

March 3, 2025

NEX-2020145.00

Mr. Eric Rumsey, Town Planner
Town of Oxford
325 Main Street
Oxford, MA 01540

SUBJECT: Response to TEC Initial Traffic Engineering Peer Review – February 12, 2025
Proposed Residential Development
Ashworth Hills – Oxford, Massachusetts

Dear Mr. Rumsey:

Greenman-Pedersen, Inc. (GPI) has prepared this Response to Comments (RTC) letter to respond to the traffic study comments provided in a review letter from TEC, dated February 12, 2025 regarding the *Traffic Impact and Access Study* (TIAS) prepared for the proposed residential development to be located 0 Ashworth Drive & 191 Southbridge Road in Oxford, Massachusetts. We have reviewed the comments, and this letter has been prepared to summarize our responses. The Initial Site Plan comments will be responded to under separate cover. A copy of the TEC review letter is attached for reference.

Traffic Study

Comment 1: *No response required.*

Comment 2: *No response required.*

Comment 3: *No response required.*

Comment 4: *No response required.*

Comment 5: *No response required.*

Comment 6: *To assess roadway operations and safety for the proposed site driveways the applicant provided sight distances including stopping sight distances (minimum) and intersection sight distances (preferred). These calculations involved the use of roadway travel speeds, typically the 85th percentile speed. The ATR data collected on Southbridge Road (Rt. 20) provided an 85th percentile speed of 51mph for Sturbridge Road.*

a. *No response required.*

b. *Sight distance for the eastern commercial driveway at Sturbridge Road did not utilize the 85th percentile speed in determining sight distances utilizing instead the posted speed limit of 45 mph. The Applicant's traffic engineer documented an available sight distance of 395 feet looking to the left (east) of the proposed driveway. This available sight distance satisfies the minimum 375-foot stopping sight distance required for 45 mph roadway but does not satisfy the stopping sight distance of 440 feet for the 51 mph 85th percentile speed. The preferred sight distance for stop controlled right turns at this intersection is 480 feet (per MassDOT PDDG Table 3-13). The applicant team should utilize the 85th percentile speed established by the ATR (51 MPH) or alternatively a separate ATR could be conducted at the driveway location to confirm*

a lower 85th percentile speed for westbound vehicles. The applicant should consider restricting the driveway to entering traffic only.

- c. Sight distance for the sight driveway at Ashworth Drive utilized an assumed travel speed of 27 MPH TEC agrees that this is a conservative speed assumption. The available sight distance of 330-feet for right turns meets both the minimum and preferred sight distances. The available sight distance to the north of the intersection for left turns does not meet. TEC agrees that left turns on to the dead-end portion of Ashworth Drive are not likely to occur with regularity and also notes that the sight distance minimum for left turns is met for travel speeds of 25mph or less on Ashworth Street. A left turn restriction for vehicles leaving the sight driveway may be considered.*
- d. Sight lines at the existing intersection of Ashworth Drive at Comminsville Road and Rochdale Street should be assessed to ensure that the existing sight distances are sufficient as an increase in volume may encourage higher risk maneuverers.*

Response 6: **Pertinent responses are provided below regarding the sight distances.**

- b. Sight distances for the eastern commercial driveway on Southbridge Road did not utilize the 85th percentile speed from the ATR provided in the TIAS because the location is not the same. The ATR was located east of Turner Road, in the vicinity of the western commercial driveway. The eastern driveway location is located approximately 700 feet west of the signalized intersection of Southbridge Road (Route 20) at Main Street (Route 12), and therefore, speeds were expected to be lower as vehicles travel through the intersection (westbound direction). To confirm speeds at the location of the eastern commercial driveway, 24-hour weekday speeds were obtained on February 25, 2025 and are enclosed with this letter. Based on the observed speeds, the 85th percentile speed is 45 miles per hour (mph) in the westbound direction. Based on the newly obtained speed data, the minimum sight distance requirement of 375 feet provided in the TIAS remains exceeded (available sight distance of 395 feet) based on the 85th percentile speed of 45 mph.**
- c. Since the preparation of this TIAS, access has changed. Ashworth Drive and Thayer Pond Road will provide gated emergency access only, subject to the Fire Department approval and a MassDOT Access Permit.**
- d. Since the preparation of this TIAS, access has changed. Ashworth Drive and Thayer Pond Road will provide gated emergency access only, subject to the Fire Department approval and a MassDOT Access Permit. Accordingly, an increase in traffic through existing intersection of Ashworth Drive at Comminsville Road and Rochdale Street is no longer expected.**

Comment 7: *No response required.*

Comment 8: *Site trip generation calculations for the Ashworth Hills 320-condominium units was generated based on the ITE Trip Generation Manual, 11th Edition, Land Use Code (LUC) 215 – Single Family Attached Housing), TEC concurs with this methodology and selection of LUC 215 for the buildings proposed as the ITE Trip Generation Manual, 11th Edition is an industry standard. TEC concurs with the trip generation provided in the appendix noting that table 5*

and 7 in the traffic study shows volumes that have been reduced based on internal capture, see comment 9. Site trip generation calculations for the three other portions of the development were not examined as part of this review plans for these additional developments should be verified to determine the accuracy of floor areas, number of units, and land use types utilized. For the sake of reviewing the traffic impacts of Ashworth Hills the trips generated by the additional developments are assumed to be accurate.

Response 8: **Comment acknowledged.**

Comment 9: *Internal Capture percentages were calculated based on the ITE Trip Generation 3rd Edition. The internal capture summaries demonstrate internal capture rates for the residential use (the Ashworth Hills portion of the development) that appear to be high, such as a residential internal capture rate for the weekday evening peak hour of 58% for residential trips for an overall internal capture rate of 37% for the development.*

- a. *Applicant should confirm calculations. Although retail and restaurant tenants are not defined in the study TEC believes it may be unreasonable to have internal capture percentages as high as shown where the development is located along a corridor with a significant number of alternative retail and restaurant opportunities already established.*
- b. *Proximity adjustment factors as described in section 6.5.4 of the ITE Trip Generation 3rd Edition should be utilized for the internal capture demand rates for the evening peak hour given the proposed distance between the centroids of the residential and commercial areas.*

Response 9: **Responses are provided below regarding internal capture.**

- a. **GPI prepared a TIAS dated August 17, 2022 for the Draft Environmental Impact Report (DEIR) prepared for the project. In that TIAS, GPI utilized trip rates from the ITE Trip Generation Manual, 10th Edition (most recent at the time of running the calculations) and did not include Ashworth Hills in the internal capture calculations. For reference, relevant pages from the August 2022 TIAS are attached to this letter, including the Trip Generation section, Site-Generated Networks, Capacity & Queue Analysis tables, and Trip Generation calculations.**

As part of the comments received from MassDOT on the DEIR dated October 27, 2022, MassDOT stated, “it’s not clear why the Ashworth Hills residential component wasn’t included in the internal trip calculations since they have shared access with the Ashworth Comments (commercial) development.” Based on the comments in the letter, as well as a meeting held with MassDOT on December 13, 2022 requesting the use of the 11th Edition of the Trip Generation Manual, GPI re-examined the trip generation for the FEIR and this included incorporating Ashworth Hills into the internal capture calculations. MassDOT has since deemed the trip generation methodology acceptable.

- b. **The ITE Trip Generation Handbook states, “The proximity adjustment is equal to 1.0 for land uses in close proximity, and declines as distances between land uses increases.” However, the proximity adjustment factors are based on average walking distance between land uses. By implementing internal capture, we are not suggesting that there will be a reduction in trips between**

Ashworth Hills and Ashworth Commons due to patrons walking between the two developments. Should a resident of Ashworth Hills travel to Ashworth Commons and back home (even by vehicle), this is an internal trip within the internal driveways of the project and is not seen as a trip outside the internal roadway network (i.e. onto US Route 20). It is understood that this peer review is for the Ashworth Hills development only, and the TIAS was prepared to include Ashworth Commons, The Reserve, and Auburn Condos. Had the TIAS been prepared for Ashworth Hills alone, then it is agreed upon that a proximity adjustment factor should be applied to represent the trips to/from the internal Ashworth Hills driveway (driveway between Ashworth Commons and Ashworth Hills), however, the driveway analyzed as part of the study extends beyond the Ashworth Hills internal driveway to the intersection with Route 20, which is inclusive of Ashworth Commons traffic as well.

Comment 10: *No response required.*

Comment 11: *The trip distribution from the Project to and from the northerly segment of Ashworth Drive appears low. The Applicant's team should assess the potential for residential trips from the northerly portion of the development to use Rochdale Street and West Street to access Route 20 eastbound through the traffic signal at Route 20 / West Street during the interim access scenario that does not include a signalized site driveway at the intersection of Route 20 / Road C. This may require a time-of-day travel time sensitivity analysis given the commuter trends on Route 20 in this area.*

Response 11: **Since the preparation of this TIAS, access has changed. Ashworth Drive and Thayer Pond Road will provide gated emergency access only, subject to the Fire Department approval and a MassDOT Access Permit. Accordingly, all residential traffic is now expected to utilize the site driveways on US Route 20.**

Comment 12: *Multi-modal access is proposed that includes sidewalk, shared use paths, and gravel walking trails within the proposed development. TEC concurs with the use of a shared use path along the primary roadway through Ashworth Hills. See comment 18 and 19 for additional shared use path comments. TEC notes that the Town of Oxford is developing design plans at various stages for segments of the French River Rail Trail that will include a segment offset approximately 150 south of Southbridge Road at the location of the proposed development. Consideration of a segment of shared use path between the proposed crosswalk at the Western Commercial Driveway and Turner Road along the south side of Sturbridge Road for future access to the trail should be considered as part of the proposed traffic signal construction.*

Response 12: **The Applicant will coordinate with MassDOT and consider a segment of shared use path between the proposed crosswalk at the western commercial driveway and Turner Road (on the south side of Southbridge Road) as the design of the proposed traffic signal progresses through the MassDOT Access Permit process.**

Comment 13: *A capacity analysis was conducted utilizing the Highway Capacity Manual (HCM) 2000 methodology. Although TEC understands the use of HCM 2000 methodology for signalized intersections, the use of HCM 6th Edition for the signalized intersections within the study area may still be reasonable.*

- a. *The Applicant should confirm that there is no significant operational result change for unsignalized intersections between the use of HCM 2000 and HCM 6th Edition.*
- b. *It appears the use of HCM 2000 at the signalized intersection within the analysis is solely based on the exclusive pedestrian phase at the signalized intersection, which TEC finds to be reasonable. The Applicant should note the number of pedestrian calls attributed to each analysis condition which is currently not shown on the worksheets.*

Response 13: **Responses are provided below regarding capacity analysis.**

- a. **The HCM 6th Edition results for unsignalized intersections has been summarized and is provided as an attachment to this letter. There are slight differences in the way the two editions analyzed the right-in/right-out driveways. Accordingly, the operations at the western commercial site driveway (under unsignalized operation) are slightly better based on HCM 6. The operations at the eastern commercial driveway are slightly worse based on HCM 6, however operations remain at LOS C or better with queue lengths of one vehicle or less. It should be noted that there are negligible changes in operations at the remaining unsignalized intersections.**
- b. **The intersections with exclusive pedestrian phases are discussed below. When originally completing the traffic study, count data from November 2015 and December 2016 were utilized. Throughout the permitting process, new counts were obtained in May 2022 and October 2023 per request by MassDOT. The pedestrian data was inadvertently not updated based on the new count data. Below is a summary of what was utilized in the analysis and what should have been utilized. Based on the comparison, the difference in pedestrian calls is not expected to significantly alter the results of the analysis.**

The number of pedestrian calls utilized in the analysis are as follows:

Intersection	Number of Pedestrian Calls		
	AM	PM	SAT
Route 20 at Route 56	0	4	0
Route 20 at Route 12 (Main St)	0	0	0
Route 12 at West Street	1	0	0

The number of pedestrian calls that should have been utilized are as follows:

Intersection	Number of Pedestrian Calls		
	AM	PM	SAT
Route 20 at Route 56	0	0	0
Route 20 at Route 12 (Main St)	0	0	1
Route 12 at West Street	1	0	0

The same pedestrian calls were utilized from the Existing analysis through the Build analysis.

Comment 14: *No response required.*

Comment 15: *No response required.*

Comment 16: *No response required.*

We hope this letter adequately addresses any outstanding traffic related matters. Should you have any questions or require additional information, please feel free to contact me directly at (978) 570-2968 or hmonticup@gpinet.com.

Sincerely,

GREENMAN-PEDERSEN, INC.



Heather L. Monticup, P.E.
Senior Vice President / Director of Land Development
44 Stiles Road
Salem, New Hampshire 03079

enclosure(s)

1. TEC Peer Review Letter – February 12, 2025
2. Speed Data
3. Information from TIAS submitted with Draft EIR
4. HCM Results

cc: (via email)

Kevin Dandrade, TEC
Chad Boardman, Eastland Partners
James Bernardino, Turning Point Engineering
Travis Brown, Turning Point Engineering

Town of Oxford
Attn: Eric Rumsey, Town Planner
325 Main Street
Oxford, MA 01540

February 12, 2025

Ref. T1603

Re: Proposed Residential Development – Ashworth Hills – Oxford, MA
Initial Traffic Engineering Peer Review

Dear Mr. Rumsey:

On behalf of the Town of Oxford, TEC, Inc. (TEC) has reviewed documents as part of the traffic engineering peer review for a proposed residential development known as *Ashworth Hills* the development is proposed to consist of 320 residential duplex style units. The Applicant proposes access to Ashworth Drive on the northern side of the development, to Thayer Pond Drive on the western side of the development as enter only, and to Southbridge Road (Rt. 20) on the southern side of the development. The development includes multiple two-lane roadways throughout the development area.

TEC reviewed the following materials as part of our traffic engineering review:

- *Traffic Impact and Access Study – The Reserve – Oxford/Auburn, Massachusetts Prepared for Eastland Partners, Inc.*; prepared by Greenman-Pederson, Inc. dated November 1, 2024; and
- *Ashworth Hills Residential Development – 0 Ashworth Drive & 191 Southbridge Road Oxford, Massachusetts*; prepared by Turning Point Engineering dated November 15, 2024.

The Traffic Impact and Access Study (the Traffic Study) includes the following (3) additional future developments:

- *Ashworth Commons* - A commercial development which proposes 160,000 square feet of commercial space located south of Ashworth Hills adjacent to Southbridge Road and utilizing the same proposed access point to Southbridge Road (Rt. 20);
- *The Reserve* – A residential development which proposes 324 residential units in (12) 3-story buildings located east of Ashworth Hills in Auburn, MA with access independent of Ashworth Hills to Southbridge Street (Rt. 20) via Blaker Street;
- *Auburn Condos* – A residential development which proposes 8 residential duplex units located east of Ashworth Hills in Auburn, MA which shares the same access to Southbridge Street (Rt. 20) as The Reserve.

TEC completed a review of these documents for the Town of Oxford and provides the following transportation-related comments for your consideration during the Town's review of this application.

Traffic Study

1. The Traffic Study includes the following intersections within the study area in the town of Oxford:
 - US Route 20 (Southbridge Road) at Route 56 (Leicester Street)
 - US Route 20 (Southbridge Road) at Thayer Pond Drive
 - US Route 20 (Southbridge Road/ Southbridge Street) at Route 12 (Main Street).

The Traffic Study also includes the following intersections within the study area in the town of Auburn:

- US Route 20 (Southbridge Street) at Albert Street / Hill Street
- US Route 20 (Southbridge Street/ Washington Street) at Route 12 (Southbridge Street)
- Route 12 (Southbridge Street) at West Street / Plaza Driveway
- Route 12 Westbound (Southbridge Street) at Interstate-90 (I-90) Off-Ramp Merge
- Route 12 Eastbound (Southbridge Street) Weave between I-90 Off-Ramp and I-90 On-Ramp.

Based on the scale of the planned redevelopment and the expected trip generation, TEC concurs with the Applicant's study area. *No response required.*

2. The Applicant's engineer performed traffic volume turning movement counts (TMC) at the study intersections from 7-9 AM and 4-6 PM on Thursday May 12, 2022 and Thursday Oct. 26, 2023 when schools were in session, and 11am – 2pm on Saturday May 14, 2022 and October 28, 2023. TEC concurs that the selected time periods are appropriate as the peak hours of residential developments typically overlap with the peak commuting hours of the adjacent street system. *No response required.*
3. A seasonal adjustment factor was not applied to the TMC volumes as May and October have higher than average volumes based on the MassDOT 2022 and 2023 Weekday Seasonal Factors. A COVID adjustment factors was not included, COVID adjustment factors are generally not necessary for traffic counts collected after March of 2022. *No response required.*
4. The Applicant's engineer performed an automatic traffic recorder (ATR) count on Southbridge Road (Rt. 20) near the site of the proposed Western Commercial driveway on Thursday Jan 19, 2023, and Saturday Jan 21, 2023. A seasonal adjustment factor of 1.05 was selected for January from the MassDOT 2023 Weekday Seasonal Factors to increase the traffic volumes to account for lower-than-average traffic volumes in January. The factor was selected for an *Urban – Other Principal Arterial* (U-3) designation. TEC concurs with the use of this seasonal adjustment factor. *No response required.*
5. Motor vehicle crash data for each study area intersection is presented in the assessment. The crash data indicates the number, type, and severity of crashes at the study area intersections between 2013 and 2017 obtained from MassDOT. Review of the data indicates that relevant crashes are included for the study intersections. The crash rates provided show a crash rate higher than the state average for the

intersection of Southbridge Road Rt. 20 at Leicester Street Rt. 56, a road safety audit for this intersection was conducted in 2014. All other study intersections had a crash rate below the statewide and district averages. *No response required.*

6. To assess roadway operations and safety for the proposed site driveways the applicant provided sight distances including stopping sight distances (minimum) and intersection sight distances (preferred). These calculations involved the use of roadway travel speeds, typically the 85th percentile speed. The ATR data collected on Southbridge Road (Rt. 20) provided an 85th percentile speed of 51mph for Sturbridge Road.
 - a. Sight distance for the western commercial driveway at Southbridge Road utilizes the 85th percentile Speed on Southbridge Road for the Western Commercial driveway. The minimum and preferred sight distances at this location are met for stop controlled right turn only conditions and are met for a signalized intersection. Sight distance for a stop controlled left turn out of this site driveway was not provided. A permanent median to prohibit left turns from the Western Commercial driveway is proposed as part of a MassDOT project. *No response required.*
 - b. Sight distance for the eastern commercial driveway at Sturbridge Road did not utilize the 85th percentile speed in determining sight distances utilizing instead the posted speed limit of 45 mph. The Applicant's traffic engineer documented an available sight distance of 395 feet looking to the left (east) of the proposed driveway. This available sight distance satisfies the minimum 375-foot stopping sight distance required for 45 mph roadway but does not satisfy the stopping sight distance of 440 feet for the 51 mph 85th percentile speed. The preferred sight distance for stop controlled right turns at this intersection is 480 feet (per MassDOT PDDG Table 3-13). The applicant team should utilize the 85th percentile speed established by the ATR (51 MPH) or alternatively a separate ATR could be conducted at the driveway location to confirm a lower 85th percentile speed for westbound vehicles. The applicant should consider restricting the driveway to entering traffic only.
 - c. Sight distance for the sight driveway at Ashworth Drive utilized an assumed travel speed of 27 MPH TEC agrees that this is a conservative speed assumption. The available sight distance of 330-feet for right turns meets both the minimum and preferred sight distances. The available sight distance to the north of the intersection for left turns does not meet. TEC agrees that left turns on to the dead-end portion of Ashworth Drive are not likely to occur with regularity and also notes that the sight distance minimum for left turns is met for travel speeds of 25mph or less on Ashworth Street. A left turn restriction for vehicles leaving the sight driveway may be considered.
 - d. Sight lines at the existing intersection of Ashworth Drive at Comminsville Road and Rochdale Street should be assessed to ensure that the existing sight distances are sufficient as an increase in volume may encourage higher risk maneuverers.
7. The background growth rate of 1.0% per year was applied to the 2022 and 2023 existing volumes to generate the 2030 future year volumes to be consistent with recent traffic studies in the area. TEC reviewed Historic Traffic Data in the area and found

