

Ref: 9837

February 27, 2025

Mr. John F. Trefethen, Chair
Zoning Board of Appeals
Town of Ashland
101 Main Street
Ashland, MA 01721

Re: Response to Transportation Peer Review
The Sanctuary at Ashland Mills - 10-60 Main Street
Ashland, Massachusetts

Dear Chair Trefethen and Members of the Zoning Board of Appeals:

Vanasse & Associates, Inc. (VAI) is providing responses to the comments that were raised in the January 30, 2025 letter prepared by MDM Transportation Consultants, Inc. (MDM) concerning their review of the August 2024 *Transportation Impact Assessment* (the “August 2024 TIA”) that was prepared by VAI in support of the proposed mixed-use development to be known as Pine The Sanctuary at Ashland Mills and located at 10-60 Main Street in Ashland, Massachusetts (hereafter referred to as the “Project”). Listed below are the comments that were identified by MDM in the subject letter followed by responses from the appropriate Project team member on behalf of the Project proponent.

Traffic Impact Study Comments

Existing Conditions

1. Study Area: Study locations include:

- Myrtle Street at Raymond Marchetti Street*
- Myrtle Street at the 10-60 Main Street Driveway*
- Myrtle Street and Main Street at Water Street and the 10-60 Main Street Driveway*
- Main Street at the LFX Enterprise Driveway*
- Main Street at Pleasant Street*
- Main Street at the CrossFit Synergistics Driveway*
- Main Street at Front Street*
- Main Street at Homer Avenue and Summer Street*

Comment 1: MDM concurs that the study locations along Myrtle Street and Main Street are appropriate primary study locations and in context with the likely traffic impacts for the Project. The intersection of Myrtle Street at Pine Hill Road should be considered as a secondary study location given the location of the site driveways and potential for residential traffic to use Pine Hill Road as an alternative travel route to Oak Street via Winter Street. This may also be a route that residents use during the upcoming Cordaville Road bridge replacement project which DPW indicates is to be advertised for 2028 construction.

VAI Response: **The study area has been expanded to include the intersection of Myrtle Street at Pine Hill Road. Turning movement counts were conducted at the intersection during the weekday morning (7:00 – 9:00 AM) and weekday evening (4:00 – 6:00 PM) peak periods on February 11, 2025 (Tuesday) and are attached. Table 4R summarizes the motor vehicle crash data for the Myrtle Street/Pine Hill Road intersection, which was identified to have experienced no (0) reported motor vehicle crashes between 2017 and 2021 based on data researched through the Massachusetts Department of Transportation (MassDOT).**

2. Traffic Volumes: Traffic volumes for study locations were conducted in February 2024 for the weekday morning (7:00 – 9:00 AM) and weekday evening (4:00 – 6:00 PM) peak periods. The TIA indicated that February is an average month based on MassDOT’s statewide traffic data collection; 2019 weekly seasonal factors; therefore, no adjustment (reduction) in volumes was required.

Comment 2: MDM concurs that no Covid adjustment is required. However, a review of MassDOT’s statewide traffic data collection, 2019 weekday seasonal factors, Groups U4-7 indicate that all of the months besides December and January are at or above average which is contrary to seasonal data for MassDOT permanent count stations in the area. MDM has independently reviewed MassDOT permanent count station data for seasonal fluctuations; stations 307 and AET09 indicate that February is approximately 8 percent below average. The Proponent should review MassDOT permanent count station data for the area and update the analysis to reflect and appropriate average season condition.

VAI Response: **As requested, the raw traffic volumes were adjusted upward by 8.0%. For consistency with the existing conditions base year that was used in the August 2024 TIA, the 2025 traffic volumes for the Myrtle Street/Pine Hill Road were added to the 2024 Existing conditions traffic volume networks. Figures 3R and 4R depict the revised 2024 Existing weekday morning and evening peak-hour traffic volumes, respectively.**

We note that the subject count stations are located on an Interstate Highway (Station AET09 located on I-90 in Framingham) and a principal arterial (Station 307 located on Route 9 in Westborough), regional roadways which experience seasonal traffic volume fluctuations that may not be representative of the roadways within the study area.

