.0		6.7	6.7	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	0.99		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1856			1830		1596	1773		1653	1912	
Flt Permitted		0.63			0.73		0.16	1.00		0.16	1.00	
Satd. Flow (perm)		1181			1353		263	1773		273	1912	
Peak-hour factor, PHF	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Adj. Flow (vph)	49	98	110	62	74	198	92	737	79	60	675	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	257	0	0	334	0	92	816	0	60	711	0
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			1 2			2		
Actuated Green, G (s)		14.8			14.8		35.1	39.1		25.5	25.5	
Effective Green, g (s)		14.8			14.8		35.1	39.1		25.5	25.5	
Actuated g/C Ratio		0.16			0.16		0.39	0.43		0.28	0.28	
Clearance Time (s)		6.2			6.2		4.0			6.7	6.7	
Vehicle Extension (s)		3.0			3.0		1.0			0.2	0.2	
Lane Grp Cap (vph)		194			222		244	770		77	541	
v/s Ratio Prot							0.04	c0.46			c0.37	
v/s Ratio Perm		0.22			c0.25		0.11			0.22		
v/c Ratio		1.32			1.50		0.38	1.06		0.78	1.31	
Uniform Delay, d1		37.6			37.6		20.5	25.4		29.7	32.2	
Progression Factor		1.00			1.00		1.27	1.13		0.82	0.80	
Incremental Delay, d2		177.3			249.1		0.3	46.7		49.1	152.9	
Delay (s)		214.9			286.7		26.4	75.6		73.4	178.7	
Level of Service		F			F		С	E		Е	F	
Approach Delay (s)		214.9			286.7			70.6			170.5	
Approach LOS		F			F			E			F	
Intersection Summary												
HCM 2000 Control Delay			152.7	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capaci	ty ratio		0.98									
Actuated Cycle Length (s)			90.0		um of lost	. ,			20.9			
Intersection Capacity Utilization	on		80.6%	IC	CU Level o	of Service)		D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3	ľ
Lane Configurations	W		ĵ.			र्स		
Traffic Volume (vph)	80	70	740	40	60	660		
Future Volume (vph)	80	70	740	40	60	660		
Peak Hour Factor	0.84	0.84	0.96	0.96	0.83	0.83		
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	178	0	813	0	0	867		
Turn Type	Prot		NA		pm+pt	NA		
Protected Phases	4		2		1	12	3	
Permitted Phases					12			
Detector Phase	4		2		1	12		
Switch Phase								
Minimum Initial (s)	5.0		21.0		5.0		1.0	
Minimum Split (s)	9.2		26.8		9.0		19.0	
Total Split (s)	19.0		43.0		9.0		19.0	
Total Split (%)	21.1%		47.8%		10.0%		21%	
Yellow Time (s)	3.0		4.2		3.0		4.0	
All-Red Time (s)	1.2		1.6		1.0		0.0	
Lost Time Adjust (s)	0.0		0.0					
Total Lost Time (s)	4.2		5.8					
Lead/Lag	Lag		Lag		Lead		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes		Yes	
Recall Mode	None		C-Min		Max		None	
v/c Ratio	0.72		0.61			0.81		
Control Delay	45.1		20.7			24.8		
Queue Delay	0.1		0.3			1.7		
Total Delay	45.1		21.1			26.5		
Queue Length 50th (ft)	75		232			339		
Queue Length 95th (ft)	123		#704			m260		
Internal Link Dist (ft)	454		519			1219		
Turn Bay Length (ft)								
Base Capacity (vph)	348		1322			1069		
Starvation Cap Reductn	0		136			0		
Spillback Cap Reductn	4		0			87		
Storage Cap Reductn	0		0			0		
Reduced v/c Ratio	0.52		0.69			0.88		

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 6 (7%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Atkins Street



	•	•	†	~	/	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	¥		₽			र्स			
Traffic Volume (vph)	80	70	740	40	60	660			
Future Volume (vph)	80	70	740	40	60	660			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	15	12	16	12	12	16			
Grade (%)	-10%		-2%			1%			
Total Lost time (s)	4.2		5.8			4.0			
Lane Util. Factor	1.00		1.00			1.00			
Frt	0.94		0.99			1.00			
Flt Protected	0.97		1.00			1.00			
Satd. Flow (prot)	1908		2077			2032			
Flt Permitted	0.97		1.00			0.72			
Satd. Flow (perm)	1908		2077			1460			
Peak-hour factor, PHF	0.84	0.84	0.96	0.96	0.83	0.83			
Adj. Flow (vph)	95	83	771	42	72	795			
RTOR Reduction (vph)	37	0	2	0	0	0			
Lane Group Flow (vph)	141	0	811	0	0	867			
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%			
Turn Type	Prot		NA		pm+pt	NA			
Protected Phases	4		2		1	12			
Permitted Phases					12				
Actuated Green, G (s)	10.0		54.0			59.0			
Effective Green, g (s)	10.0		54.0			59.0			
Actuated g/C Ratio	0.11		0.60			0.66			
Clearance Time (s)	4.2		5.8						
Vehicle Extension (s)	1.0		0.2						
Lane Grp Cap (vph)	212		1246			988			
v/s Ratio Prot	c0.07		0.39			c0.05			
v/s Ratio Perm						c0.53			
v/c Ratio	0.66		0.65			0.88			
Uniform Delay, d1	38.4		11.8			12.6			
Progression Factor	1.00		1.48			2.61			
Incremental Delay, d2	5.9		2.3			1.2			
Delay (s)	44.3		19.8			33.9			
Level of Service	D		В			С			
Approach Delay (s)	44.3		19.8			33.9			
Approach LOS	D		В			С			
Intersection Summary									
HCM 2000 Control Delay			28.7	H	CM 2000	Level of Service)	С	
HCM 2000 Volume to Capacity ratio			0.81						
Actuated Cycle Length (s)			90.0	S	um of lost	t time (s)		18.0	
Intersection Capacity Utiliza	ition		99.8%			of Service		F	
Analysis Period (min)			15						
c Critical Lane Group									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	13		7	↑			1	
Traffic Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Future Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Peak Hour Factor	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	305	232	0	23	614	0	0	926	0
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Detector Phase	4	4		4	4		2	2			2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		20.0	20.0			20.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		25.5	25.5			25.5	
Total Split (s)	25.0	25.0		25.0	25.0		42.0	42.0			42.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%		46.7%	46.7%			46.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2			4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.3	1.3			1.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max			C-Max	
v/c Ratio		0.13		0.91	0.31		0.27	0.58			0.79	
Control Delay		4.6		65.8	1.1		25.5	17.8			24.2	
Queue Delay		0.2		0.0	0.3		0.0	0.0			3.2	
Total Delay		4.7		65.8	1.4		25.5	17.9			27.3	
Queue Length 50th (ft)		0		160	0		6	197			441	
Queue Length 95th (ft)		7		#305	0		#40	#472			#886	
Internal Link Dist (ft)		295			549			582			519	
Turn Bay Length (ft)							300					
Base Capacity (vph)		452		338	746		86	1055			1165	
Starvation Cap Reductn		0		0	0		0	0			150	
Spillback Cap Reductn		121		0	170		0	19			0	
Storage Cap Reductn		0		0	0		0	0			0	
Reduced v/c Ratio		0.17		0.90	0.40		0.27	0.59			0.91	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 31.5 (35%), Referenced to phase 2:NBSB, Start of Yellow

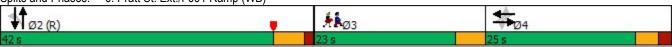
Natural Cycle: 100

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Pratt St. Ext./I-691 Ramp (WB)



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	26%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	₽		*	↑			1	
Traffic Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Future Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	10	10	10	12	12	12	8	16	16
Grade (%)		6%			-4%			-3%			2%	
Total Lost time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.90		1.00	0.85		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1630		1701	1522		1745	1837			2030	
Flt Permitted		0.91		0.72	1.00		0.08	1.00			1.00	
Satd. Flow (perm)		1503		1289	1522		151	1837			2030	
Peak-hour factor, PHF	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	14	0	43	305	0	232	23	614	0	0	926	0
RTOR Reduction (vph)	0	42	0	0	172	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	15	0	305	60	0	23	614	0	0	926	0
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Actuated Green, G (s)		23.3		23.3	23.3		48.5	48.5			48.5	
Effective Green, g (s)		23.3		23.3	23.3		48.5	48.5			48.5	
Actuated g/C Ratio		0.26		0.26	0.26		0.54	0.54			0.54	
Clearance Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Vehicle Extension (s)		1.5		1.5	1.5		0.2	0.2			0.2	
Lane Grp Cap (vph)		389		333	394		81	989			1093	
v/s Ratio Prot					0.04			0.33			c0.46	
v/s Ratio Perm		0.01		c0.24			0.15					
v/c Ratio		0.04		0.92	0.15		0.28	0.62			0.85	
Uniform Delay, d1		25.0		32.4	25.7		11.3	14.4			17.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.13	
Incremental Delay, d2		0.0		28.3	0.1		8.6	2.9			5.4	
Delay (s)		25.0		60.6	25.8		19.9	17.3			25.3	
Level of Service		С		E	С		В	В			С	
Approach Delay (s)		25.0			45.6			17.4			25.3	
Approach LOS		С			D			В			С	
Intersection Summary												
HCM 2000 Control Delay			28.0	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capac	ity ratio		0.82									
Actuated Cycle Length (s)			90.0		um of lost				14.4			
Intersection Capacity Utilizati	on		75.0%	IC	U Level o	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	1			ર્ન	7	7	13		7	†	
Traffic Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Future Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	167	0	0	165	209	22	793	0	347	787	0
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8			2		1	12	
Permitted Phases						8	2			12		
Detector Phase	4	4		8	8	8	2	2		1	12	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	15.0	15.0		3.0		
Minimum Split (s)	10.5	10.5		10.8	10.8	10.8	21.4	21.4		7.0		
Total Split (s)	20.5	20.5		20.8	20.8	20.8	41.2	41.2		12.0		
Total Split (%)	16.9%	16.9%		17.1%	17.1%	17.1%	33.9%	33.9%		9.9%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		3.0		
All-Red Time (s)	2.5	2.5		2.8	2.8	2.8	2.2	2.2		1.0		
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.5	5.5			5.8	5.8	6.4	6.4		4.0		
Lead/Lag	Lag	Lag					Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes					Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	Max	Max		Min		
v/c Ratio	0.73	0.73			0.69	0.99	0.11	1.36		1.85	0.54	
Control Delay	69.0	61.6			63.6	108.9	33.4	204.1		419.9	23.0	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	69.0	61.6			63.6	108.9	33.4	204.1		419.9	23.0	
Queue Length 50th (ft)	117	111			127	~190	13	~876		~386	230	
Queue Length 95th (ft)	163	158			#241	#346	36	#1122		#453	228	
Internal Link Dist (ft)		249			421			2589			582	
Turn Bay Length (ft)						175	50			200		
Base Capacity (vph)	262	279			239	211	206	583		188	1467	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.59	0.60			0.69	0.99	0.11	1.36		1.85	0.54	

Cycle Length: 121.5 Actuated Cycle Length: 108.2 Natural Cycle: 150

Control Type: Actuated-Uncoordinated

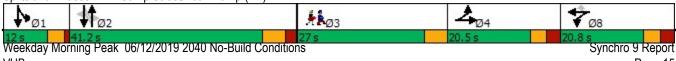
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: Camp Street/I-691 Ramp (EB)



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	1			र्स	7	7	f)		×	†	
Traffic Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Future Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	10	10	10	12	12	12	10	10	10
Grade (%)		6%			-4%			-2%			5%	
Total Lost time (s)	5.5	5.5			5.8	5.8	6.4	6.4		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	0.95	
Frt	1.00	0.94			1.00	0.85	1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1852	1837			1689	1493	1787	1773		1610	3073	
Flt Permitted	0.95	1.00			0.96	1.00	0.33	1.00		0.11	1.00	
Satd. Flow (perm)	1852	1837			1689	1493	624	1773		190	3073	
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	154	103	64	132	33	209	22	489	304	347	547	240
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	39	0
Lane Group Flow (vph)	154	148	0	0	165	209	22	793	0	347	748	0
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8			2		1	12	
Permitted Phases						8	2			12		
Actuated Green, G (s)	12.3	12.3			15.4	15.4	35.6	35.6		43.8	47.8	
Effective Green, g (s)	12.3	12.3			15.4	15.4	35.6	35.6		43.8	47.8	
Actuated g/C Ratio	0.11	0.11			0.14	0.14	0.33	0.33		0.40	0.44	
Clearance Time (s)	5.5	5.5			5.8	5.8	6.4	6.4		4.0		
Vehicle Extension (s)	2.0	2.0			2.5	2.5	0.2	0.2		1.0		
Lane Grp Cap (vph)	208	206			237	209	202	576		182	1341	
v/s Ratio Prot	c0.08	80.0			0.10			0.45		c0.14	0.24	
v/s Ratio Perm						c0.14	0.04			c0.62		
v/c Ratio	0.74	0.72			0.70	1.00	0.11	1.38		1.91	0.56	
Uniform Delay, d1	47.1	46.9			44.8	47.0	25.9	37.0		27.8	23.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.7	10.0			7.9	62.3	1.1	180.3		427.8	0.3	
Delay (s)	58.7	56.9			52.8	109.3	26.9	217.2		455.6	23.3	
Level of Service	E	E			D	F	С	F		F	C	
Approach Delay (s)		57.8			84.4			212.1			155.5	
Approach LOS		E			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			151.0	H	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capa	city ratio		1.29									
Actuated Cycle Length (s)			109.5		um of lost				25.7			
Intersection Capacity Utiliza	ation		88.7%	IC	U Level o	of Service			Е			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Future Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Peak Hour Factor	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	213	0	0	259	0	0	588	0	0	530	0
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0			15.0	15.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		9.0			20.5	20.5	
Total Split (s)	26.9	26.9		26.9	26.9		12.0			40.5	40.5	
Total Split (%)	27.1%	27.1%		27.1%	27.1%		12.1%			40.7%	40.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.0			3.9	3.9	
All-Red Time (s)	1.3	1.3		1.3	1.3		1.0			1.6	1.6	
Lost Time Adjust (s)		0.0			0.0						0.0	
Total Lost Time (s)		4.9			4.9						5.5	
Lead/Lag	Lag	Lag		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		Max			Min	Min	
v/c Ratio		0.66			0.70			0.61			0.75	
Control Delay		38.0			37.8			14.9			27.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		38.0			37.8			14.9			27.6	
Queue Length 50th (ft)		74			90			104			160	
Queue Length 95th (ft)		202			207			356			392	
Internal Link Dist (ft)		294			255			709			2589	
Turn Bay Length (ft)												
Base Capacity (vph)		531			613			1233			1007	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.40			0.42			0.48			0.53	

Cycle Length: 99.4

Actuated Cycle Length: 67.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Liberty Street



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	20%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

	۶	→	•	•	•	•	1	1	~	/	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Future Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		8%			-9%			-1%			-2%	
Total Lost time (s)		4.9			4.9			4.0			5.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.99			1.00			0.98	
Flt Protected		0.99			1.00			1.00			1.00	
Satd. Flow (prot)		1715			1818			1841			1833	
Flt Permitted		0.88			0.95			0.95			0.98	
Satd. Flow (perm)		1516			1743			1754			1804	
Peak-hour factor, PHF	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Adj. Flow (vph)	32	128	53	25	222	12	47	529	12	12	458	60
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	213	0	0	257	0	0	588	0	0	530	0
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		14.2			14.2			34.8			26.2	
Effective Green, g (s)		14.2			14.2			34.8			26.2	
Actuated g/C Ratio		0.20			0.20			0.50			0.38	
Clearance Time (s)		4.9			4.9						5.5	
Vehicle Extension (s)		1.5			1.5						2.0	
Lane Grp Cap (vph)		309			355			887			679	
v/s Ratio Prot								c0.08				
v/s Ratio Perm		0.14			c0.15			0.25			c0.29	
v/c Ratio		0.69			0.73			0.66			0.78	
Uniform Delay, d1		25.7			25.9			13.0			19.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.0			6.1			1.5			5.4	
Delay (s)		30.7			32.0			14.5			24.5	
Level of Service		С			С			В			С	
Approach Delay (s)		30.7			32.0			14.5			24.5	
Approach LOS		С			С			В			С	
Intersection Summary												
HCM 2000 Control Delay			22.9	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capa	city ratio		0.71									
Actuated Cycle Length (s)			69.6		um of lost				18.4			
Intersection Capacity Utiliza	tion		69.0%	IC	U Level o	of Service	9		С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	†	7	7	†	7	*	†	7	7	1	
Traffic Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Future Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	247	195	105	244	93	225	413	113	75	513	0
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		7	7		1	6		5	2	
Permitted Phases			4			7	6		6	2		
Detector Phase	4	4	4	7	7	7	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	15.1	15.1	15.1	9.0	21.2	21.2	9.0	21.2	
Total Split (s)	22.0	22.0	22.0	32.1	32.1	32.1	14.0	46.2	46.2	14.0	46.2	
Total Split (%)	16.0%	16.0%	16.0%	23.4%	23.4%	23.4%	10.2%	33.6%	33.6%	10.2%	33.6%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.9	3.0	3.9	
All-Red Time (s)	2.0	2.0	2.0	4.1	4.1	4.1	1.0	2.3	2.3	1.0	2.3	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	7.1	7.1	7.1	4.0	6.2	6.2	4.0	6.2	
Lead/Lag	Lag	Lag	Lag				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
v/c Ratio	0.33	0.98	0.48	0.39	0.86	0.27	1.00	0.66	0.18	0.24	0.91	
Control Delay	57.0	107.8	11.7	52.3	78.5	4.7	90.4	43.9	4.1	25.4	62.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	57.0	107.8	11.7	52.3	78.5	4.7	90.4	43.9	4.1	25.4	62.9	
Queue Length 50th (ft)	65	~249	0	83	210	0	~153	336	0	41	~465	
Queue Length 95th (ft)	100	#333	38	135	#312	16	#266	406	17	66	#572	
Internal Link Dist (ft)		485			509			712			709	
Turn Bay Length (ft)			200	200		300				200		
Base Capacity (vph)	238	251	403	329	347	397	225	629	621	344	566	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.98	0.48	0.32	0.70	0.23	1.00	0.66	0.18	0.22	0.91	

Cycle Length: 137.3 Actuated Cycle Length: 124.3

Natural Cycle: 135

Control Type: Actuated-Uncoordinated

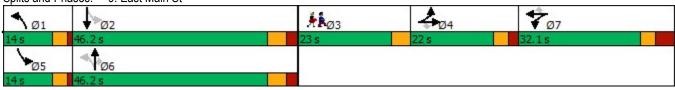
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: East Main St



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	17%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	↑	7	7	^	7	7	1	
Traffic Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Future Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	11	11	11	11	11	11	11
Grade (%)		2%			6%			1%			-1%	
Total Lost time (s)	5.0	5.0	5.0	7.1	7.1	7.1	4.0	6.2	6.2	4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1718	1809	1691	1612	1697	1442	1638	1724	1465	1670	1713	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.15	1.00	1.00	0.34	1.00	
Satd. Flow (perm)	1718	1809	1691	1612	1697	1442	253	1724	1465	601	1713	
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	78	247	195	105	244	93	225	412	112	75	425	88
RTOR Reduction (vph)	0	0	168	0	0	78	0	0	73	0	5	0
Lane Group Flow (vph)	78	247	27	105	244	15	225	413	40	75	508	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		7	7		1	6		5	2	
Permitted Phases			4			7	6		6	2		
Actuated Green, G (s)	17.3	17.3	17.3	20.9	20.9	20.9	55.6	45.4	45.4	48.2	41.7	
Effective Green, g (s)	17.3	17.3	17.3	20.9	20.9	20.9	55.6	45.4	45.4	48.2	41.7	
Actuated g/C Ratio	0.14	0.14	0.14	0.16	0.16	0.16	0.44	0.36	0.36	0.38	0.33	
Clearance Time (s)	5.0	5.0	5.0	7.1	7.1	7.1	4.0	6.2	6.2	4.0	6.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	234	247	230	265	279	237	222	617	524	283	563	
v/s Ratio Prot	0.05	c0.14		0.07	c0.14		c0.08	0.24	<u> </u>	0.01	0.30	
v/s Ratio Perm	0.00	••••	0.02	0.0.	••••	0.01	c0.36	V	0.03	0.09	0.00	
v/c Ratio	0.33	1.00	0.12	0.40	0.87	0.06	1.01	0.67	0.08	0.27	0.90	
Uniform Delay, d1	49.5	54.7	48.0	47.3	51.6	44.7	30.5	34.3	26.8	26.3	40.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	57.3	0.1	0.4	24.1	0.0	63.9	2.8	0.1	0.2	17.6	
Delay (s)	49.8	112.0	48.1	47.6	75.8	44.7	94.4	37.1	26.9	26.5	58.2	
Level of Service	D	F	D	D	E	D	F	D	C	C	E	
Approach Delay (s)	_	78.7			62.5		•	52.7			54.1	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			60.8	Н	CM 2000	Level of	Service		Е			
HCM 2000 Volume to Capac	city ratio		0.90									
Actuated Cycle Length (s)	•		126.7	S	um of lost	time (s)			26.3			
Intersection Capacity Utiliza	tion		68.4%		CU Level o	٠,)		С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			414			414	
Traffic Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Future Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Peak Hour Factor	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	71	0	0	735	0	0	663	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		2	2		2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.3	11.3		11.3	11.3		20.5	20.5		20.5	20.5	
Total Split (s)	14.0	14.0		14.0	14.0		33.0	33.0		33.0	33.0	
Total Split (%)	17.5%	17.5%		17.5%	17.5%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.3			5.3			5.5			5.5	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio		0.09			0.42			0.30			0.28	
Control Delay		34.1			25.3			6.5			8.1	
Queue Delay		0.0			0.0			0.1			0.0	
Total Delay		34.1			25.3			6.6			8.1	
Queue Length 50th (ft)		7			14			25			33	
Queue Length 95th (ft)		18			33			237			195	
Internal Link Dist (ft)		424			718			263			712	
Turn Bay Length (ft)												
Base Capacity (vph)		218			204			2464			2338	
Starvation Cap Reductn		0			0			706			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.07			0.35			0.42			0.28	

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 19.2 (24%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 10: Charles Street



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Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	41%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intono - 45 O	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			414			414	
Traffic Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Future Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	14	14	14
Grade (%)		-7%			4%			-5%			2%	
Total Lost time (s)		5.3			5.3			5.5			5.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		1.00			0.92			0.99			1.00	
Flt Protected		0.95			0.99			1.00			1.00	
Satd. Flow (prot)		2117			1628			3522			3644	
Flt Permitted		0.90			0.93			0.94			0.86	
Satd. Flow (perm)		2013			1525			3329			3162	
Peak-hour factor, PHF	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Adj. Flow (vph)	15	0	0	14	14	43	11	678	46	45	607	11
RTOR Reduction (vph)	0	0	0	0	40	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	15	0	0	31	0	0	732	0	0	662	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		5.6			5.6			53.8			53.8	
Effective Green, g (s)		5.6			5.6			53.8			53.8	
Actuated g/C Ratio		0.07			0.07			0.67			0.67	
Clearance Time (s)		5.3			5.3			5.5			5.5	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		140			106			2238			2126	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.02			c0.22			0.21	
v/c Ratio		0.11			0.29			0.33			0.31	
Uniform Delay, d1		34.9			35.3			5.5			5.4	
Progression Factor		1.00			1.00			0.80			1.00	
Incremental Delay, d2		0.1			0.6			0.4			0.4	
Delay (s)		35.0			35.9			4.8			5.8	
Level of Service		С			D			Α			Α	
Approach Delay (s)		35.0			35.9			4.8			5.8	
Approach LOS		С			D			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			7.0	Н	CM 2000	Level of S	Service		Α			
HCM 2000 Volume to Capac	ity ratio		0.29									
Actuated Cycle Length (s)			80.0		um of lost				14.8			
Intersection Capacity Utilizat	ion		52.9%	IC	U Level o	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

	۶	•	4	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			414	† \$	
Traffic Volume (vph)	70	60	70	570	520	30
Future Volume (vph)	70	60	70	570	520	30
Peak Hour Factor	0.74	0.74	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	176	0	0	811	640	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	6.0		6.0		15.0	
Minimum Split (s)	11.2		11.2		21.0	
Total Split (s)	20.0		20.0		40.0	
Total Split (%)	25.0%		25.0%		50.0%	
Yellow Time (s)	3.7		3.7		4.5	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	5.2				6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		C-Max	
v/c Ratio	0.63			0.39	0.37	
Control Delay	33.7			2.7	17.8	
Queue Delay	0.0			0.1	0.2	
Total Delay	33.7			2.8	18.0	
Queue Length 50th (ft)	62			22	60	
Queue Length 95th (ft)	87			30	197	
Internal Link Dist (ft)	372			99	263	
Turn Bay Length (ft)						
Base Capacity (vph)	398			2178	1741	
Starvation Cap Reductn	0			362	435	
Spillback Cap Reductn	1			10	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.44			0.45	0.49	

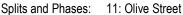
Cycle Length: 80

Actuated Cycle Length: 80

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated





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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	N/W			414	↑ ↑			
Traffic Volume (vph)	70	60	70	570	520	30		
Future Volume (vph)	70	60	70	570	520	30		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	16	16	12	12	12	12		
Grade (%)	-6%			-5%	5%			
Total Lost time (s)	5.2			5.2	6.0			
Lane Util. Factor	1.00			0.95	0.95			
Frt	0.94			1.00	0.99			
Flt Protected	0.97			0.99	1.00			
Satd. Flow (prot)	1948			3539	3389			
FIt Permitted	0.97			0.82	1.00			
Satd. Flow (perm)	1948			2907	3389			
Peak-hour factor, PHF	0.74	0.74	0.79	0.79	0.86	0.86		
Adj. Flow (vph)	95	81	89	722	605	35		
RTOR Reduction (vph)	41	0	0	0	4	0		
Lane Group Flow (vph)	135	0	0	811	636	0		
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%		
Turn Type	Prot		D.P+P	NA	NA			
Protected Phases	4		1	12	2			
Permitted Phases			2					
Actuated Green, G (s)	9.8			53.8	41.0			
Effective Green, g (s)	9.8			53.8	41.0			
Actuated g/C Ratio	0.12			0.67	0.51			
Clearance Time (s)	5.2				6.0			
Vehicle Extension (s)	1.0				0.2			
Lane Grp Cap (vph)	238			2056	1736			
v/s Ratio Prot	c0.07			c0.06	0.19			
v/s Ratio Perm				c0.20				
v/c Ratio	0.57			0.39	0.37			
Uniform Delay, d1	33.1			5.8	11.7			
Progression Factor	1.00			0.54	1.33			
Incremental Delay, d2	1.8			0.0	0.6			
Delay (s)	34.9			3.2	16.2			
Level of Service	С			Α	В			
Approach Delay (s)	34.9			3.2	16.2			
Approach LOS	С			Α	В			
Intersection Summary								
HCM 2000 Control Delay			11.7	H	CM 2000	Level of Service	 В	
HCM 2000 Volume to Capa	city ratio		0.42					
Actuated Cycle Length (s)			80.0	Sı	um of lost	time (s)	16.4	
Intersection Capacity Utiliza	tion		54.3%	IC	U Level o	f Service	Α	
Analysis Period (min)			15					
c Critical Lane Group								

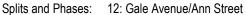
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7	7	1			4			4	
Traffic Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Future Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Peak Hour Factor	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	280	0	86	186	0	0	397	0	0	559	0
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	12.3	12.3	12.3	12.3	12.3		21.5	21.5		21.5	21.5	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		36.5	36.5		35.0	35.0	
Total Split (%)	22.6%	22.6%	22.6%	22.6%	22.6%		33.0%	33.0%		31.7%	31.7%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Lead/Lag	Lag	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes									
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
v/c Ratio		0.71		0.29	0.63			0.60			0.87	
Control Delay		43.3		35.4	43.8			29.5			43.4	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		43.3		35.4	43.8			29.5			43.4	
Queue Length 50th (ft)		122		37	85			155			248	
Queue Length 95th (ft)		#240		77	148			341			#531	
Internal Link Dist (ft)		340			311			2056			1933	
Turn Bay Length (ft)				50								
Base Capacity (vph)		447		437	444			689			671	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.63		0.20	0.42			0.58			0.83	

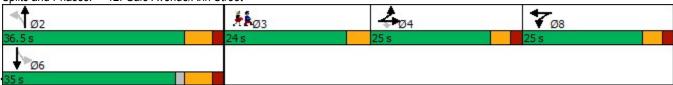
Cycle Length: 110.5 Actuated Cycle Length: 82.1 Natural Cycle: 100

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.





Weekday Morning Peak 06/12/2019 2040 No-Build Conditions VHB

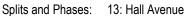
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્ન	7	7	13			4			4	
Traffic Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Future Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3		5.3	5.3			6.5			6.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	0.97			0.98			0.97	
FIt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1815		1770	1798			1832			1808	
FIt Permitted		0.97		0.95	1.00			1.00			0.99	
Satd. Flow (perm)		1815		1770	1798			1832			1786	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	147	133	0	86	143	43	0	349	48	13	429	117
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	280	0	86	186	0	0	397	0	0	559	0
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		17.8		13.6	13.6			29.5			29.5	
Effective Green, g (s)		17.8		13.6	13.6			29.5			29.5	
Actuated g/C Ratio		0.21		0.16	0.16			0.35			0.35	
Clearance Time (s)		5.3		5.3	5.3			6.5			6.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		380		283	287			635			619	
v/s Ratio Prot		c0.15		0.05	c0.10			0.22				
v/s Ratio Perm											c0.31	
v/c Ratio		0.74		0.30	0.65			0.63			0.90	
Uniform Delay, d1		31.4		31.5	33.5			23.1			26.4	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		7.3		0.6	5.0			1.9			16.5	
Delay (s)		38.7		32.1	38.4			25.1			42.9	
Level of Service		D		С	D			С			D	
Approach Delay (s)		38.7			36.4			25.1			42.9	
Approach LOS		D			D			С			D	
Intersection Summary												
HCM 2000 Control Delay			36.3	Н	CM 2000	Level of S	Service		D			
HCM 2000 Volume to Capacit	y ratio		0.76									
Actuated Cycle Length (s)			85.0		um of lost				21.1			
Intersection Capacity Utilization	n		63.8%	IC	CU Level o	of Service			В			
Analysis Period (min)			15									

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			ર્ન	1→	
Traffic Volume (vph)	50	150	90	290	320	40
Future Volume (vph)	50	150	90	290	320	40
Peak Hour Factor	0.76	0.76	0.95	0.95	0.74	0.74
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	263	0	0	400	486	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	9.0		4.0		15.0	
Minimum Split (s)	17.0		8.0		20.6	
Total Split (s)	29.0		12.0		45.6	
Total Split (%)	33.5%		13.9%		52.7%	
Yellow Time (s)	3.0		3.0		3.9	
All-Red Time (s)	1.0		1.0		1.7	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	4.0				5.6	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		Min	
v/c Ratio	0.54			0.41	0.63	
Control Delay	12.4			5.8	16.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	12.4			5.8	16.9	
Queue Length 50th (ft)	21			38	106	
Queue Length 95th (ft)	61			92	155	
Internal Link Dist (ft)	505			2424	2056	
Turn Bay Length (ft)						
Base Capacity (vph)	963			1505	1746	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.27			0.27	0.28	
Intersection Summary						

Cycle Length: 86.6 Actuated Cycle Length: 50.9
Natural Cycle: 50

Control Type: Actuated-Uncoordinated





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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			र्स	1>		
Traffic Volume (vph)	50	150	90	290	320	40	
Future Volume (vph)	50	150	90	290	320	40	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	15	15	16	15	16	16	
Grade (%)	7%			-1%	2%		
Total Lost time (s)	4.0			4.0	5.6		
Lane Util. Factor	1.00			1.00	1.00		
Frt	0.90			1.00	0.98		
Flt Protected	0.99			0.99	1.00		
Satd. Flow (prot)	1755			1977	2059		
Flt Permitted	0.99			0.82	1.00		
Satd. Flow (perm)	1755			1635	2059		
Peak-hour factor, PHF	0.76	0.76	0.95	0.95	0.74	0.74	
Adj. Flow (vph)	66	197	95	305	432	54	
RTOR Reduction (vph)	140	0	0	0	6	0	
Lane Group Flow (vph)	123	0	0	400	480	0	
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	4		1	12	2		
Permitted Phases			2	0= 0	10.0		
Actuated Green, G (s)	10.0			27.0	18.9		
Effective Green, g (s)	10.0			27.0	18.9		
Actuated g/C Ratio	0.20			0.53	0.37		
Clearance Time (s)	4.0				5.6		
Vehicle Extension (s)	2.0				2.5		
Lane Grp Cap (vph)	346			927	769		
v/s Ratio Prot	c0.07			c0.07	c0.23		
v/s Ratio Perm	0.00			0.16	0.00		
v/c Ratio	0.36			0.43	0.62		
Uniform Delay, d1	17.5			7.1	12.9		
Progression Factor	1.00			1.00	1.00		
Incremental Delay, d2	0.2			0.2	1.4		
Delay (s) Level of Service	17.8			7.4	14.3 B		
Approach Delay (s)	B 17.8			A 7.4	14.3		
Approach LOS	17.8 B			7.4 A	14.3 B		
Intersection Summary							
HCM 2000 Control Delay			12.7	Н	CM 2000	Level of Service	В
HCM 2000 Volume to Capa	acity ratio		0.51	110111 2000 20101 01 0011100		_	
Actuated Cycle Length (s)	.,		50.6	Sum of lost time (s)		13.6	
Intersection Capacity Utiliza	ation		62.9%	ICU Level of Service			В
Analysis Period (min)			15				
c Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ર્ન	7		4			4	
Traffic Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Future Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Peak Hour Factor	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	245	0	0	183	49	0	555	0	0	708	0
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Detector Phase	4	4		5	5	5	2	2		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0		20.0	20.0	
Minimum Split (s)	12.8	12.8		13.6	13.6	13.6	26.6	26.6		26.6	26.6	
Total Split (s)	20.8	20.8		26.6	26.6	26.6	56.6	56.6		56.6	56.6	
Total Split (%)	20.0%	20.0%		25.6%	25.6%	25.6%	54.4%	54.4%		54.4%	54.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.4	4.4		4.4	4.4	
All-Red Time (s)	2.8	2.8		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.8			6.6	6.6		6.6			6.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
v/c Ratio		0.78			0.69	0.15		0.68			0.83	
Control Delay		51.6			49.9	1.4		23.7			30.7	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		51.6			49.9	1.4		23.7			30.7	
Queue Length 50th (ft)		112			94	0		226			323	
Queue Length 95th (ft)		129			165	0		371			441	
Internal Link Dist (ft)		382			419			1172			2424	
Turn Bay Length (ft)						50						
Base Capacity (vph)		336			403	429		1150			1207	
Starvation Cap Reductn		0			0	0		0			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.73			0.45	0.11		0.48			0.59	

Cycle Length: 104 Actuated Cycle Length: 85 Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Gypsy Lane/Green Road



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ર્ન	7		4			4	
Traffic Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Future Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	10	8	10	10	16	16	16	16	16	16
Grade (%)		2%			4%			3%			-4%	
Total Lost time (s)		5.8			6.6	6.6		6.6			6.6	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.94			1.00	0.85		0.98			0.99	
Flt Protected		0.99			0.96	1.00		1.00			1.00	
Satd. Flow (prot)		1696			1644	1448		1995			2110	
FIt Permitted		0.99			0.96	1.00		0.93			0.93	
Satd. Flow (perm)		1696			1644	1448		1871			1972	
Peak-hour factor, PHF	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	70	70	105	134	49	49	33	444	78	49	622	37
RTOR Reduction (vph)	0	25	0	0	0	41	0	6	0	0	0	0
Lane Group Flow (vph)	0	220	0	0	183	8	0	549	0	0	708	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Actuated Green, G (s)		14.5			13.8	13.8		36.9			36.9	
Effective Green, g (s)		14.5			13.8	13.8		36.9			36.9	
Actuated g/C Ratio		0.17			0.16	0.16		0.44			0.44	
Clearance Time (s)		5.8			6.6	6.6		6.6			6.6	
Vehicle Extension (s)		2.0			2.0	2.0		2.5			2.5	
Lane Grp Cap (vph)		292			269	237		819			864	
v/s Ratio Prot		c0.13			c0.11							
v/s Ratio Perm						0.01		0.29			c0.36	
v/c Ratio		0.75			0.68	0.03		0.67			0.82	
Uniform Delay, d1		33.2			33.1	29.6		18.8			20.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		9.4			5.5	0.0		2.0			6.0	
Delay (s)		42.6			38.7	29.6		20.8			26.7	
Level of Service		D			D	С		С			C	
Approach Delay (s) Approach LOS		42.6 D			36.8 D			20.8 C			26.7 C	
		U						C				
Intersection Summary			00.4		014 0000		<u> </u>					
HCM 2000 Control Delay			28.4	H	CIVI 2000	Level of	Service		С			
HCM 2000 Volume to Capacit	y ratio		0.78	^	المالم مدا	Almar (-)			10.0			
Actuated Cycle Length (s)	_		84.2		um of los	٠,			19.0			
Intersection Capacity Utilizatio	m		66.9%	IC	U Level (of Service			С			
Analysis Period (min) c Critical Lane Group			15									
Contical Larie Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7		र्स	7	7	↑ ↑		7	1	
Traffic Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Future Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	38	0	24	58	63	316	0	116	569	0
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Detector Phase	4	4	4	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.1	12.1	12.1	12.1	12.1	9.0	9.0	21.7		9.0	21.7	
Total Split (s)	20.0	20.0	20.0	20.0	20.0	11.0	11.0	44.0		11.0	44.0	
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	14.7%	14.7%	58.7%		14.7%	58.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1		3.0	4.1	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	1.0	1.0	2.6		1.0	2.6	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
v/c Ratio		0.49	0.14		0.15	0.16	0.11	0.14		0.15	0.42	
Control Delay		41.5	1.0		31.2	7.1	4.8	9.0		3.0	8.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		41.5	1.0		31.2	7.1	4.8	9.0		3.0	8.1	
Queue Length 50th (ft)		35	0		10	0	8	27		9	120	
Queue Length 95th (ft)		61	0		29	22	17	50		24	208	
Internal Link Dist (ft)		210			555			377			529	
Turn Bay Length (ft)						125	125			250		
Base Capacity (vph)		275	404		275	400	634	2290		826	1353	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.28	0.09		0.09	0.14	0.10	0.14		0.14	0.42	

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 15: Silver Hill North Drive/North Drive to Townline Square



Weekday Morning Peak 06/12/2019 2040 No-Build Conditions VHB

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7		4	7	7	†		*	1	
Traffic Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Future Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	11	12	12	11	14	15
Grade (%)		0%			5%			1%			2%	
Total Lost time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1788	1583		1687	1470	1638	3371		1694	1907	
FIt Permitted		0.75	1.00		0.80	1.00	0.41	1.00		0.55	1.00	
Satd. Flow (perm)		1388	1583		1387	1470	710	3371		974	1907	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Adj. Flow (vph)	64	13	38	12	12	58	63	305	11	116	453	116
RTOR Reduction (vph)	0	0	34	0	0	49	0	3	0	0	8	0
Lane Group Flow (vph)	0	77	4	0	24	9	63	313	0	116	561	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4	7.4	4	4	7.4	4	6	47.0		2	40.0	
Actuated Green, G (s)		7.1	7.1		7.1	11.4	50.9	47.8		53.3	49.0	
Effective Green, g (s)		7.1	7.1		7.1	11.4	50.9	47.8		53.3	49.0	
Actuated g/C Ratio		0.09	0.09		0.09	0.15	0.68	0.64		0.71	0.65	
Clearance Time (s)		5.1	5.1 1.0		5.1 1.0	4.0 1.0	4.0	6.7 0.2		4.0 1.0	6.7 3.0	
Vehicle Extension (s)		1.0					1.0					
Lane Grp Cap (vph)		131	149		131	223	520	2148		733	1245	
v/s Ratio Prot v/s Ratio Perm		-0.00	0.00		0.00	0.00	0.01	0.09		c0.01	c0.29	
		c0.06	0.00 0.02		0.02	0.00 0.04	0.08	0.15		0.10	0.45	
v/c Ratio Uniform Delay, d1		0.59 32.5	30.8		0.18 31.3	27.1	0.12 4.1	5.4		0.16 3.4	6.4	
Progression Factor		1.00	1.00		1.00	1.00	1.63	1.42		1.00	1.00	
Incremental Delay, d2		4.3	0.0		0.2	0.0	0.0	0.1		0.0	1.00	
Delay (s)		36.8	30.8		31.5	27.2	6.8	7.9		3.4	7.6	
Level of Service		30.0 D	30.0 C		31.3 C	27.2 C	0.0 A	7.9 A		3. 4 A	7.0 A	
Approach Delay (s)		34.9	U		28.4	U		7.7			6.9	
Approach LOS		C			C			A			Α	
Intersection Summary												
HCM 2000 Control Delay			11.1	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacit	y ratio		0.45									
Actuated Cycle Length (s)			75.0			t time (s)			15.8			
Intersection Capacity Utilization	n		53.9%	IC	U Level	of Service	е		Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7	7	↑ ↑		7	1	
Traffic Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Future Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Peak Hour Factor	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	0	0	82	23	62	453	0	32	421	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Detector Phase	4	4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	15.0	15.0		5.0		
Minimum Split (s)	12.0	12.0		12.0	12.0	12.0	22.2	22.2		9.0		
Total Split (s)	15.0	15.0		15.0	15.0	15.0	41.0	41.0		9.0		
Total Split (%)	20.0%	20.0%		20.0%	20.0%	20.0%	54.7%	54.7%		12.0%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.1	4.1		3.0		
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	3.1	3.1		1.0		
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max		None		
v/c Ratio		0.38			0.51	0.07	0.13	0.25		0.05	0.29	
Control Delay		18.5			42.8	0.4	1.8	0.6		2.6	2.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		18.5			42.8	0.4	1.8	0.6		2.6	2.4	
Queue Length 50th (ft)		10			37	0	1	0		2	23	
Queue Length 95th (ft)		44			73	0	5	0		m4	34	
Internal Link Dist (ft)		256			244			895			377	
Turn Bay Length (ft)							125			125		
Base Capacity (vph)		254			195	360	487	1825		657	1448	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.33			0.42	0.06	0.13	0.25		0.05	0.29	

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 16: Silver Hill South Drive/South Drive to Townline Square



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	10.0
Total Split (s)	10.0
Total Split (%)	13%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

	•	→	•	•	•	•	1	†	~	-	ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7	7	†		*	1→	
Traffic Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Future Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	12	12	11	12	12	11	14	14
Grade (%)		1%			4%			2%			-2%	
Total Lost time (s)		5.0			5.0	5.0	7.2	7.2		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frt		0.90			1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1624			1751	1552	1645	3276		1711	1972	
Flt Permitted		0.93			0.80	1.00	0.52	1.00		0.49	1.00	
Satd. Flow (perm)		1525			1466	1552	894	3276		883	1972	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	12	12	59	70	12	23	62	340	113	32	400	21
RTOR Reduction (vph)	0	54	0	0	0	21	0	39	0	0	2	0
Lane Group Flow (vph)	0	29	0	0	82	2	62	414	0	32	419	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Actuated Green, G (s)		6.8			6.8	6.8	38.4	38.4		44.4	48.4	
Effective Green, g (s)		6.8			6.8	6.8	38.4	38.4		44.4	48.4	
Actuated g/C Ratio		0.09			0.09	0.09	0.51	0.51		0.59	0.65	
Clearance Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Vehicle Extension (s)		1.0			1.0	1.0	0.2	0.2		1.5		
Lane Grp Cap (vph)		138			132	140	457	1677		588	1272	
v/s Ratio Prot								0.13		0.00	c0.21	
v/s Ratio Perm		0.02			c0.06	0.00	0.07			0.03		
v/c Ratio		0.21			0.62	0.01	0.14	0.25		0.05	0.33	
Uniform Delay, d1		31.6			32.9	31.1	9.6	10.2		6.4	6.0	
Progression Factor		1.00			1.00	1.00	0.10	0.03		0.45	0.35	
Incremental Delay, d2		0.3			6.4	0.0	0.6	0.3		0.0	0.1	
Delay (s)		31.9			39.2	31.1	1.6	0.6		2.9	2.1	
Level of Service		С			D	С	Α	Α		Α	Α	
Approach Delay (s)		31.9			37.4			8.0			2.2	
Approach LOS		С			D			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			6.9	H	CM 2000	Level of	Service		Α			
HCM 2000 Volume to Capacity	y ratio		0.37									
Actuated Cycle Length (s)			75.0	Sı	um of lost	time (s)			20.2			
Intersection Capacity Utilizatio	n		58.0%		U Level o				В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		^			ર્ન	7		413			414	
Traffic Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Future Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Peak Hour Factor	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	14	14	0	641	0	0	516	0
Turn Type				Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases				4		4	2			2		
Detector Phase		4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)		7.0		7.0	7.0	7.0	15.0	15.0		7.0		
Minimum Split (s)		11.0		11.0	11.0	11.0	21.0	21.0		10.1		
Total Split (s)		20.0		20.0	20.0	20.0	44.0	44.0		11.0		
Total Split (%)		26.7%		26.7%	26.7%	26.7%	58.7%	58.7%		14.7%		
Yellow Time (s)		3.0		3.0	3.0	3.0	4.0	4.0		3.0		
All-Red Time (s)		1.0		1.0	1.0	1.0	2.0	2.0		0.1		
Lost Time Adjust (s)		0.0			0.0	0.0		0.0				
Total Lost Time (s)		4.0			4.0	4.0		6.0				
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode		None		None	None	None	C-Min	C-Min		Max		
v/c Ratio					0.09	0.11		0.62			0.15	
Control Delay					32.6	33.1		27.4			1.4	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					32.6	33.1		27.4			1.4	
Queue Length 50th (ft)					6	6		114			0	
Queue Length 95th (ft)					17	17		215			40	
Internal Link Dist (ft)		256			308			396			895	
Turn Bay Length (ft)												
Base Capacity (vph)					350	298		1600			3588	
Starvation Cap Reductn					0	0		0			0	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.04	0.05		0.40			0.14	

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Splits and Phases: 17: Driveway to Kohl's Plaza



	۶	→	•	•	-	•	4	†	<i>></i>	1	↓	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			र्स	7		413			413	
Traffic Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Future Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	10	15	15
Grade (%)		-8%			-6%			4%			-4%	
Total Lost time (s)					4.0	4.0		6.0			3.1	
Lane Util. Factor					1.00	1.00		0.95			0.95	
Frt					1.00	0.85		0.99			1.00	
Flt Protected					0.95	1.00		1.00			1.00	
Satd. Flow (prot)					1562	1398		3340			3967	
FIt Permitted					1.00	1.00		0.94			0.95	
Satd. Flow (perm)					1645	1398		3149			3792	
Peak-hour factor, PHF	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	14	0	14	11	596	34	11	505	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	14	14	0	633	0	0	516	0
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Turn Type				Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4		_	2		1	12	
Permitted Phases				4		4	2			2	/	
Actuated Green, G (s)					2.8	2.8		22.3			59.1	
Effective Green, g (s)					2.8	2.8		22.3			59.1	
Actuated g/C Ratio					0.04	0.04		0.30			0.79	
Clearance Time (s)					4.0	4.0		6.0				
Vehicle Extension (s)					2.0	2.0		3.0				
Lane Grp Cap (vph)					61	52		936			3073	
v/s Ratio Prot					0.04	0.04		0.00			c0.08	
v/s Ratio Perm					0.01	c0.01		c0.20			0.05	
v/c Ratio					0.23	0.27		0.68			0.17	
Uniform Delay, d1					35.1	35.1		23.2			1.9	
Progression Factor					1.00	1.00		1.23			1.45	
Incremental Delay, d2					0.7	1.0		3.9			0.1	
Delay (s)					35.8	36.1		32.5			2.9	
Level of Service		0.0			D 25.0	D		C 32.5			A 2.9	
Approach Delay (s) Approach LOS		0.0 A			35.9 D			32.5 C			2.9 A	
Intersection Summary					_			-				
HCM 2000 Control Delay			19.7	Ш	CM 2000	Level of S	Sorvico		В			
HCM 2000 Control Delay HCM 2000 Volume to Capacity	v ratio		0.36	1 1	CIVI 2000	Level OI	Sel vice		ь			
Actuated Cycle Length (s)	y raiio		75.0	Ç.	um of los	t time (s)			13.1			
Intersection Capacity Utilizatio	n		36.9%			of Service			13.1 A			
Analysis Period (min)	11		15	iC	O LEVEL	JI OEI VICE						
c Critical Lane Group			10									
o Official Laffe Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	AAA			414	† 1>	
Traffic Volume (vph)	130	20	20	460	390	110
Future Volume (vph)	130	20	20	460	390	110
Peak Hour Factor	0.97	0.97	0.85	0.85	0.92	0.92
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	0	0	565	544	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Detector Phase	4		2	2	2	
Switch Phase						
Minimum Initial (s)	9.0		15.0	15.0	15.0	
Minimum Split (s)	13.0		21.0	21.0	21.0	
Total Split (s)	25.0		50.0	50.0	50.0	
Total Split (%)	33.3%		66.7%	66.7%	66.7%	
Yellow Time (s)	3.0		4.0	4.0	4.0	
All-Red Time (s)	1.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Min	C-Min	C-Min	
v/c Ratio	0.37			0.25	0.21	
Control Delay	28.7			7.1	2.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	28.7			7.1	2.7	
Queue Length 50th (ft)	29			46	13	
Queue Length 95th (ft)	56			m169	42	
Internal Link Dist (ft)	408			2348	396	
Turn Bay Length (ft)						
Base Capacity (vph)	938			2234	2568	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.17			0.25	0.21	