- that traffic volumes are generally decreasing since 2016 therefore a 1.0% per year growth rate is considered a conservative growth rate. *No response required.*
8. Site trip generation calculations for the Ashworth Hills 320-condominium units was generated based on the ITE *Trip Generation Manual, 11th Edition*, Land Use Code (LUC) 215 – Single Family Attached Housing), TEC concurs with this methodology and selection of LUC 215 for the buildings proposed as the ITE *Trip Generation Manual, 11th Edition* is an industry standard. TEC concurs with the trip generation provided in the appendix noting that table 5 and 7 in the traffic study shows volumes that have been reduced based on internal capture, see comment 9. Site trip generation calculations for the three other portions of the development were not examined as part of this review plans for these additional developments should be verified to determine the accuracy of floor areas, number of units, and land use types utilized. For the sake of reviewing the traffic impacts of Ashworth Hills the trips generated by the additional developments are assumed to be accurate.
 9. Internal Capture percentages were calculated based on the ITE Trip Generation 3rd Edition. The internal capture summaries demonstrate internal capture rates for the residential use (the Ashworth Hills portion of the development) that appear to be high, such as a residential internal capture rate for the weekday evening peak hour of 58% for residential trips for an overall internal capture rate of 37% for the development.
 - a. Applicant should confirm calculations. Although retail and restaurant tenants are not defined in the study TEC believes it may be unreasonable to have internal capture percentages as high as shown where the development is located along a corridor with a significant number of alternative retail and restaurant opportunities already established.
 - b. Proximity adjustment factors as described in section 6.5.4 of the ITE Trip Generation 3rd Edition should be utilized for the internal capture demand rates for the evening peak hour given the proposed distance between the centroids of the residential and commercial areas.
 10. The traffic generated by the Ashworth Hills portion of the proposed project was distributed to the existing roadway network based on United States Census Bureau 2011-2015 Journey-to-Work information. This is an appropriate method for a residential development. TEC concurs with the distribution of the trips generated by the Ashworth Hills portion of the development. *No response required.*
 11. The trip distribution from the Project to and from the northerly segment of Ashworth Drive appears low. The Applicant's team should assess the potential for residential trips from the northerly portion of the development to use Rochdale Street and West Street to access Route 20 eastbound through the traffic signal at Route 20 / West Street during the interim access scenario that does not include a signalized site driveway at the intersection of Route 20 / Road C. This may require a time-of-day travel time sensitivity analysis given the commuter trends on Route 20 in this area.
 12. Multi-modal access is proposed that includes sidewalk, shared use paths, and gravel walking trails within the proposed development. TEC concurs with the use of a shared use path along the primary roadway through Ashworth Hills. See comment 18 and 19 for additional shared use path comments. TEC notes that the Town of Oxford is developing design plans at various stages for segments of the French River Rail Trail

- that will include a segment offset approximately 150 south of Southbridge Road at the location of the proposed development. Consideration of a segment of shared use path between the proposed crosswalk at the Western Commercial Driveway and Turner Road along the south side of Sturbridge Road for future access to the trail should be considered as part of the proposed traffic signal construction.
13. A capacity analysis was conducted utilizing the Highway Capacity Manual (HCM) 2000 methodology. Although TEC understands the use of HCM 2000 methodology for signalized intersections, the use of HCM 6th Edition for the signalized intersections within the study area may still be reasonable.
 - a. The Applicant should confirm that there is no significant operational result change for unsignalized intersections between the use of HCM 2000 and HCM 6th Edition.
 - b. It appears the use of HCM 2000 at the signalized intersection within the analysis is solely based on the exclusive pedestrian phase at the signalized intersection, which TEC finds to be reasonable. The Applicant should note the number of pedestrian calls attributed to each analysis condition which is currently not shown on the worksheets.
 14. Mitigation proposed in Oxford includes signal timing and phasing adjustments for the intersection of Route 20 at Route 56, signal optimization for Route 20 at Route 12 (Main Street), and new signal be installed for Route 20 at the Western Site Driveway. Other mitigation in Auburn includes signal optimization for: Route 20 at Hill Street and Albert Street, Route 20 at Route 12 (Southbridge Street), and Route 12 at West Street/ Plaza Driveway along with changing the approaches under stop control at the intersection of Blaker Street at Albert Street. TEC concurs that the proposed mitigation is appropriate. *No response required.*
 15. As part of the mitigation for the West Commercial Driveway, which is expected to be utilized by the majority of the traffic generated by Ashworth Hills, a new traffic signal is proposed. This signal will introduce approximately 5 seconds of delay for drivers on Route 20 traveling past the development in the eastbound direction during each of the peak hours and will introduce approximately 21 seconds of delay for drivers on route 20 traveling past the development in the westbound direction during each of the peak hours. Drivers turning left into or out of the site are expected to experience up to 54 seconds of delay with the longest delays occurring during the evening peak hour. TEC considers this to be a reasonable amount of delay. *No response required.*
 16. Per the Town of Oxford Zoning By-Laws in Chapter III section 3.9.3.8 and Chapter XI section 3.0; 2 off-street parking spaces per unit are required per dwelling-unit requiring a total of 640 parking spaces. The parking analysis provided in the TIAS demonstrated a number of parking units required based on ITE Parking Generation data with a weekday average peak period demand of 1.31 parking spaces for the land use code LUC 220 – Multifamily Housing [Low-Rise] requiring a total of 420 parking spaces. The traffic study indicates that 4 parking spaces are proposed for each unit including two garage spaces and two driveway spaces along with an additional 40 spaces for visitors for a total of 1,320 parking spaces well exceeding the required number of spaces. TEC notes that LUC 115 Single Family Attached Housing with a rate of 1.41 spaces per unit for a development of this size is a more appropriate land use code for the proposed

development, however, the associated parking space demand would still be substantially lower than the number of parking spaces proposed. *No response required.*

Initial Site Plan Comments

17. A truck turning analysis should be provided for the Oxford Fire Department design vehicle and a large single-unit (SU) truck (representative of a moving van, trash/refuse truck or similar). The turning analysis should demonstrate that the subject vehicles can access and circulate within the project site in an unimpeded manner.
18. A 3-5 ft buffer between the roadway and shared use path should be considered where feasible for increased pedestrian safety.
19. Trees should be located a minimum of 3 feet away from the shared use path to provide an appropriate clear distance for cyclists. Trees should be located a minimum of 2 feet away from sidewalks to minimize future root damage to sidewalks that may limit accessibility.
20. The applicant should consider an additional road name for one or more segments of Road B to avoid having 3 intersections between Road A and Road B that could lead to confusion for visitors and first responders.
21. A stop line should be provided at the intersection of Road A and Road B between units 135 and 161.
22. The all-way stop proposed at the intersection of Roads B, C, and D should include “All Way” placards under each stop sign.
23. All crosswalks should be a minimum of 8’ wide to be consistent with industry standards, 10’ wide crosswalks should be considered at shared use path crossings.
24. Alternative pedestrian curb ramp type or location should be considered at the intersection of Road E and Road B to reduce the skewed angle of the pedestrian crossing.
25. At the intersection of Road C and Road D with Road B, two separate ramps should be used on the eastern corner for each of the crossing directions. A shared use path should be provided between the ramps for continuity.
26. At the intersection of Road F and Road E two separate ramps should be used on the eastern corner for each of the crossing directions.
27. Consider bicycle parking at the clubhouse and a shared use path connection to the clubhouse.
28. TEC recommends that the Applicant consider two-way flow for the clubhouse driveway and a reversal of the flow in the drop-off lane so passengers are discharged on the right side of the vehicle.
29. A “keep right” sign (MUTCD R4-7) should be considered at the nose of the triangular island on Road C at Station 2+50 on the approach to Route 20. A graphic “right turn only” sign (MUTCD R3-5R) should be considered with the stop sign where Road C meets Route 20.

30. Pedestrian crossing warning signs (MUTCD W11-2 / W16-7p) should be considered at all crosswalks within the development.
31. The Applicant should provide a narrative regarding waste removal. If waste removal is not to be collected roadside, then dumpster locations should be identified and evaluated for appropriate heavy vehicle turning movements.
32. Sidewalks should be considered on both sides of the proposed roadways to provide accessible pedestrian paths of travel to each unit.
33. All pedestrian design features should comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG), Public Right-of-Way Accessibility Guidelines (PROWAG), and the Massachusetts Architectural Access Board (MAAB) requirements or petition the State for a waiver.
34. The Applicant's team should identify locations where raised intersections or crosswalks may calm traffic and improve pedestrian accessibility.
35. The applicant should clarify the proposed design speed for each roadway within the development and verify that the radius for each proposed horizontal curve and k value for each proposed vertical curve provides sufficient stopping sight distance for the design speed. Traffic calming measures should be considered for lower design speeds.
36. All sight line triangles should be shown for all proposed intersections on the Site Plans based on AASHTO criteria along with a general note in the plan set to indicate: "Signs, landscaping and other features located within sight triangle areas shall be designed, installed, and maintained so as not to exceed 2.5- feet in height. Snow windrows located within sight triangle areas that exceed 36 inches in height or that would otherwise inhibit sight lines shall be promptly removed."

Please do not hesitate to contact us directly if you have any questions concerning this peer review at 978-794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
"The Engineering Corporation"



John D. Dixon, EIT
Senior Transportation Designer



Kevin R. Dandrade, P.E., PTOE
Principal



PRECISION
DATA
INDUSTRIES, LLC

Location Map: 250485 Oxford, MA

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com



Client:
GPI

Engineer:
S. Theriault

Site Code:
NEX-2020145.00

Date:
Tuesday 2/25/25

PDI Job #
250485

City, State:
Oxford, MA

Southbridge Road (Route 20) between
Ashworth Road and Site Drive
City, State: Oxford, MA
Client: GPI/ S. Theriault
Site Code: NEX-2020145.00



PDI File #: 250484 ATR-A (Speed)

Count Date
Tuesday, February 25, 2025

Speed (60-minute)

WB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	6	17	30	14	1	0	0	0	0	68	45.0	41.1
1:00 AM	0	0	0	0	7	11	17	4	1	0	0	0	0	40	44.0	39.5
2:00 AM	0	0	0	1	4	11	10	4	2	0	0	0	0	32	45.0	39.7
3:00 AM	0	0	0	2	4	12	28	18	7	1	0	0	0	72	48.0	42.6
4:00 AM	0	0	0	1	10	31	34	22	5	1	0	0	0	104	46.0	40.9
5:00 AM	0	0	0	12	5	36	58	39	6	0	0	0	0	156	46.0	41.0
6:00 AM	0	0	0	4	24	128	188	100	21	3	2	0	0	470	47.0	41.7
7:00 AM	0	1	0	1	33	137	247	100	21	1	0	0	0	541	46.0	41.4
8:00 AM	0	0	1	7	36	136	214	77	20	1	0	0	0	492	46.0	41.0
9:00 AM	1	1	0	5	52	170	212	80	10	2	0	0	0	533	45.0	40.3
10:00 AM	0	0	1	5	43	164	209	62	16	2	0	0	1	503	45.0	40.3
11:00 AM	0	0	0	6	54	200	263	75	10	2	0	0	0	610	44.0	40.2
12:00 PM	0	0	1	10	66	226	278	100	14	2	0	0	0	697	45.0	40.1
1:00 PM	1	0	4	15	68	221	234	99	16	1	0	1	0	660	45.0	39.7
2:00 PM	0	0	2	11	59	272	393	116	25	1	0	0	0	879	45.0	40.5
3:00 PM	1	0	0	12	80	391	438	158	26	5	0	0	0	1111	45.0	40.4
4:00 PM	0	0	3	5	70	348	545	140	16	5	1	0	0	1133	44.0	40.6
5:00 PM	0	0	0	7	73	445	511	114	16	1	1	0	0	1168	44.0	40.0
6:00 PM	0	0	0	6	66	273	274	100	15	5	0	0	0	739	45.0	40.1
7:00 PM	0	0	3	7	40	193	213	50	13	2	0	0	0	521	44.0	39.8
8:00 PM	0	0	0	0	16	135	189	59	12	1	0	0	0	412	45.0	41.0
9:00 PM	0	0	0	4	23	53	125	45	8	0	0	0	0	258	46.0	41.1
10:00 PM	0	0	0	6	11	48	70	35	10	0	1	0	0	181	46.0	41.2
11:00 PM	0	0	0	0	10	43	50	39	14	0	0	0	0	156	48.0	42.1
Total	3	2	15	127	860	3701	4830	1650	305	36	5	1	1	11536	45.0	40.5
Percent	0.03%	0.02%	0.13%	1.10%	7.45%	32.08%	41.87%	14.30%	2.64%	0.31%	0.04%	0.01%	0.01%			

AM Peak	9:00 AM	7:00 AM	8:00 AM	5:00 AM	11:00 AM	11:00 AM	11:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM		10:00 AM	11:00 AM
Volume	1	1	1	12	54	200	263	100	21	3	2	0	1	610

PM Peak	1:00 PM		1:00 PM	1:00 PM	3:00 PM	5:00 PM	4:00 PM	3:00 PM	3:00 PM	3:00 PM	4:00 PM	1:00 PM		5:00 PM
Volume	1	0	4	15	80	445	545	158	26	5	1	1	0	1168

15th Percentile:	36.0 MPH	Average Speed:	40.5 MPH	Posted Speed Limit:	40 MPH
50th Percentile:	40.0 MPH	10 MPH Pace:	36 to 45 MPH	Number of Vehicles > 40 MPH:	5666
85th Percentile:	45.0 MPH	Number in Pace:	8626	Percent of Vehicles > 40 MPH:	49.1%
95th Percentile:	48.0 MPH	Percent in Pace:	74.8%		

TRAFFIC IMPACT AND ACCESS STUDY

**FOR SUBMISSION WITH
DRAFT ENVIRONMENTAL IMPACT REPORT
EEA #15912**

**The Reserve
Oxford/Auburn, Massachusetts**

Prepared for:

Eastland Partners, Inc.
4 Charlesview Road
Hopedale, Massachusetts 01747

August 2022

Trip Generation

To estimate the volume of traffic to be generated by the proposed development, trip-generation rates published by the Institute of Transportation Engineers (ITE) Trip Generation Manual³ were researched. The following land use codes (LUCs) were utilized to estimate the traffic for each portion of site.

- The Reserve (Auburn)
324-unit residential apartment development (40B)
LUC 221 (Multifamily Housing [Mid-Rise])
- Auburn Condos (Auburn)
Eight (8) condominium units (2 units on 4 lots)
LUC 220 (Multifamily [Low-Rise])
- Ashworth Hills (Oxford)
320-unit residential condominium development
LUC 220 (Multifamily [Low-Rise])
- Ashworth Commons (Oxford)
Commercial Development
 - Retail – 49,800 SF
LUC 820 (Shopping Center)
 - Super Convenience Market/Gas Station – 5,000 SF Convenience Store with 12 vfps
LUC 960 (Super Convenience Market/Gas Station)
 - Restaurant - Fast-Food Restaurant with Drive-Through Window – 5,000 SF
LUC 934 (Fast-Food Restaurant with Drive-Through Window)
 - Office – 100,000 SF
LUC 710 (General Office Building)

The trip-generation data are provided in the Appendix.

³ *Trip Generation, 10th Edition*. Institute of Transportation Engineers; Washington, DC; 2017.

TABLE 5
Peak Hour Trip-Generation Summary

Peak Hour/Direction	The Reserve ^a	Auburn Condos ^b	Ashworth Hills ^c	Ashworth Commons ^d	Total Trips ^e
Weekday AM Peak Hour:					
Enter	28	1	33	406	468
Exit	<u>80</u>	<u>3</u>	<u>111</u>	<u>271</u>	<u>465</u>
Total	108	4	144	677	933
Weekday PM Peak Hour:					
Enter	84	4	105	311	504
Exit	<u>53</u>	<u>2</u>	<u>61</u>	<u>394</u>	<u>510</u>
Total	137	6	166	705	1,014
Saturday Midday Peak Hour:					
Enter	70	3	121	413	607
Exit	<u>72</u>	<u>3</u>	<u>103</u>	<u>386</u>	<u>564</u>
Total	142	6	224	799	1,171

^a ITE LUC 221 (Multifamily Housing [Mid-Rise]) for 324 dwelling units.

^b ITE LUC 220 (Multifamily Housing [Low-Rise]) for 8 dwelling units

^c ITE LUC 220 (Multifamily Housing [Low-Rise]) for 320 dwelling units.

^d ITE LUC 820 (Shopping Center) for 49,800 sf, LUC 960 (Super Convenience Market/Gas Station) for 12 vfps, LUC 934 (Fast-Food Restaurant with DT Window) for 5,000 sf, and LUC 710 (General Office Building) for 100,000 sf.

^e Total Trips into and out of the site driveways for The Reserve, Auburn Condos, Ashworth Hills, and Ashworth Commons.

As shown in Table 5, the proposed development project is expected to generate 933 vehicle trips (468 entering and 465 exiting) during the weekday AM peak hour, 1,014 vehicle trips (504 entering and 510 exiting) during the weekday PM peak hour, and 1,171 vehicle trips (607 entering and 564 exiting) during the Saturday midday peak hour.

Studies have shown that for developments of mixed-use or multi-use sites, it is realistic to assume that there will be some multi-use trips within the site itself. As Ashworth Commons has various uses, it is likely that trips will be shared between the general retail, gas station/convenience store, restaurant and office uses. Accordingly, a multi-use rate was used to calculate the external trips generated by the site based on data published in the ITE *Trip Generation Handbook*.⁴ These data revealed a 22 percent internal capture rate for the weekday daily, a 19 percent internal capture rate during the weekday AM peak hour, a 20 percent internal capture rate during the weekday PM peak hour, a 12 percent internal capture rate for the Saturday daily, and a 17 percent internal capture rate during the Saturday midday peak hour. The Multi-Use Development Trip Generation and Internal Capture Worksheets are attached.

In order to provide a conservative analysis, shared-use trips were not accounted for between the Ashworth Hills and the Ashworth Commons project even though an internal connection between the two exists.

⁴ *Trip Generation Handbook*; 3rd Edition; Institute of Transportation Engineers; Washington, DC; August 2014.

Not all of the vehicle trips expected to be generated by the proposed expansion project represent new trips on the study area roadway system. Studies have shown that for developments such as the one proposed, a substantial portion of the site-generated vehicle trips are already present in the adjacent passing stream of traffic or are diverted from another route to the proposed site. Based on information published in the ITE Trip Generation Handbook,⁵ the average pass-by trip percentages are as follows:

- LUC 820 (Shopping Center) – 34% during weekday PM, 26% during Saturday midday
- LUC 945 (Gasoline/Service Station with Convenience Market) – 62% during weekday AM and 56% during weekday PM
- LUC 934 (Fast-Food Restaurant with Drive-Through Window) – 49% during weekday AM and 50% during weekday PM

For the peak hours with no data, the lowest percentage of available data was used for each land use code to provide a conservative estimate. Table 6 summarizes the breakdown of total trips, pass-by trips, and new trips associated with the Ashworth Commons commercial development.

TABLE 6
Ashworth Commons Trip-Generation Breakdown

Peak Hour/Direction	Total Trips ^a	Pass-By Trips ^d	New Trips ^e
Weekday AM Peak Hour:			
Enter	406	146	260
Exit	<u>271</u>	<u>146</u>	<u>125</u>
Total	677	292	385
Weekday PM Peak Hour:			
Enter	311	141	170
Exit	<u>394</u>	<u>141</u>	<u>253</u>
Total	705	282	423
Saturday Midday Peak Hour:			
Enter	413	160	253
Exit	<u>386</u>	<u>160</u>	<u>226</u>
Total	799	320	479

^a Total External Trips based on LUC 820, LUC 960, LUC 934, and LUC 710.

^b Pass-By Trips based on rates from ITE Trip Generation Manual for LUC 820, LUC 945, and LUC 934.

^c Total External Trips minus Pass-By Trips.

It should be noted that the volume of pass-by traffic does not reduce the total volume of traffic generated by the development and the total trips generated will still be realized as turning movements at the site driveways.

⁵ Trip Generation Handbook; 2nd Edition; Institute of Transportation Engineers; Washington, DC; June 2004.

Project Environmental Review (MEPA) Thresholds

The trip generation of the proposed project was assessed to determine if the proposed project would meet or exceed any thresholds that would require formal environmental review with respect to traffic under MEPA. One of the thresholds for MEPA environmental review is the total volume of daily traffic generated by a project. If a proposed development project requires a state permit and generates a total of more than 3,000 new daily vehicle trips, then both an ENF and an EIR must be prepared and filed with MEPA. These documents must then be subject to both governmental agency and public review and comment, and the primary government entity responsible for reviewing the proposed project plans and issuing the permits and approvals that are required to allow for the construction of the proposed project must take the comments made by other government agencies and the public on these documents into consideration as part of its decision-making process on the proposed project.

To determine the daily trip generation associated with the project, the ITE Trip Generation Manual trip rates for LUC 221 (Multifamily Housing [Mid-Rise]), LUC 220 (Multifamily Housing [Low-Rise]), LUC 820 (Shopping Center), LUC 960 (Super Convenience Market/Gas Station), and LUC 934 (Fast-Food Restaurant with Drive-Through Window) were used. The daily vehicle trips associated with the proposed project are summarized in Table 7.