3. Safety Analysis: The TIA presents relevant crash data for the study intersections between 2017 and 2021 from MassDOT’s crash database; these data indicate that the study intersections have crash rates below MassDOT’s statewide and District average crash rates and that none of the intersections are listed as high crash locations (HSIP) by MassDOT. The TIA indicates that applicable AASHTO sight line criteria with the removal of the existing stockade fence that is located within the Project site and south of the Myrtle Street Project site driveway; the available lines of sight at the Project site driveway intersections are characterized as meeting the recommended minimum stopping sight distance (SSD) based on a 30 mph design speed along Myrtle Street and a 25 mph design speed along Main Street.



Comment 3(a): MDM concurs with the speed data collected; 30 mph is appropriate for the sight line review of the norther driveway and 25 mph is appropriate for the sight line review of the other driveways. Independent measurement of travel speeds at decision points for each driveway by MDM are consistent with those used in the TIA assessment.

VAI Response: **No response required.**

Comment 3(b): MDM has the following concerns upon review of the proposed driveway locations and the applicable sight line criteria from AASHTO:

- ***Myrtle Street Driveway. Left-turns exiting onto Myrtle Street will be severely limited by a proposed retaining wall and fence as well as proposed landscaping. Review of sight lines for the proposed site plan are limited to approximately 170 feet looking south (toward Main Street) by the proposed retaining wall, which has an elevation of more than 4 feet above driveway grade.***
- ***Main Street Southern Driveway. Left-turns out of the driveway located south of the Pleasant Street signal will be severely limited by vehicle queues along Main Street that regularly extend to and past the driveway from the Pleasant Street signal, raising concern for conflict with oncoming (southbound) traffic. Likewise, landscaping features (trees) may also impede sight lines at this driveway location unless modified to avoid the driveway sight line triangle.***
- ***Short Term Parking Driveways. The landscaping, as currently shown, may significantly limit the sight lines looking north and south from the short-term parking lot; Proponent should re-evaluate specific planting material and location to ensure that sight lines at driveways are unimpeded and meet applicable criteria.***
- ***The Site Layout Plan should clearly indicate intersection sight line triangles for each site driveway including a note citing that “Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.0-feet in height for SSD and 2.5 in height for ISD. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed.”***

VAI Response: **Myrtle Street Driveway – The Site Plans will be revised to relocated the retaining wall outside of the sight triangle area and the updated landscape plan, included with this submission, has also be modified such that no object located within the sight triangle area of the Myrtle Street Project site driveway will exceed 2-feet in height.**

Main Street Southern Driveway – Movements entering and exiting the Project site at the Main Street southern Project site driveway will be restricted to right-turn only. The driveway design will be revised accordingly and appropriate signs (“Right Turn Only” and “No Left Turn”) will be installed to regulate the left-turn restriction. The Project-generated trip assignment networks and the corresponding 2031 Build condition peak-



hour traffic volume networks have been revised accordingly (see Figures 8R through 16R).

Short Term Parking Driveways – The landscape plan has been modified to remove objects within the sight triangle areas that would exceed 2-feet in height as measured from the surface elevation of the driveway.

Site Layout Plan – The intersection sight triangle areas have been added to the Landscape Plan along with the requested note. This will also be added to updated Site Plans that will be provided as a part of a future submission.

Future Conditions

4. *Traffic Growth: Future traffic volumes are projected in the TIA to a 7-year horizon using 1.0 percent per year compounded annual growth as well as projected trips associated with the proposed mixed-use development at 9-49 Homer Avenue.*

Comment 4: MDM concurs with the 7-year horizon, the general growth factor applied is consistent and conservative compared to area growth trends; we further note the inclusion of the proposed mixed-use project on Homer Avenue. Traffic from the nearby Chestnut Street apartments development should be considered for inclusion as a background project.