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Route 150



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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	44			414	†		
Traffic Volume (vph)	130	20	20	460	390	110	
Future Volume (vph)	130	20	20	460	390	110	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	11	11	12	12	
Grade (%)	4%			4%	-4%		
Total Lost time (s)	4.0			6.0	6.0		
Lane Util. Factor	0.97			0.95	0.95		
Frt	0.98			1.00	0.97		
Flt Protected	0.96			1.00	1.00		
Satd. Flow (prot)	3293			3250	3423		
FIt Permitted	0.96			0.92	1.00		
Satd. Flow (perm)	3293			3003	3423		
Peak-hour factor, PHF	0.97	0.97	0.85	0.85	0.92	0.92	
Adj. Flow (vph)	134	21	24	541	424	120	
RTOR Reduction (vph)	18	0	0	0	22	0	
Lane Group Flow (vph)	137	0	0	565	522	0	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			2	2		
Permitted Phases			2				
Actuated Green, G (s)	9.2			55.8	55.8		
Effective Green, g (s)	9.2			55.8	55.8		
Actuated g/C Ratio	0.12			0.74	0.74		
Clearance Time (s)	4.0			6.0	6.0		
Vehicle Extension (s)	2.0			3.0	3.0		
Lane Grp Cap (vph)	403			2234	2546		
//s Ratio Prot	c0.04				0.15		
v/s Ratio Perm				c0.19			
v/c Ratio	0.34			0.25	0.21		
Uniform Delay, d1	30.1			3.0	2.9		
Progression Factor	1.00			2.21	1.00		
Incremental Delay, d2	0.2			0.3	0.2		
Delay (s)	30.3			6.9	3.1		
Level of Service	С			Α	Α		
Approach Delay (s)	30.3			6.9	3.1		
Approach LOS	С			Α	Α		
ntersection Summary							
HCM 2000 Control Delay			8.1	Н	CM 2000	Level of Service	Α
HCM 2000 Volume to Capa	acity ratio		0.26				
Actuated Cycle Length (s)			75.0	Sı	um of lost	time (s)	10.0
Intersection Capacity Utiliza	ation		43.2%		U Level o		Α
Analysis Period (min)			15				
Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	*	↑	7	44	↑ ↑		ሻ	^	7
Traffic Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Future Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Peak Hour Factor	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)			46%									
Lane Group Flow (vph)	0	238	238	132	59	44	144	536	0	11	462	0
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	custom
Protected Phases		7	1		8		1	6		5	2	
Permitted Phases	7		7	8		8						6
Detector Phase	7	7	1	8	8	8	1	6		5	2	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	5.0	5.0	15.0		3.0	15.0	15.0
Minimum Split (s)	11.0	11.0	12.0	9.0	9.0	9.0	12.0	20.0		10.0	20.0	20.0
Total Split (s)	15.0	15.0	16.0	15.0	15.0	15.0	16.0	29.0		16.0	29.0	29.0
Total Split (%)	20.0%	20.0%	21.3%	20.0%	20.0%	20.0%	21.3%	38.7%		21.3%	38.7%	38.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	4.0	1.0	1.0	1.0	4.0	2.0		4.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio		1.39	0.52	0.87	0.24	0.21	0.40	0.38		0.09	0.53	
Control Delay		237.3	17.3	82.0	31.1	31.0	41.1	14.5		36.6	38.5	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		237.3	17.3	82.0	31.1	31.0	41.1	14.5		36.6	38.5	
Queue Length 50th (ft)		~152	46	61	25	18	36	91		6	117	
Queue Length 95th (ft)		#302	96	#101	43	35	63	66		22	161	
Internal Link Dist (ft)		371			347			564			2348	
Turn Bay Length (ft)				100		100	250			125		
Base Capacity (vph)		171	476	154	255	216	390	1429		207	1144	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		1.39	0.50	0.86	0.23	0.20	0.37	0.38		0.05	0.40	

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 60 (80%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	M	↑	7	14.54	↑ ↑		7	^	7
Traffic Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Future Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	11	12	12	11	12	12
Grade (%)		0%			5%			0%			-4%	
Total Lost time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Lane Util. Factor		0.95	0.95	1.00	1.00	1.00	0.97	0.95		1.00	0.95	
Frt		0.87	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1556	1519	1652	1739	1478	3255	3431		1728	3575	
Flt Permitted		0.47	1.00	0.60	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		732	1519	1050	1739	1478	3255	3431		1728	3575	
Peak-hour factor, PHF	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Adj. Flow (vph)	12	24	440	132	59	44	144	495	41	11	462	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	238	238	132	59	44	144	528	0	11	462	0
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	custom
Protected Phases		7	1		8		1	6		5	2	
Permitted Phases	7		7	8		8						6
Actuated Green, G (s)		17.5	25.7	10.8	10.8	10.8	8.2	25.5		1.2	18.5	
Effective Green, g (s)		17.5	25.7	10.8	10.8	10.8	8.2	25.5		1.2	18.5	
Actuated g/C Ratio		0.23	0.34	0.14	0.14	0.14	0.11	0.34		0.02	0.25	
Clearance Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.5	2.5	2.5	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)		170	520	151	250	212	355	1166		27	881	
v/s Ratio Prot			c0.05		0.03		0.04	c0.15		0.01	c0.13	
v/s Ratio Perm		c0.33	0.11	c0.13		0.03						
v/c Ratio		1.40	0.46	0.87	0.24	0.21	0.41	0.45		0.41	0.52	
Uniform Delay, d1		28.8	19.2	31.4	28.4	28.3	31.1	19.3		36.5	24.4	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.22	0.89		1.08	1.48	
Incremental Delay, d2		211.5	0.2	38.7	0.4	0.4	0.3	1.2		3.6	2.2	
Delay (s)		240.3	19.5	70.1	28.8	28.7	38.2	18.5		42.9	38.5	
Level of Service		F	В	E	С	С	D	В		D	D	
Approach Delay (s)		129.9			52.0			22.7			38.6	
Approach LOS		F			D			С			D	
Intersection Summary												
HCM 2000 Control Delay			57.8	Н	CM 2000	Level of S	Service		Е			
HCM 2000 Volume to Capac	ity ratio		0.88									
Actuated Cycle Length (s)			75.0		um of los	٠,			20.0			
Intersection Capacity Utilizat	ion		48.7%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	र्स	7	*	स	7	ሻሻ	^	7	44	^	7
Traffic Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Future Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Peak Hour Factor	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)	42%			41%								
Lane Group Flow (vph)	47	48	81	39	40	13	109	641	65	60	880	84
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	5 7	4	4	1	5	2	24	1	6	6 7
Permitted Phases						4						
Detector Phase	7	7	5 7	4	4	1	5	2	2 4	1	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.0	12.0		12.0	12.0	9.0	9.0	20.0		9.0	20.0	
Total Split (s)	13.0	13.0		13.0	13.0	15.0	15.0	34.0		15.0	34.0	
Total Split (%)	17.3%	17.3%		17.3%	17.3%	20.0%	20.0%	45.3%		20.0%	45.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
v/c Ratio	0.29	0.29	0.23	0.25	0.25	0.04	0.36	0.31	0.06	0.22	0.44	0.08
Control Delay	35.9	35.8	22.8	35.5	35.5	0.2	34.0	13.8	0.2	32.7	11.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	35.8	22.8	35.5	35.5	0.2	34.0	13.8	0.2	32.7	11.7	1.0
Queue Length 50th (ft)	22	22	29	17	18	0	26	65	0	14	111	0
Queue Length 95th (ft)	44	44	49	40	40	0	51	166	0	m23	m131	m1
Internal Link Dist (ft)		463			264			832			564	
Turn Bay Length (ft)	150		150				250			200		200
Base Capacity (vph)	173	175	399	171	174	435	486	2036	1146	508	1991	1061
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.27	0.20	0.23	0.23	0.03	0.22	0.31	0.06	0.12	0.44	0.08

Cycle Length: 75

Actuated Cycle Length: 75

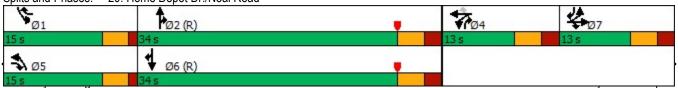
Offset: 63 (84%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Home Depot Dr./Neal Road



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	र्स	7	7	र्स	7	44	^	7	44	^	7
Traffic Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Future Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	12	12	12
Grade (%)		0%			-2%			-2%			-2%	
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1594	1620	1501	1610	1639	1516	3319	3422	1531	3467	3575	1599
FIt Permitted	0.95	0.97	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1594	1620	1501	1610	1639	1516	3319	3422	1531	3467	3575	1599
Peak-hour factor, PHF	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	81	14	81	66	13	13	109	641	65	60	880	84
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	21	0	0	34
Lane Group Flow (vph)	47	48	81	39	40	2	109	641	44	60	880	50
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	57	4	4	1	5	2	24	1	6	67
Permitted Phases	C 2	C 2	47.0	г 0	۲.0	4	r 0	40.0	F0 0	2.0	27.0	44.0
Actuated Green, G (s)	6.3	6.3	17.2	5.9	5.9	9.7	5.9	40.0	50.9	3.8	37.9	44.2
Effective Green, g (s)	6.3	6.3 0.08	12.2	5.9	5.9 0.08	9.7 0.13	5.9	40.0 0.53	50.9	3.8 0.05	37.9 0.51	44.2
Actuated g/C Ratio	0.08 5.0	5.0	0.16	0.08 5.0	5.0	4.0	0.08 4.0	5.0	0.68	4.0	5.0	0.59
Clearance Time (s) Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	0.2		2.0	0.2	
	133		244		128				1020		1806	042
Lane Grp Cap (vph) v/s Ratio Prot	0.03	136 c0.03	244 0.05	126 0.02	c0.02	196 0.00	261 c0.03	1825 0.19	1039 0.03	175 0.02	c0.25	942 0.03
v/s Ratio Prot v/s Ratio Perm	0.03	00.03	0.05	0.02	CU.U2	0.00	00.03	0.19	0.03	0.02	CU.25	0.03
v/c Ratio	0.35	0.35	0.33	0.31	0.31	0.00	0.42	0.35	0.04	0.34	0.49	0.05
Uniform Delay, d1	32.4	32.4	27.8	32.6	32.6	28.5	32.9	10.0	4.0	34.4	12.2	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.19	0.07	0.97	0.81	0.76
Incremental Delay, d2	0.6	0.6	0.3	0.5	0.5	0.0	0.37	0.5	0.07	0.37	0.01	0.70
Delay (s)	33.0	33.0	28.1	33.1	33.1	28.5	32.5	12.5	0.3	33.8	10.5	4.9
Level of Service	C	C	C	C	C	20.0 C	C	12.0 B	Α	C	В	Α.
Approach Delay (s)		30.7	J		32.5			14.2	, , , , , , , , , , , , , , , , , , ,	- U	11.4	,,
Approach LOS		C			C			В			В	
Intersection Summary												
HCM 2000 Control Delay			15.0	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capaci	ty ratio		0.44									
Actuated Cycle Length (s)			75.0			t time (s)			19.0			
Intersection Capacity Utilization	on		44.6%	IC	CU Level	of Service	;		Α			
Analysis Period (min)			15									
c Critical Lane Group												

	•	→	•	•	•	•	1	†	-	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	1			र्स	7	7	^	7	*	†	
Traffic Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Future Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Peak Hour Factor	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	30	0	0	98	37	11	833	89	38	1102	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			2			
Detector Phase	4	4		4	4	4	1	6	2	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5	11.5	9.5	20.0	20.0	9.5	20.0	
Total Split (s)	22.0	22.0		22.0	22.0	22.0	16.0	37.0	37.0	16.0	37.0	
Total Split (%)	29.3%	29.3%		29.3%	29.3%	29.3%	21.3%	49.3%	49.3%	21.3%	49.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	2.0	2.0	1.5	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
v/c Ratio	0.18	0.06			0.53	0.12	0.09	0.25	0.08	0.26	0.43	
Control Delay	29.7	0.2			40.0	0.9	37.9	8.3	3.1	42.2	2.3	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.7	0.2			40.0	0.9	37.9	8.3	3.1	42.2	2.3	
Queue Length 50th (ft)	13	0			44	0	6	60	4	18	23	
Queue Length 95th (ft)	12	0			75	0	m18	79	8	42	53	
Internal Link Dist (ft)		119			412			332			832	
Turn Bay Length (ft)							200		200	250		
Base Capacity (vph)	298	606			324	445	262	3393	1177	262	2578	_
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0			0	0	0	0	0	0	0	_
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.10	0.05			0.30	0.08	0.04	0.25	0.08	0.15	0.43	

Cycle Length: 75

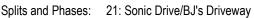
Actuated Cycle Length: 75

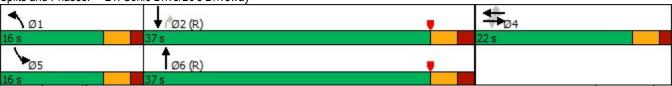
Offset: 6 (8%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.





VHB Page 50

	١	→	*	•	←	•	1	†	~	-	Ţ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	1→			र्स	7	T	ተተተ	7	7	1	
Traffic Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Future Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			-4%			-2%			0%	
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91	1.00	1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1568			1787	1599	1711	4917	1531	1711	3415	
FIt Permitted	0.69	1.00			0.74	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1279	1568			1388	1599	1711	4917	1531	1711	3415	
Peak-hour factor, PHF	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Adj. Flow (vph)	30	0	30	98	0	37	11	833	89	38	1089	13
RTOR Reduction (vph)	0	27	0	0	0	33	0	0	28	0	1	0
Lane Group Flow (vph)	30	3	0	0	98	4	11	833	61	38	1101	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			2			
Actuated Green, G (s)	8.6	8.6			8.6	8.6	1.2	48.1	51.2	4.3	51.2	
Effective Green, g (s)	8.6	8.6			8.6	8.6	1.2	48.1	51.2	4.3	51.2	
Actuated g/C Ratio	0.11	0.11			0.11	0.11	0.02	0.64	0.68	0.06	0.68	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	0.2	0.2	2.0	0.2	
Lane Grp Cap (vph)	146	179			159	183	27	3153	1045	98	2331	
v/s Ratio Prot		0.00					0.01	0.17		c0.02	c0.32	
v/s Ratio Perm	0.02				c0.07	0.00			0.04			
v/c Ratio	0.21	0.02			0.62	0.02	0.41	0.26	0.06	0.39	0.47	
Uniform Delay, d1	30.1	29.5			31.6	29.5	36.5	5.8	3.9	34.1	5.6	
Progression Factor	1.00	1.00			1.00	1.00	1.12	1.20	1.67	1.20	0.32	
Incremental Delay, d2	0.3	0.0			4.9	0.0	3.5	0.2	0.1	0.9	0.7	
Delay (s)	30.4	29.5			36.5	29.5	44.5	7.2	6.7	41.7	2.5	
Level of Service	С	С			D	С	D	Α	Α	D	Α	
Approach Delay (s)		29.9			34.6			7.6			3.8	
Approach LOS		С			С			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			7.9	H	CM 2000	Level of S	Service		Α			
HCM 2000 Volume to Capa	city ratio		0.50									
Actuated Cycle Length (s)			75.0		um of lost				14.0			
Intersection Capacity Utiliza	tion		43.9%	IC	U Level of	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

	۶	→	*	•	-	•	1	1	~	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				14.14		77	7	^			↑ ↑	
Traffic Volume (vph)	0	0	0	590	0	260	140	580	0	0	590	360
Future Volume (vph)	0	0	0	590	0	260	140	580	0	0	590	360
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	641	0	283	165	682	0	0	1159	0
Turn Type				Prot		Prot	D.P+P	NA			NA	
Protected Phases				4		4	1	12			2	
Permitted Phases							2					
Detector Phase				4		4	1	12			2	
Switch Phase												
Minimum Initial (s)				7.0		7.0	5.0				15.0	
Minimum Split (s)				13.8		13.8	8.5				21.5	
Total Split (s)				22.0		22.0	15.0				38.0	
Total Split (%)				29.3%		29.3%	20.0%				50.7%	
Yellow Time (s)				4.0		4.0	3.0				3.0	
All-Red Time (s)				2.8		2.8	0.5				3.5	
Lost Time Adjust (s)				0.0		0.0	0.0				0.0	
Total Lost Time (s)				6.8		6.8	3.5				6.5	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None		None	Min				C-Max	
v/c Ratio				0.92		0.36	0.46	0.29			0.73	
Control Delay				50.5		5.0	16.0	7.5			8.9	
Queue Delay				0.0		0.0	0.0	0.0			0.2	
Total Delay				50.5		5.0	16.0	7.5			9.1	
Queue Length 50th (ft)				151		0	45	71			0	
Queue Length 95th (ft)				#246		32	80	96			30	
Internal Link Dist (ft)		220			369			537			332	
Turn Bay Length (ft)				200		200	120					
Base Capacity (vph)				706		798	380	2287			1584	
Starvation Cap Reductn				0		0	0	0			52	
Spillback Cap Reductn				0		0	0	0			0	
Storage Cap Reductn				0		0	0	0			0	
Reduced v/c Ratio				0.91		0.35	0.43	0.30			0.76	

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 7 (9%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 22: Route 15 SB Off-Ramp



	۶	→	*	•	←	1	4	1	~	1	†	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				44		77	7	^			†	
Traffic Volume (vph)	0	0	0	590	0	260	140	580	0	0	590	360
Future Volume (vph)	0	0	0	590	0	260	140	580	0	0	590	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	12	12	12
Grade (%)		-5%			-1%			-1%			-2%	
Total Lost time (s)				6.8		6.8	3.5	3.5			6.5	
Lane Util. Factor				0.97		0.88	1.00	0.95			0.95	
Frt				1.00		0.85	1.00	1.00			0.94	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3484		2828	1744	3489			3372	
FIt Permitted				0.95		1.00	0.13	1.00			1.00	
Satd. Flow (perm)				3484		2828	239	3489			3372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	641	0	283	165	682	0	0	720	439
RTOR Reduction (vph)	0	0	0	0	0	226	0	0	0	0	120	0
Lane Group Flow (vph)	0	0	0	641	0	57	165	682	0	0	1039	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Turn Type				Prot		Prot	D.P+P	NA			NA	
Protected Phases				4		4	1	12			2	
Permitted Phases							2					
Actuated Green, G (s)				15.0		15.0	43.2	46.7			32.6	
Effective Green, g (s)				15.0		15.0	43.2	46.7			32.6	
Actuated g/C Ratio				0.20		0.20	0.58	0.62			0.43	
Clearance Time (s)				6.8		6.8	3.5				6.5	
Vehicle Extension (s)				1.5		1.5	2.0				0.2	
Lane Grp Cap (vph)				696		565	350	2172			1465	
v/s Ratio Prot				c0.18		0.02	c0.07	0.20			c0.31	
v/s Ratio Perm							0.20					
v/c Ratio				0.92		0.10	0.47	0.31			0.71	
Uniform Delay, d1				29.4		24.5	9.9	6.6			17.3	
Progression Factor				1.00		1.00	1.70	1.34			0.41	
Incremental Delay, d2				17.3		0.0	0.3	0.0			2.7	
Delay (s)				46.8		24.5	17.2	8.9			9.9	
Level of Service				D		С	В	A			Α	
Approach Delay (s)		0.0			39.9			10.5			9.9	
Approach LOS		Α			D			В			Α	
Intersection Summary												
HCM 2000 Control Delay			19.5	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	y ratio		0.72									
Actuated Cycle Length (s)			75.0		um of lost				16.8			
Intersection Capacity Utilizatio	n		64.5%	IC	U Level o	of Service	Э		С			
Analysis Period (min)			15									
c Critical Lane Group												

	1	•	†	1	1	ţ			
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4	
Lane Configurations	×	7	†		*	^			
Traffic Volume (vph)	330	230	490	400	230	950			
Future Volume (vph)	330	230	490	400	230	950			
Peak Hour Factor	0.78	0.78	0.90	0.90	0.81	0.81			
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	423	295	988	0	284	1173			
Turn Type	Prot	pm+ov	NA		custom	NA			
Protected Phases	5	1	24		1	12	2	4	
Permitted Phases		5			2				
Detector Phase	5	1	2 4		1	12			
Switch Phase									
Minimum Initial (s)	7.0	5.0			5.0		15.0	7.0	
Minimum Split (s)	11.0	8.1			8.1		20.0	11.0	
Total Split (s)	18.0	12.0			12.0		30.0	15.0	
Total Split (%)	24.0%	16.0%			16.0%		40%	20%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	1.0	0.1			0.1		2.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0				
Total Lost Time (s)	4.0	3.1			3.1				
Lead/Lag		Lead			Lead		Lag		
Lead-Lag Optimize?		Yes			Yes		Yes		
Recall Mode	None	None			None		C-Max	None	
v/c Ratio	1.24	0.39	0.60		0.88	0.66			
Control Delay	163.2	4.2	4.0		38.4	17.6			
Queue Delay	2.0	0.0	0.8		0.0	0.2			
Total Delay	165.2	4.2	4.8		38.4	17.7			
Queue Length 50th (ft)	~256	2	20		97	216			
Queue Length 95th (ft)	#344	29	24		m#137	224			
Internal Link Dist (ft)	401		143			537			
Turn Bay Length (ft)	175				175				
Base Capacity (vph)	340	757	1669		322	1774			
Starvation Cap Reductn	0	0	361		0	0			
Spillback Cap Reductn	54	0	0		0	114			
Storage Cap Reductn	0	0	0		0	0			
Reduced v/c Ratio	1.48	0.39	0.76		0.88	0.71			

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 7 (9%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

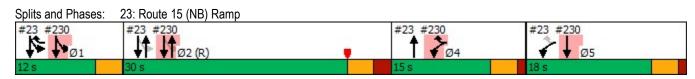
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



	•	•	1	1	-	↓		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	7	7	† 1>		*	^		
Traffic Volume (vph)	330	230	490	400	230	950		
Future Volume (vph)	330	230	490	400	230	950		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	11	11	11	11	11	11		
Grade (%)	-1%		0%			0%		
Total Lost time (s)	4.0	3.1	5.0		3.1	3.1		
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.85	0.93		1.00	1.00		
FIt Protected	0.95	1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1754	1569	3129		1711	3421		
FIt Permitted	0.95	1.00	1.00		0.19	1.00		
Satd. Flow (perm)	1754	1569	3129		334	3421		
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.81	0.81		
Adj. Flow (vph)	423	295	544	444	284	1173		
RTOR Reduction (vph)	0	199	0	0	0	0		
Lane Group Flow (vph)	423	96	988	0	284	1173		
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%		
				4 /0		NA		
Turn Type Protected Phases	Prot 5	pm+ov	NA 2 4		custom 1	12		
Protected Phases Permitted Phases	5	1	24		2	ΙZ		
	115	5	40.5		33.9	37.0		
Actuated Green, G (s)	14.5 14.5	23.4	40.5		33.9			
Effective Green, g (s)		23.4				37.0		
Actuated g/C Ratio	0.19	0.31	0.54		0.45	0.49		
Clearance Time (s)	4.0	3.1			3.1			
Vehicle Extension (s)	3.0	3.0	1000		3.0	4007		
Lane Grp Cap (vph)	339	489	1689		314	1687		
v/s Ratio Prot	c0.24	0.02	c0.32		c0.11	0.34		
v/s Ratio Perm		0.04	0 -0		c0.30	. =0		
v/c Ratio	1.25	0.20	0.58		0.90	0.70		
Uniform Delay, d1	30.2	18.9	11.6		14.7	14.7		
Progression Factor	1.00	1.00	0.21		1.28	1.21		
Incremental Delay, d2	133.8	0.2	0.5		19.6	0.8		
Delay (s)	164.0	19.1	2.8		38.4	18.5		
Level of Service	F	В	A		D	В		
Approach Delay (s)	104.5		2.8			22.4		
Approach LOS	F		Α			С		
Intersection Summary								
HCM 2000 Control Delay			34.9	F	ICM 2000	Level of Service	 С	
HCM 2000 Volume to Capac	ity ratio		0.96					
Actuated Cycle Length (s)			75.0	S	Sum of lost	time (s)	16.1	
Intersection Capacity Utilizat	ion		68.2%	10	CU Level o	of Service	С	
Analysis Period (min)			15					
c Critical Lane Group								

	1	*	†	-	-	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		† 1>			414
Traffic Volume (vph)	0	200	440	0	120	460
Future Volume (vph)	0	200	440	0	120	460
Peak Hour Factor	0.68	0.68	0.83	0.83	0.80	0.80
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	294	0	530	0	0	725
Turn Type	Perm		NA		D.P+P	NA
Protected Phases			2		4	2 4
Permitted Phases	1				2	
Detector Phase	1		2		4	2 4
Switch Phase	·					
Minimum Initial (s)	6.0		15.0		6.0	
Minimum Split (s)	11.2		21.0		11.2	
Total Split (s)	20.0		40.0		20.0	
Total Split (%)	25.0%		50.0%		25.0%	
Yellow Time (s)	3.7		4.5		3.7	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0		0.0			
Total Lost Time (s)	5.2		6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Max		None	
v/c Ratio	0.43		0.30			0.44
Control Delay	1.9		13.0			2.7
Queue Delay	0.0		0.0			0.0
Total Delay	1.9		13.0			2.7
Queue Length 50th (ft)	0		77			12
Queue Length 95th (ft)	0		117			13
Internal Link Dist (ft)	545		1933			99
Turn Bay Length (ft)	UTU		1000			33
Base Capacity (vph)	729		1761			1857
Starvation Cap Reductn	0		0			140
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.40		0.30			0.42
Neduced We Rallo	0.40		0.30			0.42

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 110: Curtis Street



	•	•	†	~	-	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	¥		†			414			
Traffic Volume (vph)	0	200	440	0	120	460			
Future Volume (vph)	0	200	440	0	120	460			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	16	16	12	12	12	12			
Grade (%)	2%		0%			4%			
Total Lost time (s)	5.2		6.0			6.0			
Lane Util. Factor	1.00		0.95			0.95			
Frt	0.86		1.00			1.00			
Flt Protected	1.00		1.00			0.99			
Satd. Flow (prot)	1808		3438			3400			
Flt Permitted	1.00		1.00			0.72			
Satd. Flow (perm)	1808		3438			2462			
Peak-hour factor, PHF	0.68	0.68	0.83	0.83	0.80	0.80			
Adj. Flow (vph)	0	294	530	0	150	575			
RTOR Reduction (vph)	247	0	0	0	0	0			
Lane Group Flow (vph)	47	0	530	0	0	725			
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%			
Turn Type	Perm		NA		D.P+P	NA			
Protected Phases			2		4	24			
Permitted Phases	1				2				
Actuated Green, G (s)	12.8		41.0			50.8			
Effective Green, g (s)	12.8		41.0			50.8			
Actuated g/C Ratio	0.16		0.51			0.63			
Clearance Time (s)	5.2		6.0						
Vehicle Extension (s)	2.0		0.2						
Lane Grp Cap (vph)	289		1761			1678			
v/s Ratio Prot			0.15			c0.05			
v/s Ratio Perm	c0.03					c0.22			
v/c Ratio	0.16		0.30			0.43			
Uniform Delay, d1	29.0		11.2			7.3			
Progression Factor	1.00		1.00			0.32			
Incremental Delay, d2	0.1		0.4			0.1			
Delay (s)	29.1		11.7			2.4			
Level of Service	С		В			A			
Approach Delay (s)	29.1		11.7			2.4			
Approach LOS	С		В			Α			
Intersection Summary									
HCM 2000 Control Delay			10.6	H	CM 2000	Level of Service	9	В	
HCM 2000 Volume to Capac	city ratio		0.38						
Actuated Cycle Length (s)			80.0	S	um of lost	t time (s)		16.4	
Intersection Capacity Utiliza	tion		55.4%			of Service		В	
Analysis Period (min)			15						
c Critical Lane Group									

	1	•	†	1	-	ļ		
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø5	
Lane Configurations	*	77	†		*	^		
Traffic Volume (vph)	30	60	700	20	380	710		
Future Volume (vph)	30	60	700	20	380	710		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	33	65	783	0	413	772		
Turn Type	Prot	Prot	NA		D.P+P	NA		
Protected Phases	4	4	2		1	125	5	
Permitted Phases					2			
Detector Phase	4	4	2		1	125		
Switch Phase								
Minimum Initial (s)	7.0	7.0	15.0		5.0		7.0	
Minimum Split (s)	11.0	11.0	20.0		8.1		11.0	
Total Split (s)	15.0	15.0	30.0		12.0		18.0	
Total Split (%)	20.0%	20.0%	40.0%		16.0%		24%	
Yellow Time (s)	3.0	3.0	3.0		3.0		3.0	
All-Red Time (s)	1.0	1.0	2.0		0.1		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.0	4.0	5.0		3.1			
Lead/Lag			Lag		Lead			
Lead-Lag Optimize?			Yes		Yes			
Recall Mode	None	None	C-Max		None		None	
v/c Ratio	0.13	0.17	0.67		1.17	0.28		
Control Delay	29.4	29.3	24.6		113.1	1.0		
Queue Delay	0.0	0.0	0.0		0.0	0.4		
Total Delay	29.4	29.3	24.6		113.1	1.4		
Queue Length 50th (ft)	14	15	161		~148	12		
Queue Length 95th (ft)	37	34	221		m#255	m14		
Internal Link Dist (ft)	551		260			143		
Turn Bay Length (ft)					90			
Base Capacity (vph)	259	408	1177		353	2710		
Starvation Cap Reductn	0	0	0		0	1347		
Spillback Cap Reductn	0	0	0		0	0		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.13	0.16	0.67		1.17	0.57		

Cycle Length: 75 Actuated Cycle Length: 75

Offset: 7 (9%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

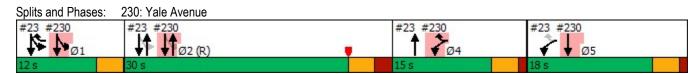
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



	1	•	†	1	1	↓		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	*	77	†		7	^		
Traffic Volume (vph)	30	60	700	20	380	710		
Future Volume (vph)	30	60	700	20	380	710		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0	4.0	5.0		3.1	3.1		
Lane Util. Factor	1.00	0.88	0.95		1.00	0.95		
Frt	1.00	0.85	1.00		1.00	1.00		
Flt Protected	0.95	1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1770	2787	3524		1770	3539		
Flt Permitted	0.95	1.00	1.00		0.22	1.00		
Satd. Flow (perm)	1770	2787	3524		401	3539		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	33	65	761	22	413	772		
RTOR Reduction (vph)	0	0	3	0	0	0		
Lane Group Flow (vph)	33	65	780	0	413	772		
Turn Type	Prot	Prot	NA		D.P+P	NA		
Protected Phases	4	4	2		1	125		
Permitted Phases					2			
Actuated Green, G (s)	10.5	10.5	25.0		33.9	55.5		
Effective Green, g (s)	10.5	10.5	25.0		33.9	51.5		
Actuated g/C Ratio	0.14	0.14	0.33		0.45	0.69		
Clearance Time (s)	4.0	4.0	5.0		3.1			
Vehicle Extension (s)	3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	247	390	1174		343	2430		
v/s Ratio Prot	0.02	c0.02	0.22		c0.14	c0.22		
v/s Ratio Perm					c0.40			
v/c Ratio	0.13	0.17	0.66		1.20	0.32		
Uniform Delay, d1	28.3	28.4	21.4		16.5	4.7		
Progression Factor	1.00	1.00	1.00		1.29	0.30		
Incremental Delay, d2	0.2	0.2	3.0		106.5	0.0		
Delay (s)	28.5	28.6	24.4		127.8	1.4		
Level of Service	С	С	С		F	Α		
Approach Delay (s)	28.6		24.4			45.5		
Approach LOS	С		С			D		
Intersection Summary								
HCM 2000 Control Delay			36.7	Н	ICM 2000	Level of Servi	ce	D
HCM 2000 Volume to Capac	city ratio		0.80					
Actuated Cycle Length (s)			75.0	S	um of lost	t time (s)		16.1
Intersection Capacity Utilizat	tion		57.7%	IC	CU Level of	of Service		В
Analysis Period (min)			15					

	٠	•	4	†	Ţ	4	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	W			4	₽		
Traffic Volume (veh/h)	10	30	30	330	560	10	
Future Volume (Veh/h)	10	30	30	330	560	10	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.61	0.61	0.89	0.89	1.00	1.00	
Hourly flow rate (vph)	16	49	34	371	560	10	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (ft)				421			
pX, platoon unblocked	0.78						
vC, conflicting volume	1004	565	570				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	867	565	570				
tC, single (s)	6.4	6.2	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	93	91	97				
cM capacity (veh/h)	245	524	1002				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	65	405	570				
Volume Left	16	34	0				
Volume Right	49	0	10				
cSH	409	1002	1700				
Volume to Capacity	0.16	0.03	0.34				
Queue Length 95th (ft)	14	3	0				
Control Delay (s)	15.4	1.1	0.0				
Lane LOS	C	Α					
Approach Delay (s)	15.4	1.1	0.0				
Approach LOS	С						
Intersection Summary							
Average Delay			1.4				
Intersection Capacity Utiliz	ation		52.2%	IC	CU Level c	of Service	
Analysis Period (min)			15				

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	1		1	1		7	ĵ⇒	
Traffic Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Future Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Peak Hour Factor	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	70	46	0	36	464	0	11	623	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4								
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	24.0	24.0		24.0	24.0		15.0	35.0		15.0	35.0	
Total Split (%)	24.5%	24.5%		24.5%	24.5%		15.3%	35.7%		15.3%	35.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
v/c Ratio		0.31		0.29	0.13		0.19	0.83		0.06	1.13	
Control Delay		25.4		37.0	20.4		42.2	44.7		39.8	110.9	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		25.4		37.0	20.4		42.2	44.7		39.8	110.9	
Queue Length 50th (ft)		36		37	12		21	260		6	~453	
Queue Length 95th (ft)		56		35	13		48	#362		23	#669	
Internal Link Dist (ft)		465			417			1385			341	
Turn Bay Length (ft)							75			50		
Base Capacity (vph)		336		239	349		190	559		187	553	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.31		0.29	0.13		0.19	0.83		0.06	1.13	

Cycle Length: 98

Actuated Cycle Length: 98

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green

Natural Cycle: 90 Control Type: Pretimed

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Golden St./Edison Middle School



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Minimum Split (s)	22.5
Total Split (s)	24.0
Total Split (%)	24%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	1		7	1		7	f)	
Traffic Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Future Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	12	12	12	12	12	12	12	12
Grade (%)		5%			-3%			4%			4%	
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.94		1.00	0.93		1.00	0.97		1.00	0.99	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1709		1666	1622		1701	1742		1669	1743	
Flt Permitted		0.87		0.67	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1518		1174	1622		1701	1742		1669	1743	
Peak-hour factor, PHF	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	44	15	44	70	23	23	36	381	83	11	591	32
RTOR Reduction (vph)	0	27	0	0	18	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	76	0	70	28	0	36	456	0	11	621	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4								
Actuated Green, G (s)		20.0		20.0	20.0		11.0	31.0		11.0	31.0	
Effective Green, g (s)		20.0		20.0	20.0		11.0	31.0		11.0	31.0	
Actuated g/C Ratio		0.20		0.20	0.20		0.11	0.32		0.11	0.32	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		309		239	331		190	551		187	551	
v/s Ratio Prot					0.02		c0.02	0.26		0.01	c0.36	
v/s Ratio Perm		0.05		c0.06								
v/c Ratio		0.25		0.29	0.08		0.19	0.83		0.06	1.13	
Uniform Delay, d1		32.7		33.0	31.6		39.5	31.0		38.9	33.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9		3.1	0.5		2.2	13.3		0.6	78.3	
Delay (s)		34.6		36.1	32.1		41.7	44.4		39.5	111.8	
Level of Service		С		D	С		D	D		D	F	
Approach Delay (s)		34.6			34.5			44.2			110.5	
Approach LOS		С			С			D			F	
Intersection Summary												
HCM 2000 Control Delay			73.7	H	CM 2000	Level of S	Service		Е			
HCM 2000 Volume to Capac	city ratio		0.53									
Actuated Cycle Length (s)			98.0	Sı	um of lost	time (s)			16.5			
Intersection Capacity Utilizat	tion		48.1%	IC	CU Level o	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥			ની	1	
Traffic Volume (vph)	10	50	70	460	600	10
Future Volume (vph)	10	50	70	460	600	10
Peak Hour Factor	0.72	0.72	0.94	0.94	0.83	0.83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	83	0	0	563	735	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			12			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	5.0		3.0		25.0	
Minimum Split (s)	9.0		7.0		30.5	
Total Split (s)	16.0		7.0		47.0	
Total Split (%)	22.9%		10.0%		67.1%	
Yellow Time (s)	3.0		3.0		4.2	
All-Red Time (s)	1.0		1.0		1.3	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	4.0				5.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		C-Min	
v/c Ratio	0.50			0.50	0.76	
Control Delay	39.1			5.3	18.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	39.1			5.3	18.7	
Queue Length 50th (ft)	35			52	216	
Queue Length 95th (ft)	55			116	256	
Internal Link Dist (ft)	384			1324	1385	
Turn Bay Length (ft)						
Base Capacity (vph)	271			1190	1114	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.31			0.47	0.66	

Cycle Length: 70 Actuated Cycle Length: 70

Offset: 3 (4%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 3: Blackstone St



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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	W			र्स	₽		
Traffic Volume (vph)	10	50	70	460	600	10	
Future Volume (vph)	10	50	70	460	600	10	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Grade (%)	7%			2%	-2%		
Total Lost time (s)	4.0			4.0	5.5		
Lane Util. Factor	1.00			1.00	1.00		
Frt	0.89			1.00	1.00		
Flt Protected	0.99			0.99	1.00		
Satd. Flow (prot)	1582			1832	1877		
Flt Permitted	0.99			0.75	1.00		
Satd. Flow (perm)	1582			1381	1877		
Peak-hour factor, PHF	0.72	0.72	0.94	0.94	0.83	0.83	
Adj. Flow (vph)	14	69	74	489	723	12	
RTOR Reduction (vph)	0	0	0	0	1	0	
Lane Group Flow (vph)	83	0	0	563	734	0	
Turn Type	Prot		pm+pt	NA	NA		
Protected Phases	4		1	12	2		
Permitted Phases			12				
Actuated Green, G (s)	6.4			50.1	35.2		
Effective Green, g (s)	6.4			50.1	35.2		
Actuated g/C Ratio	0.09			0.72	0.50		
Clearance Time (s)	4.0				5.5		
Vehicle Extension (s)	1.0				3.0		
Lane Grp Cap (vph)	144			1084	943		
v/s Ratio Prot	c0.05			c0.11	c0.39		
v/s Ratio Perm				0.26			
v/c Ratio	0.58			0.52	0.78		
Uniform Delay, d1	30.5			4.5	14.2		
Progression Factor	1.00			1.00	1.00		
Incremental Delay, d2	3.4			1.8	6.3		
Delay (s)	33.9			6.3	20.5		
Level of Service	С			Α	С		
Approach Delay (s)	33.9			6.3	20.5		
Approach LOS	С			Α	С		
Intersection Summary							
HCM 2000 Control Delay			15.5	H	CM 2000	Level of Service	В
HCM 2000 Volume to Capa	acity ratio		0.69				
Actuated Cycle Length (s)			70.0	Sı	um of lost	time (s)	13.5
Intersection Capacity Utiliz	ation		75.7%		CU Level o		D
Analysis Period (min)			15				
c Critical Lane Group							

Lane Group		۶	→	*	•	←	*	4	†	~	-	Ţ	4
Traffic Volume (vph)	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR		NBT	NBR		SBT	SBR
Future Volume (vph)	Lane Configurations		4						1		*	1	
Peak Hour Factor 0.82 0.82 0.82 0.81 0.81 0.81 0.76 0.76 0.76 0.83 0.	Traffic Volume (vph)		100	150	70		90	210	430	70	60	560	30
Heavy Vehicles (%) 3% 3% 3% 5% 5% 5% 4% 4% 4% 6% 6% 6% 6% 6	Future Volume (vph)								430	70		560	
Shared Lane Traffic (%) Lane Group Flow (vph) 0 342 0 0 357 0 276 658 0 72 711 0	Peak Hour Factor												
Lane Group Flow (vph)	Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type Perm NA Perm NA pm+pt NA Perm NA Protected Phases 4 4 4 1 12 2 Detector Phase 4 4 4 1 12 2 Detector Phase 4 4 4 1 12 2 2 Switch Phase 8 4 4 4 1 12 2 2 Minimum Initial (s) 7.0 7.0 7.0 3.0 15.0 15.0 Minimum Split (s) 13.2 13.2 13.2 13.2 7.0 21.7 21.7 Total Split (%) 23.3% 23.3% 23.3% 8.9% 36.7% 36.7% Yellow Time (s) 3.7 3.7 3.7 3.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Lost Time (s) 2.5 2.5 2.5 2.5 1.0	Shared Lane Traffic (%)												
Protected Phases 4 4 4 1 12 2 Permitted Phases 4 4 4 12 2 Switch Phase 4 4 4 4 1 12 2 Minimum Initial (s) 7.0 7.0 7.0 7.0 3.0 15.0 15.0 Minimum Split (s) 13.2 13.2 13.2 13.2 7.0 21.7 21.7 Total Split (s) 21.0 21.0 21.0 21.0 8.0 33.0 33.0 33.0 Total Split (s) 23.3% 23.3% 23.3% 23.3% 8.9% 36.7% 36.7% Yellow Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Intell Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Group Flow (vph)	0		0	0	357	0	276	658	0			0
Permitted Phases	Turn Type	Perm	NA		Perm	NA		pm+pt			Perm	NA	
Detector Phase 4	Protected Phases		4			4			12			2	
Switch Phase Minimum Initial (s) 7.0 7.0 7.0 7.0 3.0 15.0 15.0 Minimum Split (s) 13.2 13.2 13.2 13.2 7.0 21.7 21.7 Total Split (s) 21.0 21.0 21.0 21.0 8.0 33.0 33.0 Total Split (%) 23.3% 23.3% 23.3% 23.3% 8.9% 36.7% 36.7% Yellow Time (s) 3.7 3.7 3.7 3.7 3.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Lost Time Adjust (s) 0.0	Permitted Phases	4			4			12					
Minimum Initial (s) 7.0 7.0 7.0 7.0 7.0 3.0 15.0 Minimum Split (s) 13.2 13.2 13.2 13.2 7.0 21.7 21.7 Total Split (s) 21.0 21.0 21.0 21.0 8.0 33.0 33.0 Total Split (%) 23.3% 23.3% 23.3% 8.9% 36.7% 36.7% Yellow Time (s) 3.7 3.7 3.7 3.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Lost Time Adjust (s) 0.0<	Detector Phase	4	4		4	4		1	1 2		2	2	
Minimum Split (s) 13.2 13.2 13.2 13.2 21.0 21.0 21.0 21.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 36.7% 36.7% Yellow Time (s) 3.7 3.7 3.7 3.0 5.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 2.5 1.0 1.7 1.2 1.7 1.2 1.7 1.2 1.2 1.2 1.2 1.2 1.2	Switch Phase												
Total Split (s) 21.0 21.0 21.0 21.0 21.0 33.0 33.0 33.0 33.0 33.0 36.7% 36.7% Yellow Time (s) 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 2.5 1.0 1.7 1.7 1.7 1.7 Lost Time Adjust (s) 0.0 0.	Minimum Initial (s)												
Total Split (%) 23.3% 23.3% 23.3% 23.3% 8.9% 36.7% 36.7% Yellow Time (s) 3.7 3.7 3.7 3.7 3.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 1.7 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.2 6.2 4.0 6.7 6.7 Lead/Lag Lag Lag Lag Lead Lag Lag Lag Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Yes Yes Yes Recall Mode None None None None Min C-Max C-Max V/c Ratio 0.95 1.32 1.77 0.91 0.91 1.27 Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) -252 -309 -189 343 39 -516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 562 316 1219 1324 Turn Bay Length (ft) 562 361 270 156 724 79 558 Starvation Cap Reducth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Minimum Split (s)	13.2	13.2		13.2	13.2		7.0			21.7		
Yellow Time (s) 3.7 3.7 3.7 3.7 3.0 5.0 5.0 All-Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.2 6.2 4.0 6.7 6.7 Lead/Lag Lag	Total Split (s)	21.0	21.0		21.0	21.0		8.0			33.0	33.0	
All-Red Time (s) 2.5 2.5 2.5 2.5 1.0 1.7 1.7 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.2 6.2 4.0 6.7 6.7 Lead/Lag Lag Lag <td>Total Split (%)</td> <td>23.3%</td> <td>23.3%</td> <td></td> <td>23.3%</td> <td>23.3%</td> <td></td> <td>8.9%</td> <td></td> <td></td> <td>36.7%</td> <td>36.7%</td> <td></td>	Total Split (%)	23.3%	23.3%		23.3%	23.3%		8.9%			36.7%	36.7%	
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.2 6.2 4.0 6.7 6.7 Lead/Lag Lag Lag Lag Lag Lag Lag Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Recall Mode None None None Min C-Max C-Max V/c Ratio 0.95 1.32 1.77 0.91 0.91 1.27 Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 <td>Yellow Time (s)</td> <td>3.7</td> <td>3.7</td> <td></td> <td>3.7</td> <td>3.7</td> <td></td> <td>3.0</td> <td></td> <td></td> <td>5.0</td> <td>5.0</td> <td></td>	Yellow Time (s)	3.7	3.7		3.7	3.7		3.0			5.0	5.0	
Total Lost Time (s) 6.2 6.2 4.0 6.7 6.7 Lead/Lag Lag Lag Lag Lead Lag Lag Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Recall Mode None None None None Min C-Max C-Max V/c Ratio 0.95 1.32 1.77 0.91 0.91 1.27 Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 1	All-Red Time (s)	2.5	2.5		2.5	2.5		1.0			1.7	1.7	
Lead/Lag Lag Lag Lag Lead Lag Lag Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Recall Mode None None None None Min C-Max C-Max V/c Ratio 0.95 1.32 1.77 0.91 0.91 1.27 Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79	Lost Time Adjust (s)		0.0					0.0			0.0	0.0	
Lead-Lag Optimize? Yes	Total Lost Time (s)		6.2			6.2		4.0			6.7	6.7	
Recall Mode None None None None Min C-Max C-Max v/c Ratio 0.95 1.32 1.77 0.91 0.91 1.27 Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 50 50 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0		Lag	Lag		Lag	Lag		Lead			Lag	Lag	
V/c Ratio 0.95 1.32 1.77 0.91 0.91 1.27 Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 <td>Lead-Lag Optimize?</td> <td>Yes</td> <td>Yes</td> <td></td> <td>Yes</td> <td>Yes</td> <td></td> <td>Yes</td> <td></td> <td></td> <td>Yes</td> <td>Yes</td> <td></td>	Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Control Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0	Recall Mode	None	None		None	None		Min			C-Max	C-Max	
Queue Delay 0.0	v/c Ratio		0.95			1.32		1.77	0.91		0.91	1.27	
Total Delay 76.7 201.8 392.6 43.9 116.1 166.9 Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0	Control Delay												
Queue Length 50th (ft) ~252 ~309 ~189 343 39 ~516 Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0	Queue Delay					0.0		0.0	0.0		0.0		
Queue Length 95th (ft) #367 #419 #272 382 #111 #646 Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0	Total Delay		76.7			201.8		392.6	43.9		116.1	166.9	
Internal Link Dist (ft) 562 316 1219 1324 Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0	Queue Length 50th (ft)												
Turn Bay Length (ft) 100 50 Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0	Queue Length 95th (ft)							#272	382		#111		
Base Capacity (vph) 361 270 156 724 79 558 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0	Internal Link Dist (ft)		562			316			1219			1324	
Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0	Turn Bay Length (ft)							100			50		
Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0	Base Capacity (vph)		361			270		156	724		79	558	
Storage Cap Reductn 0 0 0 0 0	Starvation Cap Reductn		0			0		0	0		0	0	
	Spillback Cap Reductn		0			0		0	0		0	0	_
	Storage Cap Reductn		0			0		0	0		0	0	
	Reduced v/c Ratio		0.95			1.32		1.77	0.91		0.91	1.27	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

4: Britannia St./Westfield Rd.