TABLE 7
Trip Generation Summary –
MEPA Transportation Thresholds

Peak Hour/Direction	The Reserve ^a	Auburn Condos ^b	Ashworth Hills ^c	Ashworth Commons ^d	Total Trips ^e
Weekday Daily:					
<i>Enter</i>	882	10	1,189	3,885	5,966
<i>Exit</i>	<u>882</u>	<u>10</u>	<u>1,189</u>	<u>3,885</u>	<u>5,966</u>
<i>Total</i>	1,764	20	2,378	7,770	11,932
Saturday Daily:					
<i>Enter</i>	795	33	1,302	5,561	7,691
<i>Exit</i>	<u>795</u>	<u>33</u>	<u>1,302</u>	<u>5,561</u>	<u>7,691</u>
<i>Total</i>	1,590	66	2,604	11,122	15,382

^a ITE LUC 221 (Multifamily Housing [Mid-Rise]) for 324 dwelling units.

^b ITE LUC 220 (Multifamily Housing [Low-Rise]) for 8 dwelling units

^c ITE LUC 220 (Multifamily Housing [Low-Rise]) for 320 dwelling units.

^d ITE LUC 820 (Shopping Center) for 49,800 sf, LUC 960 (Super Convenience Market/Gas Station) for 12 vfps, LUC 934 (Fast-Food Restaurant with DT Window) for 5,000 sf, and LUC 710 (General Office Building) for 100,000 sf.

^e Total Trips into and out of the site driveways for The Reserve, Auburn Condos, Ashworth Hills, and Ashworth Commons.

As shown in Table 7, the daily traffic is estimated to be 11,932 trips during a weekday and 15,382 trips during a Saturday. As a result, the project is expected to exceed the MEPA Transportation review thresholds set forth in 301 CMR 11.10(6)(a) for the preparation of an ENF and an EIR.