VAI Response:

The 2031 No-Build condition traffic volume networks have been revised to reflect the updated and expanded 2024 Existing condition traffic volumes (8.0% seasonal adjustment and the addition of the Myrtle Street/ Pine Hill Road intersection) and to incorporate traffic volumes associated with the multi-family housing development at 9-49 Homer Avenue and the Chestnut Street apartments development.¹ Figures 5R and 6R depicted the revised 2031 No-Build weekday morning and evening peak-hour traffic volumes, respectively.

5. *Trip Generation: Trip estimates for the Project are appropriately based on characteristics published by the Institute of Transportation Engineers (ITE) in Trip Generation 11th Edition for Land Use Code (LUC) 221 – Multifamily Housing (Mid-Rise), LUC 822 Strip Retail Plaza (<40k), and LUC 932 High-Turnover (Site Down) Restaurant. The trips were then adjusted for internal trip activity following standard industry practices, pass-by trips drawn from the adjacent roadway system, and for alternative travel modes (public transportation and walking/bicycle/work from home). The project (new traffic and pass-by) is estimated to generate approximately 178 vehicular trips (72 entering and 106 exiting) during a weekday morning peak hour, 179 vehicular trips (108 entering and 71 exiting) during a weekday evening peak hour, and 2,042 vehicular trips on a weekday.*

The existing mill buildings (177,000± sf) include several commercial and retail uses, warehousing, and institutional and construction related uses which will be removed as part of the project. The trips for the existing uses were observed at 54 vehicle trips during the weekday morning peak hour and 90 vehicle trips during the weekday evening peak hour from the turning movement counts conducted in February 2024. Trip tracings for the removal of the existing traffic were provided in the TIA Attachments. The project will result in approximately 124 additional vehicle trips during the weekday morning peak hour and 89

¹Traffic Impact and Access Study, Proposed Mixed-Use Development, 100 Chestnut Street; MDM; June 2021



additional vehicle trips during the weekday evening peak hour compared to the existing/historical use of the property.

Comment 5: *MDM concurs that the application of ITE trip rates and the methodology used in the TIA to estimate internal, pass-by, and historical trip generation present a reasonable basis of estimating peak hour trip characteristics of the proposed use.*

VAI Response: **No response required.**

6. Trip Distribution: Trip patterns for Site traffic presented in the TIA are based on existing area travel patterns for the commercial traffic and Journey-to-Work data for residents of Ashland for the residential traffic.

Comment 6: *MDM generally concurs that the application of the methodology used in the TIA to estimate the trip distribution and assignment of the site generated traffic. **Supporting trip distribution calculation sheets for the commercial and residential uses were not included in the Attachments; the Proponent should provide the calculation sheets for review and verification.** As per Comment 1, the intersection of Myrtle Street at Pine Hill Road should be considered as a secondary study location given the location of the site driveways and potential for residential traffic to use Pine Hill Road as an alternative travel route to Oak Street via Winter Street.*

VAI Response: **The trip distribution pattern has been revised to include trips assigned to/from Pine Hill Road (3% of trips associated with the residential and commercial components of the Project) and to reflect the left-turn restriction at the Main Street southern Project site driveway. Figures 7R and 8R depict the revised trip-distribution patterns for the residential and commercial components of the Project, with Figures 9R and 10R depicting the revised trip assignment for the residential component of the Project for the weekday morning and evening peak hours, respectively, Figures 11R and 12R depicting the corresponding revised trip assignments for the retail component, and Figures 13R and 14R depicting the corresponding revised trip assignments for the restaurant component. Figures 15R and 16R depict the revised 2031 Build condition traffic volumes for the weekday morning and evening peak hours, respectively. The Journey-to-Work data obtained from the U.S. Census and the back-up calculations for the trip distribution pattern are attached.**

7. Operations Analysis: Operational analyses are presented in the TIA follow generally accepted traffic engineering practices and protocols. Field review of existing traffic operations at the signal are generally consistent with TIA analysis for existing conditions indicating (a) Main Street southbound queues extend to and at times through the Pleasant Street intersection; and (b) Main Street northbound left-turn queues at Pleasant Street that extend to and past the proposed driveway location for the site during peak hours. Vehicle queues along Main Street have a direct influence on the existing and proposed driveway locations, inhibiting movements to/from the driveway location. Queue impacts along Main Street are extensive when train crossings occur just south of the site. A review of the commuter rail schedule indicates the frequency of the crossings at 4 to 6 crossings during the peak commuter periods; field observation indicates that train crossings halt Main Street traffic for approximately 2 to 2.5 minutes for each crossing. These



frequent peak-period crossings are not specifically accounted for in the capacity analysis, during which time longer delays occur than modeled results indicate.