Splits and Phases: 4: Britannia St./Westfield Rd. Ø2 (R) #kø3

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Interception Cumpos	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		*	1→		7	1	
Traffic Volume (vph)	30	100	150	70	130	90	210	430	70	60	560	30
Future Volume (vph)	30	100	150	70	130	90	210	430	70	60	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	14	12	10	12	12	10	13	12
Grade (%)		4%			-8%			3%			-8%	
Total Lost time (s)		6.2			6.2		4.0	4.0		6.7	6.7	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.96		1.00	0.98		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1835			1900		1596	1762		1653	1912	
FIt Permitted		0.86			0.62		0.16	1.00		0.16	1.00	
Satd. Flow (perm)		1594			1197		263	1762		273	1912	
Peak-hour factor, PHF	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Adj. Flow (vph)	37	122	183	86	160	111	276	566	92	72	675	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	342	0	0	357	0	276	658	0	72	711	0
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			1 2			2		
Actuated Green, G (s)		20.4			20.4		29.5	33.5		25.5	25.5	
Effective Green, g (s)		20.4			20.4		29.5	33.5		25.5	25.5	
Actuated g/C Ratio		0.23			0.23		0.33	0.37		0.28	0.28	
Clearance Time (s)		6.2			6.2		4.0			6.7	6.7	
Vehicle Extension (s)		3.0			3.0		1.0			0.2	0.2	
Lane Grp Cap (vph)		361			271		145	655		77	541	
v/s Ratio Prot							c0.08	0.37			0.37	
v/s Ratio Perm		0.21			c0.30		c0.54			0.26		
v/c Ratio		0.95			1.32		1.90	1.00		0.94	1.31	
Uniform Delay, d1		34.3			34.8		30.5	28.2		31.4	32.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		33.6			166.5		431.2	36.3		85.6	154.2	
Delay (s)		67.8			201.3		461.7	64.5		117.1	186.4	
Level of Service		Е			F		F	Е		F	F	
Approach Delay (s)		67.8			201.3			181.9			180.0	
Approach LOS		E			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			168.0	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capacit	y ratio		1.20									
Actuated Cycle Length (s)			90.0		um of lost				20.9			
Intersection Capacity Utilization	on		87.1%	IC	CU Level o	of Service	9		Е			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1→			र्स
Traffic Volume (vph)	110	80	750	110	50	750
Future Volume (vph)	110	80	750	110	50	750
Peak Hour Factor	0.84	0.84	0.96	0.96	0.83	0.83
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	896	0	0	964
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	12
Permitted Phases					12	
Detector Phase	4		2		1	12
Switch Phase						
Minimum Initial (s)	5.0		21.0		5.0	
Minimum Split (s)	9.2		26.8		9.0	
Total Split (s)	19.0		42.0		9.0	
Total Split (%)	27.1%		60.0%		12.9%	
Yellow Time (s)	3.0		4.2		3.0	
All-Red Time (s)	1.2		1.6		1.0	
Lost Time Adjust (s)	0.0		0.0			
Total Lost Time (s)	4.2		5.8			
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		Max	
v/c Ratio	0.72		0.74			0.92
Control Delay	35.1		10.6			26.9
Queue Delay	0.0		0.1			4.1
Total Delay	35.1		10.7			31.0
Queue Length 50th (ft)	74		99			157
Queue Length 95th (ft)	119		#524			#412
Internal Link Dist (ft)	454		519			1219
Turn Bay Length (ft)						
Base Capacity (vph)	442		1210			1044
Starvation Cap Reductn	0		18			0
Spillback Cap Reductn	1		0			46
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.51		0.75			0.97

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 5 (7%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Atkins Street



	•	•	†	1	-	↓		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	¥		1			4		
Traffic Volume (vph)	110	80	750	110	50	750		
Future Volume (vph)	110	80	750	110	50	750		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	15	12	16	12	12	16		
Grade (%)	-10%		-2%			1%		
Total Lost time (s)	4.2		5.8			4.0		
Lane Util. Factor	1.00		1.00			1.00		
Frt	0.94		0.98			1.00		
Flt Protected	0.97		1.00			1.00		
Satd. Flow (prot)	1916		2055			2034		
FIt Permitted	0.97		1.00			0.72		
Satd. Flow (perm)	1916		2055			1471		
Peak-hour factor, PHF	0.84	0.84	0.96	0.96	0.83	0.83		
Adj. Flow (vph)	131	95	781	115	60	904		
RTOR Reduction (vph)	40	0	7	0	0	0		
Lane Group Flow (vph)	186	0	889	0	0	964		
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%		
Turn Type	Prot		NA		pm+pt	NA		
Protected Phases	4		2		1	12		
Permitted Phases					12			
Actuated Green, G (s)	10.0		41.0			46.0		
Effective Green, g (s)	10.0		41.0			46.0		
Actuated g/C Ratio	0.14		0.59			0.66		
Clearance Time (s)	4.2		5.8					
Vehicle Extension (s)	1.0		0.2					
Lane Grp Cap (vph)	273		1203			1006		
v/s Ratio Prot	c0.10		0.43			c0.07		
v/s Ratio Perm						c0.56		
v/c Ratio	0.68		0.74			0.96		
Uniform Delay, d1	28.5		10.6			11.1		
Progression Factor	1.00		0.54			1.00		
Incremental Delay, d2	5.5		3.1			19.9		
Delay (s)	33.9		8.9			31.0		
Level of Service	С		Α			С		
Approach Delay (s)	33.9		8.9			31.0		
Approach LOS	С		Α			С		
Intersection Summary								
HCM 2000 Control Delay			21.8	Н	CM 2000	Level of Service	ce C	
HCM 2000 Volume to Capac	city ratio		0.91				-	
Actuated Cycle Length (s)	,		70.0	S	um of lost	t time (s)	14.0	
Intersection Capacity Utiliza	tion		98.3%			of Service	F	
Analysis Period (min)			15					
c Critical Lane Group								

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	1		7	^			1	
Traffic Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Future Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Peak Hour Factor	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	341	268	0	23	761	0	0	1011	0
Turn Type		NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Detector Phase	4	4		4	4		2	2			2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		20.0	20.0			20.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		25.5	25.5			25.5	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0			45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%			64.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2			4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.3	1.3			1.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max			C-Max	
v/c Ratio		0.06		0.94	0.48		0.22	0.72			0.87	
Control Delay		0.2		61.1	10.3		14.2	16.0			17.0	
Queue Delay		0.0		0.0	0.0		0.0	0.2			0.9	
Total Delay		0.2		61.1	10.3		14.2	16.3			17.9	
Queue Length 50th (ft)		0		140	27		5	221			251	
Queue Length 95th (ft)		0		#246	67		19	340			m323	
Internal Link Dist (ft)		295			549			582			519	
Turn Bay Length (ft)							300					
Base Capacity (vph)		530		379	569		104	1056			1167	
Starvation Cap Reductn		0		0	0		0	0			38	
Spillback Cap Reductn		0		0	3		0	38			0	
Storage Cap Reductn		0		0	0		0	0			0	
Reduced v/c Ratio		0.05		0.90	0.47		0.22	0.75			0.90	

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 75

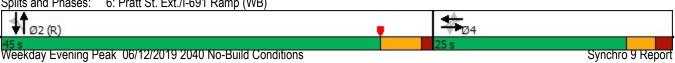
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Pratt St. Ext./I-691 Ramp (WB)



	۶	→	*	•	←	•	1	†	~	1	†	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		7	₽		*	^			1	
Traffic Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Future Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	10	10	10	12	12	12	8	16	16
Grade (%)		6%			-4%			-3%			2%	
Total Lost time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.86		1.00	0.85		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1589		1701	1522		1745	1837			2027	
FIt Permitted		1.00		0.74	1.00		0.10	1.00			1.00	
Satd. Flow (perm)		1589		1322	1522		182	1837			2027	
Peak-hour factor, PHF	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	0	0	29	341	0	268	23	761	0	0	1000	11
RTOR Reduction (vph)	0	21	0	0	135	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	8	0	341	133	0	23	761	0	0	1011	0
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type		NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Actuated Green, G (s)		19.3		19.3	19.3		40.3	40.3			40.3	
Effective Green, g (s)		19.3		19.3	19.3		40.3	40.3			40.3	
Actuated g/C Ratio		0.28		0.28	0.28		0.58	0.58			0.58	
Clearance Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Vehicle Extension (s)		1.5		1.5	1.5		0.2	0.2			0.2	
Lane Grp Cap (vph)		438		364	419		104	1057			1166	
v/s Ratio Prot		0.01			0.09			0.41			c0.50	
v/s Ratio Perm				c0.26			0.13					
v/c Ratio		0.02		0.94	0.32		0.22	0.72			0.87	
Uniform Delay, d1		18.5		24.8	20.1		7.2	10.8			12.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00			0.85	
Incremental Delay, d2		0.0		30.8	0.2		4.8	4.2			4.3	
Delay (s)		18.5		55.5	20.3		12.1	15.0			15.0	
Level of Service		В		E	С		В	В			В	
Approach Delay (s)		18.5			40.0			14.9			15.0	
Approach LOS		В			D			В			В	
Intersection Summary												
HCM 2000 Control Delay			21.3	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacit	y ratio		0.89									
Actuated Cycle Length (s)			70.0		um of lost				10.4			
Intersection Capacity Utilization	n		80.9%	IC	U Level o	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	1			ર્ન	7	*	1		1	†	
Traffic Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Future Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	282	0	0	297	242	33	967	0	267	800	0
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8			2		1	12	
Permitted Phases						8	2			12		
Detector Phase	4	4		8	8	8	2	2		1	12	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	15.0	15.0		3.0		
Minimum Split (s)	10.5	10.5		10.8	10.8	10.8	21.4	21.4		7.0		
Total Split (s)	20.5	20.5		20.8	20.8	20.8	41.2	41.2		12.0		
Total Split (%)	16.9%	16.9%		17.1%	17.1%	17.1%	33.9%	33.9%		9.9%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		3.0		
All-Red Time (s)	2.5	2.5		2.8	2.8	2.8	2.2	2.2		1.0		
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.5	5.5			5.8	5.8	6.4	6.4		4.0		
Lead/Lag	Lag	Lag					Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes					Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	Max	Max		Min		
v/c Ratio	0.91	0.96			1.17	1.07	0.15	1.52		1.32	0.51	
Control Delay	79.3	85.0			148.8	122.6	27.8	268.2		196.8	19.4	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	79.3	85.0			148.8	122.6	27.8	268.2		196.8	19.4	
Queue Length 50th (ft)	152	161			~206	~151	13	~797		~154	150	
Queue Length 95th (ft)	#321	#346			#493	#410	48	#1407		#325	250	
Internal Link Dist (ft)		249			421			2589			582	
Turn Bay Length (ft)						175	50			200		
Base Capacity (vph)	280	294			254	226	225	637		203	1582	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	_
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.91	0.96			1.17	1.07	0.15	1.52		1.32	0.51	_

Cycle Length: 121.5 Actuated Cycle Length: 99.9 Natural Cycle: 150

Control Type: Actuated-Uncoordinated

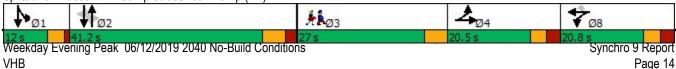
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: Camp Street/I-691 Ramp (EB)



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	1			ર્ન	7	7	f)		ሻ	↑ ↑	
Traffic Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Future Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	10	10	10	12	12	12	10	10	10
Grade (%)		6%			-4%			-2%			5%	
Total Lost time (s)	5.5	5.5			5.8	5.8	6.4	6.4		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	0.95	
Frt	1.00	0.96			1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1852	1869			1681	1493	1787	1812		1610	3165	
Flt Permitted	0.95	1.00			0.96	1.00	0.34	1.00		0.11	1.00	
Satd. Flow (perm)	1852	1869		2.21	1681	1493	639	1812		193	3165	
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	256	205	77	264	33	242	33	728	239	267	707	93
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	256	271	0	0	297	242	33	967	0	267	792	0
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8	•	•	2		1	12	
Permitted Phases	45.0	45.0			45.0	8	2	25.0		12	47.0	
Actuated Green, G (s)	15.2	15.2			15.2	15.2	35.2	35.2		43.3	47.3	
Effective Green, g (s)	15.2	15.2			15.2	15.2	35.2	35.2		43.3	47.3	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.34	0.34		0.42	0.46	
Clearance Time (s)	5.5 2.0	5.5 2.0			5.8 2.5	5.8 2.5	6.4 0.2	6.4 0.2		4.0 1.0		
Vehicle Extension (s)											4450	
Lane Grp Cap (vph)	272	275			247	219	217	618		192	1450	
v/s Ratio Prot	0.14	c0.14			c0.18	0.46	0.05	c0.53		c0.11	0.25	
v/s Ratio Perm	0.04	0.00			1 20	0.16	0.05	1 56		0.47	0.55	
v/c Ratio	0.94 43.6	0.99 43.9			1.20 44.0	1.11 44.0	0.15 23.6	1.56 34.0		1.39 25.1	0.55 20.2	
Uniform Delay, d1 Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.5	49.7			123.1	91.8	1.00	262.0		204.5	0.2	
Delay (s)	82.0	93.5			167.1	135.8	25.1	296.0		229.6	20.4	
Level of Service	02.0 F	93.5 F			107.1	133.6 F	23.1 C	290.0 F		229.0 F	20.4 C	
Approach Delay (s)	'	88.1			153.1		U	287.0		'	72.8	
Approach LOS		F			F			F			72.0 E	
Intersection Summary												
HCM 2000 Control Delay			157.3	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capac	ity ratio		1.28									
Actuated Cycle Length (s)			103.2		um of lost				25.7			
Intersection Capacity Utilizat	ion		104.8%	IC	CU Level	of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Future Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Peak Hour Factor	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	393	0	0	272	0	0	894	0	0	783	0
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0			15.0	15.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		9.0			20.5	20.5	
Total Split (s)	26.9	26.9		26.9	26.9		12.0			40.5	40.5	
Total Split (%)	27.1%	27.1%		27.1%	27.1%		12.1%			40.7%	40.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.0			3.9	3.9	
All-Red Time (s)	1.3	1.3		1.3	1.3		1.0			1.6	1.6	
Lost Time Adjust (s)		0.0			0.0						0.0	
Total Lost Time (s)		4.9			4.9						5.5	
Lead/Lag	Lag	Lag		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		Max			Min	Min	
v/c Ratio		0.99			0.62			1.07			1.05	
Control Delay		77.5			35.4			71.3			74.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		77.5			35.4			71.3			74.5	
Queue Length 50th (ft)		191			115			~321			~385	
Queue Length 95th (ft)		#485			220			#879			#757	
Internal Link Dist (ft)		294			255			709			2589	
Turn Bay Length (ft)												
Base Capacity (vph)		395			442			838			743	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.99			0.62			1.07			1.05	

Cycle Length: 99.4 Actuated Cycle Length: 83.4

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

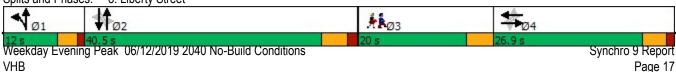
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Liberty Street



Lane Configurations Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Reduced v/c Ratio Intersection Summary	Lane Group	Ø3
Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Recall Mode v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	·	
Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (s) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (s) Yellow Time (s) All-Red Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	Heavy Vehicles (%)	
Turn Type Protected Phases Permitted Phases Detector Phase Switch Phase Minimum Initial (s) 1.0 Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	Shared Lane Traffic (%)	
Protected Phases Permitted Phases Detector Phase Switch Phase Minimum Initial (s) 1.0 Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	Lane Group Flow (vph)	
Permitted Phases Detector Phase Switch Phase Minimum Initial (s) 1.0 Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	Turn Type	
Detector Phase Switch Phase Minimum Initial (s) 1.0 Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	Protected Phases	3
Switch Phase Minimum Initial (s) 1.0 Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	Permitted Phases	
Minimum Initial (s) 1.0 Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Minimum Split (s) 20.0 Total Split (s) 20.0 Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
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Total Split (%) 20% Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Yellow Time (s) 4.0 All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
All-Red Time (s) 0.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		0.0
Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	` /	
Recall Mode v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		None
Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	• ,	
Turn Bay Length (ff) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Storage Cap Reductn Reduced v/c Ratio		
Reduced v/c Ratio		
Intersection Summary	Reduced v/c Ratio	
	Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Future Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		8%			-9%			-1%			-2%	
Total Lost time (s)		4.9			4.9			4.0			5.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.95			0.99			0.99			0.98	
Flt Protected		0.99			1.00			1.00			1.00	
Satd. Flow (prot)		1685			1819			1832			1829	
Flt Permitted		0.88			0.91			0.81			0.96	
Satd. Flow (perm)		1487			1658			1497			1756	
Peak-hour factor, PHF	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Adj. Flow (vph)	53	191	149	25	235	12	82	765	47	24	663	96
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	393	0	0	271	0	0	894	0	0	783	0
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		22.2			22.2			43.4			35.3	
Effective Green, g (s)		22.2			22.2			43.4			35.3	
Actuated g/C Ratio		0.26			0.26			0.50			0.41	
Clearance Time (s)		4.9			4.9						5.5	
Vehicle Extension (s)		1.5			1.5						2.0	
Lane Grp Cap (vph)		380			424			780			714	
v/s Ratio Prot								c0.11				
v/s Ratio Perm		c0.26			0.16			c0.47			0.45	
v/c Ratio		1.03			0.64			1.15			1.10	
Uniform Delay, d1		32.2			28.7			21.7			25.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		55.3			2.3			80.5			63.2	
Delay (s)		87.5			31.0			102.2			88.9	
Level of Service		F			С			F			F	
Approach Delay (s)		87.5			31.0			102.2			88.9	
Approach LOS		F			С			F			F	
Intersection Summary												
HCM 2000 Control Delay			87.0	H	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capa	city ratio		1.06									
Actuated Cycle Length (s)			86.7		um of lost	. ,			18.4			
Intersection Capacity Utiliza	tion		107.0%	IC	U Level o	of Service	•		G			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	†	7	7	†	7	*	†	7	1	1	
Traffic Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Future Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	286	221	209	349	209	313	613	238	113	713	0
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		7	7		1	6		5	2	
Permitted Phases			4			7	6		6	2		
Detector Phase	4	4	4	7	7	7	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	5.0	15.0	15.0	4.5	15.0	
Minimum Split (s)	13.0	13.0	13.0	15.1	15.1	15.1	9.0	21.2	21.2	9.0	21.2	
Total Split (s)	22.0	22.0	22.0	32.1	32.1	32.1	14.0	46.2	46.2	14.0	46.2	
Total Split (%)	16.0%	16.0%	16.0%	23.4%	23.4%	23.4%	10.2%	33.6%	33.6%	10.2%	33.6%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.9	3.0	3.9	
All-Red Time (s)	2.0	2.0	2.0	4.1	4.1	4.1	1.0	2.3	2.3	1.0	2.3	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	7.1	7.1	7.1	4.0	6.2	6.2	4.0	6.2	
Lead/Lag	Lag	Lag	Lag				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
v/c Ratio	0.37	1.10	0.52	0.61	0.97	0.45	1.57	1.01	0.39	0.62	1.22	
Control Delay	52.8	132.7	13.1	52.7	88.7	9.1	303.9	79.1	13.2	36.1	147.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.8	132.7	13.1	52.7	88.7	9.1	303.9	79.1	13.2	36.1	147.6	
Queue Length 50th (ft)	61	~232	8	139	254	0	~275	443	39	44	~628	
Queue Length 95th (ft)	114	#404	48	256	#520	59	#484	#754	100	94	#923	
Internal Link Dist (ft)		485			509			712			709	
Turn Bay Length (ft)			200	200		300				200		
Base Capacity (vph)	246	260	421	340	358	469	199	605	616	204	586	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.37	1.10	0.52	0.61	0.97	0.45	1.57	1.01	0.39	0.55	1.22	

Cycle Length: 137.3 Actuated Cycle Length: 118.9

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

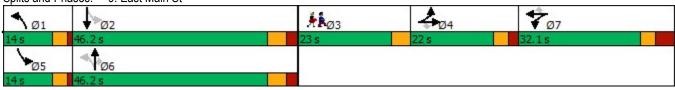
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: East Main St



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	17%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	_
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	↑	7	7	↑	7	7	↑	7	7	1€	
Traffic Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Future Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	11	11	11	11	11	11	11
Grade (%)	_	2%	_		6%			1%			-1%	
Total Lost time (s)	5.0	5.0	5.0	7.1	7.1	7.1	4.0	6.2	6.2	4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1718	1809	1691	1612	1697	1442	1638	1724	1465	1670	1721	
FIt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	1718	1809	1691	1612	1697	1442	165	1724	1465	175	1721	
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	91	286	221	209	349	209	312	612	238	112	612	100
RTOR Reduction (vph)	0	0	179	0	0	166	0	0	104	0	4	0
Lane Group Flow (vph)	91	286	42	209	349	43	313	613	134	113	709	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		7	7	_	1	6		5	2	
Permitted Phases	47.4	4= 4	4	05.4	05.4	7	6	44.0	6	2	40.0	
Actuated Green, G (s)	17.1	17.1	17.1	25.1	25.1	25.1	51.9	41.8	41.8	48.7	40.2	
Effective Green, g (s)	17.1	17.1	17.1	25.1	25.1	25.1	51.9	41.8	41.8	48.7	40.2	
Actuated g/C Ratio	0.14	0.14	0.14	0.21	0.21	0.21	0.43	0.34	0.34	0.40	0.33	
Clearance Time (s)	5.0	5.0	5.0	7.1	7.1	7.1	4.0	6.2	6.2	4.0	6.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	240	253	236	331	348	296	191	590	501	173	566	
v/s Ratio Prot	0.05	c0.16	0.00	0.13	c0.21	0.00	c0.13	0.36	0.00	0.05	0.41	
v/s Ratio Perm	0.00	4.40	0.02	0.00	4.00	0.03	c0.56	4.04	0.09	0.21	4.05	
v/c Ratio	0.38	1.13	0.18	0.63	1.00	0.15	1.64	1.04	0.27	0.65	1.25	
Uniform Delay, d1	47.7	52.5	46.3	44.3	48.5	39.7	33.1	40.1	29.1	28.8	40.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	96.3	0.1	2.9	49.0	0.1	309.9	47.5	0.3	6.6	127.7	
Delay (s)	48.0	148.8 F	46.4	47.2	97.5	39.8	343.0 F	87.7	29.4	35.4	168.7	
Level of Service	D	•	D	D	F	D	Г	F 144.4	С	D	F	
Approach Delay (s) Approach LOS		95.6 F			68.0 E			144.4 F			150.4 F	
Intersection Summary												
HCM 2000 Control Delay			119.7	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capaci	ty ratio		1.35									
Actuated Cycle Length (s)			122.1	Sı	um of lost	time (s)			26.3			
Intersection Capacity Utilizati	on		85.5%		U Level)		Е			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			413			473	
Traffic Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Future Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Peak Hour Factor	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	159	0	0	1115	0	0	955	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		2	2		2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.3	11.3		11.3	11.3		20.5	20.5		20.5	20.5	
Total Split (s)	14.0	14.0		14.0	14.0		33.0	33.0		33.0	33.0	
Total Split (%)	17.5%	17.5%		17.5%	17.5%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.3			5.3			5.5			5.5	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio		0.09			0.69			0.53			0.46	
Control Delay		31.3			45.1			11.0			11.7	
Queue Delay		0.0			3.6			0.7			0.0	
Total Delay		31.3			48.7			11.7			11.7	
Queue Length 50th (ft)		6			60			80			88	
Queue Length 95th (ft)		18			#105			#415			#333	
Internal Link Dist (ft)		424			718			263			712	
Turn Bay Length (ft)												
Base Capacity (vph)		180			233			2107			2072	
Starvation Cap Reductn		0			0			580			0	
Spillback Cap Reductn		0			28			0			47	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.78			0.73			0.47	

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 19.2 (24%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Charles Street



Lane Group Lane Configurations	Ø3
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	41%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn Reduced v/c Ratio	
Reduced V/C Rallo	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			413			413	
Traffic Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Future Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	14	14	14
Grade (%)		-7%			4%			-5%			2%	
Total Lost time (s)		5.3			5.3			5.5			5.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		1.00			0.95			0.99			1.00	
Flt Protected		0.95			0.98			1.00			1.00	
Satd. Flow (prot)		2117			1672			3532			3646	
Flt Permitted		0.57			0.87			0.92			0.88	
Satd. Flow (perm)		1281			1487			3262			3209	
Peak-hour factor, PHF	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Adj. Flow (vph)	15	0	0	58	43	58	23	1046	46	34	899	22
RTOR Reduction (vph)	0	0	0	0	25	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	15	0	0	134	0	0	1113	0	0	954	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		11.0			11.0			48.4			48.4	
Effective Green, g (s)		11.0			11.0			48.4			48.4	
Actuated g/C Ratio		0.14			0.14			0.60			0.60	
Clearance Time (s)		5.3			5.3			5.5			5.5	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		176			204			1973			1941	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.09			c0.34			0.30	
v/c Ratio		0.09			0.66			0.56			0.49	
Uniform Delay, d1		30.1			32.7			9.5			8.9	
Progression Factor		1.00			1.00			0.82			1.00	
Incremental Delay, d2		0.1			5.7			8.0			0.9	
Delay (s)		30.2			38.4			8.6			9.8	
Level of Service		С			D			Α			Α	
Approach Delay (s)		30.2			38.4			8.6			9.8	
Approach LOS		С			D			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			11.4	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capacit	ty ratio		0.53									
Actuated Cycle Length (s)			80.0	Sı	um of lost	time (s)			14.8			
Intersection Capacity Utilization	on		59.3%	IC	U Level o	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			414	†	
Traffic Volume (vph)	70	70	110	900	770	70
Future Volume (vph)	70	70	110	900	770	70
Peak Hour Factor	0.74	0.74	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	190	0	0	1278	976	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	6.0		6.0		15.0	
Minimum Split (s)	11.2		11.2		21.0	
Total Split (s)	20.0		20.0		40.0	
Total Split (%)	25.0%		25.0%		50.0%	
Yellow Time (s)	3.7		3.7		4.5	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	5.2				6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		C-Max	
v/c Ratio	0.63			0.71	0.63	
Control Delay	31.8			11.2	20.7	
Queue Delay	0.3			0.9	1.2	
Total Delay	32.1			12.1	21.9	
Queue Length 50th (ft)	64			102	98	
Queue Length 95th (ft)	91			76	281	
Internal Link Dist (ft)	372			99	263	
Turn Bay Length (ft)						
Base Capacity (vph)	403			1804	1555	
Starvation Cap Reductn	0			261	218	
Spillback Cap Reductn	29			181	342	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.51			0.83	0.80	
	5.51			0.00	0.00	

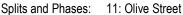
Cycle Length: 80

Actuated Cycle Length: 80

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated





	۶	*	4	1		4			
Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations	Y			414	†				
Traffic Volume (vph)	70	70	110	900	770	70			
Future Volume (vph)	70	70	110	900	770	70			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	16	16	12	12	12	12			
Grade (%)	-6%			-5%	5%				
Total Lost time (s)	5.2			5.2	6.0				
Lane Util. Factor	1.00			0.95	0.95				
Frt	0.93			1.00	0.99				
Flt Protected	0.98			0.99	1.00				
Satd. Flow (prot)	1940			3539	3375				
Flt Permitted	0.98			0.64	1.00				
Satd. Flow (perm)	1940			2286	3375				
Peak-hour factor, PHF	0.74	0.74	0.79	0.79	0.86	0.86			
Adj. Flow (vph)	95	95	139	1139	895	81			
RTOR Reduction (vph)	48	0	0	0	8	0			
Lane Group Flow (vph)	142	0	0	1278	968	0			
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%			
Turn Type	Prot		D.P+P	NA	NA				
Protected Phases	4		1	12	2				
Permitted Phases			2						
Actuated Green, G (s)	10.6			53.0	36.6				
Effective Green, g (s)	10.6			53.0	36.6				
Actuated g/C Ratio	0.13			0.66	0.46				
Clearance Time (s)	5.2				6.0				
Vehicle Extension (s)	1.0				0.2				
Lane Grp Cap (vph)	257			1771	1544				
v/s Ratio Prot	c0.07			c0.15	0.29				
v/s Ratio Perm				c0.33					
v/c Ratio	0.55			0.72	0.63				
Uniform Delay, d1	32.5			8.7	16.5				
Progression Factor	1.00			1.60	1.10				
Incremental Delay, d2	1.5			1.0	1.7				
Delay (s)	34.0			15.0	19.9				
Level of Service	С			В	В				
Approach Delay (s)	34.0			15.0	19.9				
Approach LOS	С			В	В				
Intersection Summary									
HCM 2000 Control Delay			18.4	H	CM 2000	Level of Service		В	
HCM 2000 Volume to Capa	acity ratio		0.69						
Actuated Cycle Length (s)			80.0		um of lost	٠,	16.		
Intersection Capacity Utiliza	ation		73.4%	IC	U Level o	of Service		D	
Analysis Period (min)			15						
c Critical Lane Group									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	7	1			4			4	
Traffic Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Future Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Peak Hour Factor	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	293	13	86	357	0	0	674	0	0	792	0
Turn Type	Split	NA	Perm	Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	12.3	12.3	12.3	12.3	12.3		21.5	21.5		21.5	21.5	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		36.5	36.5		36.5	36.5	
Total Split (%)	22.6%	22.6%	22.6%	22.6%	22.6%		33.0%	33.0%		33.0%	33.0%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Lead/Lag	Lag	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes									
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
v/c Ratio		0.81	0.04	0.23	0.93			1.20			1.51	
Control Delay		57.3	36.1	37.0	72.1			135.4			268.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		57.3	36.1	37.0	72.1			135.4			268.2	
Queue Length 50th (ft)		148	6	38	188			~423			~584	
Queue Length 95th (ft)		#266	21	77	#314			#774			#875	
Internal Link Dist (ft)		340			311			2056			1933	
Turn Bay Length (ft)			25	50								
Base Capacity (vph)		381	333	372	383			564			523	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.77	0.04	0.23	0.93			1.20			1.51	

Cycle Length: 110.5 Actuated Cycle Length: 95.1 Natural Cycle: 150

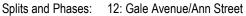
Control Type: Actuated-Uncoordinated

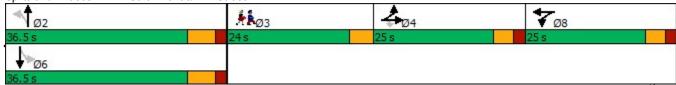
Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.





Lana Craun	Ø3
Lane Group	พง
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્ન	7	7	1			4			4	
Traffic Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Future Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frt		1.00	0.85	1.00	0.98			0.99			0.97	
Flt Protected		0.97	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1813	1583	1770	1818			1843			1798	
Flt Permitted		0.97	1.00	0.95	1.00			0.96			0.91	
Satd. Flow (perm)		1813	1583	1770	1818			1762			1632	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	160	133	13	86	300	57	12	614	48	26	571	195
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	293	13	86	357	0	0	674	0	0	792	0
Turn Type	Split	NA	Perm	Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		18.9	18.9	20.0	20.0			30.5			30.5	
Effective Green, g (s)		18.9	18.9	20.0	20.0			30.5			30.5	
Actuated g/C Ratio		0.19	0.19	0.21	0.21			0.31			0.31	
Clearance Time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		351	307	363	373			551			511	
v/s Ratio Prot		c0.16		0.05	c0.20							
v/s Ratio Perm			0.01					0.38			c0.49	
v/c Ratio		0.83	0.04	0.24	0.96			1.22			1.55	
Uniform Delay, d1		37.7	31.9	32.3	38.3			33.5			33.5	
Progression Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		15.6	0.1	0.3	35.1			116.0			257.0	
Delay (s)		53.3	32.0	32.7	73.4			149.4			290.5	
Level of Service		D	С	С	Е			F			F	
Approach Delay (s)		52.4			65.5			149.4			290.5	
Approach LOS		D			Е			F			F	
Intersection Summary												
HCM 2000 Control Delay			169.7	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capac	ity ratio		1.08									
Actuated Cycle Length (s)			97.4	S	um of lost	time (s)			21.1			
Intersection Capacity Utilizat	ion		82.9%	IC	CU Level o	of Service			Е			
Analysis Period (min)			15									

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			ર્ન	1	
Traffic Volume (vph)	90	160	160	500	470	50
Future Volume (vph)	90	160	160	500	470	50
Peak Hour Factor	0.76	0.76	0.95	0.95	0.74	0.74
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	329	0	0	694	703	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase					_	
Minimum Initial (s)	9.0		4.0		15.0	
Minimum Split (s)	17.0		8.0		20.6	
Total Split (s)	29.0		12.0		45.6	
Total Split (%)	33.5%		13.9%		52.7%	
Yellow Time (s)	3.0		3.0		3.9	
All-Red Time (s)	1.0		1.0		1.7	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	4.0				5.6	
Lead/Lag	1.0		Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		Min	
v/c Ratio	0.77		111007	0.97	0.65	
Control Delay	32.1			41.5	17.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	32.1			41.5	17.6	
Queue Length 50th (ft)	101			122	219	
Queue Length 95th (ft)	140			#476	300	
Internal Link Dist (ft)	505			2424	2056	
Turn Bay Length (ft)	000			∠¬∠¬	2000	
Base Capacity (vph)	650			713	1084	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.51			0.97	0.65	
Neduced V/C Natio	0.51			0.31	0.03	

Cycle Length: 86.6 Actuated Cycle Length: 76.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 13: Hall Avenue



	٠	•	1	1	Ţ	4	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	W			र्स	₽		
Traffic Volume (vph)	90	160	160	500	470	50	
Future Volume (vph)	90	160	160	500	470	50	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
_ane Width	15	15	16	15	16	16	
Grade (%)	7%			-1%	2%		
Total Lost time (s)	4.0			4.0	5.6		
Lane Util. Factor	1.00			1.00	1.00		
Frt	0.91			1.00	0.99		
FIt Protected	0.98			0.99	1.00		
Satd. Flow (prot)	1774			1977	2063		
FIt Permitted	0.98			0.46	1.00		
Satd. Flow (perm)	1774			929	2063		
Peak-hour factor, PHF	0.76	0.76	0.95	0.95	0.74	0.74	
Adj. Flow (vph)	118	211	168	526	635	68	
RTOR Reduction (vph)	85	0	0	0	4	0	
_ane Group Flow (vph)	244	0	0	694	699	0	
leavy Vehicles (%)	2%	2%	5%	5%	2%	2%	
urn Type	Prot		D.P+P	NA	NA		
Protected Phases	4		1	12	2		
Permitted Phases			2				
Actuated Green, G (s)	14.9			48.2	40.2		
ffective Green, g (s)	14.9			48.2	40.2		
Actuated g/C Ratio	0.19			0.63	0.52		
Clearance Time (s)	4.0				5.6		
/ehicle Extension (s)	2.0				2.5		
ane Grp Cap (vph)	344			693	1081		
/s Ratio Prot	c0.14			c0.10	0.34		
/s Ratio Perm				c0.52			
ı/c Ratio	0.71			1.00	0.65		
Jniform Delay, d1	28.9			14.2	13.1		
Progression Factor	1.00			1.00	1.00		
ncremental Delay, d2	5.7			34.5	1.2		
Delay (s)	34.5			48.8	14.3		
_evel of Service	С			D	В		
Approach Delay (s)	34.5			48.8	14.3		
Approach LOS	С			D	В		
ntersection Summary							
HCM 2000 Control Delay			32.0	Н	CM 2000	Level of Service	С
HCM 2000 Volume to Capa	acity ratio		0.93				
Actuated Cycle Length (s)	•		76.7	Sı	um of lost	time (s)	13.6
Intersection Capacity Utiliza	ation		89.1%		U Level o		Е
Analysis Period (min)			15				
Critical Lane Group							

	۶	→	*	•	+	4	1	†	~	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			स	7		4			4	
Traffic Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Future Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Peak Hour Factor	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	281	0	0	268	73	0	1067	0	0	757	0
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Detector Phase	4	4		5	5	5	2	2		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0		20.0	20.0	
Minimum Split (s)	12.8	12.8		13.6	13.6	13.6	26.6	26.6		26.6	26.6	
Total Split (s)	20.8	20.8		26.6	26.6	26.6	56.6	56.6		56.6	56.6	
Total Split (%)	20.0%	20.0%		25.6%	25.6%	25.6%	54.4%	54.4%		54.4%	54.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.4	4.4		4.4	4.4	
All-Red Time (s)	2.8	2.8		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.8			6.6	6.6		6.6			6.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
v/c Ratio		1.02			0.89	0.21		1.20			0.82	
Control Delay		100.4			72.4	5.0		128.4			32.2	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		100.4			72.4	5.0		128.4			32.2	
Queue Length 50th (ft)		~183			173	0		~871			421	
Queue Length 95th (ft)		149			#265	16		#1123			503	
Internal Link Dist (ft)		382			419			1172			2424	
Turn Bay Length (ft)						50						
Base Capacity (vph)		275			320	361		887			919	
Starvation Cap Reductn		0			0	0		0			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		1.02			0.84	0.20		1.20			0.82	_

Cycle Length: 104

Actuated Cycle Length: 102.8

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

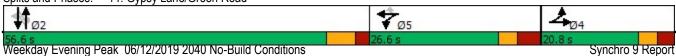
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 14: Gypsy Lane/Green Road



	١	→	*	•	-	•	1	†	<i>></i>	-	↓	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7		4			4	
Traffic Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Future Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	10	8	10	10	16	16	16	16	16	16
Grade (%)		2%			4%			3%			-4%	
Total Lost time (s)		5.8			6.6	6.6		6.6			6.6	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.94			1.00	0.85		0.97			0.99	
Flt Protected		0.99			0.97	1.00		1.00			1.00	
Satd. Flow (prot)		1702			1648	1448		1971			2104	
Flt Permitted		0.99			0.97	1.00		0.91			0.90	
Satd. Flow (perm)	0.57	1702	^ = 7	0.00	1648	1448	0.00	1804	0.00	0.00	1889	0.00
Peak-hour factor, PHF	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	53	105	123	183	85	73	56	767	244	37	659	61
RTOR Reduction (vph)	0	26	0	0	0	60	0	10	0	0	0	0
Lane Group Flow (vph)	0	255	0	0	268	13	0	1057	0	0	757	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5	_	2	2		0	2	
Permitted Phases		15.0			10 0	5 18.8	2	50.0		2	50.0	
Actuated Green, G (s) Effective Green, g (s)		15.0			18.8 18.8	18.8		50.0			50.0	
Actuated g/C Ratio		0.15			0.18	0.18		0.49			0.49	
Clearance Time (s)		5.8			6.6	6.6		6.6			6.6	
Vehicle Extension (s)		2.0			2.0	2.0		2.5			2.5	
Lane Grp Cap (vph)		248			301	264		877			918	
v/s Ratio Prot		c0.15			c0.16	204		011			310	
v/s Ratio Prot v/s Ratio Perm		60.15			60.10	0.01		c0.59			0.40	
v/c Ratio		1.03			0.89	0.05		1.20			0.40	
Uniform Delay, d1		43.9			41.0	34.6		26.4			22.6	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		64.1			25.6	0.0		103.0			6.0	
Delay (s)		108.0			66.6	34.7		129.4			28.6	
Level of Service		F			E	C		F			C	
Approach Delay (s)		108.0			59.8			129.4			28.6	
Approach LOS		F			E			F			С	
Intersection Summary												
HCM 2000 Control Delay			86.1	Н	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacit	y ratio		1.10									
Actuated Cycle Length (s)			102.8	Sı	um of lost	t time (s)			19.0			
Intersection Capacity Utilization	on		104.4%	IC	CU Level	of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

	۶	→	*	1	+	•	1	†	~	-	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7		र्स	7	7	†		*	1	
Traffic Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Future Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	154	115	0	70	233	53	748	0	233	721	0
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Detector Phase	4	4	4	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.1	12.1	12.1	12.1	12.1	9.0	9.0	21.7		9.0	21.7	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	13.0	13.0	52.0		13.0	52.0	
Total Split (%)	27.8%	27.8%	27.8%	27.8%	27.8%	14.4%	14.4%	57.8%		14.4%	57.8%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1		3.0	4.1	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	1.0	1.0	2.6		1.0	2.6	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
v/c Ratio		0.77	0.34		0.46	0.42	0.13	0.38		0.46	0.57	
Control Delay		60.3	8.9		43.1	8.6	4.6	9.0		7.1	12.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		60.3	8.9		43.1	8.6	4.6	9.0		7.1	12.8	
Queue Length 50th (ft)		85	0		37	23	7	75		33	228	
Queue Length 95th (ft)		119	29		70	62	m10	88		67	374	
Internal Link Dist (ft)		210			555			377			529	
Turn Bay Length (ft)						125	125			250		
Base Capacity (vph)		285	439		216	580	494	1984		535	1266	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.54	0.26		0.32	0.40	0.11	0.38		0.44	0.57	_

Cycle Length: 90

Actuated Cycle Length: 90

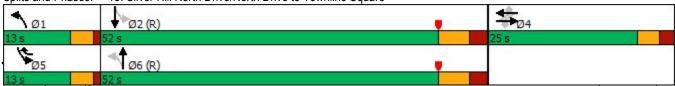
Offset: 20 (22%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Silver Hill North Drive/North Drive to Townline Square



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	۶	→	*	•	←	4	1	1	~	1	Ţ	4
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7		र्स	7	*	†		*	1	
Traffic Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Future Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	11	12	12	11	14	15
Grade (%)		0%			5%			1%			2%	
Total Lost time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1660	1470	1638	3353		1694	1934	
Flt Permitted		0.69	1.00		0.56	1.00	0.31	1.00		0.32	1.00	
Satd. Flow (perm)		1292	1583		977	1470	533	3353		568	1934	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Adj. Flow (vph)	141	13	115	58	12	233	53	695	53	233	640	81
RTOR Reduction (vph)	0	0	97	0	0	136	0	5	0	0	4	0
Lane Group Flow (vph)	0	154	18	0	70	97	53	743	0	233	717	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Actuated Green, G (s)		13.9	13.9		13.9	21.1	56.2	53.1		64.3	57.2	
Effective Green, g (s)		13.9	13.9		13.9	21.1	56.2	53.1		64.3	57.2	
Actuated g/C Ratio		0.15	0.15		0.15	0.23	0.62	0.59		0.71	0.64	
Clearance Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Vehicle Extension (s)		1.0	1.0		1.0	1.0	1.0	0.2		1.0	3.0	
Lane Grp Cap (vph)		199	244		150	344	370	1978		495	1229	
v/s Ratio Prot						0.02	0.00	0.22		c0.04	c0.37	
v/s Ratio Perm		c0.12	0.01		0.07	0.04	0.08			0.30		
v/c Ratio		0.77	0.07		0.47	0.28	0.14	0.38		0.47	0.58	
Uniform Delay, d1		36.5	32.5		34.7	28.2	7.3	9.7		4.8	9.5	
Progression Factor		1.00	1.00		1.00	1.00	0.94	0.80		1.00	1.00	
Incremental Delay, d2		15.6	0.0		0.8	0.2	0.1	0.4		0.3	2.0	
Delay (s)		52.1	32.6		35.5	28.4	6.9	8.2		5.0	11.5	
Level of Service		D	С		D	С	Α	A		Α	В	
Approach Delay (s) Approach LOS		43.8 D			30.0 C			8.1 A			9.9 A	
		U			0							
Intersection Summary			45.0	1.1	OM 0000	\	0					
HCM 2000 Control Delay	h, roti-		15.8	H	CIVI ZUUL	Level of	Service		В			
HCM 2000 Volume to Capacit	ly ratio		0.63	0	um efte	at time = /=\			15.0			
Actuated Cycle Length (s)	on .		90.0			st time (s)	_		15.8			
Intersection Capacity Utilization Analysis Period (min)	JII		63.8%	IC	o Level	of Service	3		В			
c Critical Lane Group			15									
C Gillical Latte Gloup												

Lane Group		۶	-	•	•	•	•	1	†	/	-	ļ	4
Traffic Volume (vph)	Lane Group	EBL	EBT	EBR	WBL	WBT		NBL	NBT	NBR	SBL	SBT	SBR
Future Volume (vph) 10	Lane Configurations		4			ર્ન	7	*	†		1	1	
Peak Hour Factor 0.85 0.85 0.85 0.86 0.86 0.86 0.97 0.97 0.97 0.95 0.	Traffic Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Heavy Vehicles (%)	Future Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Shared Lane Traffic (%) Lane Group Flow (vph) 0 83 0 0 256 93 52 1062 0 42 685 0 Turn Type	Peak Hour Factor	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	
Lane Group Flow (vph)	Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type Perm NA Perm NA Perm Perm NA D.P+P NA Protected Phases 4 4 4 2 1 12 Detector Phase 4 4 4 4 2 2 1 12 Switch Phase 4 4 4 4 2 2 1 12 Minimum Initial (s) 7.0 7.0 7.0 7.0 7.0 15.0 15.0 5.0 Minimum Split (s) 12.0 12.0 12.0 12.0 12.0 12.0 22.2 22.2 29.0 10.0 Total Split (s) 18.0 18.0 18.0 18.0 52.0 52.0 10.0 Total Split (s) 20.0% 20.0% 20.0% 57.8% 57.8% 111.1% Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.1 4.1 3.0 All-Red Time (s) 2.0 2.0 2.0 <t< td=""><td>Shared Lane Traffic (%)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Shared Lane Traffic (%)												
Protected Phases	Lane Group Flow (vph)			0			93	52		0			0
Permitted Phases		Perm	NA		Perm	NA	Perm	Perm			D.P+P		
Detector Phase 4			4			4			2			12	
Switch Phase Minimum Initial (s) 7.0 7.0 7.0 7.0 7.0 7.0 15.0 15.0 5.0	Permitted Phases	4			4		4						
Minimum Initial (s) 7.0 7.0 7.0 7.0 15.0 15.0 5.0 Minimum Split (s) 12.0 12.0 12.0 12.0 12.0 22.2 22.2 9.0 Total Split (s) 18.0 18.0 18.0 18.0 18.0 52.0 52.0 10.0 Total Split (%) 20.0% 20.0% 20.0% 20.0% 57.8% 57.8% 11.1% Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.1 1.1 Yellow Time (s) 2.0 2.0 2.0 2.0 2.0 3.1 3.1 1.0 All-Red Time (s) 2.0 2.0 2.0 2.0 2.0 3.1 3.1 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Lost Time (s) 5.0 5.0 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag Lag <	Detector Phase	4	4		4	4	4	2	2		1	12	
Minimum Split (s) 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 22.2 22.2 22.2 9.0 Total Split (s) 18.0 18.0 18.0 18.0 18.0 52.0 52.0 10.0 Total Split (%) 20.0% 20.0% 20.0% 57.8% 57.8% 11.1% Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.1 4.1 3.0 All-Red Time (s) 2.0 2.0 2.0 2.0 3.1 3.1 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 5.0 5.0 5.0 7.2 7.2 4.0 1.0 Lead/Lag Lag	Switch Phase												
Total Split (s) 18.0 18.0 18.0 18.0 18.0 52.0 52.0 10.0 Total Split (%) 20.0% 20.0% 20.0% 20.0% 20.0% 57.8% 57.8% 11.1% Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.1 4.1 3.0 All-Red Time (s) 2.0 2.0 2.0 2.0 2.0 3.1 3.1 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag Lag Lag Lag Lag Lag Lag Lag Lag	Minimum Initial (s)												
Total Split (%) 20.0% 20.0% 20.0% 20.0% 20.0% 57.8% 57.8% 11.1% Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.1 4.1 3.0 All-Red Time (s) 2.0 2.0 2.0 2.0 3.1 3.1 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 5.0 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag	Minimum Split (s)												
Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.1 4.1 3.0 All-Red Time (s) 2.0 2.0 2.0 2.0 3.1 3.1 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 5.0 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag Lag Lag Lag Lag Lag Lead Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Yes Recall Mode None None None None None None None Ves Yes													
All-Red Time (s) 2.0 2.0 2.0 2.0 2.0 2.0 3.1 3.1 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 5.0 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag Lag <td>Total Split (%)</td> <td></td> <td></td> <td></td> <td>20.0%</td> <td></td> <td></td> <td>57.8%</td> <td>57.8%</td> <td></td> <td></td> <td></td> <td></td>	Total Split (%)				20.0%			57.8%	57.8%				
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 5.0 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag	Yellow Time (s)												
Total Lost Time (s) 5.0 5.0 5.0 7.2 7.2 4.0 Lead/Lag Lag	All-Red Time (s)	2.0			2.0								
Lead/Lag Lag La	Lost Time Adjust (s)							0.0					
Lead-Lag Optimize? Yes	Total Lost Time (s)		5.0			5.0		7.2	7.2		4.0		
Recall Mode None None None None C-Max C-Max None v/c Ratio 0.32 1.18 0.24 0.18 0.63 0.14 0.54 Control Delay 18.0 155.6 3.2 11.3 9.1 4.6 6.4 Queue Delay 0.0													
v/c Ratio 0.32 1.18 0.24 0.18 0.63 0.14 0.54 Control Delay 18.0 155.6 3.2 11.3 9.1 4.6 6.4 Queue Delay 0.0<	Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes				Yes		
Control Delay 18.0 155.6 3.2 11.3 9.1 4.6 6.4 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.3 Total Delay 18.0 155.6 3.2 11.3 9.1 4.6 6.7 Queue Length 50th (ft) 12 ~193 0 7 55 4 69 Queue Length 95th (ft) 49 #321 9 m16 130 m10 110 Internal Link Dist (ft) 256 244 895 377 Turn Bay Length (ft) 125 125 Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 0 0		None			None								
Queue Delay 0.0													
Total Delay 18.0 155.6 3.2 11.3 9.1 4.6 6.7 Queue Length 50th (ft) 12 ~193 0 7 55 4 69 Queue Length 95th (ft) 49 #321 9 m16 130 m10 110 Internal Link Dist (ft) 256 244 895 377 Turn Bay Length (ft) 125 125 Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 0 0	•												
Queue Length 50th (ft) 12 ~193 0 7 55 4 69 Queue Length 95th (ft) 49 #321 9 m16 130 m10 110 Internal Link Dist (ft) 256 244 895 377 Turn Bay Length (ft) 125 125 Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 0	•												
Queue Length 95th (ft) 49 #321 9 m16 130 m10 110 Internal Link Dist (ft) 256 244 895 377 Turn Bay Length (ft) 125 125 Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 159													
Internal Link Dist (ft) 256 244 895 377 Turn Bay Length (ft) 125 125 Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 159	Queue Length 50th (ft)												
Turn Bay Length (ft) 125 125 Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 159	• ,						9	m16			m10		
Base Capacity (vph) 263 217 381 284 1685 293 1273 Starvation Cap Reductn 0 0 0 0 0 0 159	\ /		256			244			895			377	
Starvation Cap Reductn 0 0 0 0 0 159	Turn Bay Length (ft)												
			263			217	381	284	1685		293	-	
Spillback Cap Reductn 0 0 0 0 0 0	Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn 0 0 0 0 0	Storage Cap Reductn							-					
Reduced v/c Ratio 0.32 1.18 0.24 0.18 0.63 0.14 0.61	Reduced v/c Ratio		0.32			1.18	0.24	0.18	0.63		0.14	0.61	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 20 (22%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Weekday Evening Peak