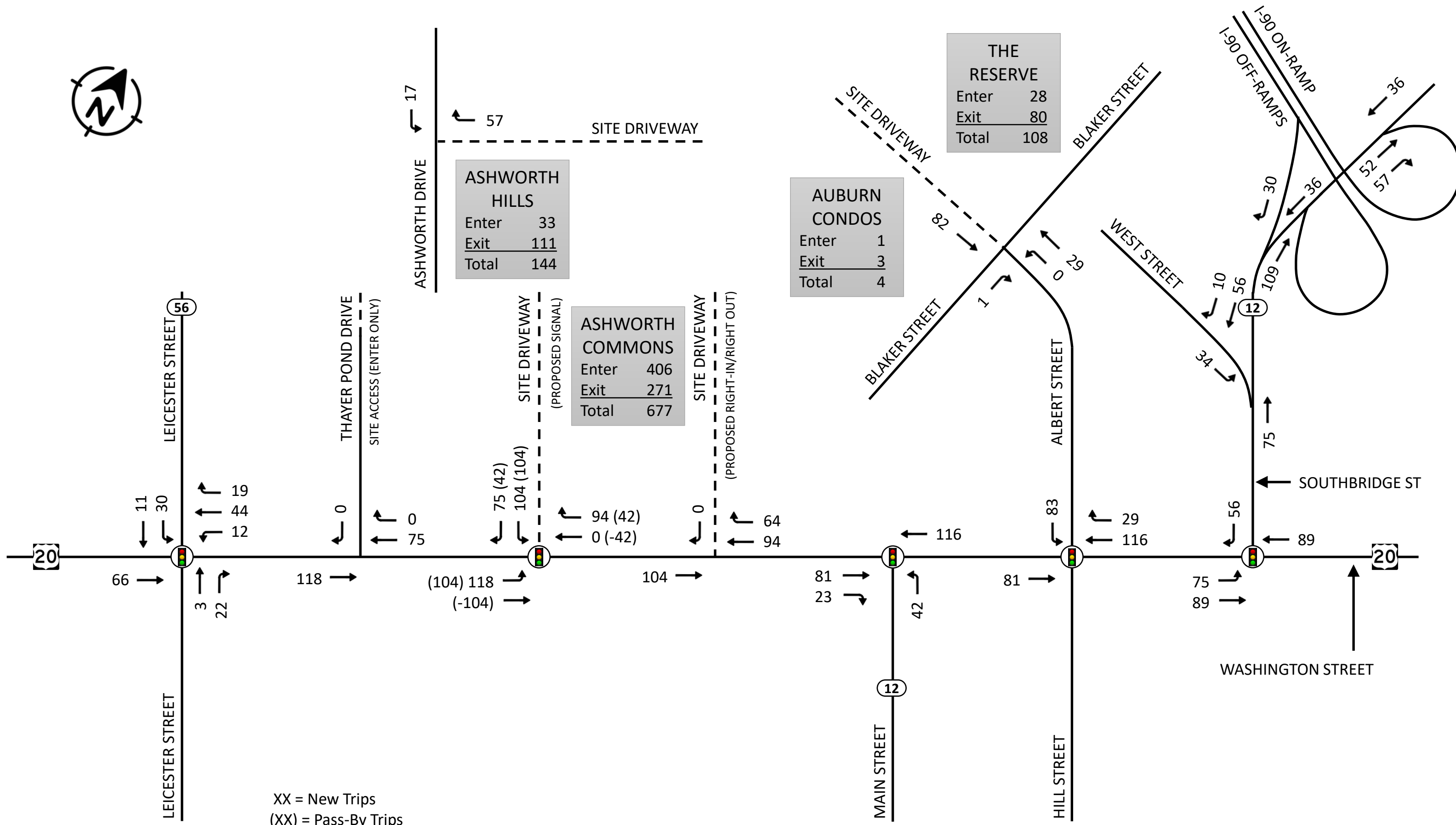


FIGURE 8

**SITE-GENERATED TRAFFIC VOLUMES
WEEKDAY AM PEAK HOUR**



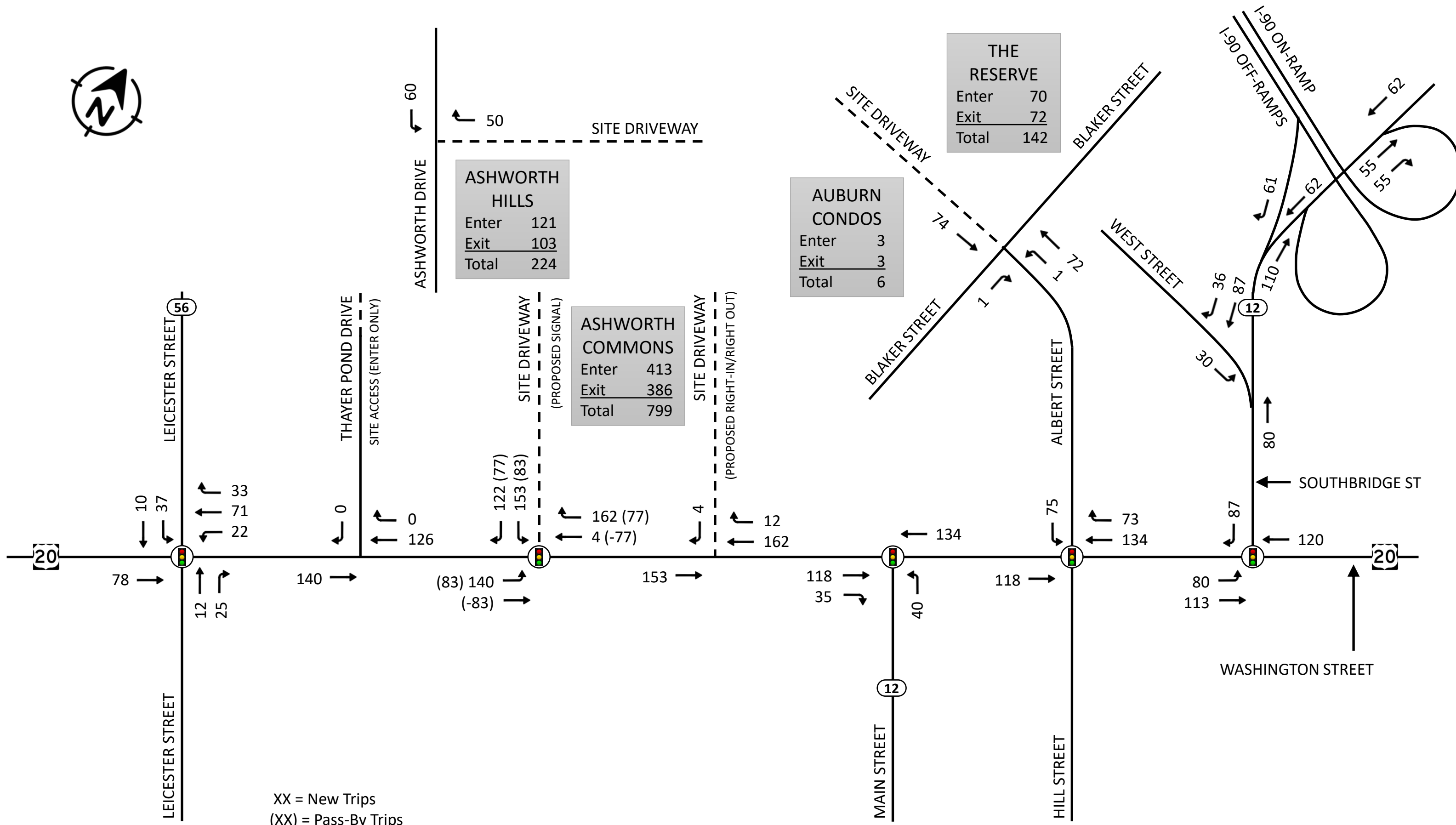


FIGURE 10

**SITE-GENERATED TRAFFIC VOLUMES
SATURDAY MIDDAY PEAK HOUR**

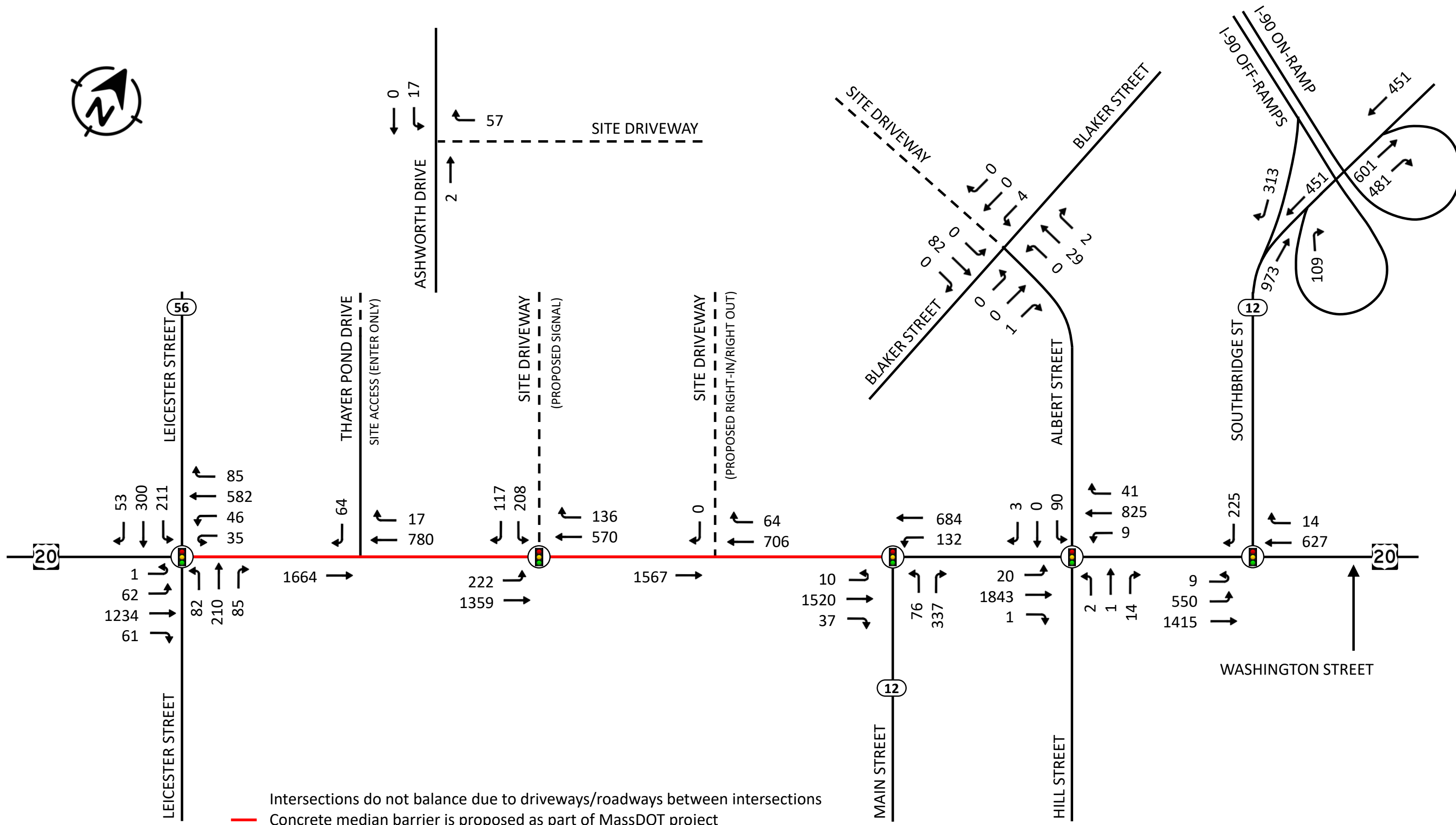


FIGURE 11
 2027 BUILD TRAFFIC VOLUMES
 WEEKDAY AM PEAK HOUR

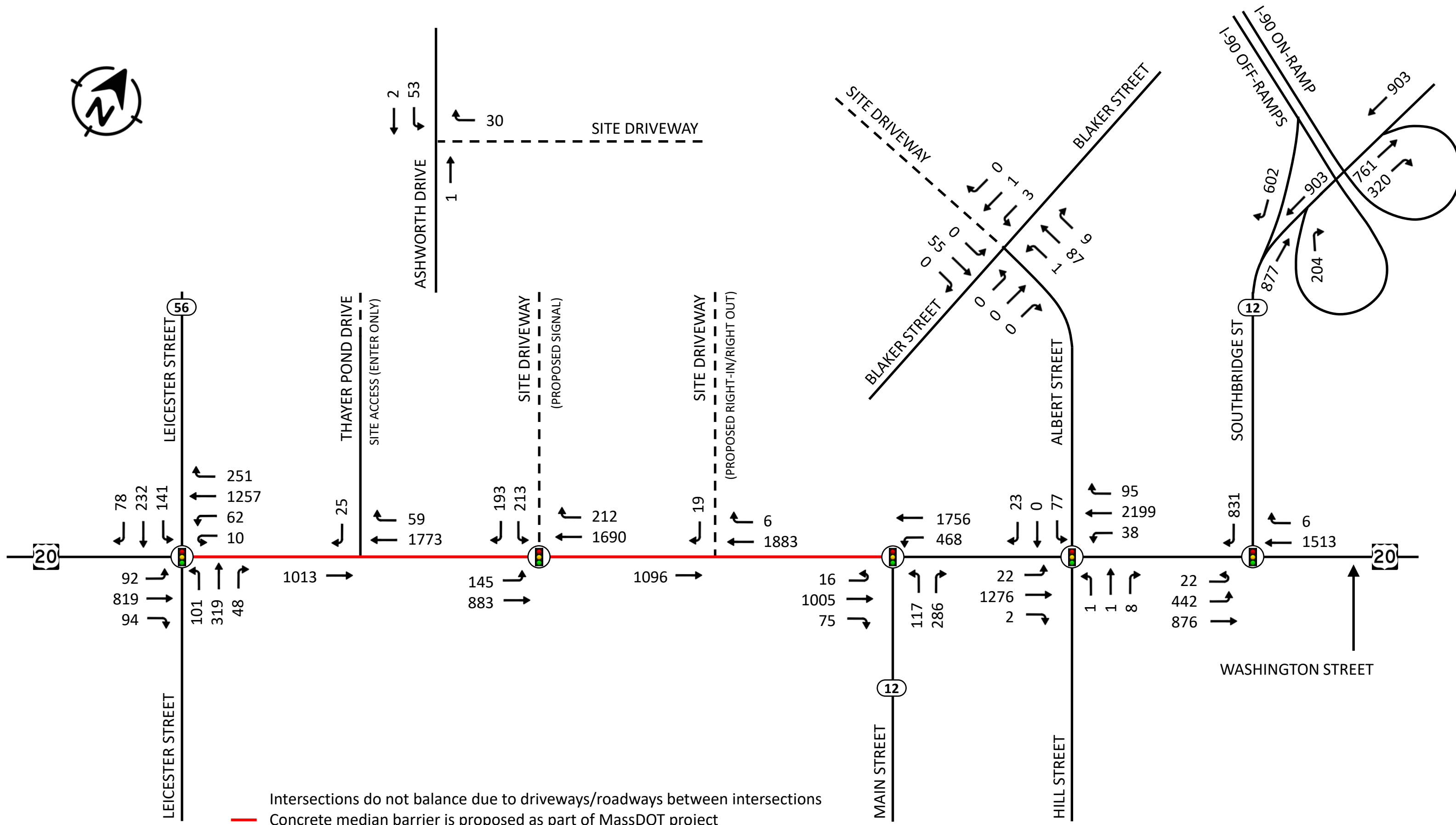


FIGURE 12
 2027 BUILD TRAFFIC VOLUMES
 WEEKDAY PM PEAK HOUR

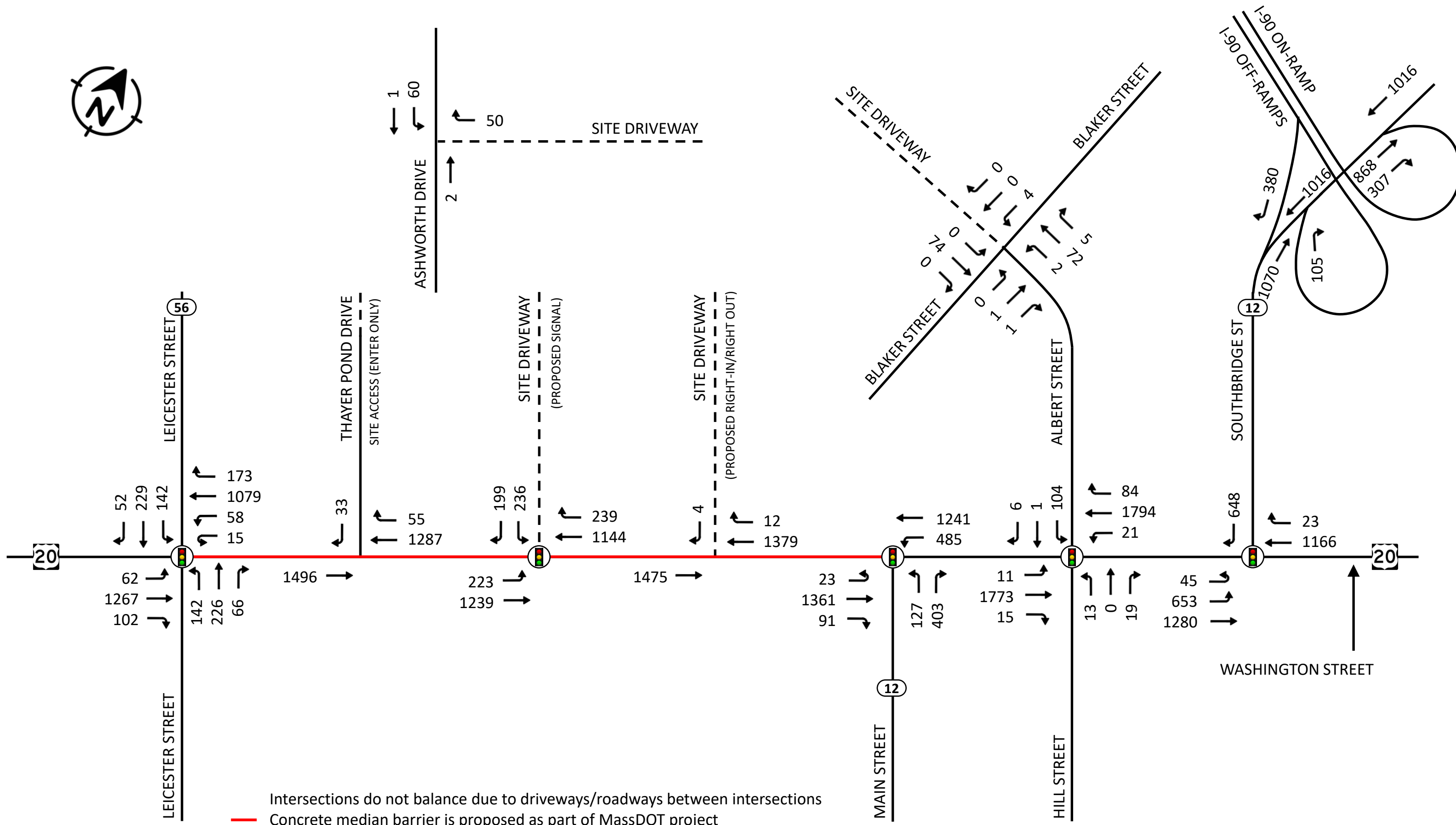


FIGURE 13

2027 BUILD TRAFFIC VOLUMES
 SATURDAY MIDDAY PEAK HOUR



TABLE 12
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 56												
<i>Weekday AM:</i>												
US Route 20 EB left-turn	0.46	56.9	E	49/97	0.59	64.4	E	53/100	0.59	64.4	E	53/100
US Route 20 EB through/right-turn	0.78	32.7	C	430/526	0.87	38.8	D	487/590	0.92	43.5	D	532/685
US Route 20 EB right-turn	--	--	--	--/--	0.05	21.1	C	<25/<25	0.05	21.1	C	<25/<25
US Route 20 WB left-turn	0.27	54.4	D	30/60	0.71	77.0	E	60/139	0.83	97.9	F	71/167
US Route 20 WB through/right-turn	0.44	24.2	C	190/213	0.43	26.7	C	180/244	0.46	27.2	C	198/266
US Route 20 WB right-turn	--	--	--	--/--	0.05	22.4	C	<25/<25	0.06	22.5	C	<25/<25
Route 56 NB approach	1.50	285.0	F	441/564	--	--	--	--/--	--	--	--	--/--
Route 56 NB left-turn	--	--	--	--/--	0.46	39.2	D	48/87	0.49	39.6	D	48/87
Route 56 NB through/right-turn	--	--	--	--/--	0.83	63.6	E	227/371	0.92	77.2	E	253/423
Route 56 SB left-turn	0.86	63.6	E	160/240	0.75	47.6	D	114/193	0.95	84.6	F	135/242
Route 56 SB through/right-turn	0.69	40.1	D	282/329	0.92	72.1	E	292/472	0.95	78.4	E	304/494
Overall Intersection	1.05	67.8	E	--/--	0.93	44.2	D	--/--	1.00	51.3	D	--/--
<i>Weekday PM:</i>												
US Route 20 EB left-turn	0.57	65.0	E	73/156	0.74	80.4	F	80/243	0.72	78.2	E	80/243
US Route 20 EB through/right-turn	0.54	29.3	C	248/451	0.56	30.1	C	255/525	0.63	32.9	C	280/574
US Route 20 EB right-turn	--	--	--	--/--	0.07	23.2	C	<25/<25	0.07	24.5	C	0/16
US Route 20 WB left-turn	0.35	61.8	E	37/84	0.70	89.9	F	43/138	0.79	96.1	F	63/212
US Route 20 WB through/right-turn	1.07	83.9	F	697/>999	0.97	59.4	E	515/1101	1.04	78.6	E	561/1188
US Route 20 WB right-turn	--	--	--	--/--	0.27	29.2	C	50/176	0.33	30.4	C	70/221
Route 56 NB approach	1.59	331.3	F	512/934	--	--	--	--/--	--	--	--	--/--
Route 56 NB left-turn	--	--	--	--/--	0.65	51.6	D	62/197	0.65	50.7	D	62/198
Route 56 NB through/right-turn	--	--	--	--/--	1.07	122.9	F	299/761	1.15	149.3	F	356/836
Route 56 SB left-turn	0.64	48.7	D	87/214	0.89	91.2	F	73/253	1.07	143.1	F	90/327
Route 56 SB through/right-turn	0.61	43.5	D	227/408	0.95	89.0	F	260/660	0.95	89.1	F	266/676
Overall Intersection	1.16	96.5	F	--/--	0.91	60.8	E	--/--	0.98	73.5	E	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 56												
<i>Saturday Midday:</i>												
US Route 20 EB left-turn	0.40	56.0	E	45/90	0.57	61.3	E	52/98	0.56	62.5	E	52/98
US Route 20 EB through/right-turn	0.76	32.0	C	413/505	0.88	38.7	D	501/608	0.94	46.7	D	556/716
US Route 20 EB right-turn	--	--	--	--/--	0.07	20.7	C	<25/<25	0.07	21.3	C	0/<25
US Route 20 WB left-turn	0.25	54.3	D	28/64	0.65	72.8	E	44/91	0.74	81.0	F	63/148
US Route 20 WB through/right-turn	0.72	30.6	C	380/463	0.80	35.7	D	407/523	0.83	37.4	D	451/616
US Route 20 WB right-turn	--	--	--	--/--	0.12	23.1	C	<25/51	0.17	23.5	C	<25/79
Route 56 NB approach	1.20	155.2	F	392/592	--	--	--	--/--	--	--	--	--/--
Route 56 NB left-turn	--	--	--	--/--	0.58	41.2	D	86/142	0.63	45.1	D	86/142
Route 56 NB through/right-turn	--	--	--	--/--	0.76	55.4	E	213/344	0.91	76.3	E	251/422
Route 56 SB left-turn	0.42	34.0	C	71/122	0.40	32.5	C	63/109	0.65	40.5	D	87/144
Route 56 SB through/right-turn	0.50	34.6	C	190/259	0.71	48.8	D	219/325	0.75	52.8	D	229/344
Overall Intersection	0.92	47.8	D	--/--	0.85	39.5	D	--/--	0.94	45.6	D	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Thayer Pond Drive												
<i>Weekday AM:</i>												
US Route 20 EB left-turn/through	0.01	0.4	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 EB through	0.57	0.0	A	--/ <25	0.49	0.0	A	--/ <25	0.53	0.0	A	--/ <25
US Route 20 WB through	0.28	0.0	A	--/ <25	0.30	0.0	A	--/ <25	0.33	0.0	A	--/ <25
US Route 20 WB through/right-turn	0.14	0.0	A	--/ <25	0.16	0.0	A	--/ <25	0.18	0.0	A	--/ <25
Thayer Pond Drive SB left-turn	0.16	24.2	C	--/ <25	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB right-turn	0.05	11.0	B	--/ <25	0.12	11.7	B	--/ <25	0.12	12.2	B	--/ <25
Overall Intersection	--	0.6	B	--/ --	--	0.3	A	--/ --	--	0.3	A	--/ --
<i>Weekday PM:</i>												
US Route 20 EB left-turn/through	0.05	1.6	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 EB through	0.35	0.0	A	--/ <25	0.29	0.0	A	--/ <25	0.32	0.0	A	--/ <25
US Route 20 WB through	0.65	0.0	A	--/ <25	0.71	0.0	A	--/ <25	0.76	0.0	A	--/ <25
US Route 20 WB through/right-turn	0.35	0.0	A	--/ <25	0.39	0.0	A	--/ <25	0.42	0.0	A	--/ <25
Thayer Pond Drive SB left-turn	0.30	122.7	F	--/ 26	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB right-turn	0.06	17.5	C	--/ <25	0.10	19.7	C	--/ <25	0.11	21.4	C	--/ <25
Overall Intersection	--	0.9	A	--/ --	--	0.2	B	--/ --	--	0.2	B	--/ --
<i>Saturday Midday:</i>												
US Route 20 EB left-turn/through	0.04	1.2	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 EB through	0.50	0.0	A	--/ <25	0.43	0.0	A	--/ <25	0.48	0.0	A	--/ <25
US Route 20 WB through	0.43	0.0	A	--/ <25	0.49	0.0	A	--/ <25	0.55	0.0	A	--/ <25
US Route 20 WB through/right-turn	0.23	0.0	A	--/ <25	0.28	0.0	A	--/ <25	0.31	0.0	A	--/ <25
Thayer Pond Drive SB left-turn	0.17	48.9	E	--/ <25	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB right-turn	0.05	13.0	B	--/ <25	0.09	14.6	B	--/ <25	0.10	15.8	C	--/ <25
Overall Intersection	--	0.7	B	--/ --	--	0.2	A	--/ --	--	0.2	A	--/ --

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 12 (Main Street)												
<i>Weekday AM:</i>												
US Route 20 EB U-turn	--	--	--	--/--	0.29	32.5	C	<25/<25	0.30	33.8	C	<25/<25
US Route 20 EB through/right-turn	0.85	22.1	C	324/582	1.22	123.0	F	389/548	1.36	185.6	F	470/597
US Route 20 WB left-turn	0.44	35.1	D	36/65	0.48	26.7	C	<25/46	0.50	27.9	C	<25/46
US Route 20 WB through	0.27	5.7	A	58/100	0.40	11.0	B	45/140	0.50	12.7	B	67/172
Route 12 NB left-turn/right-turn	0.69	37.4	D	95/166	0.28	23.5	C	<25/60	0.61	27.4	C	48/133
Route 12 NB right-turn	0.71	38.6	D	95/170	0.14	22.7	C	<25/49	0.15	22.0	C	<25/51
Overall Intersection	0.76	21.3	C	--/--	1.03	77.9	E	--/--	1.18	111.6	F	--/--
<i>Weekday PM:</i>												
US Route 20 EB U-turn	--	--	--	--/--	0.63	78.6	E	<25/28	0.65	90.9	F	<25/28
US Route 20 EB through/right-turn	0.74	23.4	C	191/344	0.66	19.1	B	204/270	0.70	19.1	B	261/341
US Route 20 WB left-turn	0.64	29.5	C	96/192	1.00	74.5	E	124/248	1.10	112.8	F	152/248
US Route 20 WB through	0.70	10.1	B	221/398	0.88	19.8	B	274/656	0.87	19.0	B	307/719
Route 12 NB left-turn/right-turn	0.59	29.4	C	85/185	0.77	49.4	D	77/204	0.98	97.0	F	108/243
Route 12 NB right-turn	0.64	31.3	C	87/192	0.13	32.1	C	<25/62	0.14	36.1	D	<25/64
Overall Intersection	0.76	18.7	B	--/--	1.01	29.7	C	--/--	1.04	36.4	D	--/--
<i>Saturday Midday:</i>												
US Route 20 EB U-turn	--	--	--	--/--	0.66	65.3	E	<25/27	0.66	65.3	E	<25/27
US Route 20 EB through/right-turn	0.88	31.9	C	364/602	1.11	79.7	E	353/474	1.24	134.5	F	421/546
US Route 20 WB left-turn	0.74	40.4	D	146/211	1.39	219.8	F	123/206	1.39	219.8	F	123/206
US Route 20 WB through	0.47	8.0	A	157/232	0.74	15.8	B	130/371	0.82	18.5	B	155/432
Route 12 NB left-turn/right-turn	0.74	42.9	D	147/250	0.76	38.0	D	61/166	0.95	67.4	E	84/210
Route 12 NB right-turn	0.80	48.3	D	153/265	0.17	23.8	C	<25/55	0.18	23.8	C	<25/57
Overall Intersection	0.82	27.3	C	--/--	1.22	71.7	E	--/--	1.37	94.0	F	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Hill Street and Albert Street												
<i>Weekday AM:</i>												
US Route 20 EB left-turn	0.42	44.7	D	<25/35	0.42	44.7	D	<25/35	0.42	44.7	D	<25/35
US Route 20 EB through/right-turn	0.68	7.5	A	157/427	0.72	7.6	A	<25/495	0.84	14.6	B	284/787
US Route 20 WB left-turn	0.39	62.3	D	<25/<25	0.43	61.0	E	<25/<25	0.43	64.8	E	<25/<25
US Route 20 WB through/right-turn	0.31	4.7	A	48/63	0.31	4.8	A	<25/105	0.42	9.8	A	77/334
Hill Street NB left-turn	0.05	41.4	D	<25/<25	0.04	42.7	D	<25/<25	0.01	36.1	D	<25/<25
Hill Street NB through/right-turn	0.04	41.4	D	<25/<25	0.03	42.7	D	<25/<25	0.02	36.1	D	<25/<25
Albert Street SB left-turn	0.17	41.9	D	<25/<25	0.15	43.2	D	<25/<25	0.66	46.4	D	54/98
Albert Street SB through/right-turn	0.00	41.2	D	<25/<25	0.00	42.5	D	<25/<25	0.00	36.0	D	<25/<25
Overall Intersection	0.66	7.8	A	--/--	0.70	7.6	A	--/--	0.82	14.7	B	--/--
<i>Weekday PM:</i>												
US Route 20 EB left-turn	0.40	58.0	E	<25/46	0.39	58.1	E	<25/46	0.39	58.1	E	<25/46
US Route 20 EB through/right-turn	0.45	6.0	A	176/251	0.46	6.0	A	181/271	0.55	9.0	A	254/392
US Route 20 WB left-turn	0.51	60.5	E	27/32	0.44	58.7	E	30/32	0.44	59.8	E	30/31
US Route 20 WB through/right-turn	0.73	14.5	B	793/883	0.83	14.9	B	975/1008	0.96	24.5	C	1068/1135
Hill Street NB left-turn	0.03	54.0	D	<25/<25	0.02	55.5	E	<25/<25	0.01	50.3	D	<25/<25
Hill Street NB through/right-turn	0.03	54.0	D	<25/<25	0.02	55.5	E	<25/<25	0.01	50.3	D	<25/<25
Albert Street SB left-turn	0.42	56.5	E	<25/43	0.38	57.6	E	<25/46	0.69	66.4	E	64/113
Albert Street SB through/right-turn	0.02	54.0	D	<25/<25	0.02	55.5	E	<25/<25	0.02	50.3	D	<25/<25
Overall Intersection	0.71	13.2	B	--/--	0.80	13.3	B	--/--	0.92	20.8	C	--/--
<i>Saturday Midday:</i>												
US Route 20 EB left-turn	0.42	48.0	D	<25/<25	0.46	48.7	D	<25/<25	0.46	48.7	D	<25/<25
US Route 20 EB through/right-turn	0.64	7.9	A	136/400	0.72	9.2	A	170/506	0.84	16.2	B	281/782
US Route 20 WB left-turn	0.37	33.2	C	<25/<25	0.41	36.4	D	<25/<25	0.41	32.0	C	<25/<25
US Route 20 WB through/right-turn	0.64	9.2	A	314/356	0.69	9.8	A	375/414	0.86	16.8	B	434/661
Hill Street NB left-turn	0.23	41.2	D	<25/<25	0.17	41.1	D	<25/26	0.08	35.4	D	<25/<25
Hill Street NB through/right-turn	0.02	40.3	D	<25/<25	0.01	40.5	D	<25/<25	0.01	35.1	D	<25/<25
Albert Street SB left-turn	0.43	42.5	D	<25/43	0.40	42.4	D	<25/45	0.70	48.9	D	62/110
Albert Street SB through/right-turn	0.02	40.3	D	<25/<25	0.02	40.5	D	<25/<25	0.01	35.1	D	<25/<25
Overall Intersection	0.62	9.7	A	--/--	0.68	10.4	B	--/--	0.84	17.7	B	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 12 (Southbridge Street)												
<i>Weekday AM:</i>												
US Route 20 EB U-turn	0.04	44.8	D	<25/<25	0.04	43.9	D	<25/<25	0.04	43.5	D	<25/<25
US Route 20 EB left-turn	0.38	20.6	C	63/113	0.40	20.8	C	98/123	0.45	20.7	C	79/171
US Route 20 EB through	0.40	0.2	A	<25/<25	0.43	0.2	A	<25/<25	0.46	0.2	A	<25/<25
US Route 20 WB through	0.37	14.7	B	114/138	0.35	15.0	B	110/151	0.42	16.6	B	133/179
US Route 20 WB right-turn	0.01	0.0	A	<25/<25	0.01	0.0	A	<25/<25	0.01	0.0	A	<25/<25
Route 12 SB right-turn	0.35	31.5	C	47/77	0.35	30.8	C	49/82	0.44	30.5	C	67/106
Overall Intersection	0.47	9.5	A	--/--	0.50	9.4	A	--/--	0.53	10.3	B	--/--
<i>Weekday PM:</i>												
US Route 20 EB U-turn	0.15	54.0	D	<25/55	0.15	53.7	D	<25/32	0.15	64.2	E	<25/33
US Route 20 EB left-turn	0.28	18.8	B	82/82	0.29	18.8	B	86/86	0.35	18.0	B	79/79
US Route 20 EB through	0.23	0.1	A	<25/<25	0.24	0.1	A	<25/<25	0.28	0.1	A	<25/<25
US Route 20 WB through	0.77	27.6	C	440/532	0.86	31.9	C	531/639	0.92	37.1	D	602/742
US Route 20 WB right-turn	0.00	0.0	A	<25/<25	0.00	0.0	A	<25/<25	0.00	0.0	A	<25/<25
Route 12 SB right-turn	1.02	80.0	E	352/488	1.06	94.0	F	394/531	1.18	137.3	F	476/617
Overall Intersection	0.80	32.2	C	--/--	0.87	37.1	D	--/--	0.95	48.7	D	--/--
<i>Saturday Midday:</i>												
US Route 20 EB U-turn	0.11	23.4	C	<25/40	0.12	22.0	C	<25/34	0.12	20.2	C	<25/27
US Route 20 EB left-turn	0.33	20.6	C	100/212	0.38	20.6	C	122/240	0.43	20.1	C	169/265
US Route 20 EB through	0.33	0.1	A	<25/<25	0.37	0.2	A	<25/<25	0.41	0.2	A	<25/<25
US Route 20 WB through	0.74	27.2	C	258/334	0.82	30.1	C	298/383	0.91	36.7	D	352/489
US Route 20 WB right-turn	0.01	0.0	A	<25/<25	0.02	0.0	A	<25/<25	0.02	0.0	A	<25/<25
Route 12 SB right-turn	1.13	117.0	F	239/308	1.10	102.7	F	225/340	1.26	168.6	F	288/409
Overall Intersection	0.73	33.6	C	--/--	0.77	29.9	C	--/--	0.87	43.6	D	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Site Driveway (Signalized)												
<i>Weekday AM:</i>												
US Route 20 EB left-turn	--	--	--	--/--	--	--	--	--/--	0.70	28.2	C	80/171
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.68	8.3	A	154/217
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.65	20.3	C	101/150
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.09	0.1	A	<25/<25
Site Driveway SB left-turn	--	--	--	--/--	--	--	--	--/--	0.68	28.2	C	76/162
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.43	22.2	C	40/85
Overall Intersection	--	--	--	--/--	--	--	--	--/--	0.93	14.4	B	--/--
<i>Weekday PM:</i>												
US Route 20 EB left-turn	--	--	--	--/--	--	--	--	--/--	0.79	70.2	E	120/231
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.36	5.5	A	117/146
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.92	31.2	C	642/780
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.15	0.2	A	<25/<25
Site Driveway SB left-turn	--	--	--	--/--	--	--	--	--/--	0.82	65.7	E	174/306
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.83	68.9	E	158/289
Overall Intersection	--	--	--	--/--	--	--	--	--/--	0.92	28.5	C	--/--
<i>Saturday Midday:</i>												
US Route 20 EB left-turn	--	--	--	--/--	--	--	--	--/--	0.77	53.0	D	163/284
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.54	8.0	A	218/269
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.78	27.9	C	384/474
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.16	0.2	A	<25/<25
Site Driveway SB left-turn	--	--	--	--/--	--	--	--	--/--	0.74	49.5	D	169/263
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.70	47.4	D	140/224
Overall Intersection	--	--	--	--/--	--	--	--	--/--	0.81	22.8	C	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Site Driveway (Right-In / Right-Out)												
<i>Weekday AM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.50	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.23	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.04	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	0.0	A	--/--
<i>Weekday PM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.35	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.60	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.04	12.2	B	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	0.1	B	--/--
<i>Saturday Midday:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.47	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.44	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.01	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.01	10.1	B	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	0.0	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Blaker Street at Albert Street and Site Driveway												
<i>Weekday AM:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Albert Street WB approach	0.00	8.3	A	--/<25	0.00	8.3	A	--/<25	0.00	0.0	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	8.7	A	--/<25
Blaker Street SB approach	0.00	7.2	A	--/<25	0.00	7.2	A	--/<25	0.00	9.2	A	--/<25
Overall Intersection	--/--	7.8	A	--/--	--/--	7.6	A	--/--	--	0.4	A	--/--
<i>Weekday PM:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Albert Street WB approach	0.02	8.4	A	--/<25	0.01	8.3	A	--/<25	0.00	0.1	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
Blaker Street SB approach	0.00	5.4	A	--/<25	0.00	5.4	A	--/<25	0.01	9.6	A	--/<25
Overall Intersection	--/--	7.9	A	--/--	--/--	7.5	A	--/--	--	0.3	A	--/--
<i>Saturday Midday:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Albert Street WB approach	0.01	8.6	A	--/<25	0.01	8.5	A	--/<25	0.00	0.2	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	9.9	A	--/<25
Blaker Street SB approach	0.01	7.4	A	--/<25	0.00	7.4	A	--/<25	0.01	9.8	A	--/<25
Overall Intersection	--/--	6.8	A	--/--	--/--	7.3	A	--/--	--	0.4	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 12 (CONTINUED)
Intersection Capacity Analysis Summary

Intersection/Peak Hour/Lane Group	2019 Existing				2027 No-Build				2027 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ashworth Drive at Site Driveway												
<i>Weekday AM:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.06	8.5	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.01	7.2	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	8.0	A	--/--
<i>Weekday PM:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.03	8.4	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.04	7.1	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	7.5	A	--/--
<i>Saturday Midday:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.05	8.5	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.04	7.2	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	7.7	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 14
Intersection Capacity Analysis Summary – with Mitigation