Comment 7: MDM further notes that Ashland DPW confirms Main Street traffic signal equipment has been recently updated for “adaptive” operation that is in process of adjustment to optimize traffic flow during peak hour including train crossing activity. Nearby rail crossings on Main Street result in notable queue impacts to the proposed site driveway location. Even under “optimized” signal operation, extensive queues are likely to impact the proposed Main Street driveway on a regular basis during peak hours. Left-turns exiting the site driveway located south of the Pleasant Street signal will be severely limited by vehicle queues that regularly extend to and past the driveway from the Pleasant Street signal; this condition creates significantly impaired sight lines for oncoming southbound traffic that raises safety concerns. Likewise, Left-turn movements entering this driveway will also often be blocked by the Main Street queues, hindering through traffic and potentially impacting signal operations. Ideally, relocating the Main Street site driveway opposite Pleasant Street for signal control would address these issues. Proponent should therefore evaluate this potential solution as well as driveway alternatives and/or restrictions that address queue blockage and sight line issues including but not limited to relocating the driveway further south, restricting driveway operations to “right-in/right-out only” or “enter only”, placement of appropriate signs/markings such as “do not block the box” striping, etc.

VAI Response: As discussed previously, movements entering and exiting the Project site at the Main Street southern Project site driveway will be restricted to right-turn only.

The traffic operations analysis has been revised to reflect the changes to the peak-hour traffic volumes under all analysis conditions (2024 Existing, 2031 No-Build and 2031 Build conditions), the expansion of the study area to include the Myrtle Street/Pine Hill Road intersection, and the left-turn restriction at the Main Street southern Project site driveway. Tables 10R and 11R summarize the results of the revised traffic operations analysis for the study area intersections with the detailed analysis worksheets attached.

As can be seen in Table 10R and consistent with the findings that were presented in the August 2024 TIA, Project-related impacts at the signalized study area intersections were identified to be relatively minor, with overall intersection operations maintained at a level-of-service (LOS) D or better and Project-related impacts defined as a predicted increase in overall average motorist delay of up to 1.2 seconds that resulted in a corresponding increase in vehicle queuing of up to two (2) vehicles.

As can be seen in Table 11R, all movements exiting Pine Hill Road to Myrtle Street were shown to continue to operate at LOS B during the weekday morning peak-hour and at LOS C during the weekday evening peak-hour with the addition of Project-related traffic. The Sumer Street approach to the Main Street/Homer Avenue/Summer Street intersection was shown to continue to operate at LOS F during the weekday morning peak-hour under all analysis conditions independent of the Project. As shown in Table 13R (Mitigated Signalized Intersection Level-of-Service and Vehicle



Queue Summary) opportunities exist to optimize the traffic signal timing to reduce motorist delays on the Summer Street approach.

As would be expected, the restriction of left-turn movements at the Main Street southern Project site driveway was shown to reduce motorist delays and vehicle queuing for the Project site driveway approach, with motorist delays and vehicle queuing internal to the project site increasing at the Myrtle Street project site driveway due to the corresponding increase in traffic volumes. All movements exiting the Myrtle Street Project site driveway were shown to operate at LOS F during the weekday morning peak-hour with vehicle queues along the driveway of up to 11 vehicles, and at LOS D during the weekday evening peak-hour with vehicle queues of up to five (5) vehicles. To reiterate, all of these additional delays are internal to the project site. All movements approaching the driveway along Myrtle Street are expected to operate at LOS A during both peak hours with negligible vehicle queuing. The predicted vehicle queuing along the Project site driveway can be contained within the Project site without inhibiting access, circulation or the movement of vehicles, pedestrians or bicyclists along Myrtle Street.