Splits and Phases: 16: Silver Hill South Drive/South Drive to Townline Square



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	10.0
Total Split (s)	10.0
Total Split (%)	11%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn]
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7	7	†		*	₽	
Traffic Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Future Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	12	12	11	12	12	11	14	14
Grade (%)		1%			4%			2%			-2%	
Total Lost time (s)		5.0			5.0	5.0	7.2	7.2		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frt		0.90			1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1624			1742	1552	1645	3225		1711	1973	
Flt Permitted		0.79			0.72	1.00	0.33	1.00		0.19	1.00	
Satd. Flow (perm)		1287			1306	1552	571	3225		336	1973	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	12	12	59	244	12	93	52	691	371	42	653	32
RTOR Reduction (vph)	0	49	0	0	0	78	0	80	0	0	2	0
Lane Group Flow (vph)	0	34	0	0	256	16	52	982	0	42	683	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Actuated Green, G (s)		15.0			15.0	15.0	44.0	44.0		50.0	54.0	
Effective Green, g (s)		15.0			15.0	15.0	44.0	44.0		50.0	54.0	
Actuated g/C Ratio		0.17			0.17	0.17	0.49	0.49		0.56	0.60	
Clearance Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Vehicle Extension (s)		1.0			1.0	1.0	0.2	0.2		1.5		
Lane Grp Cap (vph)		214			217	258	279	1576		278	1183	
v/s Ratio Prot								c0.30		0.01	c0.35	
v/s Ratio Perm		0.03			c0.20	0.01	0.09			0.07		
v/c Ratio		0.16			1.18	0.06	0.19	0.62		0.15	0.58	
Uniform Delay, d1		32.1			37.5	31.6	12.9	16.9		10.2	11.0	
Progression Factor		1.00			1.00	1.00	0.79	0.57		0.62	0.55	
Incremental Delay, d2		0.1			118.1	0.0	0.9	1.2		0.1	0.4	
Delay (s)		32.2			155.6	31.6	11.1	10.8		6.4	6.5	
Level of Service		С			F	С	В	В		Α	Α	
Approach Delay (s)		32.2			122.6			10.8			6.5	
Approach LOS		С			F			В			Α	
Intersection Summary												
HCM 2000 Control Delay			27.4	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacity	y ratio		0.71									
Actuated Cycle Length (s)			90.0		um of lost				20.2			
Intersection Capacity Utilizatio	n		70.5%		U Level o				С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7		413			413	
Traffic Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Future Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Peak Hour Factor	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	130	72	0	1314	0	0	1044	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Detector Phase	4	4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	15.0	15.0		7.0		
Minimum Split (s)	11.0	11.0		11.0	11.0	11.0	21.0	21.0		10.1		
Total Split (s)	25.0	25.0		25.0	25.0	25.0	54.0	54.0		11.0		
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	60.0%	60.0%		12.2%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		3.0		
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0		0.1		
Lost Time Adjust (s)		0.0			0.0	0.0		0.0				
Total Lost Time (s)		4.0			4.0	4.0		6.0				
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	C-Min	C-Min		Max		
v/c Ratio		0.47			0.92	0.27		0.81			0.45	
Control Delay		22.3			93.8	32.0		23.3			3.9	
Queue Delay		0.0			0.0	0.0		0.2			0.0	
Total Delay		22.3			93.8	32.0		23.5			3.9	
Queue Length 50th (ft)		59			71	34		429			51	
Queue Length 95th (ft)		4			98	52		111			m81	
Internal Link Dist (ft)		256			308			396			895	
Turn Bay Length (ft)												
Base Capacity (vph)		499			173	326		1648			2344	
Starvation Cap Reductn		0			0	0		41			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.40			0.75	0.22		0.82			0.45	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 19 (21%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Driveway to Kohl's Plaza



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7		47			413	
Traffic Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Future Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	10	15	15
Grade (%)		-8%			-6%			4%			-4%	
Total Lost time (s)		4.0			4.0	4.0		6.0			3.1	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frt		0.92			1.00	0.85		0.99			1.00	
Flt Protected		0.99			0.95	1.00		1.00			1.00	
Satd. Flow (prot)		2038			1562	1398		3332			3954	
Flt Permitted		0.92			0.45	1.00		0.92			0.80	
Satd. Flow (perm)	2.05	1885	2.25	2.00	743	1398	0.00	3076	2.00	0.04	3178	0.04
Peak-hour factor, PHF	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	40	40	120	130	0	72	22	1202	90	55	978	11
RTOR Reduction (vph)	0	63	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	137	0	0	130	72	0	1308	0	0	1044	0
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4		4	4	4	_	2		1	12	
Permitted Phases	4	17.1		4	17.1	4	2	47.0		2	FO 0	
Actuated Green, G (s)		17.1			17.1	17.1		47.3			59.8	
Effective Green, g (s)		17.1 0.19			17.1 0.19	17.1 0.19		47.3 0.53			59.8 0.66	
Actuated g/C Ratio		4.0			4.0	4.0		6.0			0.00	
Clearance Time (s) Vehicle Extension (s)		2.0			2.0	2.0		3.0				
		358			141	265		1616			2219	
Lane Grp Cap (vph) v/s Ratio Prot		330			141	200		1010			c0.07	
v/s Ratio Prot v/s Ratio Perm		0.07			c0.17	0.05		c0.43			0.25	
v/c Ratio		0.07			0.92	0.03		0.81			0.23	
Uniform Delay, d1		31.8			35.8	31.1		17.6			7.4	
Progression Factor		1.00			1.00	1.00		1.08			0.63	
Incremental Delay, d2		0.2			52.0	0.2		4.1			0.03	
Delay (s)		32.1			87.8	31.3		23.2			5.2	
Level of Service		C			67.6 F	C		C			Α.Δ	
Approach Delay (s)		32.1			67.7	J		23.2			5.2	
Approach LOS		C			E			C			A	
Intersection Summary												
HCM 2000 Control Delay			20.3	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacit	y ratio		0.78									
Actuated Cycle Length (s)			90.0		um of lost				13.1			
Intersection Capacity Utilization	n		80.5%	IC	U Level o	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	AN			414	†		
Traffic Volume (vph)	250	20	20	940	750	270	
Future Volume (vph)	250	20	20	940	750	270	
Peak Hour Factor	0.97	0.97	0.85	0.85	0.92	0.92	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	279	0	0	1130	1108	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			2	2		
Permitted Phases			2				
Detector Phase	4		2	2	2		
Switch Phase							
Minimum Initial (s)	9.0		15.0	15.0	15.0		
Minimum Split (s)	13.0		21.0	21.0	21.0		
Total Split (s)	30.0		60.0	60.0	60.0		
Total Split (%)	33.3%		66.7%	66.7%	66.7%		
Yellow Time (s)	3.0		4.0	4.0	4.0		
All-Red Time (s)	1.0		2.0	2.0	2.0		
Lost Time Adjust (s)	0.0		2.0	0.0	0.0		
Total Lost Time (s)	4.0			6.0	6.0		
Lead/Lag	1.0			0.0	0.0		
Lead-Lag Optimize?							
Recall Mode	None		C-Min	C-Min	C-Min		
v/c Ratio	0.63		O 111	0.50	0.43		
Control Delay	41.7			2.2	3.6		
Queue Delay	0.0			0.1	0.1		
Total Delay	41.7			2.3	3.7		
Queue Length 50th (ft)	75			24	46		
Queue Length 95th (ft)	111			7	96		
Internal Link Dist (ft)	408			2348	396		
Turn Bay Length (ft)	400			2010	000		
Base Capacity (vph)	965			2250	2596		
Starvation Cap Reductn	0			0	380		
Spillback Cap Reductn	0			311	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.29			0.58	0.50		
	0.20			0.00	0.00		
Intersection Summary							
Cycle Length: 90							
Actuated Cycle Length: 90 Offset: 21 (23%) Reference	ad to share	O-NIDOD	Ctort of	Vallau			
Offset: 21 (23%), Reference	eu to phase	Z.INDOB	, start of	reliow			
Natural Cycle: 40	ordinated						
Control Type: Actuated-Co	ordinated						
Splits and Phases: 18: R	oute 150						
14							√ ½ ≜

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	77.74			414	†		
Traffic Volume (vph)	250	20	20	940	750	270	
Future Volume (vph)	250	20	20	940	750	270	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	11	11	12	12	
Grade (%)	4%			4%	-4%		
Total Lost time (s)	4.0			6.0	6.0		
Lane Util. Factor	0.97			0.95	0.95		
Frt	0.99			1.00	0.96		
Flt Protected	0.96			1.00	1.00		
Satd. Flow (prot)	3314			3254	3400		
Flt Permitted	0.96			0.91	1.00		
Satd. Flow (perm)	3314			2973	3400		
Peak-hour factor, PHF	0.97	0.97	0.85	0.85	0.92	0.92	
Adj. Flow (vph)	258	21	24	1106	815	293	
RTOR Reduction (vph)	9	0	0	0	25	0	
Lane Group Flow (vph)	270	0	0	1130	1083	0	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			2	2		
Permitted Phases			2				
Actuated Green, G (s)	11.9			68.1	68.1		
Effective Green, g (s)	11.9			68.1	68.1		
Actuated g/C Ratio	0.13			0.76	0.76		
Clearance Time (s)	4.0			6.0	6.0		
Vehicle Extension (s)	2.0			3.0	3.0		
Lane Grp Cap (vph)	438			2249	2572		
v/s Ratio Prot	c0.08				0.32		
v/s Ratio Perm				c0.38			
v/c Ratio	0.62			0.50	0.42		
Uniform Delay, d1	36.9			4.3	3.9		
Progression Factor	1.00			0.34	0.84		
Incremental Delay, d2	1.8			0.6	0.5		
Delay (s)	38.7			2.1	3.7		
Level of Service	D			A	Α		
Approach Delay (s)	38.7			2.1	3.7		
Approach LOS	D			Α	Α		
Intersection Summary							
HCM 2000 Control Delay			6.9	H	CM 2000	Level of Service	Α
HCM 2000 Volume to Capa	acity ratio		0.52				
Actuated Cycle Length (s)			90.0		um of lost		10.0
Intersection Capacity Utiliz	ation		56.4%	IC	U Level o	f Service	В
Analysis Period (min)			15				
c Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	*	↑	7	44	↑ ↑		7	^	7
Traffic Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Future Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Peak Hour Factor	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)			44%									
Lane Group Flow (vph)	0	151	147	88	44	74	433	1196	0	44	846	0
Turn Type		NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	custom
Protected Phases	7	7	1		8		1	6		5	2	
Permitted Phases			7	8		8						6
Detector Phase	7	7	1	8	8	8	1	6		5	2	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	5.0	5.0	15.0		3.0	15.0	15.0
Minimum Split (s)	11.0	11.0	12.0	9.0	9.0	9.0	12.0	20.0		10.0	20.0	20.0
Total Split (s)	19.0	19.0	24.0	16.0	16.0	16.0	24.0	31.0		24.0	31.0	31.0
Total Split (%)	21.1%	21.1%	26.7%	17.8%	17.8%	17.8%	26.7%	34.4%		26.7%	34.4%	34.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	4.0	1.0	1.0	1.0	4.0	2.0		4.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio		0.71	0.34	0.68	0.22	0.44	0.79	0.66		0.34	0.62	
Control Delay		54.8	16.4	63.1	38.0	44.8	58.7	13.5		54.7	23.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		54.8	16.4	63.1	38.0	44.8	58.7	13.5		54.7	23.6	
Queue Length 50th (ft)		87	42	48	23	39	139	103		21	211	
Queue Length 95th (ft)		138	63	71	40	60	m162	m#440		61	#306	
Internal Link Dist (ft)		371			347			564			2348	
Turn Bay Length (ft)				100		100	250			125		
Base Capacity (vph)		263	465	152	231	197	614	1811		326	1363	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.57	0.32	0.58	0.19	0.38	0.71	0.66		0.13	0.62	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 39 (43%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 60

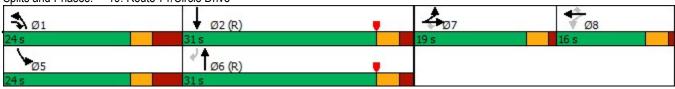
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 19: Route 71/Circle Drive



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	7	↑	7	44	↑ ↑		7	^	7
Traffic Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Future Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	11	12	12	11	12	12
Grade (%)		0%			5%			0%			-4%	
Total Lost time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Lane Util. Factor		0.95	0.95	1.00	1.00	1.00	0.97	0.95		1.00	0.95	
Frt		0.89	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	
FIt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1583	1519	1652	1739	1478	3255	3417		1728	3575	
FIt Permitted		1.00	1.00	0.66	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1583	1519	1141	1739	1478	3255	3417		1728	3575	
Peak-hour factor, PHF	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Adj. Flow (vph)	0	36	262	88	44	74	433	1072	124	44	846	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	151	147	88	44	74	433	1189	0	44	846	0
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type		NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	custom
Protected Phases	7	7	1		8		1	6		5	2	
Permitted Phases			7	8		8						6
Actuated Green, G (s)		12.2	27.4	9.1	9.1	9.1	15.2	43.9		4.8	33.5	
Effective Green, g (s)		12.2	27.4	9.1	9.1	9.1	15.2	43.9		4.8	33.5	
Actuated g/C Ratio		0.14	0.30	0.10	0.10	0.10	0.17	0.49		0.05	0.37	
Clearance Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.5	2.5	2.5	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)		214	462	115	175	149	549	1666		92	1330	
v/s Ratio Prot		c0.10	0.05		0.03		c0.13	c0.35		0.03	0.24	
v/s Ratio Perm			0.04	c0.08		0.05						
v/c Ratio		0.71	0.32	0.77	0.25	0.50	0.79	0.71		0.48	0.64	
Uniform Delay, d1		37.2	24.1	39.4	37.3	38.3	35.9	18.1		41.4	23.2	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.46	0.57		1.24	0.84	
Incremental Delay, d2		8.3	0.1	24.7	0.6	1.9	3.9	1.5		1.3	2.2	
Delay (s)		45.5	24.3	64.1	37.9	40.2	56.4	11.9		52.8	21.6	
Level of Service		D	С	Е	D	D	Е	В		D	С	
Approach Delay (s)		35.0			49.9			23.7			23.2	
Approach LOS		D			D			С			С	
Intersection Summary												
HCM 2000 Control Delay			26.5	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capacity	ratio		0.77									
Actuated Cycle Length (s)			90.0		um of lost				20.0			
Intersection Capacity Utilization	1		59.2%	IC	CU Level of	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ર્લ	7	*	र्स	7	14	^	7	14.4	^	7
Traffic Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Future Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Peak Hour Factor	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)	44%			44%								
Lane Group Flow (vph)	60	62	108	118	119	53	120	1554	207	133	1060	48
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	5 7	4	4	1	5	2	24	1	6	67
Permitted Phases						4						
Detector Phase	7	7	5 7	4	4	1	5	2	2 4	1	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.0	12.0		12.0	12.0	9.0	9.0	20.0		9.0	20.0	
Total Split (s)	16.0	16.0		15.0	15.0	20.0	20.0	39.0		20.0	39.0	
Total Split (%)	17.8%	17.8%		16.7%	16.7%	22.2%	22.2%	43.3%		22.2%	43.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
v/c Ratio	0.36	0.37	0.32	0.72	0.71	0.14	0.42	0.87	0.19	0.44	0.57	0.05
Control Delay	43.3	43.4	29.8	63.3	62.6	2.3	62.0	14.7	0.3	41.2	16.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	43.4	29.8	63.3	62.6	2.3	62.0	14.7	0.3	41.2	16.6	1.9
Queue Length 50th (ft)	33	34	50	68	69	0	38	485	0	39	133	1
Queue Length 95th (ft)	58	61	72	107	106	4	m59	#624	m0	62	223	m5
Internal Link Dist (ft)		463			264			832			564	
Turn Bay Length (ft)	150		150				250			200		200
Base Capacity (vph)	194	197	453	178	181	515	590	1784	1118	616	1866	1052
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.24	0.66	0.66	0.10	0.20	0.87	0.19	0.22	0.57	0.05

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 39 (43%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 70

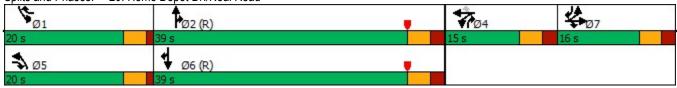
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Home Depot Dr./Neal Road



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	र्स	7	7	स	7	14.54	^	7	77	^	7
Traffic Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Future Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	12	12	12
Grade (%)		0%			-2%			-2%			-2%	
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1594	1615	1501	1610	1631	1516	3319	3422	1531	3467	3575	1599
Flt Permitted	0.95	0.96	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1594	1615	1501	1610	1631	1516	3319	3422	1531	3467	3575	1599
Peak-hour factor, PHF	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	108	14	108	211	26	53	120	1554	207	133	1060	48
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	69	0	0	19
Lane Group Flow (vph)	60	62	108	118	119	10	120	1554	138	133	1060	29
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	5 7	4	4	1	5	2	2 4	1	6	67
Permitted Phases						4		4= 0			4= 0	
Actuated Green, G (s)	8.0	8.0	20.8	9.3	9.3	17.1	7.8	45.9	60.2	7.8	45.9	53.9
Effective Green, g (s)	8.0	8.0	15.8	9.3	9.3	17.1	7.8	45.9	60.2	7.8	45.9	53.9
Actuated g/C Ratio	0.09	0.09	0.18	0.10	0.10	0.19	0.09	0.51	0.67	0.09	0.51	0.60
Clearance Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	0.2		2.0	0.2	_
Lane Grp Cap (vph)	141	143	263	166	168	288	287	1745	1024	300	1823	957
v/s Ratio Prot	0.04	c0.04	0.07	c0.07	0.07	0.00	0.04	c0.45	0.09	c0.04	0.30	0.02
v/s Ratio Perm						0.00						
v/c Ratio	0.43	0.43	0.41	0.71	0.71	0.03	0.42	0.89	0.14	0.44	0.58	0.03
Uniform Delay, d1	38.8	38.9	33.0	39.0	39.0	29.7	38.9	19.8	5.4	39.0	15.4	7.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.51	0.33	0.01	0.97	0.94	3.33
Incremental Delay, d2	0.8	0.8	0.4	11.3	10.6	0.0	0.3	5.8	0.0	0.3	1.1	0.0
Delay (s)	39.6	39.6	33.3	50.3	49.6	29.7	59.2	12.4	0.1	38.0	15.6	24.6
Level of Service	D	D	С	D	D	С	E	В	Α	D	В	С
Approach Delay (s)		36.7			46.3			14.1			18.3	
Approach LOS		D			D			В			В	
Intersection Summary												
HCM 2000 Control Delay			19.5	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capac	ity ratio		0.77									
Actuated Cycle Length (s)			90.0			st time (s)			19.0			
Intersection Capacity Utilizat	ion		67.0%	IC	U Level	of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	1			र्स	7	7	^ ^	7	7	↑ ↑	
Traffic Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Future Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Peak Hour Factor	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	30	0	0	244	171	22	1822	311	76	1317	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			2			
Detector Phase	4	4		4	4	4	1	6	2	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5	11.5	9.5	20.0	20.0	9.5	20.0	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	17.0	47.0	47.0	17.0	47.0	
Total Split (%)	28.9%	28.9%		28.9%	28.9%	28.9%	18.9%	52.2%	52.2%	18.9%	52.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	2.0	2.0	1.5	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
v/c Ratio	0.40	0.06			0.86	0.36	0.20	0.66	0.29	0.47	0.61	
Control Delay	37.6	0.2			61.5	7.0	43.9	17.0	1.8	38.0	16.6	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.3	0.0	0.0	0.4	
Total Delay	37.6	0.2			61.5	7.0	43.9	17.4	1.8	38.0	17.0	
Queue Length 50th (ft)	29	0			130	0	12	301	0	41	265	
Queue Length 95th (ft)	22	0			#207	37	m17	m357	m23	m72	342	
Internal Link Dist (ft)		119			412			332			832	
Turn Bay Length (ft)							200		200	250		
Base Capacity (vph)	174	579			321	512	237	2753	1082	237	2159	_
Starvation Cap Reductn	0	0			0	0	0	365	0	0	0	
Spillback Cap Reductn	0	27			0	0	0	0	0	0	348	_
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.05			0.76	0.33	0.09	0.76	0.29	0.32	0.73	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 26 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 60

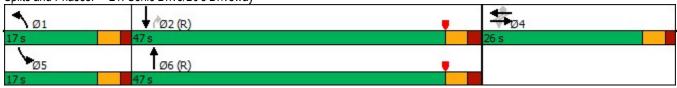
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Sonic Drive/BJ's Driveway



	۶	→	*	•	+	•	1	†	<i>></i>	-	↓	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	T	1→			र्स	7	7	^	7	*	↑ ↑	
Traffic Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Future Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			-4%		_	-2%	_		0%	
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91	1.00	1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
FIt Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1568			1796	1599	1711	4917	1531	1711	3416	
FIt Permitted	0.40	1.00			0.71	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	732	1568	2.22	2.22	1345	1599	1711	4917	1531	1711	3416	0.70
Peak-hour factor, PHF	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Adj. Flow (vph)	61	0	30	232	12	171	22	1822	311	76	1304	13
RTOR Reduction (vph)	0	24	0	0	0	135	0	1000	124	0	0	0
Lane Group Flow (vph)	61	6	0	0	244	36	22	1822	187	76	1317	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases	4	4		4	4	4	1	6	2	5	2	
Permitted Phases	4 19.1	19.1		4	19.1	4 19.1	2.8	49.5	2 54.1	7.4	54.1	
Actuated Green, G (s) Effective Green, g (s)	19.1	19.1			19.1	19.1	2.8	49.5	54.1	7.4	54.1	
Actuated g/C Ratio	0.21	0.21			0.21	0.21	0.03	0.55	0.60	0.08	0.60	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	0.2	0.2	2.0	0.2	
Lane Grp Cap (vph)	155	332			285	339	53	2704	920	140	2053	
v/s Ratio Prot	100	0.00			200	333	0.01	c0.37	320	c0.04	0.39	
v/s Ratio Perm	0.08	0.00			c0.18	0.02	0.01	60.07	0.12	60.04	0.00	
v/c Ratio	0.39	0.02			0.86	0.02	0.42	0.67	0.20	0.54	0.64	
Uniform Delay, d1	30.5	28.0			34.1	28.6	42.8	14.5	8.2	39.7	11.7	
Progression Factor	1.00	1.00			1.00	1.00	1.05	1.03	0.96	0.78	1.30	
Incremental Delay, d2	0.6	0.0			20.8	0.1	1.1	0.8	0.3	1.9	1.3	
Delay (s)	31.1	28.0			54.9	28.6	46.2	15.7	8.1	33.0	16.5	
Level of Service	С	С			D	С	D	В	Α	С	В	
Approach Delay (s)		30.1			44.1			14.9			17.4	
Approach LOS		С			D			В			В	
Intersection Summary												
HCM 2000 Control Delay			19.1	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capac	city ratio		0.71									
Actuated Cycle Length (s)			90.0		um of lost				14.0			
Intersection Capacity Utilizat	tion		65.2%	IC	U Level o	of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				14		77	7	^			↑ ↑	
Traffic Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Future Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	565	0	641	435	1588	0	0	1500	0
Turn Type				Prot		Prot	D.P+P	NA			NA	
Protected Phases				4		4	1	12			2	
Permitted Phases							2					
Detector Phase				4		4	1	12			2	
Switch Phase												
Minimum Initial (s)				7.0		7.0	5.0				15.0	
Minimum Split (s)				13.8		13.8	8.5				21.5	
Total Split (s)				22.0		22.0	20.0				48.0	
Total Split (%)				24.4%		24.4%	22.2%				53.3%	
Yellow Time (s)				4.0		4.0	3.0				3.0	
All-Red Time (s)				2.8		2.8	0.5				3.5	
Lost Time Adjust (s)				0.0		0.0	0.0				0.0	
Total Lost Time (s)				6.8		6.8	3.5				6.5	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None		None	Min				C-Max	
v/c Ratio				0.96		1.15	1.07	0.64			0.92	
Control Delay				67.2		116.1	63.5	8.4			28.6	
Queue Delay				0.0		0.1	0.0	0.5			43.3	
Total Delay				67.2		116.2	63.5	8.9			71.9	
Queue Length 50th (ft)				165		~217	~225	221			338	
Queue Length 95th (ft)				#269		#337	m166	m174			421	
Internal Link Dist (ft)		220			369			537			332	
Turn Bay Length (ft)				200		200	120					
Base Capacity (vph)				588		559	406	2500			1627	
Starvation Cap Reductn				0		0	0	427			257	
Spillback Cap Reductn				0		6	0	237			0	
Storage Cap Reductn				0		0	0	0			0	
Reduced v/c Ratio				0.96		1.16	1.07	0.77			1.09	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 41 (46%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



	۶	→	*	•	←	•	4	1	1	1	Ţ	√
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				14.14		77	7	^			↑ ↑	
Traffic Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Future Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	12	12	12
Grade (%)		-5%			-1%			-1%			-2%	
Total Lost time (s)				6.8		6.8	3.5	3.5			6.5	
Lane Util. Factor				0.97		0.88	1.00	0.95			0.95	
Frt				1.00		0.85	1.00	1.00			0.95	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3484		2828	1744	3489			3413	
FIt Permitted				0.95		1.00	0.10	1.00			1.00	
Satd. Flow (perm)				3484		2828	177	3489			3413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	565	0	641	435	1588	0	0	1049	451
RTOR Reduction (vph)	0	0	0	0	0	82	0	0	0	0	53	0
Lane Group Flow (vph)	0	0	0	565	0	559	435	1588	0	0	1447	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Turn Type				Prot		Prot	D.P+P	NA			NA	
Protected Phases				4		4	1	12			2	
Permitted Phases							2					
Actuated Green, G (s)				15.2		15.2	58.0	61.5			41.5	
Effective Green, g (s)				15.2		15.2	58.0	61.5			41.5	
Actuated g/C Ratio				0.17		0.17	0.64	0.68			0.46	
Clearance Time (s)				6.8		6.8	3.5				6.5	
Vehicle Extension (s)				1.5		1.5	2.0				0.2	
Lane Grp Cap (vph)				588		477	401	2384			1573	
v/s Ratio Prot				0.16		c0.20	c0.20	0.46			0.42	
v/s Ratio Perm							c0.50					
v/c Ratio				0.96		1.17	1.08	0.67			0.92	
Uniform Delay, d1				37.1		37.4	27.5	8.3			22.7	
Progression Factor				1.00		1.00	0.97	1.22			0.92	
Incremental Delay, d2				27.3		97.5	42.8	0.0			8.3	
Delay (s)				64.4		134.9	69.5	10.1			29.2	
Level of Service				E		F	E	В			С	
Approach Delay (s)		0.0			101.9			22.9			29.2	
Approach LOS		Α			F			С			С	
Intersection Summary												
HCM 2000 Control Delay			45.0	H	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capacity	y ratio		1.10									
Actuated Cycle Length (s)			90.0		um of los				16.8			
Intersection Capacity Utilization	n		83.0%	IC	U Level	of Service	9		Е			
Analysis Period (min)			15									
c Critical Lane Group												

	1	•	†	1	-	ļ			
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4	
Lane Configurations	7	7	†		7	^			
Traffic Volume (vph)	250	400	1320	740	300	1080			
Future Volume (vph)	250	400	1320	740	300	1080			
Peak Hour Factor	0.78	0.78	0.90	0.90	0.81	0.81			
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	321	513	2289	0	370	1333			
Turn Type	Prot	pm+ov	NA		custom	NA			
Protected Phases	5	1	2 4		1	12	2	4	
Permitted Phases		5			2				
Detector Phase	5	1	2 4		1	12			
Switch Phase									
Minimum Initial (s)	7.0	5.0			5.0		15.0	7.0	
Minimum Split (s)	11.0	8.1			8.1		20.0	11.0	
Total Split (s)	18.0	16.0			16.0		41.0	15.0	
Total Split (%)	20.0%	17.8%			17.8%		46%	17%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	1.0	0.1			0.1		2.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0				
Total Lost Time (s)	4.0	3.1			3.1				
Lead/Lag		Lead			Lead		Lag		
Lead-Lag Optimize?		Yes			Yes		Yes		
Recall Mode	None	None			None		C-Max	None	
v/c Ratio	1.18	0.92	1.27		1.12	0.65			
Control Delay	148.3	50.3	146.9		102.4	12.9			
Queue Delay	2.1	0.0	0.2		0.0	0.2			
Total Delay	150.5	50.3	147.2		102.4	13.1			
Queue Length 50th (ft)	~221	261	~892		~203	211			
Queue Length 95th (ft)	#309	#350	#1023		m#240	238			
Internal Link Dist (ft)	401		143			537			
Turn Bay Length (ft)	175				175				
Base Capacity (vph)	272	560	1798		329	2048			
Starvation Cap Reductn	0	0	135		0	158			
Spillback Cap Reductn	40	0	0		0	32			
Storage Cap Reductn	0	0	0		0	0			
Reduced v/c Ratio	1.38	0.92	1.38		1.12	0.71			

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 41 (46%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

	•	*	†	-	-	↓		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	*	7	†		*	^		
Traffic Volume (vph)	250	400	1320	740	300	1080		
Future Volume (vph)	250	400	1320	740	300	1080		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	11	11	11	11	11	11		
Grade (%)	-1%		0%			0%		
Total Lost time (s)	4.0	3.1	5.0		3.1	3.1		
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.85	0.95		1.00	1.00		
FIt Protected	0.95	1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1754	1569	3175		1711	3421		
FIt Permitted	0.95	1.00	1.00		0.11	1.00		
Satd. Flow (perm)	1754	1569	3175		200	3421		
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.81	0.81		
Adj. Flow (vph)	321	513	1467	822	370	1333		
RTOR Reduction (vph)	0	23	0	0	0	0		
Lane Group Flow (vph)	321	490	2289	0	370	1333		
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%		
Turn Type	Prot	pm+ov	NA		custom	NA		
Protected Phases	5	1	24		1	12		
Permitted Phases		5			2			
Actuated Green, G (s)	14.0	26.9	52.0		48.9	52.0		
Effective Green, g (s)	14.0	26.9	52.0		48.9	52.0		
Actuated g/C Ratio	0.16	0.30	0.58		0.54	0.58		
Clearance Time (s)	4.0	3.1			3.1			
Vehicle Extension (s)	3.0	3.0			3.0			
Lane Grp Cap (vph)	272	468	1834		325	1976		
v/s Ratio Prot	c0.18	0.15	c0.72		c0.16	0.39		
v/s Ratio Perm	55.15	0.16			0.45			
v/c Ratio	1.18	1.05	1.25		1.14	0.67		
Uniform Delay, d1	38.0	31.6	19.0		26.3	13.1		
Progression Factor	1.00	1.00	0.79		1.30	1.01		
Incremental Delay, d2	112.3	54.4	116.3		78.2	0.4		
Delay (s)	150.3	85.9	131.3		112.4	13.6		
Level of Service	F	F	F		F	В		
Approach Delay (s)	110.7	·	131.3		·	35.1		
Approach LOS	F		F			D		
Intersection Summary								
HCM 2000 Control Delay			93.8	Н	ICM 2000	Level of Service	e F	
HCM 2000 Volume to Capa	city ratio		1.30					
Actuated Cycle Length (s)	,		90.0	S	Sum of lost	time (s)	16.1	
Intersection Capacity Utiliza	tion		101.5%		CU Level		G	
Analysis Period (min)			15					
c Critical Lane Group								

	1	•	†	-	-	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		↑ ↑			414
Traffic Volume (vph)	0	230	780	10	150	690
Future Volume (vph)	0	230	780	10	150	690
Peak Hour Factor	0.68	0.68	0.83	0.83	0.80	0.80
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	338	0	952	0	0	1051
Turn Type	Perm		NA		D.P+P	NA
Protected Phases			2		4	2 4
Permitted Phases	1				2	
Detector Phase	1		2		4	2 4
Switch Phase						
Minimum Initial (s)	6.0		15.0		6.0	
Minimum Split (s)	11.2		21.0		11.2	
Total Split (s)	20.0		40.0		20.0	
Total Split (%)	25.0%		50.0%		25.0%	
Yellow Time (s)	3.7		4.5		3.7	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0		0.0			
Total Lost Time (s)	5.2		6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Max		None	
v/c Ratio	0.51		0.61			0.80
Control Delay	5.4		19.0			11.1
Queue Delay	1.1		1.0			0.6
Total Delay	6.5		20.0			11.7
Queue Length 50th (ft)	0		192			87
Queue Length 95th (ft)	0		227			72
Internal Link Dist (ft)	545		1933			99
Turn Bay Length (ft)						
Base Capacity (vph)	668		1573			1491
Starvation Cap Reductn	0		0			160
Spillback Cap Reductn	146		350			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.65		0.78			0.79

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated





	•	•	†	~	/	↓		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	¥		†			41		
Traffic Volume (vph)	0	230	780	10	150	690		
Future Volume (vph)	0	230	780	10	150	690		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	16	16	12	12	12	12		
Grade (%)	2%		0%			4%		
Total Lost time (s)	5.2		6.0			6.0		
Lane Util. Factor	1.00		0.95			0.95		
Frt	0.86		1.00			1.00		
Flt Protected	1.00		1.00			0.99		
Satd. Flow (prot)	1808		3432			3404		
FIt Permitted	1.00		1.00			0.57		
Satd. Flow (perm)	1808		3432			1955		
Peak-hour factor, PHF	0.68	0.68	0.83	0.83	0.80	0.80		
Adj. Flow (vph)	0	338	940	12	188	862		
RTOR Reduction (vph)	269	0	1	0	0	0		
Lane Group Flow (vph)	69	0	951	0	0	1051		
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%		
Turn Type	Perm		NA		D.P+P	NA		
Protected Phases			2		4	2 4		
Permitted Phases	1				2			
Actuated Green, G (s)	16.4		36.6			47.2		
Effective Green, g (s)	16.4		36.6			47.2		
Actuated g/C Ratio	0.20		0.46			0.59		
Clearance Time (s)	5.2		6.0					
Vehicle Extension (s)	2.0		0.2					
Lane Grp Cap (vph)	370		1570			1345		
v/s Ratio Prot			0.28			c0.10		
v/s Ratio Perm	c0.04					c0.36		
v/c Ratio	0.19		0.61			0.78		
Uniform Delay, d1	26.3		16.3			12.5		
Progression Factor	1.00		1.00			0.57		
Incremental Delay, d2	0.1		1.7			2.3		
Delay (s)	26.4		18.0			9.5		
Level of Service	С		В			Α		
Approach Delay (s)	26.4		18.0			9.5		
Approach LOS	С		В			Α		
Intersection Summary								
HCM 2000 Control Delay			15.4	Н	CM 2000	Level of Servic	9	В
HCM 2000 Volume to Cap	acity ratio		0.63					
Actuated Cycle Length (s)			80.0	S	um of lost	time (s)		16.4
Intersection Capacity Utiliz			73.9%		CU Level o			D
Analysis Period (min)			15					
c Critical Lane Group								

	1	•	†	1	1	↓		
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø5	
Lane Configurations	7	77	†		*	^		
Traffic Volume (vph)	30	60	700	20	380	710		
Future Volume (vph)	30	60	700	20	380	710		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	33	65	783	0	413	772		
Turn Type	Prot	Prot	NA		D.P+P	NA		
Protected Phases	4	4	2		1	125	5	
Permitted Phases					2			
Detector Phase	4	4	2		1	125		
Switch Phase								
Minimum Initial (s)	7.0	7.0	15.0		5.0		7.0	
Minimum Split (s)	11.0	11.0	20.0		8.1		11.0	
Total Split (s)	15.0	15.0	41.0		16.0		18.0	
Total Split (%)	16.7%	16.7%	45.6%		17.8%		20%	
Yellow Time (s)	3.0	3.0	3.0		3.0		3.0	
All-Red Time (s)	1.0	1.0	2.0		0.1		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.0	4.0	5.0		3.1			
Lead/Lag			Lag		Lead			
Lead-Lag Optimize?			Yes		Yes			
Recall Mode	None	None	C-Max		None		None	
v/c Ratio	0.15	0.19	0.55		0.93	0.27		
Control Delay	37.3	37.1	22.6		35.6	1.1		
Queue Delay	0.0	0.0	0.6		9.1	0.4		
Total Delay	37.3	37.1	23.1		44.6	1.6		
Queue Length 50th (ft)	17	19	175		92	16		
Queue Length 95th (ft)	45	40	233		m#228	m17		
Internal Link Dist (ft)	551		260			143		
Turn Bay Length (ft)					90			
Base Capacity (vph)	216	340	1412		446	2827		
Starvation Cap Reductn	0	0	0		26	1466		
Spillback Cap Reductn	0	0	275		0	0		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.15	0.19	0.69		0.98	0.57		

Cycle Length: 90 Actuated Cycle Length: 90

Offset: 41 (46%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 230: Yale Avenue



✓ <	†	1	-	↓		
Movement WBL WBR	NBT	NBR	SBL	SBT		
Lane Configurations	↑ ↑		*	^		
Traffic Volume (vph) 30 60	700	20	380	710		
Future Volume (vph) 30 60	700	20	380	710		
Ideal Flow (vphpl) 1900 1900	1900	1900	1900	1900		
Total Lost time (s) 4.0 4.0	5.0		3.1	3.1		
Lane Util. Factor 1.00 0.88	0.95		1.00	0.95		
Frt 1.00 0.85	1.00		1.00	1.00		
Flt Protected 0.95 1.00	1.00		0.95	1.00		
Satd. Flow (prot) 1770 2787	3524		1770	3539		
FIt Permitted 0.95 1.00	1.00		0.25	1.00		
Satd. Flow (perm) 1770 2787	3524		459	3539		
Peak-hour factor, PHF 0.92 0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph) 33 65	761	22	413	772		
RTOR Reduction (vph) 0 0	2	0	0	0		
Lane Group Flow (vph) 33 65	781	0	413	772		
Turn Type Prot Prot	NA		D.P+P	NA		
Protected Phases 4 4	2		1	125		
Permitted Phases			2			
Actuated Green, G (s) 11.0 11.0	36.0		48.9	70.0		
Effective Green, g (s) 11.0 11.0	36.0		48.9	66.0		
Actuated g/C Ratio 0.12 0.12	0.40		0.54	0.73		
Clearance Time (s) 4.0 4.0	5.0		3.1			
Vehicle Extension (s) 3.0 3.0	3.0		3.0			
Lane Grp Cap (vph) 216 340	1409		437	2595		
v/s Ratio Prot 0.02 c0.02	0.22		c0.14	c0.22		
v/s Ratio Perm			c0.38			
v/c Ratio 0.15 0.19	0.55		0.95	0.30		
Uniform Delay, d1 35.3 35.5	20.8		14.0	4.1		
Progression Factor 1.00 1.00	1.00		1.10	0.41		
Incremental Delay, d2 0.3 0.3	1.6		21.7	0.0		
Delay (s) 35.7 35.8	22.4		37.1	1.7		
Level of Service D D	С		D	Α		
Approach Delay (s) 35.7	22.4			14.1		
Approach LOS D	С			В		
Intersection Summary						
HCM 2000 Control Delay	18.2	Н	CM 2000	Level of Service	e	
HCM 2000 Volume to Capacity ratio	0.71					
Actuated Cycle Length (s)	90.0	S	um of lost	t time (s)		
Intersection Capacity Utilization	57.7%	IC	CU Level	of Service		
Analysis Period (min)	15					

c Critical Lane Group

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			4	ĵ.	
Traffic Volume (veh/h)	10	20	10	440	350	0
Future Volume (Veh/h)	10	20	10	440	350	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.61	0.61	0.89	0.89	1.00	1.00
Hourly flow rate (vph)	16	33	11	494	350	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				421		
pX, platoon unblocked	0.70			14.1		
vC, conflicting volume	866	350	350			
vC1, stage 1 conf vol	000	000	000			
vC2, stage 2 conf vol						
vCu, unblocked vol	600	350	350			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	0.7	۷.۷	7.1			
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	99			
cM capacity (veh/h)	324	693	1209			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	49	505	350			
Volume Left	16	11	0			
Volume Right	33	0	0			
cSH	505	1209	1700			
Volume to Capacity	0.10	0.01	0.21			
Queue Length 95th (ft)	8	1	0			
Control Delay (s)	12.9	0.3	0.0			
Lane LOS	В	Α				
Approach Delay (s)	12.9	0.3	0.0			
Approach LOS	В					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization	ation		41.2%	IC	CU Level c	f Service
Analysis Period (min)	auon		15	IC	JO LEVEI C	I OCIVICE
Alialysis Feliou (IIIIII)			15			

2: Golden St./Edison Middle School

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	1>		ሻ	1>	
Traffic Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Future Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Peak Hour Factor	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	302	163	0	24	678	0	97	301	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		1	2		1	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	38.2	38.2		38.2	38.2		9.8	49.5		9.8	49.5	
Total Split (%)	31.8%	31.8%		31.8%	31.8%		8.2%	41.3%		8.2%	41.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
v/c Ratio		0.26		0.82	0.28		0.05	0.87		0.51	0.38	
Control Delay		22.7		52.2	22.8		13.4	39.3		24.0	21.8	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		22.7		52.2	22.8		13.4	39.3		24.0	21.8	
Queue Length 50th (ft)		51		166	57		6	347		26	115	
Queue Length 95th (ft)		89		133	52		24	#695		#80	254	
Internal Link Dist (ft)		465			417			1385			341	
Turn Bay Length (ft)							75			50		
Base Capacity (vph)		567		367	575		479	779		191	786	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.26		0.82	0.28		0.05	0.87		0.51	0.38	

Intersection Summary

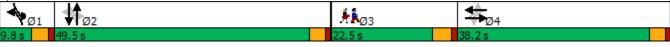
Cycle Length: 120 Actuated Cycle Length: 102

Natural Cycle: 130 Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Golden St./Edison Middle School



Lane Group Lane Configurations Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%)	Ø3
Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%)	
Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%)	
Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%)	
Heavy Vehicles (%) Shared Lane Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.5
Total Split (s)	22.5
Total Split (%)	19%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Internation Over	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	₽		7	₽		7	₽	
Traffic Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Future Volume (vph)	20	40	40	130	40	30	20	400	170	90	270	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	12	12	12	12	12	12	12	12
Grade (%)		5%			-3%			4%			4%	
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.94		1.00	0.96		1.00	0.99	
FIt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1735		1666	1640		1701	1710		1669	1747	
FIt Permitted		0.93		0.62	1.00		0.48	1.00		0.12	1.00	
Satd. Flow (perm)		1624		1088	1640		852	1710		213	1747	
Peak-hour factor, PHF	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	29	59	59	302	93	70	24	476	202	97	290	11
RTOR Reduction (vph)	0	19	0	0	22	0	0	12	0	0	1	0
Lane Group Flow (vph)	0	128	0	302	141	0	24	666	0	97	300	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		34.4		34.4	34.4		51.6	45.8		51.6	45.8	
Effective Green, g (s)		34.4		34.4	34.4		51.6	45.8		51.6	45.8	
Actuated g/C Ratio		0.33		0.33	0.33		0.49	0.43		0.49	0.43	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		529		354	534		462	741		184	757	
v/s Ratio Prot					0.09		0.00	c0.39		c0.03	0.17	
v/s Ratio Perm		0.08		c0.28			0.02			0.23		
v/c Ratio		0.24		0.85	0.26		0.05	0.90		0.53	0.40	
Uniform Delay, d1		26.1		33.2	26.3		14.3	27.8		20.3	20.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2		17.7	0.3		0.0	13.7		2.7	0.3	
Delay (s)		26.3		50.9	26.5		14.4	41.4		23.0	20.8	
Level of Service		С		D	C		В	D		С	C	
Approach Delay (s) Approach LOS		26.3 C			42.4 D			40.5 D			21.3 C	
		U						U				
Intersection Summary			05.0		014 0000		<u> </u>					
HCM 2000 Control Delay	'C C .		35.3	H	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capac	ity ratio		0.82	_		C (.)			40.5			
Actuated Cycle Length (s)			105.6		um of lost				16.5			
Intersection Capacity Utilizati	ion		60.3%	IC	U Level o	of Service	9		В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3	
Lane Configurations	W			ર્ન	- 1>			
Traffic Volume (vph)	10	40	10	550	460	10		
Future Volume (vph)	10	40	10	550	460	10		
Peak Hour Factor	0.72	0.72	0.94	0.94	0.83	0.83		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	70	0	0	596	566	0		
Turn Type	Prot		pm+pt	NA	NA			
Protected Phases	4		1	12	2		3	
Permitted Phases			12					
Detector Phase	4		1	12	2			
Switch Phase								
Minimum Initial (s)	5.0		3.0		25.0		1.0	
Minimum Split (s)	9.0		7.0		30.5		19.0	
Total Split (s)	15.0		27.0		59.0		19.0	
Total Split (%)	12.5%		22.5%		49.2%		16%	
Yellow Time (s)	3.0		3.0		4.2		4.0	
All-Red Time (s)	1.0		1.0		1.3		0.0	
Lost Time Adjust (s)	0.0				0.0			
Total Lost Time (s)	4.0				5.5			
Lead/Lag	Lag		Lead		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes		Yes	
Recall Mode	None		Max		C-Max		None	
v/c Ratio	0.63			0.41	0.68			
Control Delay	78.0			8.0	31.4			
Queue Delay	0.0			0.0	0.0			
Total Delay	78.0			8.0	31.4			
Queue Length 50th (ft)	54			148	340			
Queue Length 95th (ft)	80			m252	415			
Internal Link Dist (ft)	384			1324	1385			
Turn Bay Length (ft)								
Base Capacity (vph)	145			1456	836			
Starvation Cap Reductn	0			0	0			
Spillback Cap Reductn	0			0	0			
Storage Cap Reductn	0			0	0			
Reduced v/c Ratio	0.48			0.41	0.68			

Cycle Length: 120 Actuated Cycle Length: 120

Offset: 62 (52%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Blackstone St



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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	W			ર્ન	ĵ.			
Traffic Volume (vph)	10	40	10	550	460	10		
Future Volume (vph)	10	40	10	550	460	10		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Grade (%)	7%			2%	-2%			
Total Lost time (s)	4.0			4.0	5.5			
Lane Util. Factor	1.00			1.00	1.00			
-rt	0.89			1.00	1.00			
FIt Protected	0.99			1.00	1.00			
Satd. Flow (prot)	1588			1842	1876			
FIt Permitted	0.99			1.00	1.00			
Satd. Flow (perm)	1588			1844	1876			
Peak-hour factor, PHF	0.72	0.72	0.94	0.94	0.83	0.83		
Adj. Flow (vph)	14	56	11	585	554	12		
RTOR Reduction (vph)	0	0	0	0	1	0		
Lane Group Flow (vph)	70	0	0	596	565	0		
Turn Type	Prot		pm+pt	NA	NA			
Protected Phases	4		1	12	2			
Permitted Phases			12					
Actuated Green, G (s)	7.4			86.1	51.1			
Effective Green, g (s)	7.4			86.1	51.1			
Actuated g/C Ratio	0.06			0.72	0.43			
Clearance Time (s)	4.0				5.5			
Vehicle Extension (s)	1.0				3.0			
_ane Grp Cap (vph)	97			1322	798			
//s Ratio Prot	c0.04			c0.13	c0.30			
//s Ratio Perm				0.19				
v/c Ratio	0.72			0.45	0.71			
Uniform Delay, d1	55.3			7.1	28.3			
Progression Factor	1.00			1.14	1.00			
Incremental Delay, d2	19.9			0.8	5.3			
Delay (s)	75.2			8.8	33.6			
Level of Service	Е			Α	С			
Approach Delay (s)	75.2			8.8	33.6			
Approach LOS	Е			Α	С			
ntersection Summary								
HCM 2000 Control Delay			24.0	Н	CM 2000	Level of Service	С	
HCM 2000 Volume to Capa	city ratio		0.56					
Actuated Cycle Length (s)			120.0		um of lost		17.5	
Intersection Capacity Utiliza	ation		47.8%	IC	CU Level c	of Service	Α	
Analysis Period (min)			15					
Critical Lane Group								

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		7	f)		7	f)	
Traffic Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Future Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Peak Hour Factor	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	257	0	0	334	0	92	816	0	60	711	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			12			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		3.0			15.0	15.0	
Minimum Split (s)	13.2	13.2		13.2	13.2		7.0			21.7	21.7	
Total Split (s)	38.2	38.2		38.2	38.2		22.0			59.8	59.8	
Total Split (%)	31.8%	31.8%		31.8%	31.8%		18.3%			49.8%	49.8%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0			5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		1.0			1.7	1.7	
Lost Time Adjust (s)		0.0			0.0		0.0			0.0	0.0	
Total Lost Time (s)		6.2			6.2		4.0			6.7	6.7	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		Min			C-Max	C-Max	
v/c Ratio		0.73			0.92		0.26	0.69		0.25	0.82	
Control Delay		54.3			74.3		7.5	9.5		13.3	21.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		54.3			74.3		7.5	9.5		13.3	21.1	
Queue Length 50th (ft)		179			246		4	603		13	159	
Queue Length 95th (ft)		244			#333		m15	56		m21	181	
Internal Link Dist (ft)		562			316			1219			1324	
Turn Bay Length (ft)							100			50		
Base Capacity (vph)		380			394		360	1185		240	865	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.68			0.85		0.26	0.69		0.25	0.82	

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 78 (65%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Britannia St./Westfield Rd.