Intersection/Peak Hour/Lane Group	2027 No-Build				2027 Build				2027 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 56												
<i>Weekday AM:</i>												
US Route 20 EB left-turn	0.59	64.4	E	53/100	0.59	64.4	E	53/100	0.59	64.8	E	54/101
US Route 20 EB through/right-turn	0.87	38.8	D	487/590	0.92	43.5	D	532/685	0.98	57.3	E	563/732
US Route 20 EB right-turn	0.05	21.1	C	<25/<25	0.05	21.1	C	<25/<25	0.05	16.1	B	<25/<25
US Route 20 WB left-turn	0.71	77.0	E	60/139	0.83	97.9	F	71/167	0.67	69.4	E	70/147
US Route 20 WB through/right-turn	0.43	26.7	C	180/244	0.46	27.2	C	198/266	0.47	28.5	C	204/274
US Route 20 WB right-turn	0.05	22.4	C	<25/<25	0.06	22.5	C	<25/<25	0.06	13.9	B	<25/<25
Route 56 NB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Route 56 NB left-turn	0.46	39.2	D	48/87	0.49	39.6	D	48/87	0.45	39.4	D	47/85
Route 56 NB through/right-turn	0.83	63.6	E	227/371	0.92	77.2	E	253/423	0.92	79.6	E	255/427
Route 56 SB left-turn	0.75	47.6	D	114/193	0.95	84.6	F	135/242	0.87	58.9	E	134/227
Route 56 SB through/right-turn	0.92	72.1	E	292/472	0.95	78.4	E	304/494	0.89	66.5	E	300/476
Overall Intersection	0.93	44.2	D	--/--	1.00	51.3	D	--/--	0.99	53.1	D	--/--
<i>Weekday PM:</i>												
US Route 20 EB left-turn	0.74	80.4	F	80/243	0.72	78.2	E	80/243	1.01	157.4	F	82/277
US Route 20 EB through/right-turn	0.56	30.1	C	255/525	0.63	32.9	C	280/574	0.65	34.8	C	289/584
US Route 20 EB right-turn	0.07	23.2	C	<25/<25	0.07	24.5	C	0/16	0.07	18.3	B	<25/37
US Route 20 WB left-turn	0.70	89.9	F	43/138	0.79	96.1	F	63/212	0.70	79.5	E	63/201
US Route 20 WB through/right-turn	0.97	59.4	E	515/1101	1.04	78.6	E	561/1188	1.00	66.0	E	544/1164
US Route 20 WB right-turn	0.27	29.2	C	50/176	0.33	30.4	C	70/221	0.29	20.8	C	58/201
Route 56 NB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Route 56 NB left-turn	0.65	51.6	D	62/197	0.65	50.7	D	62/198	0.61	47.6	D	61/187
Route 56 NB through/right-turn	1.07	122.9	F	299/761	1.15	149.3	F	356/836	1.10	132.2	F	344/823
Route 56 SB left-turn	0.89	91.2	F	73/253	1.07	143.1	F	90/327	1.07	142.3	F	89/328
Route 56 SB through/right-turn	0.95	89.0	F	260/660	0.95	89.1	F	266/676	0.92	79.5	E	263/664
Overall Intersection	0.91	60.8	E	--/--	0.98	73.5	E	--/--	0.97	67.5	E	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 14 (CONTINUED)
Intersection Capacity Analysis Summary – with Mitigation

Intersection/Peak Hour/Lane Group	2027 No-Build				2027 Build				2027 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 56												
<i>Saturday Midday:</i>												
US Route 20 EB left-turn	0.57	61.3	E	52/98	0.56	62.5	E	52/98	0.63	67.9	E	54/120
US Route 20 EB through/right-turn	0.88	38.7	D	501/608	0.94	46.7	D	556/716	0.95	48.0	D	556/716
US Route 20 EB right-turn	0.07	20.7	C	<25/<25	0.07	21.3	C	0/<25	0.08	14.5	B	<25/30
US Route 20 WB left-turn	0.65	72.8	E	44/91	0.74	81.0	F	63/148	0.65	68.4	E	63/135
US Route 20 WB through/right-turn	0.80	35.7	D	407/523	0.83	37.4	D	451/616	0.81	35.0	C	430/523
US Route 20 WB right-turn	0.12	23.1	C	<25/51	0.17	23.5	C	<25/79	0.18	15.5	B	31/70
Route 56 NB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Route 56 NB left-turn	0.58	41.2	D	86/142	0.63	45.1	D	86/142	0.64	44.6	D	88/144
Route 56 NB through/right-turn	0.76	55.4	E	213/344	0.91	76.3	E	251/422	0.84	61.6	E	248/400
Route 56 SB left-turn	0.40	32.5	C	63/109	0.65	40.5	D	87/144	0.71	48.9	D	89/156
Route 56 SB through/right-turn	0.71	48.8	D	219/325	0.75	52.8	D	229/344	0.77	54.7	D	234/364
Overall Intersection	0.85	39.5	D	--/--	0.94	45.6	D	--/--	0.91	43.9	D	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 14 (CONTINUED)
Intersection Capacity Analysis Summary – with Mitigation

Intersection/Peak Hour/Lane Group	2027 No-Build				2027 Build				2027 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 12 (Main Street)												
<i>Weekday AM:</i>												
US Route 20 EB U-turn	0.29	32.5	C	<25/<25	0.30	33.8	C	<25/<25	0.52	77.0	E	<25/27
US Route 20 EB through/right-turn	1.22	123.0	F	389/548	1.36	185.6	F	470/597	0.87	24.6	C	517/803
US Route 20 WB left-turn	0.48	26.7	C	<25/46	0.50	27.9	C	<25/46	0.65	58.2	E	50/94
US Route 20 WB through	0.40	11.0	B	45/140	0.50	12.7	B	67/172	0.35	9.9	A	92/219
Route 12 NB left-turn/right-turn	0.28	23.5	C	<25/60	0.61	27.4	C	48/133	0.75	58.0	E	117/202
Route 12 NB right-turn	0.14	22.7	C	<25/49	0.15	22.0	C	<25/51	0.15	41.8	D	<25/66
Overall Intersection	1.03	77.9	E	--/--	1.18	111.6	F	--/--	0.87	26.6	C	--/--
<i>Weekday PM:</i>												
US Route 20 EB U-turn	0.63	78.6	E	<25/28	0.65	90.9	F	<25/28	0.40	61.6	E	<25/37
US Route 20 EB through/right-turn	0.66	19.1	B	204/270	0.70	19.1	B	261/341	0.74	27.1	C	365/450
US Route 20 WB left-turn	1.00	74.5	E	124/248	1.10	112.8	F	152/248	0.76	49.2	D	171/252
US Route 20 WB through	0.88	19.8	B	274/656	0.87	19.0	B	307/719	0.85	19.9	B	389/742
Route 12 NB left-turn/right-turn	0.77	49.4	D	77/204	0.98	97.0	F	108/243	0.85	70.5	E	141/302
Route 12 NB right-turn	0.13	32.1	C	<25/62	0.14	36.1	D	<25/64	0.14	43.3	D	<25/74
Overall Intersection	29.7	29.7	C	--/--	1.04	36.4	D	--/--	0.92	29.9	C	--/--
<i>Saturday Midday:</i>												
US Route 20 EB U-turn	0.66	65.3	E	<25/27	0.66	65.3	E	<25/27	0.40	61.1	E	<25/47
US Route 20 EB through/right-turn	1.11	79.7	E	353/474	1.24	134.5	F	421/546	0.99	50.9	D	643/808
US Route 20 WB left-turn	1.39	219.8	F	123/206	1.39	219.8	F	123/206	0.94	75.1	E	205/306
US Route 20 WB through	0.74	15.8	B	130/371	0.82	18.5	B	155/432	0.64	16.6	B	363/445
Route 12 NB left-turn/right-turn	0.76	38.0	D	61/166	0.95	67.4	E	84/210	0.89	74.6	E	199/358
Route 12 NB right-turn	0.17	23.8	C	<25/55	0.18	23.8	C	<25/57	0.18	42.6	D	<25/80
Overall Intersection	1.22	71.7	E	--/--	1.37	94.0	F	--/--	1.00	43.9	D	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 14 (CONTINUED)
Intersection Capacity Analysis Summary – with Mitigation

Intersection/Peak Hour/Lane Group	2027 No-Build				2027 Build				2027 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Hill Street and Albert Street												
<i>Weekday AM:</i>												
US Route 20 EB left-turn	0.42	44.7	D	<25/35	0.42	44.7	D	<25/35	0.42	44.7	D	<25/35
US Route 20 EB through/right-turn	0.72	7.6	A	<25/495	0.84	14.6	B	284/787	0.84	14.6	B	284/785
US Route 20 WB left-turn	0.43	61.0	E	<25/<25	0.43	64.8	E	<25/<25	0.43	55.7	E	<25/<25
US Route 20 WB through/right-turn	0.31	4.8	A	<25/105	0.42	9.8	A	77/334	0.42	3.1	A	34/43
Hill Street NB left-turn	0.04	42.7	D	<25/<25	0.01	36.1	D	<25/<25	0.01	36.1	D	<25/<25
Hill Street NB through/right-turn	0.03	42.7	D	<25/<25	0.02	36.1	D	<25/<25	0.02	36.1	D	<25/<25
Albert Street SB left-turn	0.15	43.2	D	<25/<25	0.66	46.4	D	54/98	0.66	46.4	D	54/99
Albert Street SB through/right-turn	0.00	42.5	D	<25/<25	0.00	36.0	D	<25/<25	0.00	36.0	D	<25/<25
Overall Intersection	0.70	7.6	A	--/--	0.82	14.7	B	--/--	0.82	12.6	B	--/--
<i>Weekday PM:</i>												
US Route 20 EB left-turn	0.39	58.1	E	<25/46	0.39	58.1	E	<25/46	0.39	58.1	E	<25/46
US Route 20 EB through/right-turn	0.46	6.0	A	181/271	0.55	9.0	A	254/392	0.55	9.0	A	254/392
US Route 20 WB left-turn	0.44	58.7	E	30/32	0.44	59.8	E	30/31	0.44	59.9	E	31/31
US Route 20 WB through/right-turn	0.83	14.9	B	975/1008	0.96	24.5	C	1068/1135	0.96	10.7	B	427/1225
Hill Street NB left-turn	0.02	55.5	E	<25/<25	0.01	50.3	D	<25/<25	0.01	50.3	D	<25/<25
Hill Street NB through/right-turn	0.02	55.5	E	<25/<25	0.01	50.3	D	<25/<25	0.01	50.3	D	<25/<25
Albert Street SB left-turn	0.38	57.6	E	<25/46	0.69	66.4	E	64/113	0.69	66.4	E	64/113
Albert Street SB through/right-turn	0.02	55.5	E	<25/<25	0.02	50.3	D	<25/<25	0.02	50.3	D	<25/<25
Overall Intersection	0.80	13.3	B	--/--	0.92	20.8	C	--/--	0.92	12.4	B	--/--
<i>Saturday Midday:</i>												
US Route 20 EB left-turn	0.46	48.7	D	<25/<25	0.46	48.7	D	<25/<25	0.46	48.7	D	<25/<25
US Route 20 EB through/right-turn	0.72	9.2	A	170/506	0.84	16.2	B	281/782	0.86	17.3	B	281/762
US Route 20 WB left-turn	0.41	36.4	D	<25/<25	0.41	32.0	C	<25/<25	0.31	31.0	C	<25/<25
US Route 20 WB through/right-turn	0.69	9.8	A	375/414	0.86	16.8	B	434/661	0.86	5.9	A	<25/813
Hill Street NB left-turn	0.17	41.1	D	<25/26	0.08	35.4	D	<25/<25	0.08	35.4	D	<25/<25
Hill Street NB through/right-turn	0.01	40.5	D	<25/<25	0.01	35.1	D	<25/<25	0.01	35.1	D	<25/<25
Albert Street SB left-turn	0.40	42.4	D	<25/45	0.70	48.9	D	62/110	0.70	48.9	D	62/110
Albert Street SB through/right-turn	0.02	40.5	D	<25/<25	0.01	35.1	D	<25/<25	0.01	35.1	D	<25/<25
Overall Intersection	0.68	10.4	B	--/--	0.84	17.7	B	--/--	0.88	12.9	B	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE 14 (CONTINUED)
Intersection Capacity Analysis Summary – with Mitigation

Intersection/Peak Hour/Lane Group	2027 No-Build				2027 Build				2027 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Route 12 (Southbridge Street)												
<i>Weekday AM:</i>												
US Route 20 EB U-turn	0.04	43.9	D	<25/<25	0.04	43.5	D	<25/<25	0.03	27.6	C	<25/<25
US Route 20 EB left-turn	0.40	20.8	C	98/123	0.45	20.7	C	79/171	0.38	10.0	B	106/106
US Route 20 EB through	0.43	0.2	A	<25/<25	0.46	0.2	A	<25/<25	0.46	0.2	A	<25/<25
US Route 20 WB through	0.35	15.0	B	110/151	0.42	16.6	B	133/179	0.49	21.2	C	152/204
US Route 20 WB right-turn	0.01	0.0	A	<25/<25	0.01	0.0	A	<25/<25	0.01	0.0	A	<25/<25
Route 12 SB right-turn	0.35	30.8	C	49/82	0.44	30.5	C	67/106	0.44	30.5	C	67/106
Overall Intersection	0.50	9.4	A	--/--	0.53	10.3	B	--/--	0.53	9.2	A	--/--
<i>Weekday PM:</i>												
US Route 20 EB U-turn	0.15	53.7	D	<25/32	0.15	64.2	E	<25/33	0.27	54.6	D	<25/32
US Route 20 EB left-turn	0.29	18.8	B	86/86	0.35	18.0	B	79/79	0.33	17.4	B	131/149
US Route 20 EB through	0.24	0.1	A	<25/<25	0.28	0.1	A	<25/<25	0.28	0.1	A	<25/<25
US Route 20 WB through	0.86	31.9	C	531/639	0.92	37.1	D	602/742	0.97	46.3	D	635/814
US Route 20 WB right-turn	0.00	0.0	A	<25/<25	0.00	0.0	A	<25/<25	0.00	0.0	A	<25/<25
Route 12 SB right-turn	1.06	94.0	F	394/531	1.18	137.3	F	476/617	0.95	56.1	E	385/531
Overall Intersection	0.87	37.1	D	--/--	0.95	48.7	D	--/--	0.93	34.1	C	--/--
<i>Saturday Midday:</i>												
US Route 20 EB U-turn	0.12	22.0	C	<25/34	0.12	20.2	C	<25/27	0.22	40.7	D	<25/32
US Route 20 EB left-turn	0.38	20.6	C	122/240	0.43	20.1	C	169/265	0.44	7.8	A	95/95
US Route 20 EB through	0.37	0.2	A	<25/<25	0.41	0.2	A	<25/<25	0.41	0.2	A	<25/<25
US Route 20 WB through	0.82	30.1	C	298/383	0.91	36.7	D	352/489	0.89	33.6	C	344/476
US Route 20 WB right-turn	0.02	0.0	A	<25/<25	0.02	0.0	A	<25/<25	0.02	0.0	A	<25/<25
Route 12 SB right-turn	1.10	102.7	F	225/340	1.26	168.6	F	288/409	0.84	36.9	D	211/315
Overall Intersection	0.77	29.9	C	--/--	0.87	43.6	D	--/--	0.81	18.4	B	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TRAFFIC IMPACT AND ACCESS STUDY

The Reserve – Oxford/Auburn, Massachusetts

TRIP-GENERATION CALCULATIONS

Trip Generation Calculations

	The Reserve LUC 221	Auburn Condos			Auburn Condos LUC 220	Ashworth Hills LUC 220	Ashworth Commons				Total	Ashworth Commons LUC 820, 960, 934, 710	TOTAL
		Albert St Ext	Blaker St				LUC 820	LUC 960	LUC 934	LUC 710			
Weekday Daily													
<i>Enter</i>	882	8	2	10	10	1,189	1,513	1,141	815	416	3,885	3,885	5,966
<i>Exit</i>	882	8	2	10	10	1,189	1,615	1,218	659	393	3,885	3,885	5,966
<i>Total</i>	1,764	16	4	20	20	2,378	3,128	2,359	1,474	809	7,770	7,770	11,932
Weekday AM													
<i>Enter</i>	28	1	0	1	1	33	101	159	61	85	406	406	468
<i>Exit</i>	80	2	1	3	3	111	58	142	70	1	271	271	465
<i>Total</i>	108	3	1	4	4	144	159	301	131	86	677	677	933
Weekday PM													
<i>Enter</i>	84	3	1	4	4	105	129	114	58	10	311	311	504
<i>Exit</i>	53	2	0	2	2	61	151	124	44	75	394	394	510
<i>Total</i>	137	5	1	6	6	166	280	238	102	85	705	705	1,014
Saturday Daily													
<i>Enter</i>	795	25	8	33	33	1,302	2,729	1,673	1,089	70	5,561	5,561	7,691
<i>Exit</i>	795	25	8	33	33	1,302	2,590	1,588	1,300	83	5,561	5,561	7,691
<i>Total</i>	1,590	50	16	66	66	2,604	5,319	3,261	2,389	153	11,122	11,122	15,382
Saturday Midday													
<i>Enter</i>	70	2	1	3	3	121	172	130	95	16	413	413	607
<i>Exit</i>	72	2	1	3	3	103	144	117	111	14	386	386	564
<i>Total</i>	142	4	2	6	6	224	316	247	206	30	799	799	1,171

Trip Generation Calculations

Ashworth Commons															
	Total Trips					Pass-By Trips					New Trips				
	LUC 820	LUC 960	LUC 934	LUC 710	Total	LUC 820	LUC 960	LUC 934	LUC 710	Total	LUC 820	LUC 960	LUC 934	LUC 710	Total
Weekday Daily															
<i>Enter</i>	1,513	1,141	815	416	3,885	407	661	361	0	1,429	1,106	480	454	416	2,456
<i>Exit</i>	<u>1,615</u>	<u>1,218</u>	<u>659</u>	<u>393</u>	<u>3,885</u>	<u>407</u>	<u>661</u>	<u>361</u>	<u>0</u>	<u>1,429</u>	<u>1,208</u>	<u>557</u>	<u>298</u>	<u>393</u>	<u>2,456</u>
<i>Total</i>	3,128	2,359	1,474	809	7,770	814	1,322	722	0	2,858	2,314	1,037	752	809	4,912
Weekday AM															
<i>Enter</i>	101	159	61	85	406	21	93	32	0	146	80	66	29	85	260
<i>Exit</i>	<u>58</u>	<u>142</u>	<u>70</u>	<u>1</u>	<u>271</u>	<u>21</u>	<u>93</u>	<u>32</u>	<u>0</u>	<u>146</u>	<u>37</u>	<u>49</u>	<u>38</u>	<u>1</u>	<u>125</u>
<i>Total</i>	159	301	131	86	677	42	186	64	0	292	117	115	67	86	385
Weekday PM															
<i>Enter</i>	129	114	58	10	311	48	67	26	0	141	81	47	32	10	170
<i>Exit</i>	<u>151</u>	<u>124</u>	<u>44</u>	<u>75</u>	<u>394</u>	<u>48</u>	<u>67</u>	<u>26</u>	<u>0</u>	<u>141</u>	<u>103</u>	<u>57</u>	<u>18</u>	<u>75</u>	<u>253</u>
<i>Total</i>	280	238	102	85	705	96	134	52	0	282	184	104	50	85	423
Saturday Daily															
<i>Enter</i>	2,729	1,673	1,089	70	5,561	691	913	585	0	2,189	2,038	760	504	70	3,372
<i>Exit</i>	<u>2,590</u>	<u>1,588</u>	<u>1,300</u>	<u>83</u>	<u>5,561</u>	<u>691</u>	<u>913</u>	<u>585</u>	<u>0</u>	<u>2,189</u>	<u>1,899</u>	<u>675</u>	<u>715</u>	<u>83</u>	<u>3,372</u>
<i>Total</i>	5,319	3,261	2,389	153	11,122	1,382	1,826	1,170	0	4,378	3,937	1,435	1,219	153	6,744
Saturday Midday															
<i>Enter</i>	172	130	95	16	413	41	69	50	0	160	131	61	45	16	253
<i>Exit</i>	<u>144</u>	<u>117</u>	<u>111</u>	<u>14</u>	<u>386</u>	<u>41</u>	<u>69</u>	<u>50</u>	<u>0</u>	<u>160</u>	<u>103</u>	<u>48</u>	<u>61</u>	<u>14</u>	<u>226</u>
<i>Total</i>	316	247	206	30	799	82	138	100	0	320	234	109	106	30	479
						LUC 820	LUC 945	LUC 934	--						
						26%	56%	49%	--						
						26%	62%	49%	--						
						34%	56%	50%	--						
						26%	56%	49%	--						
						26%	56%	49%	--						

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)

General Urban/Suburban

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 324

AVERAGE WEEKDAY DAILY

$$T = 5.45 * (X) - 1.75$$

$$T = 5.45 * 324 - 1.75$$

$$T = 1764.05$$

$$T = 1,764 \text{ vehicle trips}$$

with 50% (882 vpd) entering and 50% (882 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln(T) = 0.98 \ln(X) - 0.98$$

$$\ln(T) = 0.98 \ln(324) - 0.98$$

$$\ln(T) = 4.69$$

$$T = 108.32$$

$$T = 108 \text{ vehicle trips}$$

with 26% (28 vph) entering and 74% (80 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.96 \ln(X) - 0.63$$

$$\ln T = 0.96 \ln(324) - 0.63$$

$$\ln T = 4.92$$

$$T = 136.94$$

$$T = 137 \text{ vehicle trips}$$

with 61% (84 vph) entering and 39% (53 vph) exiting.