8. Parking: Proposed parking supply of 390 spaces represents a per-unit parking ratio of 1.56 per residential unit with shared parking for the commercial/restaurant space; however, no formal analysis of parking demand is provided in the application materials to support the proposed supply. The project will include approximately 211 garage spaces, 161 surface spaces in the main lot and 18 accessible, short-term spaces in the front entry lot. The parking garage will include approximately 211 spaces with a lower and upper floor with only a single means of access/egress in the rear of the site.

Comment 8(a): MDM anticipates that the proposed parking supply may be “right-sized” to support the proposed uses based on parking ratios commonly provided for similar projects in the Commonwealth and the relatively low bedroom count for the residential building; however, we recommend that Proponent submit calculations of the hourly shared demand for the project based on ITE Parking rates and methodology to validate the proposed shared parking supply. It would be beneficial to identify the primary parking areas for the various uses on-site (residential, commercial, restaurant, public plaza space) to make sure that each use has an appropriate number of spaces in the vicinity of the individual building entryways.

VAI Response: In order to determine the parking requirements of the specific land uses that will be located within the Project site, a parking demand analysis was performed using parking demand data published by the Institute of Transportation Engineers (ITE).² Table P1 summarizes the average ITE peak parking demand ratios for each of the land uses that will be located within the Project site. Note that the commercial component of the Project has been refined to include 6,500 sf of retail space (vs. 7,782 sf) and 5,000 sf of restaurant space (vs. 7,783 sf).

²*Parking Generation*, 6th Edition; Institute of Transportation Engineers; Washington, D.C.; October 2023.



**Table P1
 ITE WEEKDAY PEAK PARKING DEMAND RATIOS**

Land Use	Average Peak Parking Demand Ratio per 1,000 sf
Multifamily Residential^a	1.23
Retail^b	2.79
Restaurant^c	8.34

^aITE LUC 221, *Multifamily Housing - 2+ BR (Mid-Rise) - Not Close to Rail Transit.*

^bITE LUC 822, *Strip Retail Plaza (< 40k).*

^cITE LUC 932, *High-Turnover (Sit-Down) Restaurant (Serves Breakfast).*

Table P2 summarizes the peak parking demands for the Project on a weekday applying the average peak parking demand ratios shown in Table P1 to each of the respective land uses that are expected to be located within the Project site.

**Table P2
 PEAK PARKING DEMANDS**

Land Use	Peak Parking Demand (No. of Parking Spaces Occupied)
Multifamily Residential (250 units)	308
Retail (6,500 sf)	19
Restaurant (5,000 sf)	42
TOTAL:	369

As can be seen in Table P2, using the average observed peak parking demands, the Project is predicted to have a peak parking demand of 369 occupied parking spaces on a weekday.

It is important to note that the peak parking demand periods for the proposed uses do not occur simultaneously. For a residential use, the peak parking demand occurs between 12:00 AM and 4:00 AM on a weekday, with the peak parking demand for retail and restaurant uses occurring at 12:00 PM or 1:00 PM on a



weekday. Distributing the peak parking demands for each of the respective land uses over the course of the day results in an overall peak parking demand for the Project of 308 parking spaces (the peak parking demand for the residential uses) that is predicted to occur after 11 PM and before 4:00 AM. During the peak parking demand period for the retail and restaurant uses (between 12:00 PM and 1:00 PM), the peak parking demand is predicted to be 219 parking spaces. Given that the Project will have no less than 365 parking spaces, the available parking supply should be sufficient to accommodate the peak parking demands of the Project. The parking demand calculations for the Project are attached.

A color coded parking location plan will be provided that illustrates the location of parking spaces by use (e.g., residential, retail, guest, etc.).

Comment 8(b): Proponent should consider providing a secondary access/egress point for the garage given the sole garage access is within the flood zone of the property, the number of spaces served and to facilitate emergency egress.