VHB

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		ሻ	f _a		Ť	₽	
Traffic Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Future Volume (vph)	40	80	90	50	60	160	70	560	60	50	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	14	12	10	12	12	10	13	12
Grade (%)		4%			-8%			3%			-8%	
Total Lost time (s)		6.2			6.2		4.0	4.0		6.7	6.7	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.92		1.00	0.99		1.00	0.99	
FIt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1856			1830		1596	1773		1653	1912	
FIt Permitted		0.76			0.80		0.13	1.00		0.30	1.00	
Satd. Flow (perm)		1427			1480		223	1773		530	1912	
Peak-hour factor, PHF	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Adj. Flow (vph)	49	98	110	62	74	198	92	737	79	60	675	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	257	0	0	334	0	92	816	0	60	711	0
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			1 2			2		
Actuated Green, G (s)		29.6			29.6		73.5	77.5		54.4	54.4	
Effective Green, g (s)		29.6			29.6		73.5	77.5		54.4	54.4	
Actuated g/C Ratio		0.25			0.25		0.61	0.65		0.45	0.45	
Clearance Time (s)		6.2			6.2		4.0			6.7	6.7	
Vehicle Extension (s)		3.0			3.0		1.0			0.2	0.2	
Lane Grp Cap (vph)		351			365		355	1145		240	866	
v/s Ratio Prot							0.04	c0.46			c0.37	
v/s Ratio Perm		0.18			c0.23		0.12			0.11		
v/c Ratio		0.73			0.92		0.26	0.71		0.25	0.82	
Uniform Delay, d1		41.6			44.0		15.9	13.9		20.2	28.6	
Progression Factor		1.00			1.00		0.82	0.56		0.50	0.44	
Incremental Delay, d2		7.7			26.8		0.1	1.1		2.1	7.5	
Delay (s)		49.2			70.7		13.1	8.9		12.3	20.0	
Level of Service		D			E		В	Α		В	С	
Approach Delay (s)		49.2			70.7			9.4			19.4	
Approach LOS		D			Е			Α			В	
Intersection Summary												
HCM 2000 Control Delay			26.3	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capacity	y ratio		0.84									
Actuated Cycle Length (s)			120.0		um of lost				16.9			
Intersection Capacity Utilizatio	n		80.6%	IC	U Level o	of Service	9		D			
Analysis Period (min)			15									
c Critical Lane Group												

Lane Group WBL WBR NBT NBR SBL SBT Ø3 Lane Configurations Y 1 4 4 60 660 Future Volume (vph) 80 70 740 40 60 660 Peruture Volume (vph) 80 70 740 40 60 660 Pereut Relation 80 0.84 0.84 0.96 0.96 0.83 0.85 5% 4% 4% 5%		•	•	†	/	>	ļ		
Traffic Volume (vph) 80 70 740 40 60 660 Future Volume (vph) 80 70 740 40 60 660 Peak Hour Factor 0.84 0.84 0.96 0.96 0.83 0.83 Heavy Vehicles (%) 5% 5% 5% 5% 5% Shared Lane Traffic (%) Shared Lane Traffic (%) Shared Lane Traffic (%) Shared Lane Traffic (%) Lane Group Flow (vph) 178 0 813 0 0 867 Turn Type Prot NA pm+pt NA Protected Phases 4 2 1 12 3 Permitted Phases 12 1 12 3 2 1 12 3 2 1 12 3 2 1 12 3 2 1 12 3 3 1 2 1 1 2 3 1 1 1 2 2 6 8 <td< th=""><th>Lane Group</th><th>WBL</th><th>WBR</th><th>NBT</th><th>NBR</th><th>SBL</th><th>SBT</th><th>Ø3</th><th></th></td<>	Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3	
Traffic Volume (vph) 80 70 740 40 60 660 Future Volume (vph) 80 70 740 40 60 660 Peak Hour Factor 0.84 0.84 0.96 0.96 0.83 0.83 Heavy Vehicles (%) 5% 5% 5% 5% 5% Shared Lane Traffic (%) Lane Group Flow (vph) 178 0 813 0 0 867 Turn Type Prot NA pm+pt NA Protected Phases 4 2 1 12 3 Permitted Phases 4 2 1 12 3 3 2 1 12 3 1 2 1 12 3 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 <td< td=""><td>Lane Configurations</td><td>¥</td><td></td><td>ĵ,</td><td></td><td></td><td>ન</td><td></td><td></td></td<>	Lane Configurations	¥		ĵ,			ન		
Future Volume (vph) 80 70 740 40 60 660 Peak Hour Factor 0.84 0.84 0.96 0.96 0.83 0.83 Heavy Vehicles (%) 5% 5% 4% 4% 5% 5% Shared Lane Traffic (%) Shared La			70		40	60			
Heavy Vehicles (%) 5% 5% 4% 4% 5% 5%		80	70	740	40	60	660		
Shared Lane Traffic (%) Lane Group Flow (vph) 178 0 813 0 0 867	Peak Hour Factor	0.84	0.84	0.96	0.96	0.83	0.83		
Lane Group Flow (vph) 178 0 813 0 0 867 Turn Type Prot NA pm+pt NA Protected Phases 4 2 1 12 Detector Phase 4 2 1 12 Switch Phase Minimum Initial (s) 5.0 21.0 5.0 1.0 Minimum Split (s) 9.2 26.8 9.0 19.0 Total Split (s) 14.0 50.0 37.0 19.0 Total Split (s) 14.0 50.0 37.0 19.0 Total Split (s) 14.0 50.0 37.0 19.0 Total Split (s) 1.1.7% 41.7% 30.8% 16% Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time (s) 4.2 5.8 Lead Lead Lead/Lag Lag Lag Lead Lead Lead/Lag Op	Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%		
Turn Type Prot NA pm+pt NA Protected Phases 4 2 1 12 3 Permitted Phases 12	Shared Lane Traffic (%)								
Protected Phases 4 2 1 12 3 Permitted Phases 12	Lane Group Flow (vph)	178	0	813	0	0	867		
Permitted Phases 4	Turn Type	Prot		NA		pm+pt	NA		
Detector Phase 4	Protected Phases	4		2		1	12	3	
Switch Phase Minimum Initial (s) 5.0 21.0 5.0 1.0 Minimum Split (s) 9.2 26.8 9.0 19.0 Total Split (s) 14.0 50.0 37.0 19.0 Total Split (%) 11.7% 41.7% 30.8% 16% Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.2 5.8 Lead Lead Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 0.98 Control Delay 61.4 35.3 29.4 2.4 Queue Delay 0.0 22.6 18.7 1.0 Total Delay 61.4 57.9	Permitted Phases					12			
Minimum Initial (s) 5.0 21.0 5.0 1.0 Minimum Split (s) 9.2 26.8 9.0 19.0 Total Split (s) 14.0 50.0 37.0 19.0 Total Split (%) 11.7% 41.7% 30.8% 16% Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.2 5.8 Lead Lead Lead/Lag Lag Lag Lead Lead Lead/Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 95th (ft) #11	Detector Phase	4		2		1	12		
Minimum Split (s) 9.2 26.8 9.0 19.0 Total Split (s) 14.0 50.0 37.0 19.0 Total Split (%) 11.7% 41.7% 30.8% 16% Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.2 5.8 Lead Lead Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #	Switch Phase								
Total Split (s) 14.0 50.0 37.0 19.0 Total Split (%) 11.7% 41.7% 30.8% 16% Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 4.2 5.8 Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) #54 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 55 Storage Cap Reductn 0 0 0 55 Storage Cap Reductn 0 0 0	Minimum Initial (s)	5.0		21.0		5.0		1.0	
Total Split (%) 11.7% 41.7% 30.8% 16% Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.2 5.8 1.2 Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None None V/c Ratio 0.98	Minimum Split (s)	9.2		26.8		9.0		19.0	
Yellow Time (s) 3.0 4.2 3.0 4.0 All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.2 5.8 5.8 Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None V/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Total Split (s)	14.0		50.0		37.0		19.0	
All-Red Time (s) 1.2 1.6 1.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.2 5.8 5.8 Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Total Split (%)	11.7%		41.7%		30.8%		16%	
Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 4.2 5.8 Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None Ves None None None Ves None	Yellow Time (s)	3.0		4.2		3.0		4.0	
Total Lost Time (s) 4.2 5.8 Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	All-Red Time (s)	1.2		1.6		1.0		0.0	
Lead/Lag Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None V/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Lost Time Adjust (s)	0.0		0.0					
Lead-Lag Optimize? Yes Yes Yes Yes Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0		4.2		5.8					
Recall Mode None C-Min Max None v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Lead/Lag	Lag		Lag		Lead		Lead	
v/c Ratio 0.74 0.84 0.98 Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Lead-Lag Optimize?	Yes		Yes		Yes		Yes	
Control Delay 61.4 35.3 29.4 Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0		None		C-Min		Max		None	
Queue Delay 0.0 22.6 18.7 Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	v/c Ratio								
Total Delay 61.4 57.9 48.1 Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Control Delay	61.4							
Queue Length 50th (ft) 111 554 40 Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Queue Delay	0.0		22.6			18.7		
Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) 881 881 Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Total Delay	61.4		57.9			48.1		
Queue Length 95th (ft) #236 #960 #626 Internal Link Dist (ft) 454 519 1219 Turn Bay Length (ft) 881 881 Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Queue Length 50th (ft)	111		554			40		
Turn Bay Length (ft) Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0		#236		#960			#626		
Base Capacity (vph) 242 963 881 Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Internal Link Dist (ft)	454		519			1219		
Starvation Cap Reductn 0 173 0 Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0 0	Turn Bay Length (ft)								
Spillback Cap Reductn 0 0 55 Storage Cap Reductn 0 0	Base Capacity (vph)	242		963			881		
Storage Cap Reductn 0 0	. , ,	0		173			0		
		0		0			55		
Reduced v/c Ratio 0.74 1.03 1.05	Storage Cap Reductn	0		0			0		
		0.74		1.03			1.05		

Cycle Length: 120
Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Atkins Street



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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	W		ĵ»			4	
Traffic Volume (vph)	80	70	740	40	60	660	
Future Volume (vph)	80	70	740	40	60	660	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	15	12	16	12	12	16	
Grade (%)	-10%		-2%			1%	
Total Lost time (s)	4.2		5.8			4.0	
Lane Util. Factor	1.00		1.00			1.00	
Frt	0.94 0.97		0.99 1.00			1.00 1.00	
Fit Protected Satd. Flow (prot)	1908		2077			2032	
Flt Permitted	0.97		1.00			0.33	
Satd. Flow (perm)	1908		2077			676	
Peak-hour factor, PHF	0.84	0.84	0.96	0.96	0.83	0.83	
Adj. Flow (vph)	95	83	771	42	72	795	
RTOR Reduction (vph)	26	0	2	0	0	0	
Lane Group Flow (vph)	152	0	811	0	0	867	
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%	
Turn Type	Prot		NA	.,,	pm+pt	NA	
Protected Phases	4		2		1	1 2	
Permitted Phases					12		
Actuated Green, G (s)	13.6		52.4			85.4	
Effective Green, g (s)	13.6		52.4			85.4	
Actuated g/C Ratio	0.11		0.44			0.71	
Clearance Time (s)	4.2		5.8				
Vehicle Extension (s)	1.0		0.2				
Lane Grp Cap (vph)	216		906			853	
v/s Ratio Prot	c0.08		0.39			c0.28	
v/s Ratio Perm						c0.44	
v/c Ratio	0.71		0.90			1.02	
Uniform Delay, d1	51.3		31.3			17.3	
Progression Factor	1.00		0.89			0.38	
Incremental Delay, d2	8.3		12.1			27.9	
Delay (s)	59.5		40.0			34.5	
Level of Service	59.5		D			C 34.5	
Approach Delay (s) Approach LOS	59.5 E		40.0 D			04.5 C	
Intersection Summary							
HCM 2000 Control Delay			39.3	Н	CM 2000	Level of Service	
HCM 2000 Volume to Capa	acity ratio		0.94				
Actuated Cycle Length (s)			120.0	S	um of lost	t time (s)	
Intersection Capacity Utiliza	ation		99.8%	IC	CU Level o	of Service	
Analysis Period (min)			15				
c Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	↑			ĵ.	
Traffic Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Future Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Peak Hour Factor	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	305	232	0	23	614	0	0	926	0
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Detector Phase	4	4		4	4		2	2			2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		20.0	20.0			20.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		25.5	25.5			25.5	
Total Split (s)	33.0	33.0		33.0	33.0		64.0	64.0			64.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		53.3%	53.3%			53.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2			4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.3	1.3			1.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max			C-Max	
v/c Ratio		0.13		0.85	0.32		0.20	0.55			0.75	
Control Delay		9.2		64.1	1.2		7.5	8.5			13.3	
Queue Delay		0.0		0.0	0.1		0.0	0.5			4.1	
Total Delay		9.2		64.1	1.3		7.5	9.0			17.4	
Queue Length 50th (ft)		0		216	0		3	93			244	
Queue Length 95th (ft)		16		#355	0		m9	m241			m294	
Internal Link Dist (ft)		295			549			582			519	
Turn Bay Length (ft)							300					
Base Capacity (vph)		445		362	718		117	1121			1239	
Starvation Cap Reductn		0		0	0		0	74			233	
Spillback Cap Reductn		6		0	51		0	186			157	
Storage Cap Reductn		0		0	0		0	0			0	
Reduced v/c Ratio		0.13		0.84	0.35		0.20	0.66			0.92	

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Pratt St. Ext./I-691 Ramp (WB)



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	19%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	₽		7	↑			₽	
Traffic Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Future Volume (vph)	10	0	30	250	0	190	20	540	0	0	870	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	10	10	10	12	12	12	8	16	16
Grade (%)		6%			-4%			-3%			2%	
Total Lost time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.90		1.00	0.85		1.00	1.00			1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1630		1701	1522		1745	1837			2030	
Flt Permitted		0.91		0.76	1.00		0.10	1.00			1.00	
Satd. Flow (perm)		1504		1357	1522		192	1837			2030	
Peak-hour factor, PHF	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	14	0	43	305	0	232	23	614	0	0	926	0
RTOR Reduction (vph)	0	42	0	0	171	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	15	0	305	61	0	23	614	0	0	926	0
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Actuated Green, G (s)		31.7		31.7	31.7		70.1	70.1			70.1	
Effective Green, g (s)		31.7		31.7	31.7		70.1	70.1			70.1	
Actuated g/C Ratio		0.26		0.26	0.26		0.58	0.58			0.58	
Clearance Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Vehicle Extension (s)		1.5		1.5	1.5		0.2	0.2			0.2	
Lane Grp Cap (vph)		397		358	402		112	1073			1185	
v/s Ratio Prot					0.04			0.33			c0.46	
v/s Ratio Perm		0.01		c0.22			0.12					
v/c Ratio		0.04		0.85	0.15		0.21	0.57			0.78	
Uniform Delay, d1		32.8		41.9	33.9		11.8	15.6			19.1	
Progression Factor		1.00		1.00	1.00		0.31	0.45			0.56	
Incremental Delay, d2		0.0		16.9	0.1		2.9	1.6			2.0	
Delay (s)		32.8		58.8	33.9		6.5	8.6			12.7	
Level of Service		С		E	C		Α	A			В	
Approach Delay (s)		32.8			48.0			8.5			12.7	
Approach LOS		С			D			Α			В	
Intersection Summary												
HCM 2000 Control Delay			20.8	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacit	ty ratio		0.77									
Actuated Cycle Length (s)			120.0		ım of lost				14.4			
Intersection Capacity Utilization	on		75.0%	IC	U Level c	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	1>			ની	7	ሻ	ħβ		7	ĵ.	
Traffic Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Future Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	167	0	0	165	209	22	793	0	347	787	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8	1		2		1	12	
Permitted Phases						8	2			12		
Detector Phase	4	4		8	8	1	2	2		1	12	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	3.0	15.0	15.0		3.0		
Minimum Split (s)	10.5	10.5		10.8	10.8	7.0	21.4	21.4		7.0		
Total Split (s)	16.0	16.0		18.0	18.0	24.0	35.0	35.0		24.0		
Total Split (%)	13.3%	13.3%		15.0%	15.0%	20.0%	29.2%	29.2%		20.0%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		3.0		
All-Red Time (s)	2.5	2.5		2.8	2.8	1.0	2.2	2.2		1.0		
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.5	5.5			5.8	4.0	6.4	6.4		4.0		
Lead/Lag	Lag	Lag				Lead	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes				Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	Min	C-Max	C-Max		Min		
v/c Ratio	0.95	0.93			0.96	0.44	0.18	0.72		0.93	0.88	
Control Delay	113.7	99.9			114.3	36.2	28.5	35.8		55.4	27.9	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.5	
Total Delay	113.7	99.9			114.3	36.2	28.5	35.8		55.4	28.4	
Queue Length 50th (ft)	121	115			129	128	11	327		~189	~641	
Queue Length 95th (ft)	#203	#198			#269	202	m30	#457		#289	#630	
Internal Link Dist (ft)		249			421			2589			582	
Turn Bay Length (ft)						175	50			550		
Base Capacity (vph)	162	179			171	472	123	1105		374	897	
Starvation Cap Reductn	0	0			0	0	0	0		0	13	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.95	0.93			0.96	0.44	0.18	0.72		0.93	0.89	

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

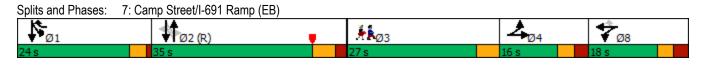
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Weekday Morning Peak



Lane Group	Ø3
	w ₃
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	4Î			र्स	7	ሻ	∱ ∱		ሻ	f.	
Traffic Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Future Volume (vph)	120	80	50	120	30	190	20	450	280	260	410	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	10	10	10	12	12	12	10	10	10
Grade (%)		6%			-4%			-2%			5%	
Total Lost time (s)	5.5	5.5			5.8	4.0	6.4	6.4		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1852	1837			1689	1493	1787	3369		1610	1618	
Flt Permitted	0.95 1852	1.00 1837			0.96 1689	1.00 1493	0.20 377	1.00 3369		0.18 306	1.00 1618	
Satd. Flow (perm)			0.70	0.04					0.00			0.75
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	154	103	64	132	33	209	22	489	304	347	547	240
RTOR Reduction (vph)	0 154	18 149	0	0	0 165	0 209	0 22	0 793	0	0 347	12 775	0
Lane Group Flow (vph)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	0 2%
Heavy Vehicles (%)			4 70						Z 70			Z 70
Turn Type Protected Phases	Split 4	NA 4		Split 8	NA 8	pm+ov	Perm	NA 2		pm+pt	NA 1 2	
Permitted Phases	4	4		0	0	1 8	2	2		1 2	1 2	
Actuated Green, G (s)	10.5	10.5			12.2	32.2	37.8	37.8		57.8	61.8	
Effective Green, g (s)	10.5	10.5			12.2	32.2	37.8	37.8		57.8	61.8	
Actuated g/C Ratio	0.09	0.09			0.10	0.27	0.31	0.31		0.48	0.51	
Clearance Time (s)	5.5	5.5			5.8	4.0	6.4	6.4		4.0	0.01	
Vehicle Extension (s)	2.0	2.0			2.5	1.0	0.2	0.2		1.0		
Lane Grp Cap (vph)	162	160			171	400	118	1061		364	833	
v/s Ratio Prot	c0.08	0.08			c0.10	0.09	110	0.24		0.16	c0.48	
v/s Ratio Perm	00.00	0.00			00.10	0.05	0.06	0.21		0.30	00.10	
v/c Ratio	0.95	0.93			0.96	0.52	0.19	0.75		0.95	0.93	
Uniform Delay, d1	54.5	54.4			53.7	37.4	29.9	36.8		26.8	27.1	
Progression Factor	1.00	1.00			1.00	1.00	0.68	0.81		1.28	0.66	
Incremental Delay, d2	55.6	49.6			58.0	0.6	3.4	4.7		26.2	11.8	
Delay (s)	110.1	104.0			111.7	37.9	23.6	34.4		60.6	29.8	
Level of Service	F	F			F	D	С	С		Е	С	
Approach Delay (s)		106.9			70.5			34.1			39.2	
Approach LOS		F			Е			С			D	
Intersection Summary												
HCM 2000 Control Delay			50.3	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capac	city ratio		0.84									
Actuated Cycle Length (s)			120.0			t time (s)			25.7			
Intersection Capacity Utiliza	tion		78.6%	IC	CU Level	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	1>			4			4			4	
Traffic Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Future Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Peak Hour Factor	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	181	0	0	259	0	0	588	0	0	530	0
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0			15.0	15.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		9.0			20.5	20.5	
Total Split (s)	30.0	30.0		30.0	30.0		12.0			58.0	58.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		10.0%			48.3%	48.3%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.0			3.9	3.9	
All-Red Time (s)	1.3	1.3		1.3	1.3		1.0			1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0						0.0	
Total Lost Time (s)	4.9	4.9			4.9						5.5	
Lead/Lag	Lag	Lag		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		Max			C-Min	C-Min	
v/c Ratio	0.38	0.61			0.92			0.47			0.83	
Control Delay	56.1	54.4			83.9			8.2			29.2	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	56.1	54.4			83.9			8.2			29.2	
Queue Length 50th (ft)	22	130			196			85			302	
Queue Length 95th (ft)	55	200			251			221			m376	
Internal Link Dist (ft)		294			255			709			2589	
Turn Bay Length (ft)	75											
Base Capacity (vph)	101	357			341			1386			789	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.32	0.51			0.76			0.42			0.67	

Cycle Length: 120 Actuated Cycle Length: 120

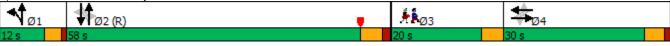
Offset: 52 (43%), Referenced to phase 2:NBSB and 6:, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Liberty Street



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	17%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	f)			4			4			4	
Traffic Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Future Volume (vph)	30	120	50	20	180	10	40	450	10	10	380	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		8%			-9%			-1%			-2%	
Total Lost time (s)	4.9	4.9			4.9			4.0			5.5	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.96			0.99			1.00			0.98	
Flt Protected	0.95	1.00			1.00			1.00			1.00	
Satd. Flow (prot)	1699	1710			1818			1841			1833	
Flt Permitted	0.27	1.00			0.89			0.96			0.98	
Satd. Flow (perm)	487	1710			1624			1772			1803	
Peak-hour factor, PHF	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Adj. Flow (vph)	32	128	53	25	222	12	47	529	12	12	458	60
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	32	181	0	0	257	0	0	588	0	0	530	0
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12		_	2	
Permitted Phases	4			4			2	_		2		
Actuated Green, G (s)	20.8	20.8			20.8			77.6			39.2	
Effective Green, g (s)	20.8	20.8			20.8			77.6			39.2	
Actuated g/C Ratio	0.17	0.17			0.17			0.65			0.33	
Clearance Time (s)	4.9	4.9			4.9						5.5	
Vehicle Extension (s)	1.5	1.5			1.5						2.0	
Lane Grp Cap (vph)	84	296			281			1167			588	
v/s Ratio Prot		0.11			0.10			c0.16				
v/s Ratio Perm	0.07				c0.16			0.16			c0.29	
v/c Ratio	0.38	0.61			0.92			0.50			0.90	
Uniform Delay, d1	43.9	45.9			48.7			11.1			38.6	
Progression Factor	1.00	1.00			1.00			0.69			0.69	
Incremental Delay, d2	1.1	2.6			31.8			1.4			9.7	
Delay (s)	45.0	48.5			80.5			9.1			36.1	
Level of Service	D	D			F			Α			D	
Approach LOS		48.0			80.5			9.1			36.1	
Approach LOS		D			F			Α			D	
Intersection Summary												
HCM 2000 Control Delay			34.9	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capa	city ratio		0.72									
Actuated Cycle Length (s)			120.0		um of lost				18.4			
Intersection Capacity Utiliza	ation		76.7%	IC	U Level o	of Service	•		D			
Analysis Period (min)			15									
o Critical Lano Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7		7	ሻ		7	ሻ		7	ሻ	₽	
Traffic Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Future Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	247	195	105	244	93	225	413	113	75	513	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	5.0	5.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	12.0	13.0	13.0	12.0	23.0	23.0	9.0	21.2	21.2	9.0	21.2	
Total Split (s)	12.0	23.0	23.0	12.0	23.0	23.0	15.0	53.0	53.0	9.0	47.0	
Total Split (%)	10.0%	19.2%	19.2%	10.0%	19.2%	19.2%	12.5%	44.2%	44.2%	7.5%	39.2%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.9	3.0	3.9	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.3	2.3	1.0	2.3	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
v/c Ratio	0.39	0.93	0.47	0.63	0.86	0.24	0.66	0.49	0.15	0.18	0.71	
Control Delay	40.8	90.7	10.3	53.6	77.8	1.5	32.2	19.2	1.7	10.6	25.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.8	90.7	10.3	53.6	77.8	1.5	32.2	19.2	1.7	10.6	25.3	
Queue Length 50th (ft)	47	191	0	65	190	0	85	192	8	14	104	
Queue Length 95th (ft)	76	#265	36	#111	#328	0	126	115	4	m28	274	
Internal Link Dist (ft)		485			509			712			709	
Turn Bay Length (ft)			200	200		300				200		
Base Capacity (vph)	200	271	419	167	283	386	342	835	775	418	719	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.91	0.47	0.63	0.86	0.24	0.66	0.49	0.15	0.18	0.71	

Cycle Length: 120
Actuated Cycle Length: 120

Offset: 10 (8%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

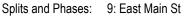
Natural Cycle: 110

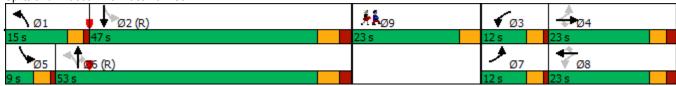
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.





Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	19%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	
•	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	†	7	¥	†	7	¥	†	7	¥	f)	
Traffic Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Future Volume (vph)	60	190	150	90	210	80	180	330	90	60	340	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	11	11	11	11	11	11	11
Grade (%)		2%			6%			1%			-1%	
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1718	1809	1691	1612	1697	1442	1638	1724	1465	1670	1713	
Flt Permitted	0.31	1.00	1.00	0.22	1.00	1.00	0.23	1.00	1.00	0.46	1.00	
Satd. Flow (perm)	556	1809	1691	372	1697	1442	397	1724	1465	802	1713	
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	78	247	195	105	244	93	225	412	112	75	425	88
RTOR Reduction (vph)	0	0	165	0	0	78	0	0	61	0	5	0
Lane Group Flow (vph)	78	247	30	105	244	16	225	413	52	75	508	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		
Actuated Green, G (s)	24.8	18.4	18.4	28.0	20.0	20.0	63.0	55.0	55.0	51.7	47.7	
Effective Green, g (s)	24.8	18.4	18.4	28.0	20.0	20.0	63.0	55.0	55.0	51.7	47.7	
Actuated g/C Ratio	0.21	0.15	0.15	0.23	0.17	0.17	0.52	0.46	0.46	0.43	0.40	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	176	277	259	169	282	240	325	790	671	374	680	
v/s Ratio Prot	0.02	0.14		c0.04	c0.14		c0.07	0.24		0.01	c0.30	
v/s Ratio Perm	0.07		0.02	0.10		0.01	0.30		0.04	0.08		
v/c Ratio	0.44	0.89	0.12	0.62	0.87	0.06	0.69	0.52	0.08	0.20	0.75	
Uniform Delay, d1	39.9	49.8	43.8	38.5	48.7	42.1	19.8	23.2	18.2	20.5	31.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.32	0.68	0.39	0.62	0.61	
Incremental Delay, d2	0.6	27.4	0.1	5.0	23.0	0.1	5.0	2.4	0.2	0.1	5.9	
Delay (s)	40.6	77.3	43.9	43.5	71.7	42.2	31.0	18.3	7.4	12.7	24.9	
Level of Service	D	Е	D	D	Е	D	С	В	Α	В	С	
Approach Delay (s)		59.2			58.8			20.4			23.4	
Approach LOS		Е			Е			С			С	
Intersection Summary												
HCM 2000 Control Delay			37.3	Н	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capa	acity ratio		0.68									
Actuated Cycle Length (s)			120.0	S	um of lost	time (s)			23.2			
Intersection Capacity Utiliza	ation		65.8%		CU Level)		С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			414			4T>	
Traffic Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Future Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Peak Hour Factor	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	71	0	0	735	0	0	663	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		2	2		2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.3	11.3		11.3	11.3		20.5	20.5		20.5	20.5	
Total Split (s)	23.0	23.0		23.0	23.0		64.0	64.0		64.0	64.0	
Total Split (%)	19.2%	19.2%		19.2%	19.2%		53.3%	53.3%		53.3%	53.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.3			5.3			5.5			5.5	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max		
v/c Ratio		0.16			0.52			0.27			0.26	
Control Delay		55.9			38.8			3.7			2.9	
Queue Delay		0.0			0.0			0.1			0.0	
Total Delay		55.9			38.8			3.8			2.9	
Queue Length 50th (ft)		11			21			30			12	
Queue Length 95th (ft)		25			43			124			123	
Internal Link Dist (ft)		424			718			263			712	
Turn Bay Length (ft)												
Base Capacity (vph)		211			261			2724			2546	
Starvation Cap Reductn		0			0			958			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.07			0.27			0.42			0.26	

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 10: Charles Street



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	28%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			€1 }			414	
Traffic Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Future Volume (vph)	10	0	0	10	10	30	10	590	40	40	540	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	14	14	14
Grade (%)		-7%			4%			-5%			2%	
Total Lost time (s)		5.3			5.3			5.5			5.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		1.00			0.92			0.99			1.00	
FIt Protected		0.95			0.99			1.00			1.00	
Satd. Flow (prot)		2117			1628			3522			3644	
FIt Permitted		0.64			0.93			0.94			0.85	
Satd. Flow (perm)		1435			1525			3325			3109	
Peak-hour factor, PHF	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Adj. Flow (vph)	15	0	0	14	14	43	11	678	46	45	607	11
RTOR Reduction (vph)	0	0	0	0	41	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	15	0	0	30	0	0	733	0	0	663	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		6.5			6.5			92.9			92.9	
Effective Green, g (s)		6.5			6.5			92.9			92.9	
Actuated g/C Ratio		0.05			0.05			0.77			0.77	
Clearance Time (s)		5.3			5.3			5.5			5.5	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		77			82			2574			2406	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.02			c0.22			0.21	
v/c Ratio		0.19			0.37			0.28			0.28	
Uniform Delay, d1		54.2			54.8			3.9			3.9	
Progression Factor		1.00			1.00			0.65			0.49	
Incremental Delay, d2		0.5			1.0			0.3			0.2	
Delay (s)		54.7			55.8			2.8			2.1	
Level of Service		D			E			Α			Α	
Approach Delay (s)		54.7			55.8			2.8			2.1	
Approach LOS		D			Е			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			5.6	H	CM 2000	Level of S	Service		Α			
HCM 2000 Volume to Capacity	y ratio		0.27									
Actuated Cycle Length (s)			120.0		um of lost				14.8			
Intersection Capacity Utilizatio	n		52.9%	IC	U Level o	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			414	† 1>	
Traffic Volume (vph)	70	60	70	570	520	30
Future Volume (vph)	70	60	70	570	520	30
Peak Hour Factor	0.74	0.74	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	176	0	0	811	640	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	6.0		6.0		15.0	
Minimum Split (s)	11.2		11.2		21.0	
Total Split (s)	31.0		31.0		58.0	
Total Split (%)	25.8%		25.8%		48.3%	
Yellow Time (s)	3.7		3.7		4.5	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	5.2				6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		C-Max	
v/c Ratio	0.74			0.36	0.30	
Control Delay	59.3			2.3	4.4	
Queue Delay	0.0			0.1	0.2	
Total Delay	59.3			2.5	4.6	
Queue Length 50th (ft)	108			25	70	
Queue Length 95th (ft)	137			34	17	
Internal Link Dist (ft)	372			99	263	
Turn Bay Length (ft)						
Base Capacity (vph)	444			2420	2152	
Starvation Cap Reductn	0			552	719	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.40			0.43	0.45	
l-tti O						

Cycle Length: 120 Actuated Cycle Length: 120

Offset: 69 (58%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

11: Olive Street Splits and Phases:



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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			414	∱ }		
Traffic Volume (vph)	70	60	70	570	520	30	
Future Volume (vph)	70	60	70	570	520	30	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	16	16	12	12	12	12	
Grade (%)	-6%			-5%	5%		
Total Lost time (s)	5.2			5.2	6.0		
Lane Util. Factor	1.00			0.95	0.95		
Frt	0.94			1.00	0.99		
FIt Protected	0.97			0.99	1.00		
Satd. Flow (prot)	1948			3539	3389		
FIt Permitted	0.97			0.79	1.00		
Satd. Flow (perm)	1948			2816	3389		
Peak-hour factor, PHF	0.74	0.74	0.79	0.79	0.86	0.86	
Adj. Flow (vph)	95	81	89	722	605	35	
RTOR Reduction (vph)	29	0	0	0	2	0	
Lane Group Flow (vph)	147	0	0	811	638	0	
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	4		1	12	2		
Permitted Phases			2				
Actuated Green, G (s)	12.9			90.7	76.2		
Effective Green, g (s)	12.9			90.7	76.2		
Actuated g/C Ratio	0.11			0.76	0.64		
Clearance Time (s)	5.2				6.0		
Vehicle Extension (s)	1.0				0.2		
Lane Grp Cap (vph)	209			2215	2152		
v/s Ratio Prot	c0.08			c0.04	0.19		
v/s Ratio Perm				c0.23			
v/c Ratio	0.70			0.37	0.30		
Uniform Delay, d1	51.7			4.9	9.8		
Progression Factor	1.00			0.55	0.36		
Incremental Delay, d2	8.4			0.0	0.3		
Delay (s)	60.1			2.7	3.9		
Level of Service	E			A	A		
Approach Delay (s)	60.1			2.7	3.9		
Approach LOS	Е			Α	Α		
Intersection Summary							
HCM 2000 Control Delay			9.4	H	CM 2000	Level of Service	Α
HCM 2000 Volume to Capa	acity ratio		0.41				
Actuated Cycle Length (s)			120.0		um of lost		16.4
Intersection Capacity Utiliza	ation		54.3%	IC	U Level c	of Service	Α
Analysis Period (min)			15				
c Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7	<u>ነ</u>	1>			4			4	
Traffic Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Future Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Peak Hour Factor	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	280	0	86	186	0	0	397	0	0	559	0
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	12.3	12.3	12.3	12.3	12.3		21.5	21.5		21.5	21.5	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		36.5	36.5		35.0	35.0	
Total Split (%)	22.6%	22.6%	22.6%	22.6%	22.6%		33.0%	33.0%		31.7%	31.7%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Lead/Lag	Lag	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes									
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
v/c Ratio		0.71		0.29	0.63			0.60			0.87	
Control Delay		43.3		35.4	43.8			29.5			43.4	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		43.3		35.4	43.8			29.5			43.4	
Queue Length 50th (ft)		122		37	85			155			248	
Queue Length 95th (ft)		#240		77	148			341			#531	
Internal Link Dist (ft)		340			311			2056			1933	
Turn Bay Length (ft)				50								
Base Capacity (vph)		447		437	444			689			671	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.63		0.20	0.42			0.58			0.83	

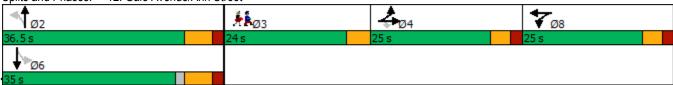
Cycle Length: 110.5 Actuated Cycle Length: 82.1 Natural Cycle: 100

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 12: Gale Avenue/Ann Street



Weekday Morning Peak 06/12/2019 2040 Build Conditions VHB

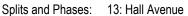
I O	CO.
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summers	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્ન	7	Ţ	î»			4			4	
Traffic Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Future Volume (vph)	110	100	0	60	100	30	0	290	40	10	330	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3		5.3	5.3			6.5			6.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	0.97			0.98			0.97	
Flt Protected		0.97		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1815		1770	1798			1832			1808	
Flt Permitted		0.97		0.95	1.00			1.00			0.99	
Satd. Flow (perm)		1815		1770	1798			1832			1786	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	147	133	0	86	143	43	0	349	48	13	429	117
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	280	0	86	186	0	0	397	0	0	559	0
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		17.8		13.6	13.6			29.5			29.5	
Effective Green, g (s)		17.8		13.6	13.6			29.5			29.5	
Actuated g/C Ratio		0.21		0.16	0.16			0.35			0.35	
Clearance Time (s)		5.3		5.3	5.3			6.5			6.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		380		283	287			635			619	
v/s Ratio Prot		c0.15		0.05	c0.10			0.22				
v/s Ratio Perm											c0.31	
v/c Ratio		0.74		0.30	0.65			0.63			0.90	
Uniform Delay, d1		31.4		31.5	33.5			23.1			26.4	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		7.3		0.6	5.0			1.9			16.5	
Delay (s)		38.7		32.1	38.4			25.1			42.9	
Level of Service		D		С	D			С			D	
Approach Delay (s)		38.7			36.4			25.1			42.9	
Approach LOS		D			D			С			D	
Intersection Summary												
HCM 2000 Control Delay			36.3	Н	CM 2000	Level of S	Service		D			
HCM 2000 Volume to Capacity	ratio		0.76									
Actuated Cycle Length (s)			85.0	S	um of lost	time (s)			21.1			
Intersection Capacity Utilization	n		63.8%		CU Level o				В			
Analysis Period (min)			15									

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥			4	1>	
Traffic Volume (vph)	50	150	90	290	320	40
Future Volume (vph)	50	150	90	290	320	40
Peak Hour Factor	0.76	0.76	0.95	0.95	0.74	0.74
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	263	0	0	400	486	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	9.0		4.0		15.0	
Minimum Split (s)	17.0		8.0		20.6	
Total Split (s)	29.0		12.0		45.6	
Total Split (%)	33.5%		13.9%		52.7%	
Yellow Time (s)	3.0		3.0		3.9	
All-Red Time (s)	1.0		1.0		1.7	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	4.0				5.6	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		Min	
v/c Ratio	0.54			0.41	0.63	
Control Delay	12.4			5.8	16.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	12.4			5.8	16.9	
Queue Length 50th (ft)	21			38	106	
Queue Length 95th (ft)	61			92	155	
Internal Link Dist (ft)	505			2424	2056	
Turn Bay Length (ft)						
Base Capacity (vph)	963			1505	1746	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.27			0.27	0.28	
Intersection Summary						

Cycle Length: 86.6 Actuated Cycle Length: 50.9
Natural Cycle: 50

Control Type: Actuated-Uncoordinated





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Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations	W			ર્ન	ĵ.				
Traffic Volume (vph)	50	150	90	290	320	40			
Future Volume (vph)	50	150	90	290	320	40			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	15	15	16	15	16	16			
Grade (%)	7%			-1%	2%				
Total Lost time (s)	4.0			4.0	5.6				
Lane Util. Factor	1.00			1.00	1.00				
Frt	0.90			1.00	0.98				
Flt Protected	0.99			0.99	1.00				
Satd. Flow (prot)	1755			1977	2059				
FIt Permitted	0.99			0.82	1.00				
Satd. Flow (perm)	1755			1635	2059				
Peak-hour factor, PHF	0.76	0.76	0.95	0.95	0.74	0.74			
Adj. Flow (vph)	66	197	95	305	432	54			
RTOR Reduction (vph)	140	0	0	0	6	0			
Lane Group Flow (vph)	123	0	0	400	480	0			
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%			
Turn Type	Prot		D.P+P	NA	NA				
Protected Phases	4		1	12	2				
Permitted Phases	•		2		_				
Actuated Green, G (s)	10.0			27.0	18.9				
Effective Green, g (s)	10.0			27.0	18.9				
Actuated g/C Ratio	0.20			0.53	0.37				
Clearance Time (s)	4.0			0.00	5.6				
Vehicle Extension (s)	2.0				2.5				
Lane Grp Cap (vph)	346			927	769				
v/s Ratio Prot	c0.07			c0.07	c0.23				
v/s Ratio Perm	00.07			0.16	00.20				
v/c Ratio	0.36			0.43	0.62				
Uniform Delay, d1	17.5			7.1	12.9				
Progression Factor	1.00			1.00	1.00				
Incremental Delay, d2	0.2			0.2	1.4				
Delay (s)	17.8			7.4	14.3				
Level of Service	В			A	В				
Approach Delay (s)	17.8			7.4	14.3				
Approach LOS	В			A	В				
Intersection Summary									
HCM 2000 Control Delay			12.7	Н	CM 2000	Level of Service		В	
HCM 2000 Volume to Capa	city ratio		0.51						
Actuated Cycle Length (s)			50.6	S	um of lost	time (s)	13	3.6	
Intersection Capacity Utiliza	ition		62.9%		CU Level o			В	
Analysis Period (min)			15						
c Critical Lane Group									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ર્ન	7		4			4	
Traffic Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Future Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Peak Hour Factor	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	245	0	0	183	49	0	555	0	0	708	0
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Detector Phase	4	4		5	5	5	2	2		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0		20.0	20.0	
Minimum Split (s)	12.8	12.8		13.6	13.6	13.6	26.6	26.6		26.6	26.6	
Total Split (s)	20.8	20.8		26.6	26.6	26.6	56.6	56.6		56.6	56.6	
Total Split (%)	20.0%	20.0%		25.6%	25.6%	25.6%	54.4%	54.4%		54.4%	54.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.4	4.4		4.4	4.4	
All-Red Time (s)	2.8	2.8		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.8			6.6	6.6		6.6			6.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
v/c Ratio		0.78			0.69	0.15		0.68			0.83	
Control Delay		51.6			49.9	1.4		23.7			30.7	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		51.6			49.9	1.4		23.7			30.7	
Queue Length 50th (ft)		112			94	0		226			323	
Queue Length 95th (ft)		129			165	0		371			441	
Internal Link Dist (ft)		382			419			1172			2424	
Turn Bay Length (ft)						50						
Base Capacity (vph)		336			403	429		1150			1207	
Starvation Cap Reductn		0			0	0		0			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.73			0.45	0.11		0.48			0.59	

Cycle Length: 104 Actuated Cycle Length: 85 Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Gypsy Lane/Green Road



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ર્ન	7		4			4	
Traffic Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Future Volume (vph)	40	40	60	110	40	40	30	400	70	40	510	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	10	8	10	10	16	16	16	16	16	16
Grade (%)		2%			4%			3%			-4%	
Total Lost time (s)		5.8			6.6	6.6		6.6			6.6	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.94			1.00	0.85		0.98			0.99	
Flt Protected		0.99			0.96	1.00		1.00			1.00	
Satd. Flow (prot)		1696			1644	1448		1995			2110	
Flt Permitted		0.99			0.96	1.00		0.93			0.93	
Satd. Flow (perm)		1696			1644	1448		1871			1972	
Peak-hour factor, PHF	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	70	70	105	134	49	49	33	444	78	49	622	37
RTOR Reduction (vph)	0	25	0	0	0	41	0	6	0	0	0	0
Lane Group Flow (vph)	0	220	0	0	183	8	0	549	0	0	708	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Actuated Green, G (s)		14.5			13.8	13.8		36.9			36.9	
Effective Green, g (s)		14.5			13.8	13.8		36.9			36.9	
Actuated g/C Ratio		0.17			0.16	0.16		0.44			0.44	
Clearance Time (s)		5.8			6.6	6.6		6.6			6.6	
Vehicle Extension (s)		2.0			2.0	2.0		2.5			2.5	
Lane Grp Cap (vph)		292			269	237		819			864	
v/s Ratio Prot		c0.13			c0.11							
v/s Ratio Perm						0.01		0.29			c0.36	
v/c Ratio		0.75			0.68	0.03		0.67			0.82	
Uniform Delay, d1		33.2			33.1	29.6		18.8			20.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		9.4			5.5	0.0		2.0			6.0	
Delay (s)		42.6			38.7	29.6		20.8			26.7	
Level of Service		D			D	С		С			C	
Approach Delay (s) Approach LOS		42.6 D			36.8 D			20.8 C			26.7 C	
Intersection Summary												
HCM 2000 Control Delay			28.4	Ц	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacit	v ratio		0.78	П	OIVI 2000	LEVEL OI	Del VICE		U			
Actuated Cycle Length (s)	y TallO		84.2	0	um of los	time (s)			19.0			
Intersection Capacity Utilization	n		66.9%			of Service			19.0 C			
Analysis Period (min)	/I 1		15	IC	O LEVEL	JI GEI VICE						
c Critical Lane Group			10									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7		4	7	ሻ	∱ ∱		7	4	
Traffic Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Future Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	38	0	24	58	63	316	0	116	569	0
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Detector Phase	4	4	4	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.1	12.1	12.1	12.1	12.1	9.0	9.0	21.7		9.0	21.7	
Total Split (s)	16.0	16.0	16.0	16.0	16.0	9.0	9.0	45.0		9.0	45.0	
Total Split (%)	22.9%	22.9%	22.9%	22.9%	22.9%	12.9%	12.9%	64.3%		12.9%	64.3%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1		3.0	4.1	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	1.0	1.0	2.6		1.0	2.6	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
v/c Ratio		0.48	0.13		0.15	0.15	0.11	0.14		0.15	0.43	
Control Delay		38.4	0.9		29.0	6.8	0.7	1.4		3.1	8.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		38.4	0.9		29.0	6.8	0.7	1.4		3.1	8.4	
Queue Length 50th (ft)		32	0		10	0	1	5		9	117	
Queue Length 95th (ft)		58	0		28	22	2	11		23	202	
Internal Link Dist (ft)		210			555			377			529	
Turn Bay Length (ft)						125	125			250		
Base Capacity (vph)		216	347		215	379	588	2241		785	1325	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.36	0.11		0.11	0.15	0.11	0.14		0.15	0.43	

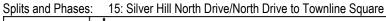
Cycle Length: 70

Actuated Cycle Length: 70

Offset: 30 (43%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated





Weekday Morning Peak 06/12/2019 2040 Build Conditions VHB

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7		र्स	7	ሻ	∱ ∱		ሻ	₽	
Traffic Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Future Volume (vph)	50	10	30	10	10	50	60	290	10	100	390	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	11	12	12	11	14	15
Grade (%)		0%			5%			1%			2%	
Total Lost time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.97	
FIt Protected		0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1788	1583		1687	1470	1638	3371		1694	1907	
Flt Permitted		0.75	1.00		0.80	1.00	0.41	1.00		0.55	1.00	
Satd. Flow (perm)		1388	1583		1387	1470	704	3371		974	1907	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Adj. Flow (vph)	64	13	38	12	12	58	63	305	11	116	453	116
RTOR Reduction (vph)	0	0	34	0	0	49	0	3	0	0	11	0
Lane Group Flow (vph)	0	77	4	0	24	9	63	313	0	116	558	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Actuated Green, G (s)		6.8	6.8		6.8	10.9	46.3	43.3		48.5	44.4	
Effective Green, g (s)		6.8	6.8		6.8	10.9	46.3	43.3		48.5	44.4	
Actuated g/C Ratio		0.10	0.10		0.10	0.16	0.66	0.62		0.69	0.63	
Clearance Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Vehicle Extension (s)		1.0	1.0		1.0	1.0	1.0	0.2		1.0	3.0	
Lane Grp Cap (vph)		134	153		134	228	505	2085		717	1209	
v/s Ratio Prot						0.00	0.01	0.09		c0.01	c0.29	
v/s Ratio Perm		c0.06	0.00		0.02	0.00	0.08			0.10		
v/c Ratio		0.57	0.02		0.18	0.04	0.12	0.15		0.16	0.46	
Uniform Delay, d1		30.2	28.6		29.0	25.1	4.3	5.6		3.6	6.6	
Progression Factor		1.00	1.00		1.00	1.00	0.14	0.20		1.00	1.00	
Incremental Delay, d2		3.7	0.0		0.2	0.0	0.0	0.1		0.0	1.3	
Delay (s)		33.9	28.6		29.3	25.1	0.6	1.3		3.6	7.9	
Level of Service		С	С		С	С	Α	Α		Α	A	
Approach Delay (s)		32.1			26.3			1.2			7.2	
Approach LOS		С			С			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			8.9	H	CM 2000	Level of	Service		Α			
HCM 2000 Volume to Capaci	ty ratio		0.46									
Actuated Cycle Length (s)			70.0			t time (s)			15.8			
Intersection Capacity Utilization	on		53.9%	IC	U Level	of Service	9		Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7	ሻ	∱ ∱		"	₽.	
Traffic Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Future Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Peak Hour Factor	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	0	0	82	23	62	453	0	32	421	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Detector Phase	4	4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	15.0	15.0		5.0		
Minimum Split (s)	12.0	12.0		12.0	12.0	12.0	22.2	22.2		9.0		
Total Split (s)	16.0	16.0		16.0	16.0	16.0	29.0	29.0		15.0		
Total Split (%)	22.9%	22.9%		22.9%	22.9%	22.9%	41.4%	41.4%		21.4%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.1	4.1		3.0		
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	3.1	3.1		1.0		
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max		None		
v/c Ratio		0.36			0.46	0.07	0.15	0.29		0.05	0.30	
Control Delay		16.7			36.9	0.3	3.3	1.8		4.1	3.6	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		16.7			36.9	0.3	3.3	1.8		4.1	3.6	
Queue Length 50th (ft)		10			34	0	1	0		3	36	
Queue Length 95th (ft)		41			67	0	4	0		m7	53	
Internal Link Dist (ft)		256			244			895			377	
Turn Bay Length (ft)							125			125		
Base Capacity (vph)		289			237	404	414	1556		724	1407	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.29			0.35	0.06	0.15	0.29		0.04	0.30	