SATURDAY DAILY

$$T = 4.91 * (X)$$

$$T = 4.91 * 324$$

$$T = 1590.84$$

$$T = 1,590 \text{ vehicle trips}$$

with 50% (795 vpd) entering and 50% (795 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

$$T = 0.42 * (X) + 6.73$$

$$T = 0.42 * 324 + 6.73$$

$$T = 142.81$$

$$T = 142 \text{ vehicle trips}$$

with 49% (70 vpd) entering and 51% (72 vpd) exiting.

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 220 - Multifamily Housing (Low-Rise)

General Urban/Suburban

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 8

Albert St Ext. Blaker St
0.75 0.25

AVERAGE WEEKDAY DAILY

$$T = 7.56 * (X) - 40.86$$

$$T = 7.56 * 8 - 40.86$$

$$T = 19.62$$

$$T = 20 \text{ vehicle trips}$$

with 50% (10 vpd) entering and 50% (10 vpd) exiting.

8 2
8 2
16 4

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.95 \ln (X) - 0.51$$

$$\ln T = 0.95 \ln (8) - 0.51$$

$$\ln T = 1.47$$

$$T = 4.33$$

$$T = 4 \text{ vehicle trips}$$

with 23% (1 vph) entering and 77% (3 vph) exiting.

1 0
2 1
3 1

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.89 \ln (X) - 0.02$$

$$\ln T = 0.89 \ln (8) - 0.02$$

$$\ln T = 1.83$$

$$T = 6.24$$

$$T = 6 \text{ vehicle trips}$$

with 63% (4 vph) entering and 37% (2 vph) exiting.

3 1
2 0
5 1

SATURDAY DAILY

$$T = 8.14 * (X)$$

$$T = 8.14 * 8$$

$$T = 65.12$$

$$T = 66 \text{ vehicle trips}$$

with 50% (33 vpd) entering and 50% (33 vpd) exiting.

25 8
25 8
50 16

SATURDAY PEAK HOUR OF GENERATOR

$$T = 0.70 * (X)$$

$$T = 0.70 * 8$$

$$T = 5.60$$

$$T = 6 \text{ vehicle trips}$$

*with 54% (3 vph) entering and 46% (3 vph) exiting.

2 1
2 1
4 2

** Distribution not given for Sat Midday Peak Hour, used Distribution from LUC
220 - Occupied Dwelling Units*

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 220 - Multifamily Housing (Low-Rise)

General Urban/Suburban

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 320

AVERAGE WEEKDAY DAILY

$$T = 7.56 * (X) - 40.86$$

$$T = 7.56 * 320 - 40.86$$

$$T = 2378.34$$

T = 2,378 vehicle trips
with 50% (1,189 vpd) entering and 50% (1,189 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.95 \ln (X) - 0.51$$

$$\ln T = 0.95 \ln(320) - 0.51$$

$$\ln T = 4.97$$

$$T = 144.01$$

T = 144 vehicle trips
with 23% (33 vph) entering and 77% (111 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.89 \ln (X) - 0.02$$

$$\ln T = 0.89 \ln(320) - 0.02$$

$$\ln T = 5.11$$

$$T = 166.30$$

T = 166 vehicle trips
with 63% (105 vph) entering and 37% (61 vph) exiting.

SATURDAY DAILY

$$T = 8.14 * (X)$$

$$T = 8.14 * 320$$

$$T = 2604.80$$

T = 2,604 vehicle trips
with 50% (1,302 vpd) entering and 50% (1,302 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

$$T = 0.70 * (X)$$

$$T = 0.70 * 320$$

$$T = 224.00$$

T = 224 vehicle trips
*with 54% (121 vph) entering and 46% (103 vph) exiting.

** Distribution not given for Sat Midday Peak Hour, used Distribution from LUC 220 - Occupied Dwelling Units*

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 820 - Shopping Center

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Ft. Gross Floor Area
Independent Variable (X): 49.800

AVERAGE WEEKDAY DAILY

$$\ln(T) = 0.68 \ln(X) + 5.57$$

$$\ln(T) = 0.68 \ln(49.800) + 5.57$$

$$\ln(T) = 8.23$$

$$T = 3742.28$$

T = 3,742 vehicle trips

with 50% (1,871 vph) entering and 50% (1,871 vph) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.50 * (X) + 151.78$$

$$T = 0.50 * (49.800) + 151.78$$

$$T = 176.68$$

T = 177 vehicle trips

with 62% (110 vph) entering and 38% (67 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.74 \ln(X) + 2.89$$

$$\ln T = 0.74 \ln(49.800) + 2.89$$

$$\ln T = 5.78$$

$$T = 324.39$$

T = 324 vehicle trips

with 48% (156 vph) entering and 52% (168 vph) exiting.

SATURDAY DAILY

$$\ln T = 0.62 \ln(X) + 6.24$$

$$\ln T = 0.62 \ln(49.800) + 6.24$$

$$\ln T = 8.66$$

$$T = 5784.69$$

T = 5,784 vehicle trips

with 50% (2,892 vpd) entering and 50% (2,892 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

$$\ln T = 0.79 \ln(X) + 2.79$$

$$\ln T = 0.79 \ln(49.800) + 2.79$$

$$\ln T = 5.88$$

$$T = 356.86$$

T = 357 vehicle trips

with 52% (186 vpd) entering and 48% (171 vpd) exiting.

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 960 - Super Convenience Market/Gas Station

General Urban/Suburban

Average Vehicle Trips Ends vs: Vehicle Fueling Positions
Independent Variable (X): 12

AVERAGE WEEKDAY DAILY

$$\begin{aligned}T &= 230.52 * (X) \\T &= 230.52 * 12 \\T &= 2766.24 \\T &= 2,766 \text{ vehicle trips} \\&\text{with 50\% (1,383 vpd) entering and 50\% (1,383 vpd) exiting.}\end{aligned}$$

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\begin{aligned}T &= 28.08 * (X) \\T &= 28.08 * 12 \\T &= 336.96 \\T &= 337 \text{ vehicle trips} \\&\text{with 50\% (169 vph) entering and 50\% (168 vph) exiting.}\end{aligned}$$

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\begin{aligned}T &= 22.96 * (X) \\T &= 22.96 * 12 \\T &= 275.52 \\T &= 276 \text{ vehicle trips} \\&\text{with 50\% (138 vph) entering and 50\% (138 vph) exiting.}\end{aligned}$$

SATURDAY DAILY

$$\begin{aligned}T &= 291.67 * (X) \\T &= 291.67 * 12 \\T &= 3500.04 \\T &= 3,500 \text{ vehicle trips} \\&\text{with 50\% (1,750 vpd) entering and 50\% (1,750 vpd) exiting.}\end{aligned}$$

SATURDAY PEAK HOUR OF GENERATOR

$$\begin{aligned}T &= 23.26 * (X) \\T &= 23.26 * 12 \\T &= 279.12 \\T &= 279 \text{ vehicle trips} \\&\text{with 50\% (140 vph) entering and 50\% (139 vph) exiting.}\end{aligned}$$

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 934 - Fast-Food Restaurant with Drive-Through Window

General Urban/Suburban

Average Vehicle Trips Ends vs: 1,000 Sq. Ft. Gross Floor Area

Independent Variable (X): 5.000

AVERAGE WEEKDAY DAILY

$$T = 470.95 * (X)$$

$$T = 470.95 * 5.000$$

$$T = 2354.75$$

T = 2,354 vehicle trips
with 50% (1,177 vpd) entering and 50% (1,177 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 40.19 * (X)$$

$$T = 40.19 * 5.000$$

$$T = 200.95$$

T = 201 vehicle trips
with 51% (103 vph) entering and 49% (98 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 32.67 * (X)$$

$$T = 32.67 * 5.000$$

$$T = 163.35$$

T = 163 vehicle trips
with 52% (85 vph) entering and 48% (78 vph) exiting.

SATURDAY DAILY

$$T = 616.12 * (X)$$

$$T = 616.12 * 5.000$$

$$T = 3080.60$$

T = 3,080 vehicle trips
with 50% (1,540 vpd) entering and 50% (1,540 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

$$T = 54.86 * (X)$$

$$T = 54.86 * 5.000$$

$$T = 274.30$$

T = 274 vehicle trips
with 51% (140 vph) entering and 49% (134 vph) exiting.

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 710 - General Office Building

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 100.000

AVERAGE WEEKDAY DAILY

$$\ln(T) = 0.97 \ln(X) + 2.50$$

$$\ln(T) = 0.97 \ln(100.000) + 2.50$$

$$\ln(T) = 6.97$$

$$T = 1061.05$$

$$T = 1,062 \text{ vehicle trips}$$

with 50% (531 vpd) entering and 50% (531 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.94 * (X) + 26.49$$

$$T = 0.94 * 100.000 + 26.49$$

$$T = 120.49$$

$$T = 120 \text{ vehicle trips}$$

with 86% (103 vph) entering and 14% (17 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln(T) = 0.95 \ln(X) + 0.36$$

$$\ln(T) = 0.95 \ln(100.000) + 0.36$$

$$\ln(T) = 4.73$$

$$T = 113.85$$

$$T = 114 \text{ vehicle trips}$$

with 16% (18 vph) entering and 84% (96 vph) exiting.

SATURDAY DAILY

$$T = 2.21 * (X)$$

$$T = 2.21 * 100.000$$

$$T = 221.00$$

$$T = 222 \text{ vehicle trips}$$

with 50% (111 vph) entering and 50% (111 vph) exiting.

SATURDAY PEAK HOUR OF GENERATOR

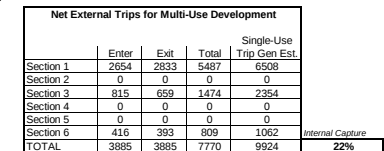
$$T = 0.53 * (X)$$

$$T = 0.53 * 100.000$$

$$T = 53.00$$

$$T = 53 \text{ vehicle trips}$$

with 54% (29 vph) entering and 46% (24 vph) exiting.

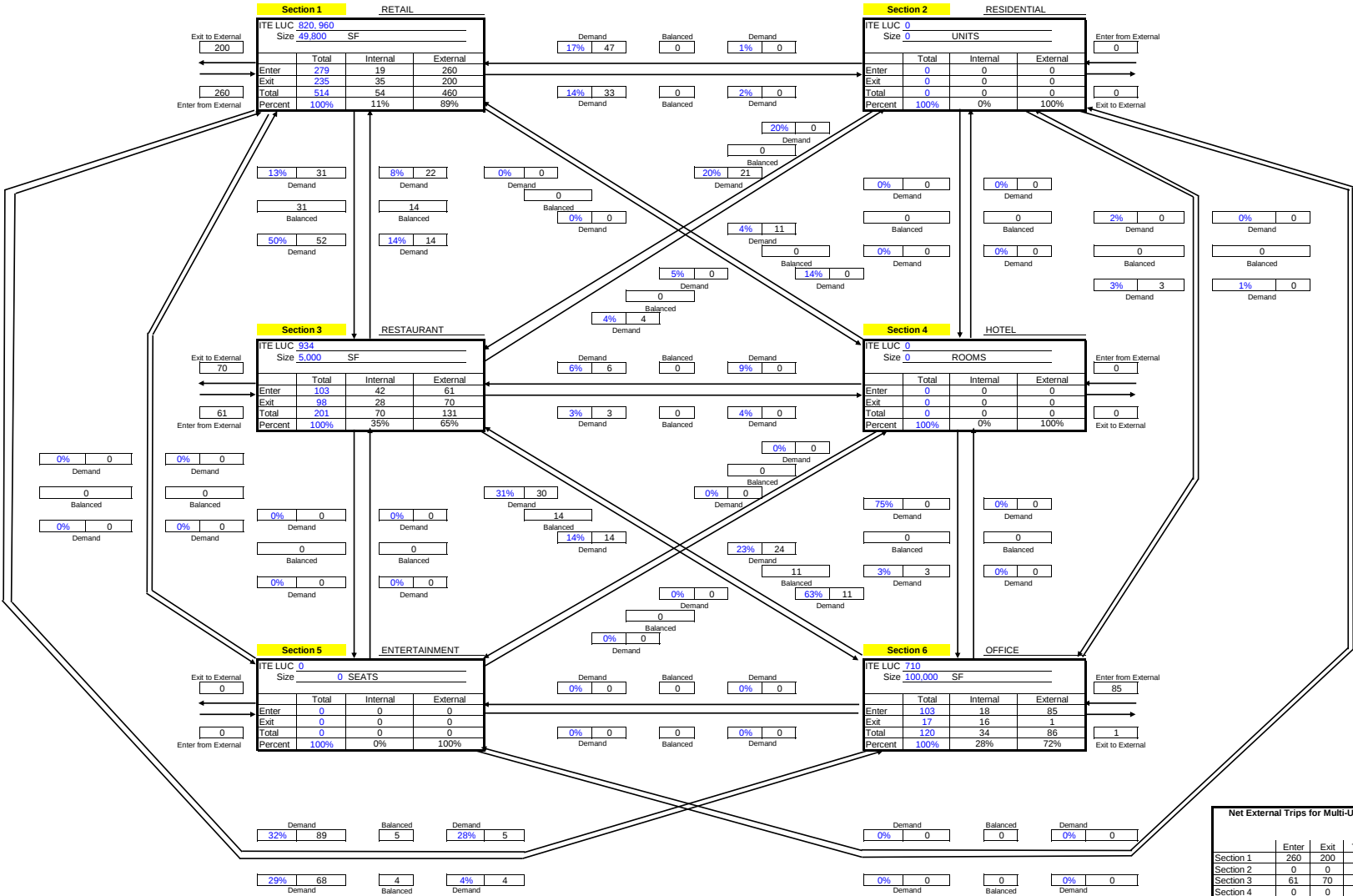


Based on Weekday PM from ITE Trip Generation Handbook, 3rd Edition, August 2014.
Based on an average of Weekday AM or PM from ITE Trip Generation Handbook, 3rd Edition, August 2014.

Analyst: [Susannah E. Theriault, P.E.](#)
Date: [July 8, 2020](#)

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt: [The Reserve](#)
Time Period: [Weekday AM](#)



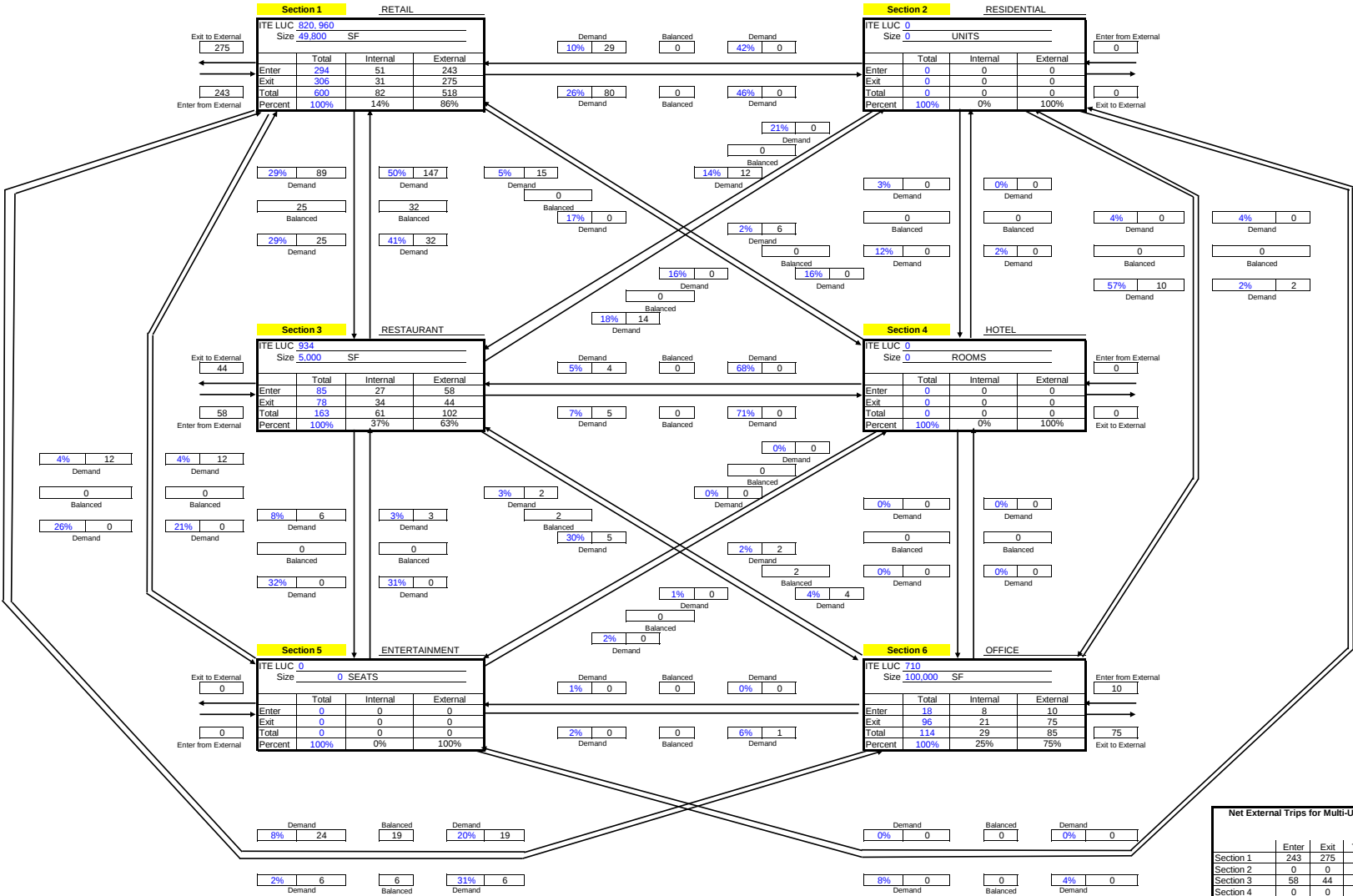
Net External Trips for Multi-Use Development				
	Enter	Exit	Total	Single-Use Trip Gen Est.
Section 1	260	200	460	514
Section 2	0	0	0	0
Section 3	61	70	131	201
Section 4	0	0	0	0
Section 5	0	0	0	0
Section 6	85	1	86	120
TOTAL	406	271	677	835
				Internal Capture 19%

Based on ITE Trip Generation Handbook, 3rd Edition, August 2014.

Analyst: [Susannah E. Theriault, P.E.](#)
Date: [July 8, 2020](#)

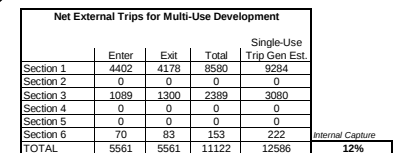
MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt: [The Reserve](#)
Time Period: [Weekday PM](#)



Net External Trips for Multi-Use Development				
	Enter	Exit	Total	Single-Use Trip Gen Est.
Section 1	243	275	518	600
Section 2	0	0	0	0
Section 3	58	44	102	163
Section 4	0	0	0	0
Section 5	0	0	0	0
Section 6	10	75	85	114
TOTAL	311	394	705	877
				Internal Capture 20%

Based on ITE Trip Generation Handbook, 3rd Edition, August 2014.



Based on most conservative of Weekday AM or PM from ITE Trip Generation Handbook, 3rd Edition, August 2014.