EMBARC Response : It is important to emphasize that the proposed garage is an “open” garage designed to allow for the free inflow and outflow of water. There will be no gate nor garage door that could malfunction, nor anything that could potentially block or inhibit the entrance or existing of vehicles. In addition, there will be multiple entrances and exits for residents to safely exit the garage in any situation.

Moreover, flooding events are typically predictable and anticipated and with adequate advance notice, vehicles can be moved to alternate locations out of the flood plain. In addition, the upper level of the garage, which is above the flood plain has an egress stair to street level. And the elevator lobbies and trash room are also above flood plain.

This project will be institutionally managed by a national property management company. There will be communication protocols in place with all residents to provide the appropriate notifications and communications should a possible flood event be on the horizon.

As a condition of an occupancy permit, the Applicant could share the property management plan for flood events for review by the Town.

9. Transportation Demand Management Programming: A list of TDM measures for the project aimed at encouraging alternative modes of transportation to single occupant vehicles (SOV's) includes the following:

- A transportation coordinator should be designated for the Project, who may have other duties and responsibilities, to coordinate the elements of the TDM program;*
- The transportation coordinator should facilitate a rideshare matching program for residents and employees to encourage carpooling;*



- *A “welcome packet” should be provided to new residents and employees detailing available public transportation services, bicycle and walking alternatives, and other commuting options;*
- *Information regarding public transportation services, maps, schedules, and fare information should be posted in a central location and/or otherwise made available to residents and employees;*
- *A pick-up/drop-off area has been provided at the front of the building for use by carshare and delivery service providers, as well as Amazon, UPS and FedEx;*
- *Specific amenities should be provided to discourage off-site trips, including providing one or more of the following: a breakroom equipped with a microwave and refrigerator; offering direct deposit of paychecks; on-site dry-cleaning pick-up; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;*
- *Consideration should be given to providing electric vehicle (EV) charging stations for use by residents, employees and customers; and*
- *Secure bicycle parking should be provided at appropriate locations within the Project site.*

Comment 9: Proponent should consider the following additional TDM measures to facilitate and incentivize use of public transportation use by residents and employees, alternatives to auto use/ownership and alternative fuel vehicles:

- ***Transit Pass Subsidy: Offer a fare subsidy for MBTA and MWRTA passes for residents for the first month of residency. This program is intended to promote awareness and use of public transportation options serving the property to be provided at time of lease for new residents.***
- ***Given the distance to the Ashland commuter rail station (approximately ¾ mile away) the Proponent should also consider “last mile” transportation alternatives including but not limited to a “bike share” program.***
- ***Specific commitment to EV charging stations for both the residential and commercial uses with ability to expand EV charging infrastructure over time based on demand.***
- ***Preferential Parking and Incentives for Low-Emission Vehicles. Preferential parking locations for residents who use low-emission vehicles.***
- ***Unbundled Parking. Unbundling residential parking from tenant leases to provide an option for residents to rent fewer or no parking spaces with their unit, thereby encouraging lower vehicle ownership at time of lease.***



VAI Response: **The Project proponent will expand the elements of the TDM program that were defined in the August 2024 TIA to include the following measures:**

- **Transit Pass Subsidy** – New residents of the Project that sign a one-month lease will be offered a transit pass subsidy for the first month of tenancy limited to \$50 per unit.
- **Bicycle Accommodations** – Secure, weather protected bicycle parking will be provided for resident bicycles and exterior bicycle parking will be provided for both resident and visitor bicycles. To the extent that the Town of Ashland establishes a bikeshare program, space will be provided within the Project site to locate a bikeshare station.
- **EV Charging** – Initially five (5) EV charging stations will be provided within the Project site, with infrastructure provided to support future expansion of the EV charging to 63 stations based on tenant demand.
- **Parking** – Parking will be unbundled from the lease for each residential unit in order to encourage lower automobile ownership.