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 25 (36%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 16: Silver Hill South Drive/South Drive to Townline Square



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	10.0
Total Split (s)	10.0
Total Split (%)	14%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reduct	n
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7	ሻ	∱ }		ሻ	₽	
Traffic Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Future Volume (vph)	10	10	50	60	10	20	60	330	110	30	380	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	12	12	11	12	12	11	14	14
Grade (%)		1%			4%			2%			-2%	
Total Lost time (s)		5.0			5.0	5.0	7.2	7.2		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frt		0.90			1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1624			1751	1552	1645	3276		1711	1972	
Flt Permitted		0.93			0.83	1.00	0.52	1.00		0.49	1.00	
Satd. Flow (perm)		1525			1509	1552	894	3276		883	1972	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	12	12	59	70	12	23	62	340	113	32	400	21
RTOR Reduction (vph)	0	53	0	0	0	21	0	39	0	0	2	0
Lane Group Flow (vph)	0	30	0	0	82	2	62	414	0	32	419	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Actuated Green, G (s)		6.9			6.9	6.9	29.8	29.8		39.3	43.3	
Effective Green, g (s)		6.9			6.9	6.9	29.8	29.8		39.3	43.3	
Actuated g/C Ratio		0.10			0.10	0.10	0.43	0.43		0.56	0.62	
Clearance Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Vehicle Extension (s)		1.0			1.0	1.0	0.2	0.2		1.5		
Lane Grp Cap (vph)		150			148	152	380	1394		608	1219	
v/s Ratio Prot								0.13		0.01	c0.21	
v/s Ratio Perm		0.02			c0.05	0.00	0.07			0.02		
v/c Ratio		0.20			0.55	0.01	0.16	0.30		0.05	0.34	
Uniform Delay, d1		29.0			30.1	28.5	12.4	13.2		6.9	6.5	
Progression Factor		1.00			1.00	1.00	0.15	0.11		0.67	0.52	
Incremental Delay, d2		0.2			2.5	0.0	0.9	0.5		0.0	0.1	
Delay (s)		29.2			32.6	28.5	2.7	1.9		4.6	3.4	
Level of Service		С			С	С	Α	Α		A	Α	
Approach Delay (s)		29.2			31.7			2.0			3.5	
Approach LOS		С			С			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			7.3	H	CM 2000	Level of	Service		Α			
HCM 2000 Volume to Capacit	y ratio		0.37									
Actuated Cycle Length (s)			70.0		um of lost				20.2			
Intersection Capacity Utilization	on		58.0%	IC	U Level	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		†			4	7		€ 1Ъ			€Î}•	
Traffic Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Future Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Peak Hour Factor	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	14	14	0	641	0	0	516	0
Turn Type				Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases				4		4	2			2		
Detector Phase		4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)		7.0		7.0	7.0	7.0	15.0	15.0		7.0		
Minimum Split (s)		11.0		11.0	11.0	11.0	21.0	21.0		10.1		
Total Split (s)		13.0		13.0	13.0	13.0	43.0	43.0		14.0		
Total Split (%)		18.6%		18.6%	18.6%	18.6%	61.4%	61.4%		20.0%		
Yellow Time (s)		3.0		3.0	3.0	3.0	4.0	4.0		3.0		
All-Red Time (s)		1.0		1.0	1.0	1.0	2.0	2.0		0.1		
Lost Time Adjust (s)		0.0			0.0	0.0		0.0				
Total Lost Time (s)		4.0			4.0	4.0		6.0				
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode		None		None	None	None	C-Min	C-Min		Max		
v/c Ratio					0.09	0.10		0.60			0.16	
Control Delay					29.9	30.5		15.1			1.9	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					29.9	30.5		15.1			1.9	
Queue Length 50th (ft)					6	6		80			1	
Queue Length 95th (ft)					16	16		146			52	
Internal Link Dist (ft)		256			308			396			895	
Turn Bay Length (ft)												
Base Capacity (vph)					211	179		1670			3561	
Starvation Cap Reductn					0	0		0			0	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.07	0.08		0.38			0.14	

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 18 (26%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Splits and Phases: 17: Driveway to Kohl's Plaza



17: Bilveway to Rein	0 1 IG										-, -	
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		*			ર્ન	7		414			414	
Traffic Volume (vph)	0	Ö	0	10	Ö	10	10	530	30	10	460	0
Future Volume (vph)	0	0	0	10	0	10	10	530	30	10	460	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	10	15	15
Grade (%)		-8%			-6%			4%			-4%	
Total Lost time (s)					4.0	4.0		6.0			3.1	
Lane Util. Factor					1.00	1.00		0.95			0.95	
Frt					1.00	0.85		0.99			1.00	
Flt Protected					0.95	1.00		1.00			1.00	
Satd. Flow (prot)					1562	1398		3340			3967	
Flt Permitted					1.00	1.00		0.94			0.95	
Satd. Flow (perm)					1645	1398		3149			3792	
Peak-hour factor, PHF	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	14	0	14	11	596	34	11	505	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	14	14	0	633	0	0	516	0
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Turn Type				Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4		1 01111	4	1 01111	1 01111	2		1	12	
Permitted Phases		•		4	•	4	2	_		2	• =	
Actuated Green, G (s)				•	2.8	2.8	_	21.2		_	54.1	
Effective Green, g (s)					2.8	2.8		21.2			54.1	
Actuated g/C Ratio					0.04	0.04		0.30			0.77	
Clearance Time (s)					4.0	4.0		6.0			•	
Vehicle Extension (s)					2.0	2.0		3.0				
Lane Grp Cap (vph)					65	55		953			3012	
v/s Ratio Prot					00			000			c0.08	
v/s Ratio Perm					0.01	c0.01		c0.20			0.05	
v/c Ratio					0.22	0.25		0.66			0.17	
Uniform Delay, d1					32.5	32.6		21.3			2.1	
Progression Factor					1.00	1.00		0.70			1.76	
Incremental Delay, d2					0.6	0.9		3.6			0.1	
Delay (s)					33.1	33.5		18.5			3.8	
Level of Service					C	C		В			Α	
Approach Delay (s)		0.0			33.3			18.5			3.8	
Approach LOS		A			С			В			A	
Intersection Summary												
HCM 2000 Control Delay			12.5	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capacity	/ ratio		0.36									
Actuated Cycle Length (s)			70.0	Sı	um of los	t time (s)			13.1			
Intersection Capacity Utilization	n		36.9%			of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	AAA			41	∱ }		
Traffic Volume (vph)	130	20	20	460	390	110	
Future Volume (vph)	130	20	20	460	390	110	
Peak Hour Factor	0.97	0.97	0.85	0.85	0.92	0.92	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	155	0	0	565	544	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			2	2		
Permitted Phases			2				
Detector Phase	4		2	2	2		
Switch Phase							
Minimum Initial (s)	9.0		15.0	15.0	15.0		
Minimum Split (s)	13.0		21.0	21.0	21.0		
Total Split (s)	20.0		50.0	50.0	50.0		
Total Split (%)	28.6%		71.4%	71.4%	71.4%		
Yellow Time (s)	3.0		4.0	4.0	4.0		
All-Red Time (s)	1.0		2.0	2.0	2.0		
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	4.0			6.0	6.0		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None		C-Min	C-Min	C-Min		
v/c Ratio	0.35			0.26	0.22		
Control Delay	26.2			4.5	2.2		
Queue Delay	0.0			0.0	0.0		
Total Delay	26.2			4.5	2.2		
Queue Length 50th (ft)	27			13	37		
Queue Length 95th (ft)	53			2	1		
Internal Link Dist (ft)	408			2348	396		
Turn Bay Length (ft)							
Base Capacity (vph)	769			2185	2515		
Starvation Cap Reductn	0			0	0		
Spillback Cap Reductn	0			0	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.20			0.26	0.22		
Intersection Summary							
Cycle Length: 70							
Actuated Cycle Length: 70							
Offset: 40 (57%), Referenced	d to phase	2:NBSB.	Start of \	ellow			
Natural Cycle: 40		,					
Control Type: Actuated-Coor	dinated						
Splits and Phases: 18: Ro	ute 150						
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	٠	•	1	†	+	✓	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	77			414	∱ ⊅		
Traffic Volume (vph)	130	20	20	460	390	110	
Future Volume (vph)	130	20	20	460	390	110	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	11	11	12	12	
Grade (%)	4%			4%	-4%		
Total Lost time (s)	4.0			6.0	6.0		
Lane Util. Factor	0.97			0.95	0.95		
Frt	0.98			1.00	0.97		
FIt Protected	0.96			1.00	1.00		
Satd. Flow (prot)	3293			3250	3423		
FIt Permitted	0.96			0.92	1.00		
Satd. Flow (perm)	3293			3005	3423		
Peak-hour factor, PHF	0.97	0.97	0.85	0.85	0.92	0.92	
Adj. Flow (vph)	134	21	24	541	424	120	
RTOR Reduction (vph)	18	0	0	0	27	0	
Lane Group Flow (vph)	137	0	0	565	517	0	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			2	2		
Permitted Phases	•		2	50.0	=0.0		
Actuated Green, G (s)	9.1			50.9	50.9		
Effective Green, g (s)	9.1			50.9	50.9		
Actuated g/C Ratio	0.13			0.73	0.73		
Clearance Time (s)	4.0			6.0	6.0		
Vehicle Extension (s)	2.0			3.0	3.0		
Lane Grp Cap (vph)	428			2185	2489		
v/s Ratio Prot	c0.04			-0.40	0.15		
v/s Ratio Perm	0.00			c0.19	0.04		
v/c Ratio	0.32			0.26	0.21		
Uniform Delay, d1	27.6			3.2	3.1		
Progression Factor	1.00 0.2			1.27 0.3	0.80 0.2		
Incremental Delay, d2	27.8			4.4	2.6		
Delay (s) Level of Service	27.8 C			4.4 A	2.6 A		
Approach Delay (s)	27.8			4.4	2.6		
Approach LOS	21.6 C			4.4 A	2.0 A		
Intersection Summary							
HCM 2000 Control Delay			6.5	H	CM 2000	Level of Service	Α
HCM 2000 Volume to Capa	acity ratio		0.27				
Actuated Cycle Length (s)			70.0	Sı	um of lost	time (s)	10.0
Intersection Capacity Utiliza	ation		43.2%		U Level c		Α
Analysis Period (min)			15				
c Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7	ሻ		7	ሻሻ	∱ ∱		ሻ		7
Traffic Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Future Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Peak Hour Factor	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	440	132	59	44	144	536	0	11	462	0
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	custom
Protected Phases		7	1		8		1	6		5	2	
Permitted Phases	7		7	8		8						6
Detector Phase	7	7	1	8	8	8	1	6		5	2	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	5.0	5.0	15.0		3.0	15.0	15.0
Minimum Split (s)	11.0	11.0	12.0	9.0	9.0	9.0	12.0	20.0		10.0	20.0	20.0
Total Split (s)	11.0	11.0	25.0	13.0	13.0	13.0	25.0	36.0		10.0	21.0	36.0
Total Split (%)	15.7%	15.7%	35.7%	18.6%	18.6%	18.6%	35.7%	51.4%		14.3%	30.0%	51.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	4.0	1.0	1.0	1.0	4.0	2.0		4.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio		0.30	0.90	0.79	0.26	0.23	0.16	0.25		0.12	0.47	
Control Delay		36.4	45.0	63.4	30.6	30.5	27.4	9.9		37.5	18.4	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		36.4	45.0	63.4	30.6	30.5	27.4	9.9		37.5	18.4	
Queue Length 50th (ft)		15	110	56	23	17	31	37		5	101	
Queue Length 95th (ft)		39	#244	#92	41	34	57	107		19	88	
Internal Link Dist (ft)		371			347			564			2348	
Turn Bay Length (ft)				100		100	250			125		
Base Capacity (vph)		119	489	172	234	199	884	2122		89	978	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.30	0.90	0.77	0.25	0.22	0.16	0.25		0.12	0.47	

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 26 (37%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

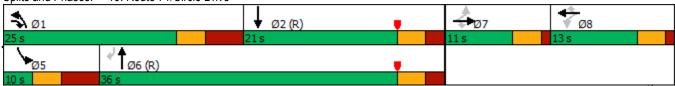
Natural Cycle: 70

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 19: Route 71/Circle Drive



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7	Ť	†	7	ሻሻ	∱ }		7	^	7
Traffic Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Future Volume (vph)	10	20	370	90	40	30	140	480	40	10	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	11	12	12	11	12	12
Grade (%)		0%			5%			0%			-4%	
Total Lost time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
FIt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1850	1599	1652	1739	1478	3255	3431		1728	3575	
FIt Permitted		0.63	1.00	0.73	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	0.04	1194	1599	1276	1739	1478	3255	3431	0.07	1728	3575	0.04
Peak-hour factor, PHF	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Adj. Flow (vph)	12	24	440	132	59	44	144	495	41	11	462	0
RTOR Reduction (vph)	0	0	0	120	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0 1%	36 1%	440 1%	132 3%	59 3%	44 3%	144 4%	528 4%	0	11 3%	462 3%	0 3%
Heavy Vehicles (%)									4%			
Turn Type Protected Phases	Perm	NA 7	pm+ov	Perm	NA 8	Perm	Prot	NA		Prot	NA 2	custom
Permitted Phases	7	1	1 7	8	0	8	1	6		5	2	6
Actuated Green, G (s)	1	4.2	23.2	9.2	9.2	9.2	19.0	36.0		0.6	17.6	U
Effective Green, g (s)		4.2	23.2	9.2	9.2	9.2	19.0	36.0		0.6	17.6	
Actuated g/C Ratio		0.06	0.33	0.13	0.13	0.13	0.27	0.51		0.01	0.25	
Clearance Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.5	2.5	2.5	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)		71	529	167	228	194	883	1764		14	898	
v/s Ratio Prot		, ,	c0.23	107	0.03	104	0.04	0.15		0.01	c0.13	
v/s Ratio Perm		0.03	0.05	c0.10	0.00	0.03	0.01	0.10		0.01	00.10	
v/c Ratio		0.51	0.83	0.79	0.26	0.23	0.16	0.30		0.79	0.51	
Uniform Delay, d1		31.9	21.6	29.5	27.3	27.2	19.4	9.8		34.6	22.5	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.35	1.26		1.06	0.74	
Incremental Delay, d2		2.1	10.3	21.3	0.4	0.4	0.0	0.4		123.0	2.1	
Delay (s)		34.0	31.9	50.8	27.8	27.7	26.4	12.7		159.8	18.7	
Level of Service		С	С	D	С	С	С	В		F	В	
Approach Delay (s)		32.0			40.7			15.6			22.0	
Approach LOS		С			D			В			С	
Intersection Summary												
HCM 2000 Control Delay			24.6	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capac	ity ratio		0.71									
Actuated Cycle Length (s)			70.0		um of lost	. ,			20.0			
Intersection Capacity Utilizati	ion		53.7%	IC	U Level of	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	सी	7	ሻ	र्स	7	ሻሻ	^	7	ሻሻ	^	7
Traffic Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Future Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Peak Hour Factor	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)	42%			41%								
Lane Group Flow (vph)	47	48	81	39	40	13	109	641	65	60	880	84
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	5 7	4	4	1	5	2	24	1	6	6 7
Permitted Phases						4						
Detector Phase	7	7	5 7	4	4	1	5	2	24	1	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.0	12.0		12.0	12.0	9.0	9.0	20.0		9.0	20.0	
Total Split (s)	12.0	12.0		12.0	12.0	9.0	10.0	37.0		9.0	36.0	
Total Split (%)	17.1%	17.1%		17.1%	17.1%	12.9%	14.3%	52.9%		12.9%	51.4%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
v/c Ratio	0.30	0.30	0.24	0.24	0.25	0.04	0.40	0.32	0.06	0.24	0.44	0.08
Control Delay	34.5	34.4	22.6	33.2	33.2	0.2	33.0	11.7	0.3	37.8	7.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	34.4	22.6	33.2	33.2	0.2	33.0	11.7	0.3	37.8	7.6	0.7
Queue Length 50th (ft)	20	21	27	16	16	0	25	82	0	13	73	1
Queue Length 95th (ft)	42	42	49	37	37	0	51	98	0	m21	m111	m0
Internal Link Dist (ft)		463			264			832			564	
Turn Bay Length (ft)	150		150				250			200		200
Base Capacity (vph)	159	162	342	161	163	338	284	2024	1141	247	1982	1049
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.24	0.24	0.25	0.04	0.38	0.32	0.06	0.24	0.44	0.08

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 31 (44%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Home Depot Dr./Neal Road



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ર્ન	7	J.	ર્ન	7	1,1	^	7	1,1	^	7
Traffic Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Future Volume (vph)	60	10	60	50	10	10	100	590	60	50	730	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	12	12	12
Grade (%)		0%			-2%			-2%			-2%	
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	0.97	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1594	1620	1501	1610	1639	1516	3319	3422	1531	3467	3575	1599
FIt Permitted	0.95	0.97	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1594	1620	1501	1610	1639	1516	3319	3422	1531	3467	3575	1599
Peak-hour factor, PHF	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	81	14	81	66	13	13	109	641	65	60	880	84
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	21	0	0	35
Lane Group Flow (vph)	47	48	81	39	40	2	109	641	44	60	880	49
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	5 7	4	4	1	5	2	24	1	6	6 7
Permitted Phases						4						
Actuated Green, G (s)	5.6	5.6	15.4	5.6	5.6	8.6	4.8	36.8	47.4	3.0	35.0	40.6
Effective Green, g (s)	5.6	5.6	10.4	5.6	5.6	8.6	4.8	36.8	47.4	3.0	35.0	40.6
Actuated g/C Ratio	0.08	0.08	0.15	0.08	0.08	0.12	0.07	0.53	0.68	0.04	0.50	0.58
Clearance Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	0.2		2.0	0.2	
Lane Grp Cap (vph)	127	129	223	128	131	186	227	1798	1036	148	1787	927
v/s Ratio Prot	0.03	c0.03	0.05	0.02	c0.02	0.00	c0.03	0.19	0.03	0.02	c0.25	0.03
v/s Ratio Perm						0.00						
v/c Ratio	0.37	0.37	0.36	0.30	0.31	0.01	0.48	0.36	0.04	0.41	0.49	0.05
Uniform Delay, d1	30.5	30.5	26.8	30.4	30.4	27.0	31.4	9.7	3.8	32.6	11.6	6.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	1.07	0.36	1.17	0.55	0.62
Incremental Delay, d2	0.7	0.7	0.4	0.5	0.5	0.0	0.6	0.5	0.0	0.5	0.7	0.0
Delay (s)	31.2	31.2	27.2	30.9	30.8	27.0	30.1	11.0	1.4	38.5	7.1	4.0
Level of Service	С	С	С	С	С	С	С	В	Α	D	A	Α
Approach Delay (s)		29.3			30.3			12.8			8.7	
Approach LOS		С			С			В			Α	
Intersection Summary												
HCM 2000 Control Delay			12.9	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capaci	ty ratio		0.45									
Actuated Cycle Length (s)			70.0			t time (s)			19.0			
Intersection Capacity Utilization	on		44.6%	IC	CU Level	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	₽			र्स	7	ሻ	ተተተ	7	ሻ	∱ ∱	
Traffic Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Future Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Peak Hour Factor	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	30	0	0	98	37	11	833	89	38	1102	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			2			
Detector Phase	4	4		4	4	4	1	6	2	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5	11.5	9.5	20.0	20.0	9.5	20.0	
Total Split (s)	18.0	18.0		18.0	18.0	18.0	10.0	41.0	42.0	11.0	42.0	
Total Split (%)	25.7%	25.7%		25.7%	25.7%	25.7%	14.3%	58.6%	60.0%	15.7%	60.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	2.0	2.0	1.5	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
v/c Ratio	0.17	0.08			0.51	0.12	0.09	0.24	0.08	0.27	0.43	
Control Delay	27.5	0.4			37.0	0.8	40.3	3.2	0.6	35.4	5.4	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	27.5	0.4			37.0	8.0	40.3	3.2	0.6	35.4	5.4	
Queue Length 50th (ft)	12	0			40	0	5	12	0	18	78	
Queue Length 95th (ft)	11	0			71	0	m20	46	0	m39	107	
Internal Link Dist (ft)		119			412			332			832	
Turn Bay Length (ft)							200		200	250		
Base Capacity (vph)	246	467			267	389	134	3488	1164	160	2543	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn		^			٥	0	0	0	0	0	0	
	0	0			0	U		U	U	U	U	
Storage Cap Reductn	0 0 0.12	0 0.06			0 0.37	0.10	0 0.08	0.24	0.08	0.24	0 0.43	

Cycle Length: 70

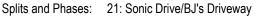
Actuated Cycle Length: 70

Offset: 42 (60%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.





VHB Page 48

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	₽			ર્ન	7	7	ተተተ	7	Ť	ħβ	
Traffic Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Future Volume (vph)	10	0	10	80	0	30	10	750	80	30	860	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)	4.5	0%			-4%	4.5	4.5	-2%	5 0	4.5	0%	
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91	1.00	1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Fit Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1568 1.00			1787 0.74	1599	1711 0.95	4917	1531 1.00	1711 0.95	3415 1.00	
Flt Permitted Satd. Flow (perm)	0.69 1279	1568			1388	1.00 1599	1711	1.00 4917	1531	1711	3415	
			0.00	0.00								0.70
Peak-hour factor, PHF	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Adj. Flow (vph)	30	0 26	30 0	98	0	37 33	11	833	89 30	38	1089 1	13
RTOR Reduction (vph)	0 30	4	0	0	98	33 4	11	833	59	0 38	1101	0
Lane Group Flow (vph) Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
			370					NA				270
Turn Type Protected Phases	Perm	NA 4		Perm	NA 4	Perm	Prot 1	NA 6	custom	Prot 5	NA 2	
Permitted Phases	4	4		4	4	4	I	U	2	อ	Z	
Actuated Green, G (s)	8.3	8.3		4	8.3	8.3	1.1	45.0	46.6	2.7	46.6	
Effective Green, g (s)	8.3	8.3			8.3	8.3	1.1	45.0	46.6	2.7	46.6	
Actuated g/C Ratio	0.12	0.12			0.12	0.12	0.02	0.64	0.67	0.04	0.67	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	0.2	0.2	2.0	0.2	
Lane Grp Cap (vph)	151	185			164	189	26	3160	1019	65	2273	
v/s Ratio Prot	101	0.00			101	100	0.01	0.17	1013	c0.02	c0.32	
v/s Ratio Perm	0.02	0.00			c0.07	0.00	0.01	0.11	0.04	00.02	00.02	
v/c Ratio	0.20	0.02			0.60	0.02	0.42	0.26	0.06	0.58	0.48	
Uniform Delay, d1	27.8	27.3			29.3	27.3	34.1	5.4	4.1	33.1	5.8	
Progression Factor	1.00	1.00			1.00	1.00	1.28	0.52	0.26	1.03	0.87	
Incremental Delay, d2	0.2	0.0			3.9	0.0	3.9	0.2	0.1	7.9	0.7	
Delay (s)	28.1	27.3			33.1	27.3	47.8	3.0	1.1	42.2	5.7	
Level of Service	С	С			С	С	D	Α	Α	D	Α	
Approach Delay (s)		27.7			31.5			3.4			6.9	
Approach LOS		С			С			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			7.5	H	CM 2000	Level of S	Service		Α			
HCM 2000 Volume to Capac	city ratio		0.52									
Actuated Cycle Length (s)			70.0		um of lost				14.0			
Intersection Capacity Utiliza	tion		43.9%	IC	U Level	of Service			Α			
Analysis Period (min)			15									
c Critical Lane Group												

Lane Group EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Traffic Volume (vph) 0 0 590 0 260 140 580 0 0 590 360 Future Volume (vph) 0 0 0 590 0 260 140 580 0 0 590 360 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.85 0.85 0.85 0.82
Traffic Volume (vph) 0 0 590 0 260 140 580 0 0 590 360 Future Volume (vph) 0 0 0 590 0 260 140 580 0 0 590 360 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.85 0.85 0.85 0.82
Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.85 0.85 0.85 0.82 0.82 0.82 Heavy Vehicles (%) 2% 2% 2% 1% 1% 1% 4% 4% 4% 2% 2% 2% Shared Lane Traffic (%) Lane Group Flow (vph) 0 0 641 0 283 165 682 0 0 1159 0 Turn Type Prot Prot D.P+P NA NA Protected Phases 4 4 1 12 2 Permitted Phases 2 Detector Phase 4 4 1 12 2 2 Switch Phase 5 7 7.0 5.0 15.0 15.0 Minimum Initial (s) 7.0 7.0 5.0 15.0 15.0 Minimum Split (s) 24.0 24.0 11.0
Heavy Vehicles (%) 2% 2% 2% 1% 1% 4% 4% 4% 2% 2% 2% 2% Shared Lane Traffic (%) Lane Group Flow (vph) 0 0 641 0 283 165 682 0 0 1159 0 Turn Type Prot Prot D.P+P NA NA NA NA NA Protected Phases 4 4 1 12 3 3 3 3 3 3 3 3 3<
Shared Lane Traffic (%) Lane Group Flow (vph) 0 0 641 0 283 165 682 0 0 1159 0 Turn Type Prot Prot D.P+P NA NA Protected Phases 4 4 1 12 2 Permitted Phases 2 2 2 2 Detector Phase 4 4 1 12 2 Switch Phase 2 2 2 2 Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 6.8 </td
Lane Group Flow (vph) 0 0 0 641 0 283 165 682 0 0 1159 0 Turn Type Prot Prot D.P+P NA NA Protected Phases 4 4 1 12 2 Permitted Phases 2 2 2 2 Detector Phase 4 4 1 12 2 Switch Phase 2 2 2 2 Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8
Turn Type Prot Prot D.P+P NA NA Protected Phases 4 4 1 12 2 Permitted Phases 2 2 2 2 Detector Phase 4 4 1 12 2 Switch Phase 8 5 2 2 Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Protected Phases 4 4 1 1 2 2 Permitted Phases 2 2 2 2 Detector Phase 4 4 1 1 2 2 Switch Phase 8 5 2 2 Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Permitted Phases 2 Detector Phase 4 4 1 12 2 Switch Phase Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Detector Phase 4 4 1 1 2 2 Switch Phase Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Switch Phase Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Minimum Initial (s) 7.0 7.0 5.0 15.0 Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Minimum Split (s) 13.8 13.8 8.5 21.5 Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Total Split (s) 24.0 24.0 11.0 35.0 Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Total Split (%) 34.3% 34.3% 15.7% 50.0% Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Yellow Time (s) 4.0 4.0 3.0 3.0 All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
All-Red Time (s) 2.8 2.8 0.5 3.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.8 6.8 3.5 6.5
Total Lost Time (s) 6.8 6.8 3.5 6.5
Load/Load
Lead-Lag Optimize? Yes Yes
Recall Mode None None Min C-Max
v/c Ratio 0.82 0.33 0.54 0.22 0.74
Control Delay 35.6 4.3 15.6 2.1 11.7
Queue Delay 0.0 0.0 0.0 0.1
Total Delay 35.6 4.3 15.6 2.1 11.8
Queue Length 50th (ft) 132 0 12 13 131
Queue Length 95th (ft) 187 29 m30 17 53
Internal Link Dist (ft) 220 369 537 332
Turn Bay Length (ft) 200 200 120
Base Capacity (vph) 856 908 311 3117 1566
Starvation Cap Reductn 0 0 0 36
Spillback Cap Reductn 0 0 0 0
Storage Cap Reductn 0 0 0 0
Reduced v/c Ratio 0.75 0.31 0.53 0.22 0.76

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 38 (54%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Route 15 SB Off-Ramp



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				1/1		77	Ť	ተተተ			∱ î≽	
Traffic Volume (vph)	0	0	0	590	0	260	140	580	0	0	590	360
Future Volume (vph)	0	0	0	590	0	260	140	580	0	0	590	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	12	12	12
Grade (%)		-5%			-1%			-1%			-2%	
Total Lost time (s)				6.8		6.8	3.5	3.5			6.5	
Lane Util. Factor				0.97		0.88	1.00	0.91			0.95	
Frt				1.00		0.85	1.00	1.00			0.94	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3484		2828	1744	5012			3372	
Flt Permitted				0.95		1.00	0.13	1.00			1.00	
Satd. Flow (perm)	0.00	0.00	0.00	3484	0.00	2828	246	5012	0.05	0.00	3372	0.00
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	641	0	283	165	682	0	0	720	439
RTOR Reduction (vph)	0	0	0	0	0	220	105	0	0	0	128	0
Lane Group Flow (vph)	0 2%	0	0	641 1%	10/	63 1%	165	682	0	0 2%	1031 2%	0
Heavy Vehicles (%)	Z 70	2%	2%		1%		4%	4%	4%	Z70		2%
Turn Type				Prot		Prot	D.P+P	NA 1.2			NA 2	
Protected Phases Permitted Phases				4		4	1 2	12			2	
Actuated Green, G (s)				15.6		15.6	37.6	41.1			29.9	
Effective Green, g (s)				15.6		15.6	37.6	41.1			29.9	
Actuated g/C Ratio				0.22		0.22	0.54	0.59			0.43	
Clearance Time (s)				6.8		6.8	3.5	0.00			6.5	
Vehicle Extension (s)				1.5		1.5	2.0				0.2	
Lane Grp Cap (vph)				776		630	296	2942			1440	
v/s Ratio Prot				c0.18		0.02	c0.06	0.14			c0.31	
v/s Ratio Perm				00.10		0.02	0.24	0.11			00.01	
v/c Ratio				0.83		0.10	0.56	0.23			0.72	
Uniform Delay, d1				25.9		21.6	10.5	6.9			16.5	
Progression Factor				1.00		1.00	1.26	0.34			0.63	
Incremental Delay, d2				6.8		0.0	1.0	0.0			2.9	
Delay (s)				32.8		21.6	14.2	2.4			13.2	
Level of Service				С		С	В	Α			В	
Approach Delay (s)		0.0			29.4			4.7			13.2	
Approach LOS		Α			С			Α			В	
Intersection Summary												
HCM 2000 Control Delay			15.8	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacit	y ratio		0.72									
Actuated Cycle Length (s)			70.0		um of lost				16.8			
Intersection Capacity Utilization	n		64.5%	IC	U Level o	of Service	Э		С			
Analysis Period (min)			15									
c Critical Lane Group												

	•	•	†	/	-	ļ			
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4	
Lane Configurations	7	7	∱ }		7	^			
Traffic Volume (vph)	330	230	490	400	230	950			
Future Volume (vph)	330	230	490	400	230	950			
Peak Hour Factor	0.78	0.78	0.90	0.90	0.81	0.81			
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	423	295	988	0	284	1173			
Turn Type	Prot	pm+ov	NA		custom	NA			
Protected Phases	5	1	2 4		1	12	2	4	
Permitted Phases		5			2				
Detector Phase	5	1	2 4		1	12			
Switch Phase									
Minimum Initial (s)	7.0	5.0			5.0		15.0	7.0	
Minimum Split (s)	11.0	8.1			8.1		20.0	11.0	
Total Split (s)	21.0	16.0			16.0		22.0	11.0	
Total Split (%)	30.0%	22.9%			22.9%		31%	16%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	1.0	0.1			0.1		2.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0				
Total Lost Time (s)	4.0	3.1			3.1				
Lead/Lag		Lead			Lead		Lag		
Lead-Lag Optimize?		Yes			Yes		Yes		
Recall Mode	None	None			None		C-Max	None	
v/c Ratio	1.00	0.35	0.79		0.66	0.69			
Control Delay	72.5	5.6	8.2		18.9	8.0			
Queue Delay	34.6	0.0	12.1		0.0	0.1			
Total Delay	107.1	5.6	20.3		18.9	8.1			
Queue Length 50th (ft)	182	25	24		58	102			
Queue Length 95th (ft)	#281	49	m36		m108	135			
Internal Link Dist (ft)	401		143			537			
Turn Bay Length (ft)	175				175				
Base Capacity (vph)	425	854	1252		429	1705			
Starvation Cap Reductn	0	0	255		0	0			
Spillback Cap Reductn	49	0	0		0	46			
Storage Cap Reductn	0	0	0		0	0			
Reduced v/c Ratio	1.13	0.35	0.99		0.66	0.71			

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

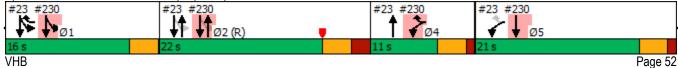
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Route 15 (NB) Ramp



	•	•	†	/	-	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	*	#	↑ 1>		ሻ	† †			
Traffic Volume (vph)	330	230	490	400	230	950			
Future Volume (vph)	330	230	490	400	230	950			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	11	11	11	11	11	11			
Grade (%)	-1%		0%			0%			
Total Lost time (s)	4.0	3.1	5.0		3.1	3.1			
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95			
Frt	1.00	0.85	0.93		1.00	1.00			
Flt Protected	0.95	1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1754	1569	3129		1711	3421			
FIt Permitted	0.95	1.00	1.00		0.24	1.00			
Satd. Flow (perm)	1754	1569	3129		424	3421			
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.81	0.81			
Adj. Flow (vph)	423	295	544	444	284	1173			
RTOR Reduction (vph)	0	105	0	0	0	0			
Lane Group Flow (vph)	423	190	988	0	284	1173			
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%			
Turn Type	Prot	pm+ov	NA	170	custom	NA NA			
Protected Phases	5	1	24		1	12			
Permitted Phases	<u> </u>	5	2 7		2	1 2			
Actuated Green, G (s)	17.0	29.9	29.0		29.9	33.0			
Effective Green, g (s)	17.0	29.9	29.0		29.9	33.0			
Actuated g/C Ratio	0.24	0.43	0.41		0.43	0.47			
Clearance Time (s)	4.0	3.1	0.71		3.1	0.41			
Vehicle Extension (s)	3.0	3.0			3.0				
Lane Grp Cap (vph)	425	670	1296		418	1612			
v/s Ratio Prot	c0.24	0.05	c0.32		0.13	c0.34			
v/s Ratio Perm	00.24	0.03	00.32		0.13	00.34			
	1.00	0.07	0.76		0.17	0.73			
v/c Ratio									
Uniform Delay, d1	26.5	13.1	17.5		15.0	14.9			
Progression Factor	1.00	1.00	0.24 1.9		1.08	0.47			
Incremental Delay, d2	42.2	0.2			3.1	1.2			
Delay (s)	68.6	13.3	6.0		19.3	8.1			
Level of Service	45.9	В	A 6.0		В	A 10.3			
Approach Delay (s) Approach LOS	45.9 D		6.0 A			10.3 B			
Intersection Summary									
HCM 2000 Control Delay			17.0	H	ICM 2000	Level of Service)	В	
HCM 2000 Volume to Capa	city ratio		0.91						
Actuated Cycle Length (s)	,		70.0	9	Sum of los	t time (s)	1	6.1	
Intersection Capacity Utiliza	ition		68.2%			of Service		С	
Analysis Period (min)			15	•					
c Critical Lane Group			. •						

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		∱ ⊅			414
Traffic Volume (vph)	0	200	440	0	120	460
Future Volume (vph)	0	200	440	0	120	460
Peak Hour Factor	0.68	0.68	0.83	0.83	0.80	0.80
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	294	0	530	0	0	725
Turn Type	Perm		NA		D.P+P	NA
Protected Phases			2		4	2 4
Permitted Phases	1				2	
Detector Phase	1		2		4	2 4
Switch Phase						
Minimum Initial (s)	6.0		15.0		6.0	
Minimum Split (s)	11.2		21.0		11.2	
Total Split (s)	31.0		58.0		31.0	
Total Split (%)	25.8%		48.3%		25.8%	
Yellow Time (s)	3.7		4.5		3.7	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0		0.0			
Total Lost Time (s)	5.2		6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Max		None	
v/c Ratio	0.44		0.24			0.39
Control Delay	2.1		11.1			1.6
Queue Delay	0.0		0.0			0.1
Total Delay	2.1		11.1			1.6
Queue Length 50th (ft)	0		87			5
Queue Length 95th (ft)	0		137			6
Internal Link Dist (ft)	560		1933			99
Turn Bay Length (ft)						
Base Capacity (vph)	788		2180			2244
Starvation Cap Reductn	0		0			354
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.37		0.24			0.38
	0.01					0.00

Cycle Length: 120 Actuated Cycle Length: 120

Offset: 69 (58%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

110: Curtis Street Splits and Phases:



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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	¥		∱ }			414		
Traffic Volume (vph)	0	200	440	0	120	460		
Future Volume (vph)	0	200	440	0	120	460		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	16	16	12	12	12	12		
Grade (%)	2%		0%			4%		
Total Lost time (s)	5.2		6.0			6.0		
Lane Util. Factor	1.00		0.95			0.95		
Frt	0.86		1.00			1.00		
Flt Protected	1.00		1.00			0.99		
Satd. Flow (prot)	1808		3438			3400		
Flt Permitted	1.00		1.00			0.70		
Satd. Flow (perm)	1808		3438			2421		
Peak-hour factor, PHF	0.68	0.68	0.83	0.83	0.80	0.80		
Adj. Flow (vph)	0.00	294	530	0.00	150	575		
RTOR Reduction (vph)	258	0	0	0	0	0		
Lane Group Flow (vph)	36	0	530	0	0	725		
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%		
Turn Type	Perm	270	NA	070	D.P+P	NA		
Protected Phases	T CITII		2		4	2 4		
Permitted Phases	1				2	4 T		
Actuated Green, G (s)	14.5		76.2			89.1		
Effective Green, g (s)	14.5		76.2			89.1		
Actuated g/C Ratio	0.12		0.64			0.74		
Clearance Time (s)	5.2		6.0			0.1 4		
Vehicle Extension (s)	2.0		0.2					
Lane Grp Cap (vph)	218		2183			1902		
v/s Ratio Prot	210		0.15			c0.04		
v/s Ratio Perm	c0.02		0.15			c0.04		
v/c Ratio	0.16		0.24			0.38		
	47.3		9.5			5.5		
Uniform Delay, d1	1.00		1.00			0.21		
Progression Factor Incremental Delay, d2	0.1		0.3			0.21		
	47.4		9.7			1.2		
Delay (s) Level of Service	47.4 D		9.7 A					
Approach Delay (s)	47.4		9.7			A 1.2		
Approach LOS	47.4 D		9.7 A			A		
Intersection Summary								
HCM 2000 Control Delay			12.9	H	CM 2000	Level of Serv	vice B	
HCM 2000 Volume to Capac	city ratio		0.35					
Actuated Cycle Length (s)	•		120.0	S	um of lost	time (s)	16.4	
Intersection Capacity Utilizat	ion		55.4%		CU Level o	. ,	В	
Analysis Period (min)			15					
c Critical Lane Group								

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø5
Lane Configurations	ሻ	77	↑ Ъ		ሻ	^	
Traffic Volume (vph)	30	60	700	20	380	710	
Future Volume (vph)	30	60	700	20	380	710	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	33	65	783	0	413	772	
Turn Type	Prot	Prot	NA		D.P+P	NA	
Protected Phases	4	4	2		1	125	5
Permitted Phases					2		
Detector Phase	4	4	2		1	125	
Switch Phase							
Minimum Initial (s)	7.0	7.0	15.0		5.0		7.0
Minimum Split (s)	11.0	11.0	20.0		8.1		11.0
Total Split (s)	11.0	11.0	22.0		16.0		21.0
Total Split (%)	15.7%	15.7%	31.4%		22.9%		30%
Yellow Time (s)	3.0	3.0	3.0		3.0		3.0
All-Red Time (s)	1.0	1.0	2.0		0.1		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0	4.0	5.0		3.1		
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	C-Max		None		None
v/c Ratio	0.19	0.23	0.91		0.93	0.27	
Control Delay	31.7	31.4	42.8		38.0	0.9	
Queue Delay	0.0	0.0	0.0		13.1	0.4	
Total Delay	31.7	31.4	42.8		51.1	1.4	
Queue Length 50th (ft)	13	14	172		95	9	
Queue Length 95th (ft)	38	34	#277		m#229	m24	
Internal Link Dist (ft)	551		260			143	
Turn Bay Length (ft)					90		
Base Capacity (vph)	177	278	859		444	2826	
Starvation Cap Reductn	0	0	0		32	1454	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.19	0.23	0.91		1.00	0.56	

Cycle Length: 70
Actuated Cycle Length: 70

Offset: 1 (1%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 230: Yale Avenue



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Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	ች	77	∱ ⊅		ሻ	† †			
Traffic Volume (vph)	30	60	700	20	380	710			
Future Volume (vph)	30	60	700	20	380	710			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	5.0		3.1	3.1			
Lane Util. Factor	1.00	0.88	0.95		1.00	0.95			
Frt	1.00	0.85	1.00		1.00	1.00			
Flt Protected	0.95	1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	2787	3524		1770	3539			
Flt Permitted	0.95	1.00	1.00		0.24	1.00			
Satd. Flow (perm)	1770	2787	3524		438	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	33	65	761	22	413	772			
RTOR Reduction (vph)	0	0	3	0	0	0			
Lane Group Flow (vph)	33	65	780	0	413	772			
Turn Type	Prot	Prot	NA		D.P+P	NA			
Protected Phases	4	4	2		1	125			
Permitted Phases					2				
Actuated Green, G (s)	7.0	7.0	17.0		29.9	54.0			
Effective Green, g (s)	7.0	7.0	17.0		29.9	50.0			
Actuated g/C Ratio	0.10	0.10	0.24		0.43	0.71			
Clearance Time (s)	4.0	4.0	5.0		3.1				
Vehicle Extension (s)	3.0	3.0	3.0		3.0				
Lane Grp Cap (vph)	177	278	855		432	2527			
v/s Ratio Prot	0.02	c0.02	0.22		c0.18	c0.22			
v/s Ratio Perm					c0.23				
v/c Ratio	0.19	0.23	0.91		0.96	0.31			
Uniform Delay, d1	28.9	29.0	25.8		16.2	3.7			
Progression Factor	1.00	1.00	1.00		0.99	0.42			
Incremental Delay, d2	0.5	0.4	15.7		23.5	0.0			
Delay (s)	29.4	29.5	41.4		39.5	1.6			
Level of Service	С	С	D		D	Α			
Approach Delay (s)	29.4		41.4			14.8			
Approach LOS	С		D			В			
Intersection Summary									
HCM 2000 Control Delay			25.6	Н	CM 2000	Level of Service	e	С	
HCM 2000 Volume to Capac	ity ratio		0.66						
Actuated Cycle Length (s)	•		70.0	S	um of lost	t time (s)		16.1	
Intersection Capacity Utilizati	ion		57.7%			of Service		В	
Analysis Period (min)			15						

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥			सी	ĵ.	
Traffic Volume (veh/h)	10	30	30	330	560	10
Future Volume (Veh/h)	10	30	30	330	560	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.61	0.61	0.89	0.89	1.00	1.00
Hourly flow rate (vph)	16	49	34	371	560	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)				1,0110	110110	
Upstream signal (ft)				421		
pX, platoon unblocked	0.92			r = 1		
vC, conflicting volume	1004	565	570			
vC1, stage 1 conf vol	1004	000	070			
vC2, stage 2 conf vol						
vCu, unblocked vol	959	565	570			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	0.4	0.2	7.1			
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	91	97			
cM capacity (veh/h)	253	524	1002			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	65	405	570			
Volume Left	16	34	0			
Volume Right	49	0	10			
cSH	415	1002	1700			
Volume to Capacity	0.16	0.03	0.34			
Queue Length 95th (ft)	14	3	0			
Control Delay (s)	15.3	1.1	0.0			
Lane LOS	С	Α				
Approach Delay (s)	15.3	1.1	0.0			
Approach LOS	С					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utiliza	ntion		52.2%	IC	CU Level c	f Service
Analysis Period (min)			15			

2: Golden St./Edison Middle School

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	ĵ.		ሻ	ĵ∍		7	1>	
Traffic Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Future Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Peak Hour Factor	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	70	46	0	36	464	0	11	623	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		1	2		1	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	22.6	22.6		22.6	22.6		9.6	35.3		9.6	35.3	
Total Split (%)	25.1%	25.1%		25.1%	25.1%		10.7%	39.2%		10.7%	39.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
v/c Ratio		0.39		0.34	0.17		0.07	0.40		0.02	0.54	
Control Delay		19.7		26.0	15.1		3.5	8.8		3.3	11.0	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		19.7		26.0	15.1		3.5	8.8		3.3	11.0	
Queue Length 50th (ft)		20		22	7		3	86		1	136	
Queue Length 95th (ft)		39		24	10		10	154		5	269	
Internal Link Dist (ft)		465			417			1385			341	
Turn Bay Length (ft)							75			50		
Base Capacity (vph)		526		455	569		529	1148		633	1146	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.20		0.15	0.08		0.07	0.40		0.02	0.54	

Intersection Summary

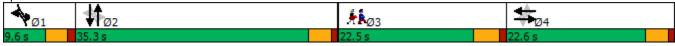
Cycle Length: 90

Actuated Cycle Length: 55

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Golden St./Edison Middle School



Lane Group Lane Configurations Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) All-Red Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Unternal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Spillback Cap Reductn Reduced v/c Ratio Intersection Summary	l O	C 22
Traffic Volume (vph) Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (s) Total Split (%) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Recall Mode v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		<i>W</i> 3
Future Volume (vph) Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (s) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Peak Hour Factor Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Heavy Vehicles (%) Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Shared Lane Traffic (%) Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (%) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Lane Group Flow (vph) Turn Type Protected Phases Detector Phase Switch Phase Minimum Initial (s) Minimum Split (s) Total Split (s) Yellow Time (s) Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead-Lag Optimize? Recall Mode V/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Turn Type Protected Phases Permitted Phases Detector Phase Switch Phase Minimum Initial (s) 5.0 Minimum Split (s) 22.5 Total Split (s) 22.5 Total Split (%) 25% Yellow Time (s) 3.5 All-Red Time (s) 1.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Protected Phases Permitted Phases Detector Phase Switch Phase Minimum Initial (s) 5.0 Minimum Split (s) 22.5 Total Split (s) 22.5 Total Split (%) 25% Yellow Time (s) 3.5 All-Red Time (s) 1.0 Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
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Lost Time Adjust (s) Total Lost Time (s) Lead/Lag Lead Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		1.0
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Lead-Lag Optimize? Yes Recall Mode None v/c Ratio Control Delay Queue Delay Total Delay Queue Length 50th (ft) Queue Length 95th (ft) Internal Link Dist (ft) Turn Bay Length (ft) Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
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Base Capacity (vph) Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio	. ,	
Starvation Cap Reductn Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Spillback Cap Reductn Storage Cap Reductn Reduced v/c Ratio		
Storage Cap Reductn Reduced v/c Ratio		
Reduced v/c Ratio		
Intersection Summary		
	Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	₽		ሻ	f)		7	₽	
Traffic Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Future Volume (vph)	30	10	30	30	10	10	30	320	70	10	550	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	12	12	12	12	12	12	12	12
Grade (%)		5%			-3%			4%			4%	
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.94		1.00	0.93		1.00	0.97		1.00	0.99	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1709		1666	1622		1701	1742		1669	1743	
Flt Permitted		0.84		0.76	1.00		0.33	1.00		0.44	1.00	
Satd. Flow (perm)		1467		1332	1622		596	1742		778	1743	
Peak-hour factor, PHF	0.68	0.68	0.68	0.43	0.43	0.43	0.84	0.84	0.84	0.93	0.93	0.93
Adj. Flow (vph)	44	15	44	70	23	23	36	381	83	11	591	32
RTOR Reduction (vph)	0	33	0	0	20	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	70	0	70	26	0	36	459	0	11	622	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		1	2		1	2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		7.3		7.3	7.3		38.3	35.2		38.3	35.2	
Effective Green, g (s)		7.3		7.3	7.3		38.3	35.2		38.3	35.2	
Actuated g/C Ratio		0.13		0.13	0.13		0.66	0.61		0.66	0.61	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		185		168	205		455	1064		565	1065	
v/s Ratio Prot					0.02		c0.00	0.26		0.00	c0.36	
v/s Ratio Perm		0.05		c0.05			0.05			0.01		
v/c Ratio		0.38		0.42	0.13		0.08	0.43		0.02	0.58	
Uniform Delay, d1		23.1		23.2	22.3		3.9	5.9		3.4	6.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3		1.7	0.3		0.1	0.3		0.0	0.8	
Delay (s)		24.4		24.9	22.6		3.9	6.2		3.4	7.6	
Level of Service		С		С	С		Α	Α		Α	A	
Approach Delay (s)		24.4			24.0			6.0			7.5	
Approach LOS		С			С			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			9.7	H	CM 2000	Level of	Service		Α			
HCM 2000 Volume to Capacit	y ratio		0.58									
Actuated Cycle Length (s)			57.6		um of lost				16.5			
Intersection Capacity Utilization	n		48.1%	IC	U Level c	of Service	•		Α			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W	•	_	4	ĵ»	•
Traffic Volume (vph)	10	50	70	460	600	10
Future Volume (vph)	10	50	70	460	600	10
Peak Hour Factor	0.72	0.72	0.94	0.94	0.83	0.83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	83	0	0	563	735	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			12			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	5.0		3.0		25.0	
Minimum Split (s)	9.0		7.0		30.5	
Total Split (s)	10.0		15.0		45.0	
Total Split (%)	14.3%		21.4%		64.3%	
Yellow Time (s)	3.0		3.0		4.2	
All-Red Time (s)	1.0		1.0		1.3	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	4.0				5.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		C-Min	
v/c Ratio	0.61			0.48	0.78	
Control Delay	51.8			2.7	20.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	51.8			2.7	20.5	
Queue Length 50th (ft)	34			22	223	
Queue Length 95th (ft)	#61			m20	279	
Internal Link Dist (ft)	384			1324	1385	
Turn Bay Length (ft)						
Base Capacity (vph)	141			1212	1060	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.59			0.46	0.69	

Cycle Length: 70
Actuated Cycle Length: 70

Offset: 27 (39%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Blackstone St



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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	W			4	1>			
Traffic Volume (vph)	10	50	70	460	600	10		
Future Volume (vph)	10	50	70	460	600	10		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Grade (%)	7%			2%	-2%			
Total Lost time (s)	4.0			4.0	5.5			
Lane Util. Factor	1.00			1.00	1.00			
Frt	0.89			1.00	1.00			
Flt Protected	0.99			0.99	1.00			
Satd. Flow (prot)	1582			1832	1877			
FIt Permitted	0.99			0.74	1.00			
Satd. Flow (perm)	1582			1368	1877			
Peak-hour factor, PHF	0.72	0.72	0.94	0.94	0.83	0.83		
Adj. Flow (vph)	14	69	74	489	723	12		
RTOR Reduction (vph)	0	0	0	0	1	0		
Lane Group Flow (vph)	83	0	0	563	734	0		
Turn Type	Prot		pm+pt	NA	NA			
Protected Phases	4		1	12	2			
Permitted Phases			12					
Actuated Green, G (s)	5.1			51.4	34.1			
Effective Green, g (s)	5.1			51.4	34.1			
Actuated g/C Ratio	0.07			0.73	0.49			
Clearance Time (s)	4.0				5.5			
Vehicle Extension (s)	1.0				3.0			
Lane Grp Cap (vph)	115			1119	914			
v/s Ratio Prot	c0.05			c0.12	c0.39			
v/s Ratio Perm	- 53.00			0.24				
v/c Ratio	0.72			0.50	0.80			
Uniform Delay, d1	31.8			3.9	15.1			
Progression Factor	1.00			0.78	1.00			
Incremental Delay, d2	17.1			1.1	7.4			
Delay (s)	48.9			4.2	22.5			
Level of Service	D			A	C			
Approach Delay (s)	48.9			4.2	22.5			
Approach LOS	D			Α	С			
Intersection Summary								
HCM 2000 Control Delay			16.6	Н	CM 2000	Level of Service		В
HCM 2000 Volume to Capa	city ratio		0.70					
Actuated Cycle Length (s)	,		70.0	S	um of lost	time (s)	1	3.5
Intersection Capacity Utiliza	ation		75.7%		CU Level c			D
Analysis Period (min)			15					
c Critical Lane Group								

4: Britannia St./Westfield Rd.