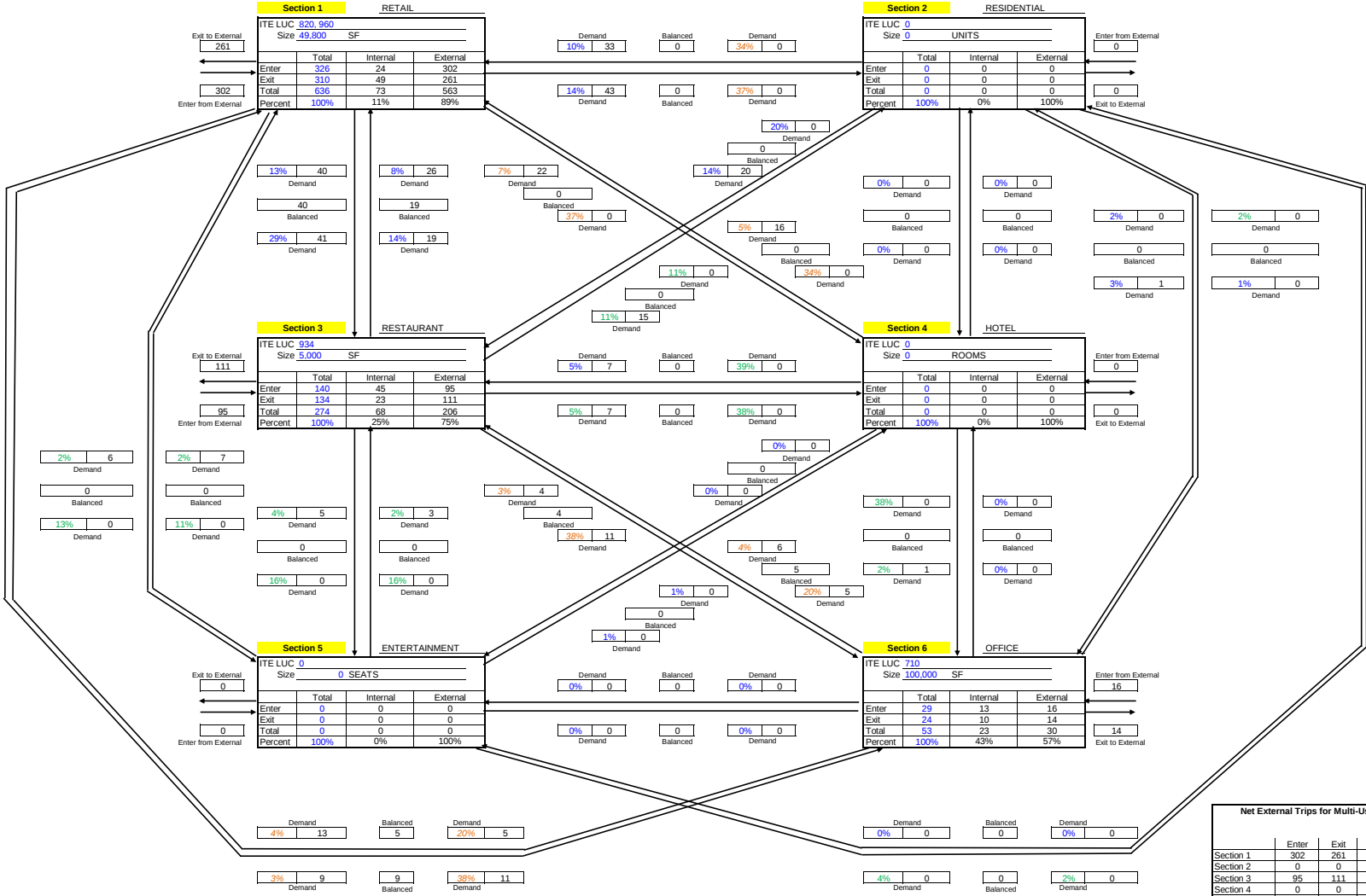
Based on an average of Weekday AM or PM from ITE Trip Generation Handbook, 3rd Edition, August 2014.

Based on ITE Trip Generation Handbook, 2nd Edition, June 2004.

Analyst: Susannah E. Theriault, P.E.
Date: July 8, 2020

**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY**

Name of Dvlpt: The Reserve
Time Period: Saturday Middy



Net External Trips for Multi-Use Development				
	Enter	Exit	Total	Single-Use Trip Gen Est.
Section 1	302	261	563	636
Section 2	0	0	0	0
Section 3	95	111	206	274
Section 4	0	0	0	0
Section 5	0	0	0	0
Section 6	16	14	30	53
TOTAL	413	386	799	963
				Internal Capture 17%

Based on most conservative of Weekday AM or PM from ITE Trip Generation Handbook, 3rd Edition, August 2014.
Based on an average of Weekday AM or PM from ITE Trip Generation Handbook, 3rd Edition, August 2014.
Based on ITE Trip Generation Handbook, 2nd Edition, June 2004.

TABLE A-1
Intersection Capacity Analysis Summary – HCM 2000

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Thayer Pond Drive												
<i>Weekday AM:</i>												
US Route 20 EB left-turn/through	0.01	0.2	A	--/ <25	0.36	0.0	A	--/ <25	--	--	--	--/ <25
US Route 20 EB through	0.45	0.0	A	--/ <25	0.36	0.0	A	--/ <25	0.44	0.0	A	--/ <25
US Route 20 WB through	0.24	0.0	A	--/ <25	0.26	0.0	A	--/ <25	0.36	0.0	A	--/ <25
US Route 20 WB through/right-turn	0.13	0.0	A	--/ <25	0.14	0.0	A	--/ <25	0.19	0.0	A	--/ <25
Thayer Pond Drive SB left-turn	0.09	16.8	C	--/ <25	--	--	--	--/ <25	--	--	--	--/ <25
Thayer Pond Drive SB right-turn	0.04	10.4	B	--/ <25	0.08	11.0	B	--/ <25	0.10	12.2	B	--/ <25
Overall Intersection	--	0.5	A	--/ <25	--	0.3	A	--/ <25	--	0.3	A	--/ <25
<i>Weekday PM:</i>												
US Route 20 EB left-turn/through	0.05	1.7	A	--/ <25	0.28	0.0	A	--/ <25	--	--	--	--/ <25
US Route 20 EB through	0.34	0.0	A	--/ <25	0.28	0.0	A	--/ <25	0.36	0.0	A	--/ <25
US Route 20 WB through	0.62	0.0	A	--/ <25	0.60	0.0	A	--/ <25	0.72	0.0	A	--/ <25
US Route 20 WB through/right-turn	0.34	0.0	A	--/ <25	0.34	0.0	A	--/ <25	0.39	0.0	A	--/ <25
Thayer Pond Drive SB left-turn	0.51	137.4	F	--/ <47	--	--	--	--/ <25	--	--	--	--/ <25
Thayer Pond Drive SB right-turn	0.07	17.0	C	--/ <25	0.12	17.3	C	--/ <25	0.15	20.9	C	--/ <25
Overall Intersection	--	1.7	A	--/ <25	--	0.3	A	--/ <25	--	0.3	B	--/ <25
<i>Saturday Midday:</i>												
US Route 20 EB left-turn/through	0.04	1.1	A	--/ <25	--	--	--	--/ <25	--	--	--	--/ <25
US Route 20 EB through	0.46	0.0	A	--/ <25	0.40	0.0	A	--/ <25	0.49	0.0	A	--/ <25
US Route 20 WB through	0.40	0.0	A	--/ <25	0.46	0.0	A	--/ <25	0.57	0.0	A	--/ <25
US Route 20 WB through/right-turn	0.22	0.0	A	--/ <25	0.26	0.0	A	--/ <25	0.32	0.0	A	--/ <25
Thayer Pond Drive SB left-turn	0.14	39.9	E	--/ <25	--	--	--	--/ <25	--	--	--	--/ <25
Thayer Pond Drive SB right-turn	0.05	12.5	B	--/ <25	0.08	13.9	B	--/ <25	0.10	16.3	C	--/ <25
Overall Intersection	--	0.6	B	--/ <25	--	0.2	A	--/ <25	--	0.2	A	--/ <25

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-1 (CONTINUED)
Intersection Capacity Analysis Summary – HCM 2000

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Western Site Driveway (Right-In / Right-Out)												
<i>Weekday AM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.45	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.24	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.31	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.57	20.1	C	--/88
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	2.2	A	--/--
<i>Weekday PM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.37	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.60	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.47	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	1.26	179.8	F	--/421
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	18.5	D	--/--
<i>Saturday Midday:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.48	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.45	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.44	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	1.02	89.3	F	--/304
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	9.2	C	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-1 (CONTINUED)

Intersection Capacity Analysis Summary – HCM 2000

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Eastern Site Driveway (Right-In / Right-Out)												
<i>Weekday AM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.45	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.37	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.24	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	0.0	A	--/--
<i>Weekday PM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.37	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.70	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.36	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.05	10.9	B	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	0.1	B	--/--
<i>Saturday Midday:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	0.48	0.0	A	--/<25
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	0.59	0.0	A	--/<25
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	0.30	0.0	A	--/<25
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.01	9.7	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	0.0	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-1 (CONTINUED)
Intersection Capacity Analysis Summary – HCM 2000

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Blaker Street at Albert Street and Site Driveway												
<i>Weekday AM:</i>												
Site Driveway EB approach	0.01	9.6	A	--/<25	0.01	9.6	A	--/<25	0.14	10.3	B	--/<25
Albert Street WB approach	0.04	9.2	A	--/<25	0.03	9.2	A	--/<25	0.07	9.4	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
Blaker Street SB approach	0.01	7.4	A	--/<25	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25
Overall Intersection	--/--	8.3	A	--/--	--/--	8.2	A	--/--	--	9.7	A	--/--
<i>Weekday PM:</i>												
Site Driveway EB approach	0.02	9.1	A	--/<25	0.01	9.0	A	--/<25	0.09	9.4	A	--/<25
Albert Street WB approach	0.01	8.3	A	--/<25	0.01	8.3	A	--/<25	0.13	9.6	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
Blaker Street SB approach	0.00	7.2	A	--/<25	0.00	7.2	A	--/<25	0.00	7.2	A	--/<25
Overall Intersection	--/--	7.7	A	--/--	--/--	8.1	A	--/--	--	9.5	A	--/--
<i>Saturday Midday:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.08	9.4	A	--/<25
Albert Street WB approach	0.01	8.6	A	--/<25	0.01	8.5	A	--/<25	0.09	9.5	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
Blaker Street SB approach	0.01	7.4	A	--/<25	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25
Overall Intersection	--/--	6.8	A	--/--	--/--	7.3	A	--/--	--	9.3	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-1 (CONTINUED)
Intersection Capacity Analysis Summary – HCM 2000

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ashworth Drive at Site Driveway												
<i>Weekday AM:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.05	8.5	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.01	7.3	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	7.9	A	--/--
<i>Weekday PM:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.02	8.4	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.01	6.7	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	7.3	A	--/--
<i>Saturday Midday:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.02	8.4	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.01	7.0	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	7.3	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-2
Intersection Capacity Analysis Summary – HCM 2000

Intersection/Peak Hour/Lane Group	2030 No-Build				2030 Build				2030 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Blaker Street at Albert Street and Site Driveway												
<i>Weekday AM:</i>												
Site Driveway EB approach	0.01	9.6	A	--/<25	0.14	10.3	B	--/<25	0.00	0.0	A	--/<25
Albert Street WB approach	0.03	9.2	A	--/<25	0.07	9.4	A	--/<25	0.00	0.1	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	9.1	A	--/<25
Blaker Street SB approach	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25	0.01	9.8	A	--/<25
Overall Intersection	--/--	8.2	A	--/--	--	9.7	A	--/--	--	0.5	A	--/--
<i>Weekday PM:</i>												
Site Driveway EB approach	0.01	9.0	A	--/<25	0.09	9.4	A	--/<25	0.00	0.2	A	--/<25
Albert Street WB approach	0.01	8.3	A	--/<25	0.13	9.6	A	--/<25	0.00	0.1	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	8.6	A	--/<25
Blaker Street SB approach	0.00	7.2	A	--/<25	0.00	7.2	A	--/<25	0.00	9.7	A	--/<25
Overall Intersection	--/--	8.1	A	--/--	--	9.5	A	--/--	--	0.3	A	--/--
<i>Saturday Midday:</i>												
Site Driveway EB approach	--	--	--	--/--	0.08	9.4	A	--/<25	0.00	0.0	A	--/<25
Albert Street WB approach	0.01	8.5	A	--/<25	0.09	9.5	A	--/<25	0.00	0.2	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	9.9	A	--/<25
Blaker Street SB approach	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25	0.01	9.8	A	--/<25
Overall Intersection	--/--	7.3	A	--/--	--	9.3	A	--/--	--	0.5	A	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-3
Intersection Capacity Analysis Summary – HCM 6

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Thayer Pond Drive												
<i>Weekday AM:</i>												
US Route 20 EB left-turn/through	0.01	8.8	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 EB through	0.00	0.1	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 WB through	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
US Route 20 WB through/right-turn	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB left-turn	0.18	30.2	D	--/ <25	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB right-turn	0.04	10.5	B	--/ <25	0.09	11.0	B	--/ <25	0.10	12.2	B	--/ <25
Overall Intersection	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
<i>Weekday PM:</i>												
US Route 20 EB left-turn/through	0.05	14.4	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 EB through	0.00	0.6	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 WB through	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
US Route 20 WB through/right-turn	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB left-turn	0.57	168.4	F	--/ 53	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB right-turn	0.07	17.0	C	--/ <25	0.12	17.3	C	--/ <25	0.15	20.9	C	--/ <25
Overall Intersection	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
<i>Saturday Midday:</i>												
US Route 20 EB left-turn/through	0.04	10.8	B	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 EB through	0.00	0.6	A	--/ <25	--	--	--	--/ --	--	--	--	--/ --
US Route 20 WB through	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
US Route 20 WB through/right-turn	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB left-turn	0.23	67.5	F	--/ <25	--	--	--	--/ --	--	--	--	--/ --
Thayer Pond Drive SB right-turn	0.05	12.5	B	--/ <25	0.08	13.9	B	--/ <25	0.10	16.3	C	--/ <25
Overall Intersection	--	--	--	--/ --	--	--	--	--/ --	--	--	--	--/ --

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-3 (CONTINUED)

Intersection Capacity Analysis Summary – HCM 6

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Western Site Driveway (Right-In / Right-Out)												
<i>Weekday AM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.45	14.4	B	--/58
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Weekday PM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	1.02	88.6	F	--/298
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Saturday Midday:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.77	34.3	D	--/170
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-3 (CONTINUED)

Intersection Capacity Analysis Summary – HCM 6

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
US Route 20 at Eastern Site Driveway (Right-In / Right-Out)												
<i>Weekday AM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Weekday PM:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.11	19.2	C	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Saturday Midday:</i>												
US Route 20 EB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB through	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
US Route 20 WB right-turn	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Site Driveway SB right-turn	--	--	--	--/--	--	--	--	--/--	0.01	15.3	C	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-3 (CONTINUED)

Intersection Capacity Analysis Summary – HCM 6

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Blaker Street at Albert Street and Site Driveway												
<i>Weekday AM:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Albert Street WB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
Blaker Street SB approach	0.01	7.4	A	--/<25	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Weekday PM:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Albert Street WB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25
Blaker Street SB approach	0.01	7.2	A	--/<25	0.00	7.2	A	--/<25	0.00	7.2	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Saturday Midday:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Albert Street WB approach	0.00	8.6	A	--/<25	0.01	8.5	A	--/<25	--	--	--	--/--
Blaker Street NB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Blaker Street SB approach	0.01	7.4	A	--/<25	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-3 (CONTINUED)

Intersection Capacity Analysis Summary – HCM 6

Intersection/Peak Hour/Lane Group	2022/23 Existing				2030 No-Build				2030 Build			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ashworth Drive at Site Driveway												
<i>Weekday AM:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.05	8.5	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.01	7.3	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Weekday PM:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.02	8.4	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.01	7.2	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Saturday Midday:</i>												
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.02	8.4	A	--/<25
Ashworth Drive NB approach	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
Ashworth Drive SB approach	--	--	--	--/--	--	--	--	--/--	0.02	7.2	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

TABLE A-4
Intersection Capacity Analysis Summary – HCM 6

Intersection/Peak Hour/Lane Group	2030 No-Build				2030 Build				2030 Build with Mitigation			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Blaker Street at Albert Street and Site Driveway												
<i>Weekday AM:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Albert Street WB approach	--	--	--	--/--	--	--	--	--/--	0.00	7.4	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.01	9.1	A	--/<25
Blaker Street SB approach	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25	0.01	9.8	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Weekday PM:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.00	7.4	A	--/<25
Albert Street WB approach	--	--	--	--/--	--	--	--	--/--	0.00	7.3	A	--/<25
Blaker Street NB approach	0.00	0.0	A	--/<25	0.00	0.0	A	--/<25	0.00	8.6	A	--/<25
Blaker Street SB approach	0.00	7.2	A	--/<25	0.00	7.2	A	--/<25	0.00	9.7	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--
<i>Saturday Midday:</i>												
Site Driveway EB approach	--	--	--	--/--	--	--	--	--/--	0.00	0.0	A	--/<25
Albert Street WB approach	0.01	8.5	A	--/<25	--	--	--	--/--	0.00	7.8	A	--/<25
Blaker Street NB approach	--	--	--	--/--	0.00	0.0	A	--/<25	0.00	9.9	A	--/<25
Blaker Street SB approach	0.00	7.4	A	--/<25	0.00	7.4	A	--/<25	0.01	9.8	A	--/<25
Overall Intersection	--	--	--	--/--	--	--	--	--/--	--	--	--	--/--

^a Volume-to-capacity ratio.

^b Average control delay in seconds per vehicle.

^c Level of service.

^d Maximum queue in an average/95th percentile cycle in feet per lane (assuming 25 feet per vehicle).

2023 Existing
Timing Plan: Weekday AM

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	963	-	-	-	175	687
HCM Lane V/C Ratio	0.007	-	-	-	0.184	0.038
HCM Control Delay (s)	8.8	0.1	-	-	30.2	10.5
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0.1

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	4	0	1	18	4	0	1	2	5	0	0
Future Vol, veh/h	0	4	0	1	18	4	0	1	2	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	72	72	72	75	75	75	63	63	63
Heavy Vehicles, %	0	50	0	0	11	25	0	0	0	20	0	0
Mvmt Flow	0	8	0	1	25	6	0	1	3	8	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	34	20	0	23	19	3	0	0	0	4	0	0
Stage 1	16	16	-	3	3	-	-	-	-	-	-	-
Stage 2	18	4	-	20	16	-	-	-	-	-	-	-
Critical Hdwy	7.1	7	6.2	7.1	6.61	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	6	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.45	3.3	3.5	4.099	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	978	788	-	994	857	1017	-	-	-	1507	-	-
Stage 1	1009	796	-	1025	876	-	-	-	-	-	-	-
Stage 2	1006	806	-	1004	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	948	784	-	-	853	1017	-	-	-	1507	-	-
Mov Cap-2 Maneuver	948	784	-	-	853	-	-	-	-	-	-	-
Stage 1	1009	792	-	1025	876	-	-	-	-	-	-	-
Stage 2	972	806	-	989	860	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0	7.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	1507	-	-
HCM Lane V/C Ratio	-	-	-	-	0.005	-	-
HCM Control Delay (s)	0	-	-	-	7.4	0	-
HCM Lane LOS	A	-	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-	-

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2023 Existing
Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	17	775	1321	35	19	18
Future Vol, veh/h	17	775	1321	35	19	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	83	83	77	77
Heavy Vehicles, %	0	4	3	0	0	0
Mvmt Flow	19	861	1592	42	25	23

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1634	0	0 2082 817
Stage 1	-	-	- 1613 -
Stage 2	-	-	- 469 -
Critical Hdwy	4.1	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	402	-	- 47 324
Stage 1	-	-	- 152 -
Stage 2	-	-	- 602 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	402	-	- 43 324
Mov Cap-2 Maneuver	-	-	- 43 -
Stage 1	-	-	- 138 -
Stage 2	-	-	- 602 -

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	94.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	402	-	-	-	43	324
HCM Lane V/C Ratio	0.047	-	-	-	0.574	0.072
HCM Control Delay (s)	14.4	0.6	-	-	168.4	17
HCM Lane LOS	B	A	-	-	F	C
HCM 95th %tile Q(veh)	0.1	-	-	-	2.1	0.2

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	7	0	0	0	6	0	0	1	3	0	0
Future Vol, veh/h	2	7	0	0	0	6	0	0	1	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	45	45	45	50	50	50	25	25	25	38	38	38
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	16	0	0	0	12	0	0	4	8	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	24	20	0	26	18	2	0	0	0	4	0	0
Stage 1	16	16	-	2	2	-	-	-	-	-	-	-
Stage 2	8	4	-	24	16	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	993	878	-	990	880	1088	-	-	-	1631	-	-
Stage 1	1009	886	-	1026	898	-	-	-	-	-	-	-
Stage 2	1019	897	-	999	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	978	874	-	-	876	1088	-	-	-	1631	-	-
Mov Cap-2 Maneuver	978	874	-	-	876	-	-	-	-	-	-	-
Stage 1	1009	882	-	1026	898	-	-	-	-	-	-	-
Stage 2	1008	897	-	976	882	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0	7.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	1631	-	-
HCM Lane V/C Ratio	-	-	-	-	0.005	-	-
HCM Control Delay (s)	0	-	-	-	7.2	0	-
HCM Lane LOS	A	-	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-	-