10. Mitigation: Based on a discussion with the Ashland DPW indicates that the study area traffic signals within the downtown area have recently been updated to include adaptive traffic signal operations. Said traffic signals have been designed to optimize traffic flow in the area with respect to vehicular demand and train crossings.

Comment 10: MDM advises that Proponent conduct post-occupancy monitoring for traffic and operations at study intersections with commitment to modify/adjust Main Street signal operations working in coordination with Ashland DPW.

VAI Response: **The Proponent will undertake a post-occupancy traffic monitoring program pursuant to the schedule defined in Comment 11 that will include performing traffic counts and undertaking a traffic operations analysis at the signalized study area intersections in order to assist the Ashland DPW with adjusting the operations of the Main Street traffic signal system as may be necessary. The specific intersections are as follows:**

- **Main Street at Pleasant Street**
- **Main Street at Fron Street**
- **Main Street at Homer Street and Summer Street**

11. Transportation Monitoring Program: None identified by Proponent in filed materials.

Comment 11: The Proponent should commit to a post occupancy monitoring program with commitment to implement strategic mitigation actions such as driveway modifications or restrictions and traffic management based on actual driveway and study intersection operations and safety characteristics.

An initial traffic monitoring report should be provided within 6 months of achieving initial occupancy of the Project. Subsequent monitoring reports shall be conducted within 6 months of 80% occupancy



of residential units and 80% occupancy of the commercial space. Monitoring should include the following elements for site driveways and study intersections included in the TIA:

- *Performing manual turning movement and vehicle classification counts during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods;*
- *Evaluate traffic operations (crash history, levels of service, motorist delays and vehicle queuing) for the weekday morning and evening peak hours.*
- *Provide parking counts by zone to evaluate the effectiveness of the on-site parking to accommodate the site uses.*

The results of the monitoring programs will be summarized in reports to be provided to the Town of Ashland for distribution and review/input by Planning, DPW, Police and Fire Departments. To the extent warranted, the reports should include specific recommendations to address identified traffic operational and/or safety issues including but not limited to driveway restrictions or modifications including supplemental signs, markings or traffic controls; signal timing adjustments; parking management practices; and modification/expansion of TDM programming. If directed by the Town, the Proponent should implement recommended improvements subject to receipt of all necessary rights, permits and approvals. Performance criteria for the monitoring report should be expressly identified including crash experience/trends at site driveways, trip generation and patterns for the site based on projections cited in the TIA; and parking demand projections to be determined during the course of local approvals and Proponent responses.

VAI Response:

The Project proponent will undertake a post-occupancy traffic and parking monitoring program as defined above to include an initial monitoring report to be issued within 6-months of initial occupancy and a subsequent report to be issued within 6 months of achieving 80% occupancy of residential units and 80% occupancy of the commercial space.

If and to the extent that one or more of the following conditions are documented as a part of the post-occupancy traffic and parking monitoring program:

- a) The volume of traffic that is associated with the Project as measured at the Project site driveways exceeds the predicted volume of traffic for the Project as defined in the August 2024 TIA by more than 10% (110% of the projected traffic volume);**
- b) There is an increase in the frequency of occurrence of motor vehicle crashes at the monitored intersections that is directly attributable to the Project; and/or**
- c) The peak parking demand exceeds 90 percent occupancy;**

The Project proponent will undertake corrective actions in conjunction with the appropriate party(ies) and subject to receipt of all necessary rights, permits and approvals limited to the following:

- **Traffic signal timing improvements**
- **Sign and pavement marking installation**



- Expansion of the elements of the TDM program
- Parking management strategies

General Site Plan Comments

12. General Site Plan Comments (Transportation):

(a) The driveways on Main Street should be designed to be consistent with recently built infrastructure in the downtown; specifically, this design eliminates the traditional ADA ramp designs and marked crossing with a continuous sidewalk with “tip-down” driveway to provide a continuous pedestrian sidewalk elevation through the driveway – therefore favoring pedestrian movements.

Bohler Response: The Site Plans will be revised to reflect the use of “pan-type” driveways where the sidewalk is flush across the driveway.