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		"	₽		- ኝ	f)	
Traffic Volume (vph)	30	100	150	70	130	90	210	430	70	60	560	30
Future Volume (vph)	30	100	150	70	130	90	210	430	70	60	560	30
Peak Hour Factor	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	342	0	0	357	0	276	658	0	72	711	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			12			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		3.0			15.0	15.0	
Minimum Split (s)	13.2	13.2		13.2	13.2		7.0			21.7	21.7	
Total Split (s)	24.0	24.0		24.0	24.0		12.0			34.0	34.0	
Total Split (%)	34.3%	34.3%		34.3%	34.3%		17.1%			48.6%	48.6%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0			5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		1.0			1.7	1.7	
Lost Time Adjust (s)		0.0			0.0		0.0			0.0	0.0	
Total Lost Time (s)		6.2			6.2		4.0			6.7	6.7	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		Min			C-Max	C-Max	
v/c Ratio		0.81			1.04		0.96	0.62		0.27	0.95	
Control Delay		42.2			89.3		62.9	12.6		8.4	34.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		42.2			89.3		62.9	12.6		8.4	34.2	
Queue Length 50th (ft)		138			~170		128	299		10	297	
Queue Length 95th (ft)		#228			#274		#130	208		m15	#444	
Internal Link Dist (ft)		562			316			1219			1324	
Turn Bay Length (ft)							100			50		
Base Capacity (vph)		421			343		288	1057		264	745	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.81			1.04		0.96	0.62		0.27	0.95	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 52 (74%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Britannia St./Westfield Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		¥	f)		¥	f)	
Traffic Volume (vph)	30	100	150	70	130	90	210	430	70	60	560	30
Future Volume (vph)	30	100	150	70	130	90	210	430	70	60	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	15	12	12	14	12	10	12	12	10	13	12
Grade (%)		4%			-8%			3%			-8%	
Total Lost time (s)		6.2			6.2		4.0	4.0		6.7	6.7	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.96		1.00	0.98		1.00	0.99	
FIt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1835			1900		1596	1762		1653	1912	
FIt Permitted		0.90			0.70		0.15	1.00		0.39	1.00	
Satd. Flow (perm)		1658			1352		246	1762		677	1912	
Peak-hour factor, PHF	0.82	0.82	0.82	0.81	0.81	0.81	0.76	0.76	0.76	0.83	0.83	0.83
Adj. Flow (vph)	37	122	183	86	160	111	276	566	92	72	675	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	342	0	0	357	0	276	658	0	72	711	0
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		_	4		1	12			2	
Permitted Phases	4	47.0		4	47.0		12	00.0		2	07.0	
Actuated Green, G (s)		17.8			17.8		35.3	39.3		27.3	27.3	
Effective Green, g (s)		17.8			17.8		35.3	39.3		27.3	27.3	
Actuated g/C Ratio		0.25			0.25		0.50	0.56		0.39	0.39	
Clearance Time (s)		6.2 3.0			6.2 3.0		4.0			6.7 0.2	6.7 0.2	
Vehicle Extension (s)							1.0	000				
Lane Grp Cap (vph)		421			343		278	989		264	745 0.37	
v/s Ratio Prot		0.21			c0.26		c0.11 c0.39	0.37		0.11	0.37	
v/s Ratio Perm v/c Ratio		0.21			1.04		0.99	0.67		0.11	0.95	
Uniform Delay, d1		24.5			26.1		16.4	10.7		14.6	20.7	
Progression Factor		1.00			1.00		1.76	1.13		0.42	0.57	
Incremental Delay, d2		11.4			59.6		46.8	1.13		1.8	18.9	
Delay (s)		35.9			85.7		75.7	13.2		8.0	30.7	
Level of Service		00.9 D			65.7 F		75.7 E	13.2 B		Α	00.7 C	
Approach Delay (s)		35.9			85.7			31.7		, , , , , , , , , , , , , , , , , , ,	28.6	
Approach LOS		D			F			C			C	
Intersection Summary												
HCM 2000 Control Delay			39.3	H	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capac	ity ratio		1.01									
Actuated Cycle Length (s)			70.0	S	um of lost	time (s)			16.9			
Intersection Capacity Utilizati	ion		87.1%	IC	CU Level o	of Service)		Е			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		ĵ.			4
Traffic Volume (vph)	110	80	750	110	50	750
Future Volume (vph)	110	80	750	110	50	750
Peak Hour Factor	0.84	0.84	0.96	0.96	0.83	0.83
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	896	0	0	964
Turn Type	Prot		NA		pm+pt	NA
Protected Phases	4		2		1	12
Permitted Phases					12	
Detector Phase	4		2		1	12
Switch Phase						
Minimum Initial (s)	5.0		21.0		5.0	
Minimum Split (s)	9.2		26.8		9.0	
Total Split (s)	30.0		98.0		12.0	
Total Split (%)	21.4%		70.0%		8.6%	
Yellow Time (s)	3.0		4.2		3.0	
All-Red Time (s)	1.2		1.6		1.0	
Lost Time Adjust (s)	0.0		0.0			
Total Lost Time (s)	4.2		5.8			
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		Max	
v/c Ratio	0.83		0.61			0.76
Control Delay	76.9		6.0			9.6
Queue Delay	0.1		0.3			4.0
Total Delay	77.0		6.3			13.5
Queue Length 50th (ft)	183		179			135
Queue Length 95th (ft)	241		168			m373
Internal Link Dist (ft)	454		519			1219
Turn Bay Length (ft)						
Base Capacity (vph)	371		1465			1270
Starvation Cap Reductn	0		142			0
Spillback Cap Reductn	3		0			224
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.61		0.68			0.92
	0.01		0.00			0.02

Cycle Length: 140
Actuated Cycle Length: 140

Offset: 31 (22%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Atkins Street



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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	¥		1>			4		
Traffic Volume (vph)	110	80	750	110	50	750		
Future Volume (vph)	110	80	750	110	50	750		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	15	12	16	12	12	16		
Grade (%)	-10%		-2%			1%		
Total Lost time (s)	4.2		5.8			4.0		
Lane Util. Factor	1.00		1.00			1.00		
Frt	0.94		0.98			1.00		
Flt Protected	0.97		1.00			1.00		
Satd. Flow (prot)	1916		2055			2034		
Flt Permitted	0.97		1.00			0.78		
Satd. Flow (perm)	1916		2055			1594		
Peak-hour factor, PHF	0.84	0.84	0.96	0.96	0.83	0.83		
Adj. Flow (vph)	131	95	781	115	60	904		
RTOR Reduction (vph)	20	0	3	0	0	0		
Lane Group Flow (vph)	206	0	893	0	0	964		
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%		
Turn Type	Prot		NA		pm+pt	NA		
Protected Phases	4		2		1	12		
Permitted Phases	•		_		12			
Actuated Green, G (s)	18.4		99.6		· -	107.6		
Effective Green, g (s)	18.4		99.6			107.6		
Actuated g/C Ratio	0.13		0.71			0.77		
Clearance Time (s)	4.2		5.8					
Vehicle Extension (s)	1.0		0.2					
Lane Grp Cap (vph)	251		1461			1250		
v/s Ratio Prot	c0.11		0.43			c0.04		
v/s Ratio Perm			0.10			c0.55		
v/c Ratio	0.82		0.61			0.77		
Uniform Delay, d1	59.2		10.3			9.2		
Progression Factor	1.00		0.39			0.89		
Incremental Delay, d2	18.1		1.6			1.8		
Delay (s)	77.3		5.6			10.0		
Level of Service	77.0 E		A			В		
Approach Delay (s)	77.3		5.6			10.0		
Approach LOS	E		A			В		
Intersection Summary								
HCM 2000 Control Delay			15.4	Н	ICM 2000	Level of Servi	ce B	
HCM 2000 Volume to Capa	acity ratio		0.78					
Actuated Cycle Length (s)			140.0	S	um of los	t time (s)	14.0	
Intersection Capacity Utiliza	ation		98.3%	IC	CU Level	of Service	F	
Analysis Period (min)			15					
c Critical Lane Group								

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	1>		ሻ	↑			f)	
Traffic Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Future Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Peak Hour Factor	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	341	268	0	23	761	0	0	1011	0
Turn Type		NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					
Detector Phase	4	4		4	4		2	2			2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		20.0	20.0			20.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		25.5	25.5			25.5	
Total Split (s)	51.0	51.0		51.0	51.0		89.0	89.0			89.0	
Total Split (%)	36.4%	36.4%		36.4%	36.4%		63.6%	63.6%			63.6%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2			4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.3	1.3			1.3	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max			C-Max	
v/c Ratio		0.05		0.91	0.46		0.19	0.65			0.78	
Control Delay		0.2		76.4	12.2		11.2	13.6			20.8	
Queue Delay		0.0		0.0	0.0		0.0	0.9			3.5	
Total Delay		0.2		76.4	12.2		11.2	14.5			24.4	
Queue Length 50th (ft)		0		294	42		7	233			673	
Queue Length 95th (ft)		0		358	89		m9	m314			815	
Internal Link Dist (ft)		295			549			582			519	
Turn Bay Length (ft)							300					
Base Capacity (vph)		603		435	638		121	1179			1302	
Starvation Cap Reductn		0		0	0		0	185			203	
Spillback Cap Reductn		10		0	0		0	0			184	
Storage Cap Reductn		0		0	0		0	0			0	
Reduced v/c Ratio		0.05		0.78	0.42		0.19	0.77			0.92	

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 22 (16%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Pratt St. Ext./I-691 Ramp (WB)



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4		ሻ	₽		ሻ	↑			₽	
Traffic Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Future Volume (vph)	0	0	20	280	0	220	20	670	0	0	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	10	10	10	12	12	12	8	16	16
Grade (%)		6%			-4%			-3%			2%	
Total Lost time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00			1.00	
Frt		0.86		1.00	0.85		1.00	1.00			1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1589		1701	1522		1745	1837			2027	
Flt Permitted		1.00		0.74	1.00		0.10	1.00			1.00	
Satd. Flow (perm)	0.00	1589	2.00	1322	1522	0.00	190	1837	0.00	0.04	2027	0.04
Peak-hour factor, PHF	0.69	0.69	0.69	0.82	0.82	0.82	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	0	0	29	341	0	268	23	761	0	0	1000	11
RTOR Reduction (vph)	0	21	0	0	147	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	8	0	341	121	0	23	761	0	0	1011	0
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type		NA		Perm	NA		Perm	NA			NA	
Protected Phases	4	4		4	4		0	2			2	
Permitted Phases	4	39.7		4 39.7	39.7		2 89.9	89.9			89.9	
Actuated Green, G (s) Effective Green, g (s)		39.7		39.7	39.7		89.9	89.9			89.9	
Actuated g/C Ratio		0.28		0.28	0.28		0.64	0.64			0.64	
Clearance Time (s)		4.9		4.9	4.9		5.5	5.5			5.5	
Vehicle Extension (s)		1.5		1.5	1.5		0.2	0.2			0.2	
Lane Grp Cap (vph)		450		374	431		122	1179			1301	
v/s Ratio Prot		0.01		314	0.08		122	0.41			c0.50	
v/s Ratio Perm		0.01		c0.26	0.00		0.12	0.71			00.00	
v/c Ratio		0.02		0.91	0.28		0.12	0.65			0.78	
Uniform Delay, d1		36.1		48.5	39.0		10.2	15.3			17.9	
Progression Factor		1.00		1.00	1.00		0.66	0.70			0.88	
Incremental Delay, d2		0.0		25.4	0.1		1.9	1.6			3.1	
Delay (s)		36.1		73.9	39.2		8.7	12.3			18.9	
Level of Service		D		E	D		Α	В			В	
Approach Delay (s)		36.1			58.6			12.2			18.9	
Approach LOS		D			Е			В			В	
Intersection Summary												
HCM 2000 Control Delay			26.9	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacity	y ratio		0.82									
Actuated Cycle Length (s)			140.0		um of lost				10.4			
Intersection Capacity Utilizatio	n		80.9%	IC	U Level o	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	1>			सी	7	*	∱ β		7	ĵ.	
Traffic Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Future Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	282	0	0	297	242	33	967	0	267	800	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8	1		2		1	12	
Permitted Phases						8	2			12		
Detector Phase	4	4		8	8	1	2	2		1	12	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	3.0	15.0	15.0		3.0		
Minimum Split (s)	10.5	10.5		10.8	10.8	7.0	21.4	21.4		7.0		
Total Split (s)	23.0	23.0		30.0	30.0	21.0	39.0	39.0		21.0		
Total Split (%)	16.4%	16.4%		21.4%	21.4%	15.0%	27.9%	27.9%		15.0%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		3.0		
All-Red Time (s)	2.5	2.5		2.8	2.8	1.0	2.2	2.2		1.0		
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.5	5.5			5.8	4.0	6.4	6.4		4.0		
Lead/Lag	Lag	Lag				Lead	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes				Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	Min	C-Max	C-Max		Min		
v/c Ratio	1.11	1.16			1.02	0.48	0.49	0.81		1.03	0.93	
Control Delay	145.9	158.2			115.2	40.9	49.9	34.6		95.8	41.1	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	18.7	
Total Delay	145.9	158.2			115.2	40.9	49.9	34.6		95.8	59.7	
Queue Length 50th (ft)	~265	~295			~287	175	16	314		178	376	
Queue Length 95th (ft)	#354	#385			#476	261	m39	m#567		#302	#827	
Internal Link Dist (ft)		249			421			2589			582	
Turn Bay Length (ft)						175	50			550		
Base Capacity (vph)	231	243			290	501	68	1199		258	862	
Starvation Cap Reductn	0	0			0	0	0	0		0	84	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	1.11	1.16			1.02	0.48	0.49	0.81		1.03	1.03	

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 135 (96%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	Ø3
Lane Configuration	าร
Traffic Volume (vp	
Future Volume (vp	
Peak Hour Factor	,
Heavy Vehicles (%	(a)
Shared Lane Traffi	
Lane Group Flow (
Turn Type	(F)
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	19%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize	
Recall Mode	None
v/c Ratio	110.10
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th	h (ft)
Queue Length 95th	
Internal Link Dist (
Turn Bay Length (1	
Base Capacity (vp	
Starvation Cap Re	
Spillback Cap Red	
Storage Cap Redu	
Reduced v/c Ratio	
Neuticed V/C Rallo	
Intersection Summ	nary

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)			ર્ન	7	¥	∱ }		J.	ĵ.	
Traffic Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Future Volume (vph)	200	160	60	240	30	220	30	670	220	200	530	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	10	10	10	12	12	12	10	10	10
Grade (%)		6%			-4%			-2%			5%	
Total Lost time (s)	5.5	5.5			5.8	4.0	6.4	6.4		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frt	1.00	0.96			1.00	0.85	1.00	0.96		1.00	0.98	
FIt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1852	1869			1681	1493	1787	3442		1610	1666	
FIt Permitted	0.95	1.00			0.96	1.00	0.10	1.00		0.10	1.00	
Satd. Flow (perm)	1852	1869			1681	1493	196	3442		172	1666	
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	256	205	77	264	33	242	33	728	239	267	707	93
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	256	272	0	0	297	242	33	967	0	267	797	0
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases	4	4		8	8	1		2		1	12	
Permitted Phases						8	2			12		
Actuated Green, G (s)	17.5	17.5			24.2	41.2	46.4	46.4		63.4	67.4	
Effective Green, g (s)	17.5	17.5			24.2	41.2	46.4	46.4		63.4	67.4	
Actuated g/C Ratio	0.12	0.12			0.17	0.29	0.33	0.33		0.45	0.48	
Clearance Time (s)	5.5	5.5			5.8	4.0	6.4	6.4		4.0		
Vehicle Extension (s)	2.0	2.0			2.5	1.0	0.2	0.2		1.0		
Lane Grp Cap (vph)	231	233			290	439	64	1140		252	802	
v/s Ratio Prot	0.14	c0.15			c0.18	0.07		0.28		0.13	c0.48	
v/s Ratio Perm						0.10	0.17			c0.35		
v/c Ratio	1.11	1.17			1.02	0.55	0.52	0.85		1.06	0.99	
Uniform Delay, d1	61.2	61.2			57.9	41.6	37.7	43.5		40.4	36.1	
Progression Factor	1.00	1.00			1.00	1.00	0.75	0.69		1.22	0.85	
Incremental Delay, d2	91.3	112.2			59.2	0.9	14.8	4.4		61.4	23.4	
Delay (s)	152.5	173.5			117.1	42.5	43.0	34.3		110.8	54.0	
Level of Service	F	F			F	D	D	С		F	D	
Approach Delay (s)		163.5			83.6			34.5			68.2	
Approach LOS		F			F			С			Е	
Intersection Summary												
HCM 2000 Control Delay			76.4	H	CM 2000	Level of	Service		Е			
HCM 2000 Volume to Capac	ity ratio		0.98									
Actuated Cycle Length (s)			140.0			t time (s)			25.7			
Intersection Capacity Utilizati	ion		89.7%	IC	U Level	of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	1>			4			4			4	
Traffic Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Future Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Peak Hour Factor	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	340	0	0	272	0	0	894	0	0	783	0
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		1	12		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0			15.0	15.0	
Minimum Split (s)	9.9	9.9		9.9	9.9		9.0			20.5	20.5	
Total Split (s)	33.0	33.0		33.0	33.0		12.0			75.0	75.0	
Total Split (%)	23.6%	23.6%		23.6%	23.6%		8.6%			53.6%	53.6%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.0			3.9	3.9	
All-Red Time (s)	1.3	1.3		1.3	1.3		1.0			1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0						0.0	
Total Lost Time (s)	4.9	4.9			4.9						5.5	
Lead/Lag	Lag	Lag		Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		Max			C-Min	C-Min	
v/c Ratio	0.24	0.71			0.64			1.06			0.90	
Control Delay	46.7	55.4			53.6			70.5			40.8	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	46.7	55.4			53.6			70.5			40.8	
Queue Length 50th (ft)	34	255			198			~765			711	
Queue Length 95th (ft)	88	#524			#347			#929			m790	
Internal Link Dist (ft)		294			255			709			2589	
Turn Bay Length (ft)	75											
Base Capacity (vph)	217	478			422			844			869	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.24	0.71			0.64			1.06			0.90	

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 70 (50%), Referenced to phase 2:NBSB and 6:, Start of Yellow

Natural Cycle: 150

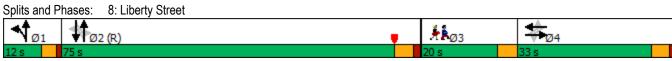
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	14%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Cummers	
Intersection Summary	

	۶	→	*	•	+	•	4	†	~	/	+	-√
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	£			4			4			4	
Traffic Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Future Volume (vph)	50	180	140	20	190	10	70	650	40	20	550	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		8%			-9%			-1%			-2%	
Total Lost time (s)	4.9	4.9			4.9			4.0			5.5	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.93			0.99			0.99			0.98	
Flt Protected	0.95	1.00			1.00			1.00			1.00	
Satd. Flow (prot)	1699	1671			1819			1832			1829	
FIt Permitted	0.42	1.00			0.81			0.79			0.96	
Satd. Flow (perm)	759	1671			1472			1457			1752	
Peak-hour factor, PHF	0.94	0.94	0.94	0.81	0.81	0.81	0.85	0.85	0.85	0.83	0.83	0.83
Adj. Flow (vph)	53	191	149	25	235	12	82	765	47	24	663	96
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	53	340	0	0	271	0	0	894	0	0	783	0
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4			4		1	12			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	40.1	40.1			40.1			75.1			67.1	
Effective Green, g (s)	40.1	40.1			40.1			75.1			67.1	
Actuated g/C Ratio	0.29	0.29			0.29			0.54			0.48	
Clearance Time (s)	4.9	4.9			4.9						5.5	
Vehicle Extension (s)	1.5	1.5			1.5						2.0	
Lane Grp Cap (vph)	217	478			421			803			839	
v/s Ratio Prot		c0.20						c0.06				
v/s Ratio Perm	0.07				0.18			c0.53			0.45	
v/c Ratio	0.24	0.71			0.64			1.11			0.93	
Uniform Delay, d1	38.3	44.8			43.7			32.5			34.3	
Progression Factor	1.00	1.00			1.00			0.86			1.10	
Incremental Delay, d2	0.2	4.1			2.5			64.6			7.0	
Delay (s)	38.5	48.9			46.2			92.6			44.6	
Level of Service	D	D			D			F			D	
Approach Delay (s)		47.5			46.2			92.6			44.6	
Approach LOS		D			D			F			D	
Intersection Summary												
HCM 2000 Control Delay			63.6	Н	CM 2000	Level of	Service		Е			
HCM 2000 Volume to Capa	city ratio		0.92									
Actuated Cycle Length (s)			140.0		um of lost				18.4			
Intersection Capacity Utiliza	ation		103.3%	IC	CU Level	of Service	9		G			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	†	7	7	†	7	7	†	7	7	f)	
Traffic Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Future Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Peak Hour Factor	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	286	221	209	349	209	313	613	238	113	713	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	5.0	15.0	15.0	4.5	15.0	
Minimum Split (s)	13.0	13.0	13.0	15.1	13.0	13.0	9.0	21.2	21.2	9.0	21.2	
Total Split (s)	13.0	25.2	25.2	15.8	28.0	28.0	20.0	67.0	67.0	9.0	56.0	
Total Split (%)	9.3%	18.0%	18.0%	11.3%	20.0%	20.0%	14.3%	47.9%	47.9%	6.4%	40.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.9	3.0	3.9	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.3	2.3	1.0	2.3	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
v/c Ratio	0.57	1.10	0.52	1.12	1.24	0.50	1.17	0.67	0.27	0.36	0.91	
Control Delay	54.9	137.9	13.1	144.9	181.7	11.0	144.0	24.5	4.8	8.9	30.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	
Total Delay	54.9	137.9	13.1	144.9	181.7	11.0	144.0	24.8	4.8	8.9	30.6	
Queue Length 50th (ft)	65	~294	10	~171	~396	0	~226	298	19	21	147	
Queue Length 95th (ft)	96	#375	47	#312	#557	61	#404	227	36	m27	#352	
Internal Link Dist (ft)		485			509			712			709	
Turn Bay Length (ft)			200	200		300				200		
Base Capacity (vph)	164	261	422	186	281	414	268	918	870	313	785	
Starvation Cap Reductn	0	0	0	0	0	0	0	38	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	2	0	16	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.55	1.10	0.52	1.12	1.24	0.51	1.17	0.70	0.27	0.36	0.91	

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 33 (24%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9: East Main St



Lane Group	Ø9
Lane Configurations	23
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type Protected Phases	0
	9
Permitted Phases	
Detector Phase	
Switch Phase	4.0
Minimum Initial (s)	1.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	16%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	
intersection outlinary	

	۶	→	•	•	+	•	•	†	<i>></i>	/	↓	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	†	7	7	†	7	ň	†	7	Ť	f)	
Traffic Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Future Volume (vph)	70	220	170	180	300	180	250	490	190	90	490	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	11	11	11	11	11	11	11
Grade (%)		2%			6%	_		1%			-1%	
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1718	1809	1691	1612	1697	1442	1638	1724	1465	1670	1721	
Flt Permitted	0.20	1.00	1.00	0.17	1.00	1.00	0.09	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	358	1809	1691	291	1697	1442	164	1724	1465	539	1721	2.22
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	91	286	221	209	349	209	312	612	238	112	612	100
RTOR Reduction (vph)	0	0	179	0	0	174	0	0	94	0	4	0
Lane Group Flow (vph)	91	286	42	209	349	35	313	613	144	113	709	0
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	6%	6%	6%	5%	5%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4	4	3	8		1	6	0	5	2	
Permitted Phases	4	00.0	4	8	00.0	8	6	70.0	6	2	C4 0	
Actuated Green, G (s)	28.9	20.2	20.2	35.1	23.3	23.3	81.2	72.2	72.2	66.2	61.2	
Effective Green, g (s)	28.9 0.21	20.2 0.14	20.2 0.14	35.1 0.25	23.3 0.17	23.3 0.17	81.2 0.58	72.2 0.52	72.2 0.52	66.2 0.47	61.2 0.44	
Actuated g/C Ratio Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.2	6.2	4.0	6.2	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	
	158	261	243	184	282	239	263	889	755	295	752	
Lane Grp Cap (vph) v/s Ratio Prot	0.04	0.16	243	c0.10	c0.21	239	c0.14	0.36	755	0.01	0.41	
v/s Ratio Prot v/s Ratio Perm	0.04	0.10	0.02	0.19	CU.Z I	0.02	c0.14	0.30	0.10	0.01	0.41	
v/c Ratio	0.08	1.10	0.02	1.14	1.24	0.02	1.19	0.69	0.10	0.17	0.94	
Uniform Delay, d1	47.5	59.9	52.6	47.9	58.4	49.8	40.3	25.5	18.2	22.9	37.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.36	0.77	0.78	0.43	0.49	
Incremental Delay, d2	3.1	83.7	0.1	107.6	133.5	0.1	114.7	4.0	0.70	0.43	12.7	
Delay (s)	50.7	143.6	52.7	155.5	191.9	49.9	169.6	23.7	14.8	10.0	31.4	
Level of Service	D	F	D	F	F	75.5 D	F	C	В	В	C	
Approach Delay (s)		95.9		•	143.3		'	61.1			28.5	
Approach LOS		F			F			E			С	
Intersection Summary												
HCM 2000 Control Delay			78.1	Н	CM 2000	Level of	Service		Е			
HCM 2000 Volume to Capac	city ratio		1.17									
Actuated Cycle Length (s)			140.0		um of lost				23.2			
Intersection Capacity Utiliza	tion		83.0%	IC	CU Level	of Service	9		Е			
Analysis Period (min)			15									
c Critical Lane Group												

	•	-	•	•	←	•	4	†	<i>></i>	/	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			414			414	
Traffic Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Future Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Peak Hour Factor	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	159	0	0	1115	0	0	955	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Detector Phase	4	4		4	4		2	2		2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.3	11.3		11.3	11.3		20.5	20.5		20.5	20.5	
Total Split (s)	31.0	31.0		31.0	31.0		76.0	76.0		76.0	76.0	
Total Split (%)	22.1%	22.1%		22.1%	22.1%		54.3%	54.3%		54.3%	54.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.3			5.3			5.5			5.5	
Lead/Lag	Lag	Lag		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max		
v/c Ratio		0.11			0.78			0.46			0.41	
Control Delay		52.8			76.9			6.0			5.6	
Queue Delay		0.0			0.0			0.5			0.0	
Total Delay		52.8			76.9			6.5			5.6	
Queue Length 50th (ft)		12			127			54			114	
Queue Length 95th (ft)		24			140			318			m187	
Internal Link Dist (ft)		424			718			263			712	
Turn Bay Length (ft)												
Base Capacity (vph)		196			287			2426			2352	
Starvation Cap Reductn		0			0			785			0	
Spillback Cap Reductn		0			0			5			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.55			0.68			0.41	

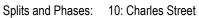
Cycle Length: 140

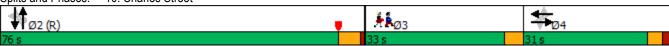
Actuated Cycle Length: 140

Offset: 98 (70%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated





Lane Group Lane Configurations Traffic Volume (vph)	Ø3
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	24%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn Reduced v/c Ratio	
Reduced WC Rallo	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			सींक			414	
Traffic Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Future Volume (vph)	10	0	0	40	30	40	20	910	40	30	800	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	14	14	14
Grade (%)		-7%			4%			-5%			2%	
Total Lost time (s)		5.3			5.3			5.5			5.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		1.00			0.95			0.99			1.00	
FIt Protected		0.95			0.98			1.00			1.00	
Satd. Flow (prot)		2117			1672			3532			3646	
FIt Permitted		0.48			0.87			0.91			0.86	
Satd. Flow (perm)		1067			1487			3234			3138	
Peak-hour factor, PHF	0.67	0.67	0.67	0.69	0.69	0.69	0.87	0.87	0.87	0.89	0.89	0.89
Adj. Flow (vph)	15	0	0	58	43	58	23	1046	46	34	899	22
RTOR Reduction (vph)	0	0	0	0	16	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	15	0	0	143	0	0	1114	0	0	954	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		17.7			17.7			101.7			101.7	
Effective Green, g (s)		17.7			17.7			101.7			101.7	
Actuated g/C Ratio		0.13			0.13			0.73			0.73	
Clearance Time (s)		5.3			5.3			5.5			5.5	
Vehicle Extension (s)		2.0			2.0			0.2			0.2	
Lane Grp Cap (vph)		134			187			2349			2279	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.10			c0.34			0.30	
v/c Ratio		0.11			0.77			0.47			0.42	
Uniform Delay, d1		54.2			59.1			8.0			7.5	
Progression Factor		1.00			1.00			0.55			0.57	
Incremental Delay, d2		0.1			15.4			0.5			0.3	
Delay (s)		54.3			74.6			4.9			4.5	
Level of Service		D			Е			Α			Α	
Approach Delay (s)		54.3			74.6			4.9			4.5	
Approach LOS		D			Е			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			10.0	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capacit	y ratio		0.49									
Actuated Cycle Length (s)			140.0	Sı	um of lost	time (s)			14.8			
Intersection Capacity Utilization	n		59.3%	IC	U Level o	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			414	∱ }	
Traffic Volume (vph)	70	70	110	900	770	70
Future Volume (vph)	70	70	110	900	770	70
Peak Hour Factor	0.74	0.74	0.79	0.79	0.86	0.86
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	190	0	0	1278	976	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	6.0		6.0		15.0	
Minimum Split (s)	11.2		11.2		21.0	
Total Split (s)	26.0		29.0		85.0	
Total Split (%)	18.6%		20.7%		60.7%	
Yellow Time (s)	3.7		3.7		4.5	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	5.2				6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		C-Max	
v/c Ratio	0.77			0.66	0.48	
Control Delay	69.7			8.4	10.8	
Queue Delay	0.0			0.4	0.2	
Total Delay	69.7			8.7	11.0	
Queue Length 50th (ft)	143			150	191	
Queue Length 95th (ft)	173			87	85	
Internal Link Dist (ft)	372			99	263	
Turn Bay Length (ft)	VI L			- 00		
Base Capacity (vph)	313			1968	2052	
Starvation Cap Reductn	0			246	364	
Spillback Cap Reductn	1			75	55	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.61			0.74	0.58	
Intersection Summary	0.01			V.1 T	0.00	

Cycle Length: 140
Actuated Cycle Length: 140

Offset: 95 (68%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 11: Olive Street



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Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations	W			414	∱ }				
Traffic Volume (vph)	70	70	110	900	770	70			
Future Volume (vph)	70	70	110	900	770	70			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	16	16	12	12	12	12			
Grade (%)	-6%			-5%	5%				
Total Lost time (s)	5.2			5.2	6.0				
Lane Util. Factor	1.00			0.95	0.95				
Frt	0.93			1.00	0.99				
Flt Protected	0.98			0.99	1.00				
Satd. Flow (prot)	1940			3539	3375				
Flt Permitted	0.98			0.62	1.00				
Satd. Flow (perm)	1940			2213	3375				
Peak-hour factor, PHF	0.74	0.74	0.79	0.79	0.86	0.86			
Adj. Flow (vph)	95	95	139	1139	895	81			
RTOR Reduction (vph)	27	0	0	0	4	0			
Lane Group Flow (vph)	163	0	0	1278	972	0			
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%			
Turn Type	Prot		D.P+P	NA	NA				
Protected Phases	4		1	12	2				
Permitted Phases			2						
Actuated Green, G (s)	16.1			107.5	84.9				
Effective Green, g (s)	16.1			107.5	84.9				
Actuated g/C Ratio	0.12			0.77	0.61				
Clearance Time (s)	5.2				6.0				
Vehicle Extension (s)	1.0				0.2				
Lane Grp Cap (vph)	223			1913	2046				
v/s Ratio Prot	c0.08			c0.11	0.29				
v/s Ratio Perm				c0.41					
v/c Ratio	0.73			0.67	0.47				
Uniform Delay, d1	59.9			7.7	15.2				
Progression Factor	1.00			1.49	0.63				
Incremental Delay, d2	10.2			0.6	0.7				
Delay (s)	70.1			12.2	10.3				
Level of Service	Е			В	В				
Approach Delay (s)	70.1			12.2	10.3				
Approach LOS	Е			В	В				
Intersection Summary									
HCM 2000 Control Delay			15.9	Н	CM 2000	Level of Service)	В	
HCM 2000 Volume to Capa	city ratio		0.68						
Actuated Cycle Length (s)			140.0	S	um of lost	time (s)		16.4	
Intersection Capacity Utiliza	ition		73.4%	IC	U Level c	of Service		D	
Analysis Period (min)			15						
c Critical Lane Group									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7	ሻ	₽			₩.			4	
Traffic Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Future Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Peak Hour Factor	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	293	13	86	357	0	0	674	0	0	792	0
Turn Type	Split	NA	Perm	Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	12.3	12.3	12.3	12.3	12.3		21.5	21.5		21.5	21.5	
Total Split (s)	25.0	25.0	25.0	25.0	25.0		36.5	36.5		36.5	36.5	
Total Split (%)	22.6%	22.6%	22.6%	22.6%	22.6%		33.0%	33.0%		33.0%	33.0%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Lead/Lag	Lag	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes									
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
v/c Ratio		0.81	0.04	0.23	0.93			1.20			1.51	
Control Delay		57.3	36.1	37.0	72.1			135.4			268.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		57.3	36.1	37.0	72.1			135.4			268.2	
Queue Length 50th (ft)		148	6	38	188			~423			~584	
Queue Length 95th (ft)		#266	21	77	#314			#774			#875	
Internal Link Dist (ft)		340			311			2056			1933	
Turn Bay Length (ft)			25	50								
Base Capacity (vph)		381	333	372	383			564			523	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.77	0.04	0.23	0.93			1.20			1.51	

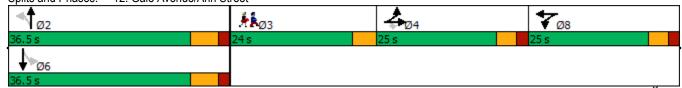
Cycle Length: 110.5 Actuated Cycle Length: 95.1 Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 12: Gale Avenue/Ann Street



Lane Group	Ø3		
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Peak Hour Factor			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	3		
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0		
Minimum Split (s)	24.0		
Total Split (s)	24.0		
Total Split (%)	22%		
Yellow Time (s)	4.0		
All-Red Time (s)	0.0		
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead		
Lead-Lag Optimize?	Yes		
Recall Mode	None		
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn Reduced v/c Ratio			
Reduced V/C Ratio			
Intersection Summary			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્ન	7	ሻ	ĵ»			4			4	
Traffic Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Future Volume (vph)	120	100	10	60	210	40	10	510	40	20	440	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frt		1.00	0.85	1.00	0.98			0.99			0.97	
Flt Protected		0.97	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1813	1583	1770	1818			1843			1798	
Flt Permitted		0.97	1.00	0.95	1.00			0.96			0.91	
Satd. Flow (perm)		1813	1583	1770	1818			1762			1632	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	160	133	13	86	300	57	12	614	48	26	571	195
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	293	13	86	357	0	0	674	0	0	792	0
Turn Type	Split	NA	Perm	Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)		18.9	18.9	20.0	20.0			30.5			30.5	
Effective Green, g (s)		18.9	18.9	20.0	20.0			30.5			30.5	
Actuated g/C Ratio		0.19	0.19	0.21	0.21			0.31			0.31	
Clearance Time (s)		5.3	5.3	5.3	5.3			6.5			6.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		351	307	363	373			551			511	
v/s Ratio Prot		c0.16		0.05	c0.20							
v/s Ratio Perm			0.01					0.38			c0.49	
v/c Ratio		0.83	0.04	0.24	0.96			1.22			1.55	
Uniform Delay, d1		37.7	31.9	32.3	38.3			33.5			33.5	
Progression Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		15.6	0.1	0.3	35.1			116.0			257.0	
Delay (s)		53.3	32.0	32.7	73.4			149.4			290.5	
Level of Service		D	С	С	Е			F			F	
Approach Delay (s)		52.4			65.5			149.4			290.5	
Approach LOS		D			Е			F			F	
Intersection Summary												
HCM 2000 Control Delay			169.7	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capacity	/ ratio		1.08									
Actuated Cycle Length (s)			97.4	S	um of lost	time (s)			21.1			
Intersection Capacity Utilization	n		82.9%		CU Level o				Е			
Analysis Period (min)			15									

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			4	1>	
Traffic Volume (vph)	90	160	160	500	470	50
Future Volume (vph)	90	160	160	500	470	50
Peak Hour Factor	0.76	0.76	0.95	0.95	0.74	0.74
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	329	0	0	694	703	0
Turn Type	Prot		D.P+P	NA	NA	
Protected Phases	4		1	12	2	
Permitted Phases			2			
Detector Phase	4		1	12	2	
Switch Phase						
Minimum Initial (s)	9.0		4.0		15.0	
Minimum Split (s)	17.0		8.0		20.6	
Total Split (s)	29.0		12.0		45.6	
Total Split (%)	33.5%		13.9%		52.7%	
Yellow Time (s)	3.0		3.0		3.9	
All-Red Time (s)	1.0		1.0		1.7	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	4.0				5.6	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		Max		Min	
v/c Ratio	0.77			0.97	0.65	
Control Delay	32.1			41.5	17.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	32.1			41.5	17.6	
Queue Length 50th (ft)	101			122	219	
Queue Length 95th (ft)	140			#476	300	
Internal Link Dist (ft)	505			2424	2056	
Turn Bay Length (ft)						
Base Capacity (vph)	650			713	1084	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.51			0.97	0.65	

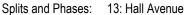
Cycle Length: 86.6
Actuated Cycle Length: 76.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.





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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			र्स	î,		
Fraffic Volume (vph)	90	160	160	500	470	50	
uture Volume (vph)	90	160	160	500	470	50	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	15	15	16	15	16	16	
Grade (%)	7%			-1%	2%		
Total Lost time (s)	4.0			4.0	5.6		
Lane Util. Factor	1.00			1.00	1.00		
Frt	0.91			1.00	0.99		
Flt Protected	0.98			0.99	1.00		
Satd. Flow (prot)	1774			1977	2063		
FIt Permitted	0.98			0.46	1.00		
Satd. Flow (perm)	1774			929	2063		
Peak-hour factor, PHF	0.76	0.76	0.95	0.95	0.74	0.74	
Adj. Flow (vph)	118	211	168	526	635	68	
RTOR Reduction (vph)	85	0	0	0	4	0	
Lane Group Flow (vph)	244	0	0	694	699	0	
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	
Turn Type	Prot		D.P+P	NA	NA		
Protected Phases	4		1	12	2		
Permitted Phases			2				
Actuated Green, G (s)	14.9			48.2	40.2		
Effective Green, g (s)	14.9			48.2	40.2		
Actuated g/C Ratio	0.19			0.63	0.52		
Clearance Time (s)	4.0				5.6		
Vehicle Extension (s)	2.0				2.5		
Lane Grp Cap (vph)	344			693	1081		
v/s Ratio Prot	c0.14			c0.10	0.34		
v/s Ratio Perm				c0.52			
v/c Ratio	0.71			1.00	0.65		
Uniform Delay, d1	28.9			14.2	13.1		
Progression Factor	1.00			1.00	1.00		
Incremental Delay, d2	5.7			34.5	1.2		
Delay (s)	34.5			48.8	14.3		
Level of Service	C			D	B		
Approach Delay (s)	34.5			48.8	14.3		
Approach LOS	С			D	В		
Intersection Summary							
HCM 2000 Control Delay			32.0	H	CM 2000	Level of Service	 С
HCM 2000 Volume to Capa	acity ratio		0.93				
Actuated Cycle Length (s)			76.7		um of lost		13.6
Intersection Capacity Utiliza	ation		89.1%	IC	U Level c	f Service	Е
Analysis Period (min)			15				
Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7		4			4	
Traffic Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Future Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Peak Hour Factor	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	281	0	0	268	73	0	1067	0	0	757	0
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Detector Phase	4	4		5	5	5	2	2		2	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0		20.0	20.0	
Minimum Split (s)	12.8	12.8		13.6	13.6	13.6	26.6	26.6		26.6	26.6	
Total Split (s)	22.2	22.2		25.0	25.0	25.0	72.8	72.8		72.8	72.8	
Total Split (%)	18.5%	18.5%		20.8%	20.8%	20.8%	60.7%	60.7%		60.7%	60.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.4	4.4		4.4	4.4	
All-Red Time (s)	2.8	2.8		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.8			6.6	6.6		6.6			6.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
v/c Ratio		1.10			1.06	0.25		1.05			0.72	
Control Delay		128.4			123.0	9.4		69.3			24.7	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		128.4			123.0	9.4		69.3			24.7	
Queue Length 50th (ft)		~228			~228	0		~895			415	
Queue Length 95th (ft)		172			#346	26		#1154			479	
Internal Link Dist (ft)		382			419			1172			2424	
Turn Bay Length (ft)						50						
Base Capacity (vph)		256			252	293		1016			1058	
Starvation Cap Reductn		0			0	0		0			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		1.10			1.06	0.25		1.05			0.72	_

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 14: Gypsy Lane/Green Road



VHB

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7		4			4	
Traffic Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Future Volume (vph)	30	60	70	150	70	60	50	690	220	30	540	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	10	8	10	10	16	16	16	16	16	16
Grade (%)		2%			4%			3%			-4%	
Total Lost time (s)		5.8			6.6	6.6		6.6			6.6	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.94			1.00	0.85		0.97			0.99	
FIt Protected		0.99			0.97	1.00		1.00			1.00	
Satd. Flow (prot)		1702			1648	1448		1971			2104	
Flt Permitted		0.99			0.97	1.00		0.92			0.91	
Satd. Flow (perm)		1702			1648	1448		1826			1920	
Peak-hour factor, PHF	0.57	0.57	0.57	0.82	0.82	0.82	0.90	0.90	0.90	0.82	0.82	0.82
Adj. Flow (vph)	53	105	123	183	85	73	56	767	244	37	659	61
RTOR Reduction (vph)	0	23	0	0	0	62	0	9	0	0	0	0
Lane Group Flow (vph)	0	258	0	0	268	11	0	1058	0	0	757	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		5	5			2			2	
Permitted Phases						5	2			2		
Actuated Green, G (s)		16.4			18.4	18.4		66.2			66.2	
Effective Green, g (s)		16.4			18.4	18.4		66.2			66.2	
Actuated g/C Ratio		0.14			0.15	0.15		0.55			0.55	
Clearance Time (s)		5.8			6.6	6.6		6.6			6.6	
Vehicle Extension (s)		2.0			2.0	2.0		2.5			2.5	
Lane Grp Cap (vph)		232			252	222		1007			1059	
v/s Ratio Prot		c0.15			c0.16							
v/s Ratio Perm						0.01		c0.58			0.39	
v/c Ratio		1.11			1.06	0.05		1.05			0.71	
Uniform Delay, d1		51.8			50.8	43.3		26.9			19.9	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		92.0			74.5	0.0		42.6			2.2	
Delay (s)		143.8			125.3	43.4		69.5			22.1	
Level of Service		F			F	D		E			C	
Approach Delay (s) Approach LOS		143.8 F			107.7 F			69.5 E			22.1 C	
Intersection Summary								_				
HCM 2000 Control Delay			68.7	Н	CM 2000	Level of	Service		Е			
HCM 2000 Volume to Capacity	v ratio		1.06	11	CIVI 2000	LCVGI OI V	JOI VICE					
Actuated Cycle Length (s)	y railo		120.0	Si	um of lost	time (s)			19.0			
Intersection Capacity Utilizatio	n		104.4%		CU Level				19.0 G			
Analysis Period (min)			15	iC	O LOVE!	J. COI VICE			J			
c Critical Lane Group			10									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્ન	7		ની	7	ሻ	∱ ∱		7	f)	
Traffic Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Future Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	154	115	0	70	233	53	748	0	233	721	0
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Detector Phase	4	4	4	4	4	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.1	12.1	12.1	12.1	12.1	9.0	9.0	21.7		9.0	21.7	
Total Split (s)	26.0	26.0	26.0	26.0	26.0	19.0	9.0	45.0		19.0	55.0	
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	21.1%	10.0%	50.0%		21.1%	61.1%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.1		3.0	4.1	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	1.0	1.0	2.6		1.0	2.6	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
v/c Ratio		0.76	0.31		0.46	0.44	0.13	0.38		0.46	0.57	
Control Delay		58.5	5.6		42.3	12.8	1.5	2.8		7.2	12.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		58.5	5.6		42.3	12.8	1.5	2.8		7.2	12.9	
Queue Length 50th (ft)		85	0		37	46	2	21		33	227	
Queue Length 95th (ft)		117	16		69	81	m3	39		70	378	
Internal Link Dist (ft)		210			555			377			529	
Turn Bay Length (ft)						125	125			250		
Base Capacity (vph)		300	476		227	636	420	1957		607	1265	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.51	0.24		0.31	0.37	0.13	0.38		0.38	0.57	

Cycle Length: 90

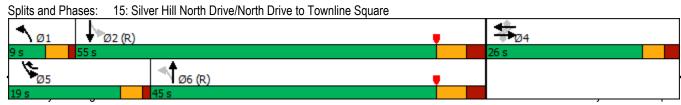
Actuated Cycle Length: 90

Offset: 14 (16%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.