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2023 Existing
Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	23	1128	993	32	14	19
Future Vol, veh/h	23	1128	993	32	14	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	98	98	83	83
Heavy Vehicles, %	4	2	2	0	7	0
Mvmt Flow	24	1175	1013	33	17	23

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1046	0	0 1666 523
Stage 1	-	-	- 1030 -
Stage 2	-	-	- 636 -
Critical Hdwy	4.18	-	- 6.94 6.9
Critical Hdwy Stg 1	-	-	- 5.94 -
Critical Hdwy Stg 2	-	-	- 5.94 -
Follow-up Hdwy	2.24	-	- 3.57 3.3
Pot Cap-1 Maneuver	649	-	- 83 504
Stage 1	-	-	- 294 -
Stage 2	-	-	- 476 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	649	-	- 74 504
Mov Cap-2 Maneuver	-	-	- 74 -
Stage 1	-	-	- 263 -
Stage 2	-	-	- 476 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	35.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	649	-	-	-	74	504
HCM Lane V/C Ratio	0.037	-	-	-	0.228	0.045
HCM Control Delay (s)	10.8	0.6	-	-	67.5	12.5
HCM Lane LOS	B	A	-	-	F	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.1

104: Blaker St & Albert St
HCM 6th TWSC

2023 Existing
Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 6.8

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations 

Traffic Vol, veh/h 1 5 1 0 4 0

Future Vol, veh/h 1 5 1 0 4 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - 0 - - 0

Grade, % 0 - 0 - - 0

Peak Hour Factor 50 50 25 25 50 50

Heavy Vehicles, % 100 0 100 0 25 0

Mvmt Flow 2 10 4 0 8 0

Major/Minor Minor1 Major1 Major2

Conflicting Flow All 20 4 0 0 4 0

Stage 1 4 - - - - -

Stage 2 16 - - - - -

Critical Hdwy 7.4 6.2 - - 4.35 -

Critical Hdwy Stg 1 6.4 - - - - -

Critical Hdwy Stg 2 6.4 - - - - -

Follow-up Hdwy 4.4 3.3 - - 2.425 -

Pot Cap-1 Maneuver 795 1085 - - 1479 -

Stage 1 814 - - - - -

Stage 2 803 - - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 791 1085 - - 1479 -

Mov Cap-2 Maneuver 791 - - - - -

Stage 1 814 - - - - -

Stage 2 799 - - - - -

Approach WB NB SB

HCM Control Delay, s 8.6 0 7.4

HCM LOS A

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h) - - 1022 1479 -

HCM Lane V/C Ratio - - 0.012 0.005 -

HCM Control Delay (s) - - 8.6 7.4 0

HCM Lane LOS - - A A A

HCM 95th %tile Q(veh) - - 0 0 -

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2030 No-Build
Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1117	605	14	0	51
Future Vol, veh/h	0	1117	605	14	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	5	13	13	0	3
Mvmt Flow	0	1214	658	15	0	55

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	-	0	-	0	-	337
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	0	-	-	-	0	656
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	656
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach EB WB SB

HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt EBT WBT WBR SBLn1

Capacity (veh/h)	-	-	-	656
HCM Lane V/C Ratio	-	-	-	0.085
HCM Control Delay (s)	-	-	-	11
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection

Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	0	4	0	1	18	4	0	1	2	5	0	0
Future Vol, veh/h	0	4	0	1	18	4	0	1	2	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	50	0	0	11	25	0	0	0	20	0	0
Mvmt Flow	0	4	0	1	20	4	0	1	2	5	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	24	13	0	14	12	2	0	0	0	3	0	0
Stage 1	10	10	-	2	2	-	-	-	-	-	-	-
Stage 2	14	3	-	12	10	-	-	-	-	-	-	-
Critical Hdwy	7.1	7	6.2	7.1	6.61	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	6	-	6.1	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6	-	6.1	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.45	3.3	3.5	4.099	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	993	795	-	1007	865	1019	-	-	-	1509	-	-
Stage 1	1016	801	-	1026	877	-	-	-	-	-	-	-
Stage 2	1011	806	-	1014	870	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	969	793	-	-	862	1019	-	-	-	1509	-	-
Mov Cap-2 Maneuver	969	793	-	-	862	-	-	-	-	-	-	-
Stage 1	1016	799	-	1026	877	-	-	-	-	-	-	-
Stage 2	984	806	-	1005	867	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0	7.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	-	1509	-
HCM Lane V/C Ratio	-	-	-	-	-	0.004	-
HCM Control Delay (s)	0	-	-	-	-	7.4	0
HCM Lane LOS	A	-	-	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	-	-	0	-

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	867	1416	52	0	37
Future Vol, veh/h	0	867	1416	52	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	3	0	0	0
Mvmt Flow	0	942	1539	57	0	40

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	333
HCM Lane V/C Ratio	-	-	-	0.121
HCM Control Delay (s)	-	-	-	17.3
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection

Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	7	0	0	0	6	0	0	1	3	0	0
Future Vol, veh/h	2	7	0	0	0	6	0	0	1	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	8	0	0	0	7	0	0	1	3	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	10	7	0	11	7	1	0	0	0	1	0	0
Stage 1	6	6	-	1	1	-	-	-	-	-	-	-
Stage 2	4	1	-	10	6	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1013	892	-	1012	892	1090	-	-	-	1635	-	-
Stage 1	1021	895	-	1027	899	-	-	-	-	-	-	-
Stage 2	1024	899	-	1016	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	1006	890	-	-	890	1090	-	-	-	1635	-	-
Mov Cap-2 Maneuver	1006	890	-	-	890	-	-	-	-	-	-	-
Stage 1	1021	893	-	1027	899	-	-	-	-	-	-	-
Stage 2	1018	899	-	1005	893	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0	7.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	1635	-	-
HCM Lane V/C Ratio	-	-	-	-	0.002	-	-
HCM Control Delay (s)	0	-	-	-	7.2	0	-
HCM Lane LOS	A	-	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-	-

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2030 No-Build
Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1258	1075	55	0	33
Future Vol, veh/h	0	1258	1075	55	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	0	7	0
Mvmt Flow	0	1367	1168	60	0	36

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	440
HCM Lane V/C Ratio	-	-	-	0.082
HCM Control Delay (s)	-	-	-	13.9
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection

Int Delay, s/veh	7.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	5	1	0	4	0
Future Vol, veh/h	1	5	1	0	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	100	0	100	0	25	0
Mvmt Flow	1	5	1	0	4	0

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	9	1	0
Stage 1	1	-	-
Stage 2	8	-	-
Critical Hdwy	7.4	6.2	-
Critical Hdwy Stg 1	6.4	-	-
Critical Hdwy Stg 2	6.4	-	-
Follow-up Hdwy	4.4	3.3	-
Pot Cap-1 Maneuver	808	1090	-
Stage 1	817	-	-
Stage 2	811	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	806	1090	-
Mov Cap-2 Maneuver	806	-	-
Stage 1	817	-	-
Stage 2	809	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	7.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1030	1483
HCM Lane V/C Ratio	-	-	0.006	0.003
HCM Control Delay (s)	-	-	8.5	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2030 Build
Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1382	836	14	0	51
Future Vol, veh/h	0	1382	836	14	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	5	13	13	0	0
Mvmt Flow	0	1502	909	15	0	55

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	552
HCM Lane V/C Ratio	-	-	-	0.1
HCM Control Delay (s)	-	-	-	12.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

102: Route 20 & Site Driveway (western)
HCM 6th TWSC

2030 Build
Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1398	570	293	0	283
Future Vol, veh/h	0	1398	570	293	0	283
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	11	2	2	2
Mvmt Flow	0	1520	620	318	0	308

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	686
HCM Lane V/C Ratio	-	-	0.448
HCM Control Delay (s)	-	-	14.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	2.3

103: Route 20 & Site Driveway (eastern)
HCM 6th TWSC

2030 Build
Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 0

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations ↑↑ ↑↑ ↑

Traffic Vol, veh/h 0 1398 863 90 0 0

Future Vol, veh/h 0 1398 863 90 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - Free - Stop

Storage Length - - - - - 0

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 0 4 11 2 0 0

Mvmt Flow 0 1520 938 98 0 0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All - 0 - 0 - 469

Stage 1 - - - - -

Stage 2 - - - - -

Critical Hdwy - - - - - 6.9

Critical Hdwy Stg 1 - - - - -

Critical Hdwy Stg 2 - - - - -

Follow-up Hdwy - - - - - 3.3

Pot Cap-1 Maneuver 0 - - 0 0 546

Stage 1 0 - - 0 0 -

Stage 2 0 - - 0 0 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver - - - - - 546

Mov Cap-2 Maneuver - - - - -

Stage 1 - - - - -

Stage 2 - - - - -

Approach EB WB SB

HCM Control Delay, s 0 0 0

HCM LOS A

Minor Lane/Major Mvmt EBT WBT SBLn1

Capacity (veh/h) - - -

HCM Lane V/C Ratio - - -

HCM Control Delay (s) - - 0

HCM Lane LOS - - A

HCM 95th %tile Q(veh) - - -

104: Blaker St & Site Driveway/Albert St
HCM 6th TWSC

2030 Build
Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
----------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	99	0	1	49	4	0	1	3	5	0	0
Future Vol, veh/h	0	99	0	1	49	4	0	1	3	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	50	0	0	11	25	0	0	0	20	0	0
Mvmt Flow	0	108	0	1	53	4	0	1	3	5	0	0

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	41	14	0	67
Stage 1	10	10	-	3
Stage 2	31	4	-	64
Critical Hdwy	7.1	7	6.2	7.1
Critical Hdwy Stg 1	6.1	6	-	6.1
Critical Hdwy Stg 2	6.1	6	-	6.1
Follow-up Hdwy	3.5	4.45	3.3	3.5
Pot Cap-1 Maneuver	968	794	-	931
Stage 1	1016	801	-	1025
Stage 2	991	806	-	952
Platoon blocked, %				
Mov Cap-1 Maneuver	916	792	-	861
Mov Cap-2 Maneuver	916	792	-	861
Stage 1	1016	799	-	1025
Stage 2	927	806	-	821

Approach	EB	WB	NB	SB
HCM Control Delay, s			0	7.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	1507	-	-
HCM Lane V/C Ratio	-	-	-	-	0.004	-	-
HCM Control Delay (s)	0	-	-	-	7.4	0	-
HCM Lane LOS	A	-	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-	-

105: Ashworth Dr & Site Driveway
HCM 6th TWSC

2030 Build
Timing Plan: Weekday AM

Intersection

Int Delay, s/veh 7.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	48	2	0	20	0
Future Vol, veh/h	0	48	2	0	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	2	0	22	0

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	46	2	0
Stage 1	2	-	-
Stage 2	44	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	964	1082	-
Stage 1	1021	-	-
Stage 2	978	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	951	1082	-
Mov Cap-2 Maneuver	951	-	-
Stage 1	1021	-	-
Stage 2	964	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620
HCM Lane V/C Ratio	-	-	0.048	0.013
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2030 Build
Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1122	1688	52	0	37
Future Vol, veh/h	0	1122	1688	52	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	3	0	0	0
Mvmt Flow	0	1220	1835	57	0	40

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	266
HCM Lane V/C Ratio	-	-	-	0.151
HCM Control Delay (s)	-	-	-	20.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.5

102: Route 20 & Site Driveway (western)
HCM 6th TWSC

2030 Build
Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 9.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1148	1410	258	0	323
Future Vol, veh/h	0	1148	1410	258	0	323
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	0	1248	1533	280	0	351

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	88.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	345
HCM Lane V/C Ratio	-	-	1.018
HCM Control Delay (s)	-	-	88.6
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	11.9

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

103: Route 20 & Site Driveway (eastern)
HCM 6th TWSC

2030 Build
Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1148	1639	18	0	29
Future Vol, veh/h	0	1148	1639	18	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	3	2	0	2
Mvmt Flow	0	1248	1782	20	0	32

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	-	0	-	0	-	891
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	285
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	285
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach EB WB SB

HCM Control Delay, s	0	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt EBT WBT SBLn1

Capacity (veh/h)	-	-	285
HCM Lane V/C Ratio	-	-	0.111
HCM Control Delay (s)	-	-	19.2
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.4

104: Blaker St & Site Driveway/Albert St
HCM 6th TWSC

2030 Build
Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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Lane Configurations

Traffic Vol, veh/h	2	68	0	1	103	6	0	0	1	3	0	0
Future Vol, veh/h	2	68	0	1	103	6	0	0	1	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	74	0	1	112	7	0	0	1	3	0	0

Major/Minor	Minor2	Minor1	Major1	Major2
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Conflicting Flow All	66	7	0	44	7	1	0	0	0	1	0	0
Stage 1	6	6	-	1	1	-	-	-	-	-	-	-
Stage 2	60	1	-	43	6	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	932	892	-	963	892	1090	-	-	-	1635	-	-
Stage 1	1021	895	-	1027	899	-	-	-	-	-	-	-
Stage 2	957	899	-	976	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	836	890	-	-	890	1090	-	-	-	1635	-	-
Mov Cap-2 Maneuver	836	890	-	-	890	-	-	-	-	-	-	-
Stage 1	1021	893	-	1027	899	-	-	-	-	-	-	-
Stage 2	833	899	-	893	893	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
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HCM Control Delay, s			0	7.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
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Capacity (veh/h)	-	-	-	-	1635	-	-
HCM Lane V/C Ratio	-	-	-	-	0.002	-	-
HCM Control Delay (s)	0	-	-	-	7.2	0	-
HCM Lane LOS	A	-	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-	-

105: Ashworth Dr & Site Driveway
HCM 6th TWSC

2030 Build
Timing Plan: Weekday PM

Intersection

Int Delay, s/veh 7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	18	1	0	20	2
Future Vol, veh/h	0	18	1	0	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	20	1	0	22	2

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	47	1	0
Stage 1	1	-	-
Stage 2	46	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	963	1084	-
Stage 1	1022	-	-
Stage 2	976	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	950	1084	-
Mov Cap-2 Maneuver	950	-	-
Stage 1	1022	-	-
Stage 2	962	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1084	1622
HCM Lane V/C Ratio	-	-	0.018	0.013
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2: Route 20 & Thayer Pond Dr
HCM 6th TWSC

2030 Build
Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1530	1336	55	0	33
Future Vol, veh/h	0	1530	1336	55	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	0	7	0
Mvmt Flow	0	1663	1452	60	0	36

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	355
HCM Lane V/C Ratio	-	-	-	0.101
HCM Control Delay (s)	-	-	-	16.3
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.3

102: Route 20 & Site Driveway (western)
HCM 6th TWSC

2030 Build
Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1498	1056	343	0	332
Future Vol, veh/h	0	1498	1056	343	0	332
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	1628	1148	373	0	361

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	34.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	467
HCM Lane V/C Ratio	-	-	0.773
HCM Control Delay (s)	-	-	34.3
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	6.8

103: Route 20 & Site Driveway (eastern)
HCM 6th TWSC

2030 Build
Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	1498	1395	12	0	4
Future Vol, veh/h	0	1498	1395	12	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	1628	1516	13	0	4

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	354
HCM Lane V/C Ratio	-	-	0.012
HCM Control Delay (s)	-	-	15.3
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	67	0	2	69	5	0	1	1	4	0	0
Future Vol, veh/h	0	67	0	2	69	5	0	1	1	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	50	2	0	0	100	0	25	0	0
Mvmt Flow	0	73	0	2	75	5	0	1	1	4	0	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	50	10	0	47	10	2	0	0	0	2	0	0
Stage 1	8	8	-	2	2	-	-	-	-	-	-	-
Stage 2	42	2	-	45	8	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.6	6.52	6.2	4.1	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.6	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.95	4.018	3.3	2.2	-	-	2.425	-	-
Pot Cap-1 Maneuver	955	885	-	847	885	1088	-	-	-	1482	-	-
Stage 1	1019	889	-	909	894	-	-	-	-	-	-	-
Stage 2	978	894	-	860	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	886	882	-	-	882	1088	-	-	-	1482	-	-
Mov Cap-2 Maneuver	886	882	-	-	882	-	-	-	-	-	-	-
Stage 1	1019	886	-	909	894	-	-	-	-	-	-	-
Stage 2	891	894	-	787	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0	7.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	1482	-	-
HCM Lane V/C Ratio	-	-	-	-	0.003	-	-
HCM Control Delay (s)	0	-	-	-	7.4	0	-
HCM Lane LOS	A	-	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-	-

Intersection

Int Delay, s/veh 7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	20	2	0	22	1
Future Vol, veh/h	0	20	2	0	22	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	2
Mvmt Flow	0	22	2	0	24	1

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	51	2	0
Stage 1	2	-	-
Stage 2	49	-	-
Critical Hdwy	6.4	6.22	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.318	-
Pot Cap-1 Maneuver	963	1082	-
Stage 1	1026	-	-
Stage 2	979	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	949	1082	-
Mov Cap-2 Maneuver	949	-	-
Stage 1	1026	-	-
Stage 2	964	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1634
HCM Lane V/C Ratio	-	-	0.02	0.015
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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Lane Configurations												
Traffic Vol, veh/h	0	99	0	1	49	4	0	1	3	5	0	0
Future Vol, veh/h	0	99	0	1	49	4	0	1	3	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	50	0	0	11	25	0	0	0	20	0	0
Mvmt Flow	0	108	0	1	53	4	0	1	3	5	0	0

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	57	0	0	108	0	0	165	167	108	167	165	55
Stage 1	-	-	-	-	-	-	108	108	-	57	57	-
Stage 2	-	-	-	-	-	-	57	59	-	110	108	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.68	4	3.3
Pot Cap-1 Maneuver	1560	-	-	1495	-	-	804	729	951	758	731	1018
Stage 1	-	-	-	-	-	-	902	810	-	911	851	-
Stage 2	-	-	-	-	-	-	960	850	-	853	810	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1560	-	-	1495	-	-	803	728	951	754	730	1018
Mov Cap-2 Maneuver	-	-	-	-	-	-	803	728	-	754	730	-
Stage 1	-	-	-	-	-	-	902	810	-	911	850	-
Stage 2	-	-	-	-	-	-	959	849	-	849	810	-

Approach	EB		WB		NB		SB
HCM Control Delay, s	0		0.1		9.1		9.8
HCM LOS					A		A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	883	1560	-	-	1495	-	-	754
HCM Lane V/C Ratio	0.005	-	-	-	0.001	-	-	0.007
HCM Control Delay (s)	9.1	0	-	-	7.4	0	-	9.8
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	68	0	1	103	6	0	0	1	3	0	0
Future Vol, veh/h	2	68	0	1	103	6	0	0	1	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	74	0	1	112	7	0	0	1	3	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	119	0	0	74	0	0	196	199	74	197	196	116
Stage 1	-	-	-	-	-	-	78	78	-	118	118	-
Stage 2	-	-	-	-	-	-	118	121	-	79	78	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1482	-	-	1538	-	-	767	700	993	766	703	942
Stage 1	-	-	-	-	-	-	936	834	-	891	802	-
Stage 2	-	-	-	-	-	-	891	800	-	935	834	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1482	-	-	1538	-	-	765	699	993	764	702	942
Mov Cap-2 Maneuver	-	-	-	-	-	-	765	699	-	764	702	-
Stage 1	-	-	-	-	-	-	935	833	-	890	801	-
Stage 2	-	-	-	-	-	-	890	799	-	933	833	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	8.6	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	993	1482	-	-	1538	-	-	764
HCM Lane V/C Ratio	0.001	0.001	-	-	0.001	-	-	0.004
HCM Control Delay (s)	8.6	7.4	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection

Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	67	0	2	69	5	0	1	1	4	0	0
Future Vol, veh/h	0	67	0	2	69	5	0	1	1	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	50	2	0	0	100	0	25	0	0
Mvmt Flow	0	73	0	2	75	5	0	1	1	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	80	0	0	73	0	0	155	157	73	156	155	78
Stage 1	-	-	-	-	-	-	73	73	-	82	82	-
Stage 2	-	-	-	-	-	-	82	84	-	74	73	-
Critical Hdwy	4.1	-	-	4.6	-	-	7.1	7.5	6.2	7.35	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6.5	-	6.35	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6.5	-	6.35	5.5	-
Follow-up Hdwy	2.2	-	-	2.65	-	-	3.5	4.9	3.3	3.725	4	3.3
Pot Cap-1 Maneuver	1531	-	-	1271	-	-	816	588	995	761	741	988
Stage 1	-	-	-	-	-	-	942	676	-	872	831	-
Stage 2	-	-	-	-	-	-	931	668	-	881	838	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1531	-	-	1271	-	-	814	587	995	758	740	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	814	587	-	758	740	-
Stage 1	-	-	-	-	-	-	942	676	-	872	829	-
Stage 2	-	-	-	-	-	-	929	667	-	879	838	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	9.9	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	738	1531	-	-	1271	-	-	758
HCM Lane V/C Ratio	0.003	-	-	-	0.002	-	-	0.006
HCM Control Delay (s)	9.9	0	-	-	7.8	0	-	9.8
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0