VHB Page 35

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7		र्स	7	Ť	∱ î≽		7	f)	
Traffic Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Future Volume (vph)	110	10	90	50	10	200	50	660	50	200	550	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	11	12	12	11	14	15
Grade (%)		0%			5%			1%			2%	
Total Lost time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.98	
FIt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1660	1470	1638	3353		1694	1934	
FIt Permitted		0.69	1.00		0.57	1.00	0.31	1.00		0.32	1.00	
Satd. Flow (perm)		1292	1583		981	1470	538	3353		565	1934	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.95	0.95	0.95	0.86	0.86	0.86
Adj. Flow (vph)	141	13	115	58	12	233	53	695	53	233	640	81
RTOR Reduction (vph)	0	0	97	0	0	95	0	5	0	0	4	0
Lane Group Flow (vph)	0	154	18	0	70	138	53	743	0	233	717	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	6%	6%	6%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4			4	5	1	6		5	2	
Permitted Phases	4		4	4		4	6			2		
Actuated Green, G (s)		14.1	14.1		14.1	21.8	55.4	52.4		64.1	57.1	
Effective Green, g (s)		14.1	14.1		14.1	21.8	55.4	52.4		64.1	57.1	
Actuated g/C Ratio		0.16	0.16		0.16	0.24	0.62	0.58		0.71	0.63	
Clearance Time (s)		5.1	5.1		5.1	4.0	4.0	6.7		4.0	6.7	
Vehicle Extension (s)		1.0	1.0		1.0	1.0	1.0	0.2		1.0	3.0	
Lane Grp Cap (vph)		202	248		153	356	367	1952		498	1227	
v/s Ratio Prot						0.03	0.00	0.22		c0.04	c0.37	
v/s Ratio Perm		c0.12	0.01		0.07	0.06	0.08			0.29		
v/c Ratio		0.76	0.07		0.46	0.39	0.14	0.38		0.47	0.58	
Uniform Delay, d1		36.3	32.4		34.5	28.5	7.5	10.1		4.8	9.6	
Progression Factor		1.00	1.00		1.00	1.00	0.24	0.21		1.00	1.00	
Incremental Delay, d2		14.1	0.0		0.8	0.3	0.0	0.4		0.3	2.0	
Delay (s)		50.5	32.4		35.3	28.8	1.8	2.5		5.1	11.6	
Level of Service		D	С		D	С	Α	A		Α	В	
Approach Delay (s)		42.8			30.3			2.5			10.0	
Approach LOS		D			С			Α			В	
Intersection Summary												
HCM 2000 Control Delay			13.8	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	y ratio		0.63									
Actuated Cycle Length (s)			90.0			t time (s)			15.8			
Intersection Capacity Utilizatio	n		63.8%	IC	U Level	of Service	9		В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ર્ન	7	ሻ	∱ ∱		7	₽	
Traffic Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Future Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Peak Hour Factor	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	0	0	256	93	52	1062	0	42	685	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Detector Phase	4	4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	15.0	15.0		5.0		
Minimum Split (s)	12.0	12.0		12.0	12.0	12.0	22.2	22.2		9.0		
Total Split (s)	25.0	25.0		25.0	25.0	25.0	40.0	40.0		15.0		
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	44.4%	44.4%		16.7%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.1	4.1		3.0		
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	3.1	3.1		1.0		
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max		None		
v/c Ratio		0.23			0.93	0.21	0.22	0.78		0.13	0.58	
Control Delay		13.6			75.3	2.5	14.6	14.9		8.1	9.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.3	
Total Delay		13.6			75.3	2.5	14.6	14.9		8.1	10.1	
Queue Length 50th (ft)		11			141	0	8	135		7	114	
Queue Length 95th (ft)		44			#260	8	m13	#247		m16	184	
Internal Link Dist (ft)		256			244			895			377	
Turn Bay Length (ft)							125			125		
Base Capacity (vph)		386			291	460	235	1358		315	1187	
Starvation Cap Reductn		0			0	0	0	0		0	120	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.22			0.88	0.20	0.22	0.78		0.13	0.64	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 4 (4%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 75

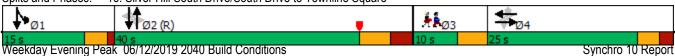
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 16: Silver Hill South Drive/South Drive to Townline Square



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Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	10.0
Total Split (s)	10.0
Total Split (%)	11%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Cummers	
Intersection Summary	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7	ሻ	∱ ∱		7	₽	
Traffic Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Future Volume (vph)	10	10	50	210	10	80	50	670	360	40	620	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	12	12	11	12	12	11	14	14
Grade (%)		1%			4%			2%			-2%	
Total Lost time (s)		5.0			5.0	5.0	7.2	7.2		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frt		0.90			1.00	0.85	1.00	0.95		1.00	0.99	
FIt Protected		0.99			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1624			1742	1552	1645	3225		1711	1973	
FIt Permitted		0.94			0.72	1.00	0.34	1.00		0.13	1.00	
Satd. Flow (perm)		1535			1312	1552	592	3225		242	1973	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	12	12	59	244	12	93	52	691	371	42	653	32
RTOR Reduction (vph)	0	47	0	0	0	73	0	76	0	0	2	0
Lane Group Flow (vph)	0	36	0	0	256	20	52	986	0	42	683	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Actuated Green, G (s)		18.9			18.9	18.9	35.0	35.0		46.1	50.1	
Effective Green, g (s)		18.9			18.9	18.9	35.0	35.0		46.1	50.1	
Actuated g/C Ratio		0.21			0.21	0.21	0.39	0.39		0.51	0.56	
Clearance Time (s)		5.0			5.0	5.0	7.2	7.2		4.0		
Vehicle Extension (s)		1.0			1.0	1.0	0.2	0.2		1.5		
Lane Grp Cap (vph)		322			275	325	230	1254		305	1098	
v/s Ratio Prot								c0.31		0.02	c0.35	
v/s Ratio Perm		0.02			c0.20	0.01	0.09			0.05		
v/c Ratio		0.11			0.93	0.06	0.23	0.79		0.14	0.62	
Uniform Delay, d1		28.8			34.9	28.4	18.4	24.2		12.9	13.5	
Progression Factor		1.00			1.00	1.00	0.63	0.52		0.82	0.65	
Incremental Delay, d2		0.1			35.8	0.0	1.4	3.2		0.1	0.7	
Delay (s)		28.8			70.7	28.5	13.0	15.8		10.7	9.5	
Level of Service		С			E	С	В	В		В	Α	
Approach Delay (s)		28.8			59.5			15.6			9.6	
Approach LOS		С			E			В			Α	
Intersection Summary												
HCM 2000 Control Delay			20.9	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacity	y ratio		0.76									
Actuated Cycle Length (s)			90.0		um of lost				20.2			
Intersection Capacity Utilizatio	n		70.5%	IC	U Level	of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ની	7		€ 1Ъ			€1 }	
Traffic Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Future Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Peak Hour Factor	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	130	72	0	1314	0	0	1044	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Detector Phase	4	4		4	4	4	2	2		1	12	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	15.0	15.0		7.0		
Minimum Split (s)	11.0	11.0		11.0	11.0	11.0	21.0	21.0		10.1		
Total Split (s)	26.0	26.0		26.0	26.0	26.0	53.8	53.8		10.2		
Total Split (%)	28.9%	28.9%		28.9%	28.9%	28.9%	59.8%	59.8%		11.3%		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.0	4.0		3.0		
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	2.0		0.1		
Lost Time Adjust (s)		0.0			0.0	0.0		0.0				
Total Lost Time (s)		4.0			4.0	4.0		6.0				
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	C-Min	C-Min		Max		
v/c Ratio		0.47			0.92	0.27		0.81			0.45	
Control Delay		21.8			91.7	31.6		15.5			5.1	
Queue Delay		0.0			0.0	0.0		0.2			0.0	
Total Delay		21.8			91.7	31.6		15.7			5.1	
Queue Length 50th (ft)		59			72	35		116			66	
Queue Length 95th (ft)		3			96	52		154			m121	
Internal Link Dist (ft)		256			308			396			895	
Turn Bay Length (ft)												
Base Capacity (vph)		520			182	341		1639			2339	
Starvation Cap Reductn		0			0	0		40			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.38			0.71	0.21		0.82			0.45	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 89 (99%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Driveway to Kohl's Plaza



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			र्स	7		414			र्सीक	
Traffic Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Future Volume (vph)	10	10	30	90	0	50	20	1070	80	50	890	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	10	15	15
Grade (%)		-8%			-6%			4%			-4%	
Total Lost time (s)		4.0			4.0	4.0		6.0			3.1	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frt		0.92			1.00	0.85		0.99			1.00	
FIt Protected		0.99			0.95	1.00		1.00			1.00	
Satd. Flow (prot)		2038			1562	1398		3332			3954	
FIt Permitted		0.92			0.45	1.00		0.92			0.80	
Satd. Flow (perm)		1885			746	1398		3076			3174	
Peak-hour factor, PHF	0.25	0.25	0.25	0.69	0.69	0.69	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	40	40	120	130	0	72	22	1202	90	55	978	11
RTOR Reduction (vph)	0	64	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	136	0	0	130	72	0	1308	0	0	1044	0
Heavy Vehicles (%)	0%	0%	0%	19%	19%	19%	5%	5%	5%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		D.P+P	NA	
Protected Phases		4			4			2		1	12	
Permitted Phases	4			4		4	2			2		
Actuated Green, G (s)		17.2			17.2	17.2		47.1			59.7	
Effective Green, g (s)		17.2			17.2	17.2		47.1			59.7	
Actuated g/C Ratio		0.19			0.19	0.19		0.52			0.66	
Clearance Time (s)		4.0			4.0	4.0		6.0				
Vehicle Extension (s)		2.0			2.0	2.0		3.0				
Lane Grp Cap (vph)		360			142	267		1609			2214	
v/s Ratio Prot											c0.07	
v/s Ratio Perm		0.07			c0.17	0.05		c0.43			0.25	
v/c Ratio		0.38			0.92	0.27		0.81			0.47	
Uniform Delay, d1		31.7			35.7	31.0		17.8			7.4	
Progression Factor		1.00			1.00	1.00		0.64			0.82	
Incremental Delay, d2		0.2			49.8	0.2		4.1			0.6	
Delay (s)		32.0			85.5	31.2		15.4			6.7	
Level of Service		С			F	С		В			A	
Approach Delay (s)		32.0			66.2			15.4			6.7	
Approach LOS		С			E			В			Α	
Intersection Summary												
HCM 2000 Control Delay			17.0	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capaci	ty ratio		0.78									
Actuated Cycle Length (s)			90.0		um of los				13.1			
Intersection Capacity Utilization	on		80.5%	IC	U Level	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	ካ ነላ			41	†		
Traffic Volume (vph)	250	20	20	940	750	270	
Future Volume (vph)	250	20	20	940	750	270	
Peak Hour Factor	0.97	0.97	0.85	0.85	0.92	0.92	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Shared Lane Traffic (%)	070	0 70	070	070	170	170	
Lane Group Flow (vph)	279	0	0	1130	1108	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			2	2		
Permitted Phases	•		2	_	<u>-</u>		
Detector Phase	4		2	2	2		
Switch Phase	•		_	_			
Minimum Initial (s)	9.0		15.0	15.0	15.0		
Minimum Split (s)	13.0		21.0	21.0	21.0		
Total Split (s)	21.0		69.0	69.0	69.0		
Total Split (%)	23.3%		76.7%	76.7%	76.7%		
Yellow Time (s)	3.0		4.0	4.0	4.0		
All-Red Time (s)	1.0		2.0	2.0	2.0		
Lost Time Adjust (s)	0.0			0.0	0.0		
Total Lost Time (s)	4.0			6.0	6.0		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None		C-Min	C-Min	C-Min		
v/c Ratio	0.63			0.50	0.43		
Control Delay	42.1			2.7	3.7		
Queue Delay	0.0			0.0	0.1		
Total Delay	42.1			2.7	3.8		
Queue Length 50th (ft)	76			24	80		
Queue Length 95th (ft)	111			11	122		
Internal Link Dist (ft)	408			2348	396		
Turn Bay Length (ft)	100			2010	000		
Base Capacity (vph)	632			2250	2605		
Starvation Cap Reductn	0			0	392		
Spillback Cap Reductn	0			14	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.44			0.51	0.50		
Intersection Summary							
Cycle Length: 90							
Actuated Cycle Length: 90							
Offset: 19 (21%), Reference	ed to phase	2:NBSB.	Start of \	/ellow			
Natural Cycle: 40		,					
Control Type: Actuated-Co	ordinated						
Splits and Phases: 18: R	oute 150						
4.4							
♥ Ø2 (R)							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	77			414	∱ 1≽		
Traffic Volume (vph)	250	20	20	940	750	270	
Future Volume (vph)	250	20	20	940	750	270	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	11	11	12	12	
Grade (%)	4%			4%	-4%		
Total Lost time (s)	4.0			6.0	6.0		
Lane Util. Factor	0.97			0.95	0.95		
Frt	0.99			1.00	0.96		
Flt Protected	0.96			1.00	1.00		
Satd. Flow (prot)	3314			3254	3400		
FIt Permitted	0.96			0.91	1.00		
Satd. Flow (perm)	3314			2973	3400		
Peak-hour factor, PHF	0.97	0.97	0.85	0.85	0.92	0.92	
Adj. Flow (vph)	258	21	24	1106	815	293	
RTOR Reduction (vph)	7	0	0	0	33	0	
Lane Group Flow (vph)	272	0	0	1130	1075	0	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4		0	2	2		
Permitted Phases	11.9		2	60.1	68.1		
Actuated Green, G (s)	11.9			68.1 68.1	68.1		
Effective Green, g (s) Actuated g/C Ratio	0.13			0.76	0.76		
Clearance Time (s)	4.0			6.0	6.0		
Vehicle Extension (s)	2.0			3.0	3.0		
_ane Grp Cap (vph)	438			2249	2572		
v/s Ratio Prot	c0.08			2243	0.32		
v/s Ratio Perm	60.00			c0.38	0.02		
v/c Ratio	0.62			0.50	0.42		
Uniform Delay, d1	36.9			4.3	3.9		
Progression Factor	1.00			0.43	0.90		
Incremental Delay, d2	2.0			0.7	0.5		
Delay (s)	38.9			2.5	4.0		
Level of Service	D			A	A		
Approach Delay (s)	38.9			2.5	4.0		
Approach LOS	D			Α	Α		
Intersection Summary							
HCM 2000 Control Delay			7.2	H	CM 2000	Level of Service	Α
HCM 2000 Volume to Capa	acity ratio		0.52				
Actuated Cycle Length (s)			90.0	Sı	um of lost	time (s)	10.0
Intersection Capacity Utiliz	ation		56.4%		U Level o		В
Analysis Period (min)			15				
Critical Lane Group							

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्स	7	7		7	ሻሻ	∱ ⊅		ሻ		7
Traffic Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Future Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Peak Hour Factor	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	262	88	44	74	433	1196	0	44	846	0
Turn Type		NA	pm+ov	Perm	NA	Perm	Prot	NA		Prot	NA	custom
Protected Phases	7	7	1		8		1	6		5	2	
Permitted Phases			7	8		8						6
Detector Phase	7	7	1	8	8	8	1	6		5	2	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	5.0	5.0	15.0		3.0	15.0	15.0
Minimum Split (s)	11.0	11.0	12.0	9.0	9.0	9.0	12.0	20.0		10.0	20.0	20.0
Total Split (s)	11.0	11.0	27.0	16.0	16.0	16.0	27.0	50.0		13.0	36.0	50.0
Total Split (%)	12.2%	12.2%	30.0%	17.8%	17.8%	17.8%	30.0%	55.6%		14.4%	40.0%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	4.0	1.0	1.0	1.0	4.0	2.0		4.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	C-Min
v/c Ratio		0.25	0.78	0.62	0.23	0.45	0.73	0.53		0.40	0.50	
Control Delay		43.6	46.1	57.2	38.5	45.8	49.3	5.2		59.5	17.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		43.6	46.1	57.2	38.5	45.8	49.3	5.2		59.5	17.3	
Queue Length 50th (ft)		20	91	48	23	40	139	54		22	193	
Queue Length 95th (ft)		46	126	70	40	60	m160	85		m62	292	
Internal Link Dist (ft)		371			347			564			2348	
Turn Bay Length (ft)				100		100	250			125		
Base Capacity (vph)		146	398	170	231	197	723	2264		118	1707	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.25	0.66	0.52	0.19	0.38	0.60	0.53		0.37	0.50	

Cycle Length: 90

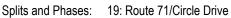
Actuated Cycle Length: 90

Offset: 46 (51%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.





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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	Ť	†	7	ሻሻ	∱ ∱		7	^	7
Traffic Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Future Volume (vph)	0	30	220	60	30	50	420	1040	120	40	770	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	11	12	12	11	12	12
Grade (%)		0%	_		5%			0%		_	-4%	
Total Lost time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1881	1599	1652	1739	1478	3255	3417		1728	3575	
Flt Permitted		1.00 1881	1.00 1599	0.73 1276	1.00 1739	1.00 1478	0.95	1.00 3417		0.95 1728	1.00 3575	
Satd. Flow (perm)	0.04						3255		0.07			0.04
Peak-hour factor, PHF	0.84	0.84	0.84	0.68	0.68	0.68	0.97	0.97	0.97	0.91	0.91	0.91
Adj. Flow (vph)	0	36	262	88 0	44	74	433	1072	124 0	44	846	0
RTOR Reduction (vph)	0	36	0 262	88	44	0 74	0 433	8 1188	0	44	846	0
Lane Group Flow (vph) Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	433	4%	4%	3%	3%	3%
	1 /0	NA		Perm	NA		Prot	NA	4 /0	Prot	NA	
Turn Type Protected Phases	7	NA 7	pm+ov 1	Pellii	NA 8	Perm	1	NA 6		5	2	custom
Permitted Phases	1	I	7	8	0	8	ı	U		5	2	6
Actuated Green, G (s)		4.2	20.6	8.8	8.8	8.8	16.4	53.3		3.7	40.6	U
Effective Green, g (s)		4.2	20.6	8.8	8.8	8.8	16.4	53.3		3.7	40.6	
Actuated g/C Ratio		0.05	0.23	0.10	0.10	0.10	0.18	0.59		0.04	0.45	
Clearance Time (s)		4.0	7.0	4.0	4.0	4.0	7.0	5.0		7.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.5	2.5	2.5	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)		87	365	124	170	144	593	2023		71	1612	
v/s Ratio Prot		0.02	c0.13		0.03		c0.13	c0.35		0.03	0.24	
v/s Ratio Perm			0.03	c0.07		0.05						
v/c Ratio		0.41	0.72	0.71	0.26	0.51	0.73	0.59		0.62	0.52	
Uniform Delay, d1		41.7	32.0	39.4	37.6	38.6	34.7	11.5		42.5	17.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.29	0.37		1.22	0.84	
Incremental Delay, d2		1.2	5.5	15.8	0.6	2.3	2.6	0.8		10.1	1.1	
Delay (s)		42.9	37.5	55.2	38.2	40.9	47.3	5.1		61.8	16.1	
Level of Service		D	D	Е	D	D	D	Α		Е	В	
Approach Delay (s)		38.2			46.4			16.3			18.3	
Approach LOS		D			D			В			В	
Intersection Summary												
HCM 2000 Control Delay			21.1	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capacit	ty ratio		0.66									
Actuated Cycle Length (s)			90.0		um of los				20.0			
Intersection Capacity Utilization	on		59.2%	IC	CU Level	of Service			В			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	र्स	7	- ኝ	सी	7	ሻሻ	^	7	ሻሻ		7
Traffic Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Future Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Peak Hour Factor	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)	44%			44%								
Lane Group Flow (vph)	60	62	108	118	119	53	120	1554	207	133	1060	48
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	5 7	4	4	1	5	2	24	1	6	6 7
Permitted Phases						4						
Detector Phase	7	7	5 7	4	4	1	5	2	24	1	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	5.0	5.0	15.0		5.0	15.0	
Minimum Split (s)	12.0	12.0		12.0	12.0	9.0	9.0	20.0		9.0	20.0	
Total Split (s)	12.0	12.0		15.0	15.0	9.0	11.0	54.0		9.0	52.0	
Total Split (%)	13.3%	13.3%		16.7%	16.7%	10.0%	12.2%	60.0%		10.0%	57.8%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Lead/Lag						Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	
v/c Ratio	0.48	0.48	0.38	0.72	0.71	0.15	0.48	0.79	0.18	0.68	0.53	0.05
Control Delay	52.9	53.2	35.2	63.3	62.6	3.0	58.0	9.1	0.3	58.8	12.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	53.2	35.2	63.3	62.6	3.0	58.0	9.1	0.3	58.8	12.4	1.4
Queue Length 50th (ft)	34	36	53	68	69	0	38	54	0	40	111	0
Queue Length 95th (ft)	62	64	81	107	106	5	m58	110	m0	m#71	175	m10
Internal Link Dist (ft)		463			264			832			564	
Turn Bay Length (ft)	150		150				250			200		200
Base Capacity (vph)	126	128	282	178	181	342	258	1972	1190	197	1996	1046
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.48	0.38	0.66	0.66	0.15	0.47	0.79	0.17	0.68	0.53	0.05

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Home Depot Dr./Neal Road



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	र्स	7	ሻ	4	7	ሻሻ	^	7	ሻሻ	^	7
Traffic Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Future Volume (vph)	80	10	80	160	20	40	110	1430	190	110	880	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	12	12	12
Grade (%)		0%			-2%			-2%			-2%	
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1594	1615	1501	1610	1631	1516	3319	3422	1531	3467	3575	1599
Flt Permitted	0.95	0.96	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1594	1615	1501	1610	1631	1516	3319	3422	1531	3467	3575	1599
Peak-hour factor, PHF	0.74	0.74	0.74	0.76	0.76	0.76	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	108	14	108	211	26	53	120	1554	207	133	1060	48
RTOR Reduction (vph)	0	0	0	0	0	45	0	0	57	0	0	19
Lane Group Flow (vph)	60	62	108	118	119	8	120	1554	150	133	1060	29
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	Split	NA	pt+ov	Split	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pt+ov
Protected Phases	7	7	57	4	4	1	5	2	2 4	1	6	6 7
Permitted Phases						4						
Actuated Green, G (s)	5.7	5.7	17.4	9.3	9.3	14.4	6.7	50.9	65.2	5.1	49.3	55.0
Effective Green, g (s)	5.7	5.7	12.4	9.3	9.3	14.4	6.7	50.9	65.2	5.1	49.3	55.0
Actuated g/C Ratio	0.06	0.06	0.14	0.10	0.10	0.16	0.07	0.57	0.72	0.06	0.55	0.61
Clearance Time (s)	5.0	5.0		5.0	5.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	0.2		2.0	0.2	
Lane Grp Cap (vph)	100	102	206	166	168	242	247	1935	1109	196	1958	977
v/s Ratio Prot	0.04	c0.04	0.07	c0.07	0.07	0.00	0.04	c0.45	0.10	c0.04	0.30	0.02
v/s Ratio Perm						0.00						
v/c Ratio	0.60	0.61	0.52	0.71	0.71	0.04	0.49	0.80	0.14	0.68	0.54	0.03
Uniform Delay, d1	41.0	41.1	36.1	39.0	39.0	31.9	40.0	15.6	3.8	41.6	13.1	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.31	0.40	0.00	1.03	0.85	2.75
Incremental Delay, d2	6.3	6.8	1.1	11.3	10.6	0.0	0.4	2.9	0.0	6.2	0.9	0.0
Delay (s)	47.4	47.9	37.2	50.3	49.6	32.0	53.0	9.0	0.0	49.0	12.1	19.1
Level of Service	D	D	D	D	D	С	D	Α	Α	D	В	В
Approach Delay (s)		42.7			46.7			10.8			16.3	
Approach LOS		D			D			В			В	
Intersection Summary												
HCM 2000 Control Delay			17.6	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capaci												
Actuated Cycle Length (s)	•			Sı	um of los	t time (s)			19.0			
Intersection Capacity Utilization						of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	f)			र्स	7	ሻ	^	7	- ኝ	∱ ∱	
Traffic Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Future Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Peak Hour Factor	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	30	0	0	244	171	22	1822	311	76	1317	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			2			
Detector Phase	4	4		4	4	4	1	6	2	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5	11.5	9.5	20.0	20.0	9.5	20.0	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	9.6	47.0	50.4	13.0	50.4	
Total Split (%)	33.3%	33.3%		33.3%	33.3%	33.3%	10.7%	52.2%	56.0%	14.4%	56.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	2.0	2.0	1.5	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
v/c Ratio	0.36	0.06			0.81	0.38	0.22	0.66	0.29	0.53	0.61	
Control Delay	33.9	0.3			53.5	11.6	53.9	16.7	1.9	44.8	12.4	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.1	0.0	0.0	0.0	
Total Delay	33.9	0.3			53.5	11.6	53.9	16.9	1.9	44.8	12.4	
Queue Length 50th (ft)	29	0			131	22	12	355	6	42	270	
Queue Length 95th (ft)	20	0			181	58	m24	m406	m20	m70	251	
Internal Link Dist (ft)		119			412			332			832	
Turn Bay Length (ft)							200		200	250		
Base Capacity (vph)	215	550			381	540	101	2742	1075	164	2143	
Starvation Cap Reductn	0	0			0	0	0	196	0	0	0	
Spillback Cap Reductn	0	0			0	0	0	0	0	0	10	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.05			0.64	0.32	0.22	0.72	0.29	0.46	0.62	

Cycle Length: 90

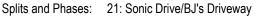
Actuated Cycle Length: 90

Offset: 30 (33%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.





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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	₽			र्स	7	7	ተተተ	7	Ť	∱ î≽	
Traffic Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Future Volume (vph)	20	0	10	190	10	140	20	1640	280	60	1030	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		0%			-4%			-2%			0%	
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91	1.00	1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
FIt Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1568			1796	1599	1711	4917	1531	1711	3416	
FIt Permitted	0.41	1.00			0.71	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	760	1568			1345	1599	1711	4917	1531	1711	3416	
Peak-hour factor, PHF	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Adj. Flow (vph)	61	0	30	232	12	171	22	1822	311	76	1304	13
RTOR Reduction (vph)	0	23	0	0	0	95	0	0	125	0	1	0
Lane Group Flow (vph)	61	7	0	0	244	76	22	1822	186	76	1316	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	custom	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			2			
Actuated Green, G (s)	20.1	20.1			20.1	20.1	2.2	49.3	53.7	6.6	53.7	
Effective Green, g (s)	20.1	20.1			20.1	20.1	2.2	49.3	53.7	6.6	53.7	
Actuated g/C Ratio	0.22	0.22			0.22	0.22	0.02	0.55	0.60	0.07	0.60	
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	5.0	5.0	4.5	5.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	0.2	0.2	2.0	0.2	
Lane Grp Cap (vph)	169	350			300	357	41	2693	913	125	2038	
v/s Ratio Prot		0.00					0.01	0.37		c0.04	c0.39	
v/s Ratio Perm	0.08				c0.18	0.05			0.12			
v/c Ratio	0.36	0.02			0.81	0.21	0.54	0.68	0.20	0.61	0.65	
Uniform Delay, d1	29.5	27.3			33.2	28.5	43.4	14.6	8.3	40.4	11.9	
Progression Factor	1.00	1.00			1.00	1.00	1.23	0.97	0.85	0.85	0.89	
Incremental Delay, d2	0.5	0.0			14.6	0.1	5.2	1.1	0.4	4.8	1.4	
Delay (s)	30.0	27.3			47.8	28.6	58.5	15.3	7.5	39.2	12.0	
Level of Service	С	С			D	С	E	В	Α	D	В	
Approach Delay (s)		29.1			39.9			14.6			13.5	
Approach LOS		С			D			В			В	
Intersection Summary												
HCM 2000 Control Delay			17.1	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capac	ity ratio		0.70									
Actuated Cycle Length (s)			90.0		um of lost				14.0			
Intersection Capacity Utilizat	ion		65.2%	IC	U Level	of Service			С			
Analysis Period (min)			15									
c Critical Lane Group												

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				ሻሻ		77	ሻ	^ ^			∱ ∱	
Traffic Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Future Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	565	0	641	435	1588	0	0	1500	0
Turn Type				Prot		Prot	D.P+P	NA			NA	
Protected Phases				4		4	1	12			2	
Permitted Phases							2					
Detector Phase				4		4	1	12			2	
Switch Phase												
Minimum Initial (s)				7.0		7.0	5.0				15.0	
Minimum Split (s)				13.8		13.8	8.5				21.5	
Total Split (s)				25.0		25.0	21.0				44.0	
Total Split (%)				27.8%		27.8%	23.3%				48.9%	
Yellow Time (s)				4.0		4.0	3.0				3.0	
All-Red Time (s)				2.8		2.8	0.5				3.5	
Lost Time Adjust (s)				0.0		0.0	0.0				0.0	
Total Lost Time (s)				6.8		6.8	3.5				6.5	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None		None	Min				C-Max	
v/c Ratio				0.80		1.00	1.02	0.46			1.02	
Control Delay				44.3		69.1	41.2	7.3			45.0	
Queue Delay				0.0		3.9	0.0	0.1			7.0	
Total Delay				44.3		73.0	41.2	7.4			52.0	
Queue Length 50th (ft)				158		~185	~193	157			~81	
Queue Length 95th (ft)				#233		#314	m146	m131			#175	
Internal Link Dist (ft)		220			369			537			332	
Turn Bay Length (ft)				200		200	120					
Base Capacity (vph)				704		639	427	3424			1475	
Starvation Cap Reductn				0		0	0	0			30	
Spillback Cap Reductn				0		9	0	560			0	
Storage Cap Reductn				0		0	0	0			0	
Reduced v/c Ratio				0.80		1.02	1.02	0.55			1.04	

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 30 (33%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				ሻሻ		77	Ĭ	ተተተ			∱ β	
Traffic Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Future Volume (vph)	0	0	0	520	0	590	370	1350	0	0	860	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	12	12	12	12	12	12
Grade (%)		-5%			-1%			-1%			-2%	
Total Lost time (s)				6.8		6.8	3.5	3.5			6.5	
Lane Util. Factor				0.97		0.88	1.00	0.91			0.95	
Frt				1.00		0.85	1.00	1.00			0.95	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3484		2828	1744	5012			3413	
FIt Permitted				0.95		1.00	0.11	1.00			1.00	
Satd. Flow (perm)				3484		2828	196	5012			3413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	565	0	641	435	1588	0	0	1049	451
RTOR Reduction (vph)	0	0	0	0	0	68	0	0	0	0	53	0
Lane Group Flow (vph)	0	0	0	565	0	573	435	1588	0	0	1447	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Turn Type				Prot		Prot	D.P+P	NA			NA	
Protected Phases				4		4	1	12			2	
Permitted Phases							2					
Actuated Green, G (s)				18.2		18.2	55.0	58.5			37.5	
Effective Green, g (s)				18.2		18.2	55.0	58.5			37.5	
Actuated g/C Ratio				0.20		0.20	0.61	0.65			0.42	
Clearance Time (s)				6.8		6.8	3.5				6.5	
Vehicle Extension (s)				1.5		1.5	2.0				0.2	
Lane Grp Cap (vph)				704		571	420	3257			1422	
v/s Ratio Prot				0.16		c0.20	c0.20	0.32			0.42	
v/s Ratio Perm							c0.43					
v/c Ratio				0.80		1.00	1.04	0.49			1.02	
Uniform Delay, d1				34.2		35.9	27.3	8.1			26.2	
Progression Factor				1.00		1.00	0.83	1.09			0.72	
Incremental Delay, d2				6.2		38.6	23.7	0.0			25.8	
Delay (s)				40.4		74.5	46.3	8.8			44.7	
Level of Service				D		E	D	Α			D	
Approach Delay (s)		0.0			58.5			16.8			44.7	
Approach LOS		Α			E			В			D	
Intersection Summary												
HCM 2000 Control Delay			36.3	H	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capacity	ratio		1.03									
Actuated Cycle Length (s)			90.0		um of lost				16.8			
Intersection Capacity Utilization	1		83.0%	IC	U Level	of Service	Э		Е			
Analysis Period (min)			15									
c Critical Lane Group												

	•	•	†	/	-	ļ			
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4	
Lane Configurations	*	7	↑ 1≽		ሻ	^			
Traffic Volume (vph)	250	400	1320	740	300	1080			
Future Volume (vph)	250	400	1320	740	300	1080			
Peak Hour Factor	0.78	0.78	0.90	0.90	0.81	0.81			
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	321	513	2289	0	370	1333			
Turn Type	Prot	pm+ov	NA		custom	NA			
Protected Phases	5	1	2 4		1	12	2	4	
Permitted Phases		5			2				
Detector Phase	5	1	2 4		1	12			
Switch Phase									
Minimum Initial (s)	7.0	5.0			5.0		15.0	7.0	
Minimum Split (s)	11.0	8.1			8.1		20.0	11.0	
Total Split (s)	17.0	15.0			15.0		47.0	11.0	
Total Split (%)	18.9%	16.7%			16.7%		52%	12%	
Yellow Time (s)	3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	1.0	0.1			0.1		2.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0				
Total Lost Time (s)	4.0	3.1			3.1				
Lead/Lag		Lead			Lead		Lag		
Lead-Lag Optimize?		Yes			Yes		Yes		
Recall Mode	None	None			None		C-Max	None	
v/c Ratio	1.27	0.97	1.22		1.20	0.60			
Control Delay	182.9	62.2	125.1		129.3	2.2			
Queue Delay	1.1	0.0	0.1		0.0	0.1			
Total Delay	184.0	62.2	125.3		129.3	2.4			
Queue Length 50th (ft)	~232	268	~852		~201	35			
Queue Length 95th (ft)	#321	#367	#1002		m#239	m35			
Internal Link Dist (ft)	401		143			537			
Turn Bay Length (ft)	175				175				
Base Capacity (vph)	253	529	1869		309	2238			
Starvation Cap Reductn	0	0	93		0	199			
Spillback Cap Reductn	19	0	0		0	32			
Storage Cap Reductn	0	0	0		0	0			
Reduced v/c Ratio	1.37	0.97	1.29		1.20	0.65			

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 68 (76%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 120

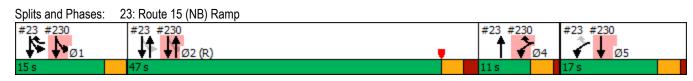
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



	•	•	†	/	\	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	ሻ	7	∱ }		ሻ	^			
Traffic Volume (vph)	250	400	1320	740	300	1080			
Future Volume (vph)	250	400	1320	740	300	1080			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	11	11	11	11	11	11			
Grade (%)	-1%		0%			0%			
Total Lost time (s)	4.0	3.1	5.0		3.1	3.1			
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95			
Frt	1.00	0.85	0.95		1.00	1.00			
Flt Protected	0.95	1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1754	1569	3175		1711	3421			
Flt Permitted	0.95	1.00	1.00		0.10	1.00			
Satd. Flow (perm)	1754	1569	3175		171	3421			
Peak-hour factor, PHF	0.78	0.78	0.90	0.90	0.81	0.81			
Adj. Flow (vph)	321	513	1467	822	370	1333			
RTOR Reduction (vph)	0	27	0	0	0	0			
Lane Group Flow (vph)	321	486	2289	0	370	1333			
Heavy Vehicles (%)	0%	0%	4%	4%	2%	2%			
Turn Type	Prot	pm+ov	NA		custom	NA			
Protected Phases	5	1	24		1	12			
Permitted Phases		5			2				
Actuated Green, G (s)	13.0	24.9	54.0		53.9	57.0			
Effective Green, g (s)	13.0	24.9	54.0		53.9	57.0			
Actuated g/C Ratio	0.14	0.28	0.60		0.60	0.63			
Clearance Time (s)	4.0	3.1			3.1				
Vehicle Extension (s)	3.0	3.0			3.0				
Lane Grp Cap (vph)	253	434	1905		306	2166			
v/s Ratio Prot	c0.18	0.15	c0.72		c0.16	0.39			
v/s Ratio Perm	- 55.10	0.16			0.56	-0.00			
v/c Ratio	1.27	1.12	1.20		1.21	0.62			
Uniform Delay, d1	38.5	32.5	18.0		27.5	9.9			
Progression Factor	1.00	1.00	0.82		1.15	0.19			
Incremental Delay, d2	148.3	79.6	96.0		106.9	0.2			
Delay (s)	186.8	112.2	110.7		138.7	2.1			
Level of Service	F	F	F		F	A			
Approach Delay (s)	140.9	•	110.7			31.8			
Approach LOS	F		F			C			
Intersection Summary									
HCM 2000 Control Delay			88.1	Н	ICM 2000	Level of Service	9	F	
HCM 2000 Volume to Capac	city ratio		1.30		2 2000		- 	•	
Actuated Cycle Length (s)		90.0	S	um of lost	time (s)		16.1		
Intersection Capacity Utilizat		101.5%		CU Level			G		
Analysis Period (min)			15			2030			
c Critical Lane Group									

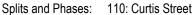
	•	•	†	/	\	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		∱ ⊅			414
Traffic Volume (vph)	0	230	780	10	150	690
Future Volume (vph)	0	230	780	10	150	690
Peak Hour Factor	0.68	0.68	0.83	0.83	0.80	0.80
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	338	0	952	0	0	1051
Turn Type	Perm		NA		D.P+P	NA
Protected Phases			2		4	2 4
Permitted Phases	1				2	
Detector Phase	1		2		4	2 4
Switch Phase						
Minimum Initial (s)	6.0		15.0		6.0	
Minimum Split (s)	11.2		21.0		11.2	
Total Split (s)	29.0		85.0		26.0	
Total Split (%)	20.7%		60.7%		18.6%	
Yellow Time (s)	3.7		4.5		3.7	
All-Red Time (s)	1.5		1.5		1.5	
Lost Time Adjust (s)	0.0		0.0			
Total Lost Time (s)	5.2		6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Max		None	
v/c Ratio	0.60		0.46			0.67
Control Delay	11.2		16.8			5.1
Queue Delay	0.2		0.1			0.3
Total Delay	11.4		16.9			5.4
Queue Length 50th (ft)	11		256			64
Queue Length 95th (ft)	9		284			18
Internal Link Dist (ft)	590		1933			99
Turn Bay Length (ft)						
Base Capacity (vph)	582		2082			1693
Starvation Cap Reductn	0		0			194
Spillback Cap Reductn	24		251			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.61		0.52			0.70

Cycle Length: 140
Actuated Cycle Length: 140

Offset: 95 (68%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated





	•	•	†	~	\	↓	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	W		ħβ			4↑	
Traffic Volume (vph)	0	230	780	10	150	690	
Future Volume (vph)	0	230	780	10	150	690	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	16	16	12	12	12	12	
Grade (%)	2%		0%			4%	
Total Lost time (s)	5.2		6.0			6.0	
Lane Util. Factor	1.00		0.95			0.95	
Frt	0.86		1.00			1.00	
Flt Protected	1.00		1.00			0.99	
Satd. Flow (prot)	1808		3432			3404	
Fit Permitted	1.00		1.00			0.58	
Satd. Flow (perm)	1808		3432	• • • •	• • •	1989	
Peak-hour factor, PHF	0.68	0.68	0.83	0.83	0.80	0.80	
Adj. Flow (vph)	0	338	940	12	188	862	
RTOR Reduction (vph)	271	0	0	0	0	0	
Lane Group Flow (vph)	67	0	952	0	0	1051	
Heavy Vehicles (%)	2%	2%	5%	5%	3%	3%	
Turn Type	Perm		NA		D.P+P	NA	
Protected Phases	4		2		4	2 4	
Permitted Phases	1		04.0		2	404.0	
Actuated Green, G (s)	22.6		84.9			101.0	
Effective Green, g (s)	22.6		84.9			101.0	
Actuated g/C Ratio	0.16 5.2		0.61 6.0			0.72	
Clearance Time (s) Vehicle Extension (s)	2.0		0.2				
						1507	
Lane Grp Cap (vph) v/s Ratio Prot	291		2081 0.28			1597 c0.08	
v/s Ratio Perm	c0.04		0.20			c0.40	
v/c Ratio	0.23		0.46			0.66	
Uniform Delay, d1	51.1		15.0			10.3	
Progression Factor	1.00		1.00			0.32	
Incremental Delay, d2	0.1		0.7			0.32	
Delay (s)	51.3		15.7			4.0	
Level of Service	31.3 D		15.7 B			4.0 A	
Approach Delay (s)	51.3		15.7			4.0	
Approach LOS	D D		В			A.0	
Intersection Summary							
HCM 2000 Control Delay			15.6	Н	CM 2000	Level of Service	
HCM 2000 Volume to Capa	acity ratio		0.58				
Actuated Cycle Length (s)			140.0		um of lost		
Intersection Capacity Utilization	ation		73.9%	IC	CU Level of	of Service	
Analysis Period (min)			15				
c Critical Lane Group							

	•	•	†	/	>	ļ		
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø5	
Lane Configurations	ሻ	77	∱ ∱		ሻ	^		
Traffic Volume (vph)	30	60	700	20	380	710		
Future Volume (vph)	30	60	700	20	380	710		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	33	65	783	0	413	772		
Turn Type	Prot	Prot	NA		D.P+P	NA		
Protected Phases	4	4	2		1	125	5	
Permitted Phases					2			
Detector Phase	4	4	2		1	125		
Switch Phase								
Minimum Initial (s)	7.0	7.0	15.0		5.0		7.0	
Minimum Split (s)	11.0	11.0	20.0		8.1		11.0	
Total Split (s)	11.0	11.0	47.0		15.0		17.0	
Total Split (%)	12.2%	12.2%	52.2%		16.7%		19%	
Yellow Time (s)	3.0	3.0	3.0		3.0		3.0	
All-Red Time (s)	1.0	1.0	2.0		0.1		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0			
Total Lost Time (s)	4.0	4.0	5.0		3.1			
Lead/Lag			Lag		Lead			
Lead-Lag Optimize?			Yes		Yes			
Recall Mode	None	None	C-Max		None		None	
v/c Ratio	0.24	0.30	0.48		0.85	0.26		
Control Delay	43.7	43.2	17.6		22.5	0.3		
Queue Delay	0.0	0.0	0.2		1.7	0.4		
Total Delay	43.7	43.2	17.8		24.2	0.7		
Queue Length 50th (ft)	18	20	153		56	2		
Queue Length 95th (ft)	47	42	203		m#161	m9		
Internal Link Dist (ft)	551		260			143		
Turn Bay Length (ft)					90			
Base Capacity (vph)	137	216	1647		485	2984		
Starvation Cap Reductn	0	0	0		17	1541		
Spillback Cap Reductn	0	0	274		0	0		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.24	0.30	0.57		0.88	0.53		

Cycle Length: 90 Actuated Cycle Length: 90

Offset: 68 (76%), Referenced to phase 2:NBSB, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 230: Yale Avenue



	•	•	†	/	\	↓			
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations	*	77	∱ %		ሻ	† †			_
Traffic Volume (vph)	30	60	700	20	380	710			
Future Volume (vph)	30	60	700	20	380	710			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	5.0		3.1	3.1			
Lane Util. Factor	1.00	0.88	0.95		1.00	0.95			
Frt	1.00	0.85	1.00		1.00	1.00			
Flt Protected	0.95	1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	2787	3524		1770	3539			
FIt Permitted	0.95	1.00	1.00		0.28	1.00			
Satd. Flow (perm)	1770	2787	3524		516	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	33	65	761	22	413	772			
RTOR Reduction (vph)	0	0	2	0	0	0			
Lane Group Flow (vph)	33	65	781	0	413	772			
Turn Type	Prot	Prot	NA		D.P+P	NA			
Protected Phases	4	4	2		1	125			
Permitted Phases					2				
Actuated Green, G (s)	7.0	7.0	42.0		53.9	74.0			
Effective Green, g (s)	7.0	7.0	42.0		53.9	70.0			
Actuated g/C Ratio	0.08	0.08	0.47		0.60	0.78			
Clearance Time (s)	4.0	4.0	5.0		3.1				
Vehicle Extension (s)	3.0	3.0	3.0		3.0				
Lane Grp Cap (vph)	137	216	1644		474	2752			
v/s Ratio Prot	0.02	c0.02	0.22		c0.12	c0.22			
v/s Ratio Perm					c0.41				
v/c Ratio	0.24	0.30	0.47		0.87	0.28			
Uniform Delay, d1	39.0	39.2	16.4		10.7	2.8			
Progression Factor	1.00	1.00	1.00		1.06	0.14			
Incremental Delay, d2	0.9	0.8	1.0		11.4	0.0			
Delay (s)	39.9	40.0	17.4		22.8	0.4			
Level of Service	D	D	В		С	Α			
Approach Delay (s)	40.0		17.4			8.2			
Approach LOS	D		В			Α			
Intersection Summary									
HCM 2000 Control Delay			13.2	Н	CM 2000	Level of Service	e	В	
HCM 2000 Volume to Capac	city ratio		0.71						
Actuated Cycle Length (s)			90.0	S	um of lost	t time (s)		16.1	
Intersection Capacity Utiliza	tion		57.7%	IC	CU Level	of Service		В	
Analysis Period (min)			15						

CITY OF MERIDEN ROUTE 5 STUDY

- * Vehs: Number of vehicles
- * Veh Delay: Average Delay of all vehicles [s]
- * LOS: Level-of-service (A..F) (A: <= 10", B: >10"-20", C: >20"-35", D: >35"-55", E: >55"-80", F: >80")
- * Stop Delay: Average Stopped delay per vehicle in seconds [s]
- * Stops: Number of vehicle stops per vehicle
- * QLenAve: Average queue length: In each time step, the current queue length is measured and the arithmetic mean is thus calculated per time interval. [ft]
- * QLenMax: Queue length (maximum): In each time step, the current queue length is measured and the maximum is thus calculated per time interval. [ft]
- * EmissionsCO: Quantity of carbon monoxide [grams]
- * EmissionsNOX: Quantity of nitrogen oxides [grams]
- * EmissionsVOC: Quantity of volatile organic compounds [grams]
- * Fuel Consumption: Fuel consumption [US liquid gallon]

ROUTE 5 AT CAMP STREET AND I-691 EB RAMPS 2040 PM PEAK HOUR

Movement	Vehs	Veh Delay	LOS	Stop Delay	Stops	QLenAve	QLenMax	EmissionsCO	EmissionsNOx	EmissionsVOC	Fuel Consumption
EB LT	201	16.55 LOS_C		8.54	1.14	17.08	156.52	283.73	55.20	65.76	4.06
EB TH	178	18.51 L	_OS_C	9.33	1.24	21.67	222.15	209.06	40.68	48.45	2.99
EB RT	54	15.52 L	_OS_C	7.53	1.00	19.63	219.44	63.07	12.27	14.62	0.90
WB LT	241	19.94 L	_OS_C	9.47	1.27	28.85	207.73	394.30	76.72	91.38	5.64
WB TH	31	23.13 L	_OS_C	12.12	1.45	28.85	207.73	39.42	7.67	9.14	0.56
WB RT	219	12.43 L	_OS_B	5.95	0.87	11.99	108.91	261.04	50.79	60.50	3.73
NB LT	38	10.23 L	_OS_B	1.81	0.68	42.74	558.19	33.13	6.45	7.68	0.47
NB TH	645	9.57 L	-OS_A	1.37	0.61	42.74	558.19	604.12	117.54	140.01	8.64
NB RT	226	3.09 L	OS_A	0.22	0.14	0.47	20.39	132.26	25.73	30.65	1.89
SB LT	186	1.62 L	_OS_A	0.08	0.06	0.26	38.34	126.26	24.57	29.26	1.81
SB TH	534	2.97 L	_OS_A	0.11	0.08	3.26	174.57	259.45	50.48	60.13	3.71
SB RT	64	2.68 L	_OS_A	0.11	0.13	3.26	174.57	32.96	6.41	7.64	0.47
OVERALL	2617	9.56 L	OS A	3.37	0.60	16.22	558.19	2364.35	460.02	547.96	33.83

	ROUTE 5 AT CAMP STREET AND I-691 EB RAMPS 2040 AM PEAK HOUR													
Movement	Vehs	Veh Delay	LOS	Stop Delay	Stops	QLenAve	QLenMax	EmissionsCO	EmissionsNOx	EmissionsVOC	Fuel Consumption			
EB LT	203	12.2 LOS_B		5.55	0.89	11.51	123.92	240.29	46.75	55.69	3.44			
EB TH	72	6.09 LOS_A		2.36	0.51	7.58	144.7	51.93	10.10	12.04	0.74			
EB RT	161	10.08 L	OS_B	4.54	0.72	9.02	147.41	145.02	28.22	33.61	2.08			
WB LT	222	10.87 LOS_B		4.23	0.76	13.41	152.24	260.56	50.70	60.39	3.73			
WB TH	50	10.14 LOS_B		3.99	0.74	13.41	152.24	47.01	9.15	10.90	0.67			
WB RT	219	8.15 LOS_A		3.15	0.63	7.42	127.93	212.02	41.25	49.14	3.03			
NB LT	29	7.86 L	OS_A	1.27	0.45	21.62	324.02	22.76	4.43	5.27	0.33			
NB TH	534	7.7 L	OS_A	1.45	0.55	21.62	324.02	463.38	90.16	107.39	6.63			
NB RT	344	3.85 L	OS_A	0.45	0.21	3.99	146.28	212.33	41.31	49.21	3.04			
SB LT	241	1.63 L	OS_A	0.04	0.02	0.22	20.07	160.92	31.31	37.30	2.30			
SB TH	390	2.48 L	OS_A	0.11	0.08	1.89	121.11	188.23	36.62	43.62	2.69			
SB RT	153	2.08 LOS_A		0.14	0.08	1.89	121.11	76.50	14.88	17.73	1.09			
OVERALL	2618	6.33 L	OS_A	1.87	0.42	8.52	324.02	1979.91	385.22	458.86	28.33			