(b) Provide swept path analysis/modeling for the site using the current Fire Department tower vehicle/template dimensions. Modeling should include movements to/from each of the site driveways and circulation aisles as well as the front parking lot along Main Street that provides short-term parking as this is likely the main point of entry for emergency calls.

Bohler Response: A vehicle turning (swept path) analysis has been performed for the Project and will be provided for the following design vehicles: SU-30, SU-40 and Ashland Fire Department design vehicle.

(c) Provide swept path analysis/modeling for refuse vehicles to/from designated dumpster areas and for service/delivery vehicles for the commercial building.

Bohler Response: A vehicle turning analysis for an SU-30 and an SU-40 design vehicle for the proposed dumpster areas and the location of service/delivery for the commercial building. This will be provided as part of the updated Site Plans under separate cover.

(d) Provide clarification of where tenant move-in/move-out trucks (typically SU-30 design vehicles or equivalent) can be staged/parked within the Site in a manner that does not impair circulation or impact parking spaces.

Bohler Response: Tenant moves will be coordinated with the property manager and scheduled in advance. Tenants will be informed of the location for moving vehicle staging. In addition to the use of parking spaces for smaller moving vehicles, a loading area is located adjacent to the garage driveway to the rear of the building.

(e) skewed alignment of the proposed driveway at Myrtle Street may require adjustment to curb radii to accommodate delivery, move-in or service vehicles so as to avoid encroachment into southbound Myrtle Street traffic. Proponent to confirm or consider restriction on the use of this driveway by non-passenger vehicle types with appropriate signs and markings.



Bohler Response: The Myrtle Street Project site driveway has been designed to accommodate the turning and maneuvering requirements of delivery vehicles and the Ashland Fire Department design vehicle. Delivery vehicles will service the Project during non-peak hours and, as such, conflicts with vehicles exiting the driveway will be limited if any.

(f) Bicycle parking locations should be identified on the site plan to include covered and protected areas for residents and loop racks for visitors near the building entrances.

Bohler Response: The location of interior and exterior bicycle parking is shown on the attached exhibit from Embarc and will be added to the revised Site Plans.

(g) The proposed retaining wall and fence to be situated proximate to the proposed public plaza will require modification and possible relocation within the Project site ensure sight line criteria are achieved.

Bohler Response: The proposed retaining wall has been relocated outside of the sight triangle area of the Myrtle Street Project site driveway. This is shown on updated Landscape Plan that is included as an attachment.

(h) Landscaping and canopy trees should be modified were appropriate within the Project site so that sight line triangle areas for all driveways are not impacted. The current plan includes canopy trees set in a line that may impair sight lines.

Bohler Response: The landscape plan has been modified to adjust the location of the canopy trees and to remove objects located within the sight triangle area of the Project site driveways that would exceed 2-feet in height.

(i) The Site Design Plan should clearly indicate intersection sight triangles and include a note citing that "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.0-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."

Bohler Response: The sight triangle areas have been added to the Landscape Plan along with the requested note. This will also be provided on the Site Plan as part of the future submittal.

(j) The Project is proposing to extend the sidewalk on the eastern side of Myrtle Street between Water Street and the proposed site driveway. As there is no sidewalk on the eastern side of Myrtle Street to the north of the project, the sidewalk should likely continue into the site and not extend to the site driveway at this time. The proponent should coordinate with the DPW if a replacement existing guardrail is required in this area.

Bohler Response: The proposed sidewalk will continue into the Project site as shown on the revised Landscape Plans. The Project proponent will coordinate with the Ashland DPW if a replacement of the existing guardrail is required in conjunction with the construction of the new sidewalk.



Mr. John F. Trefethen, Chair
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We trust that this information is responsive to the comments that were identified in the January 31, 2025 letter prepared by MDM concerning their review of the materials that have been submitted in support of the Project. If you should have any questions or would like to discuss the responses from the Project team in more detail, please feel free to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.



Jeffrey S. Dirk, P.E., PTOE, FITE
Managing Partner

Professional Engineer in CT, MA, ME, NH, RI, and VA

JSD/jsd

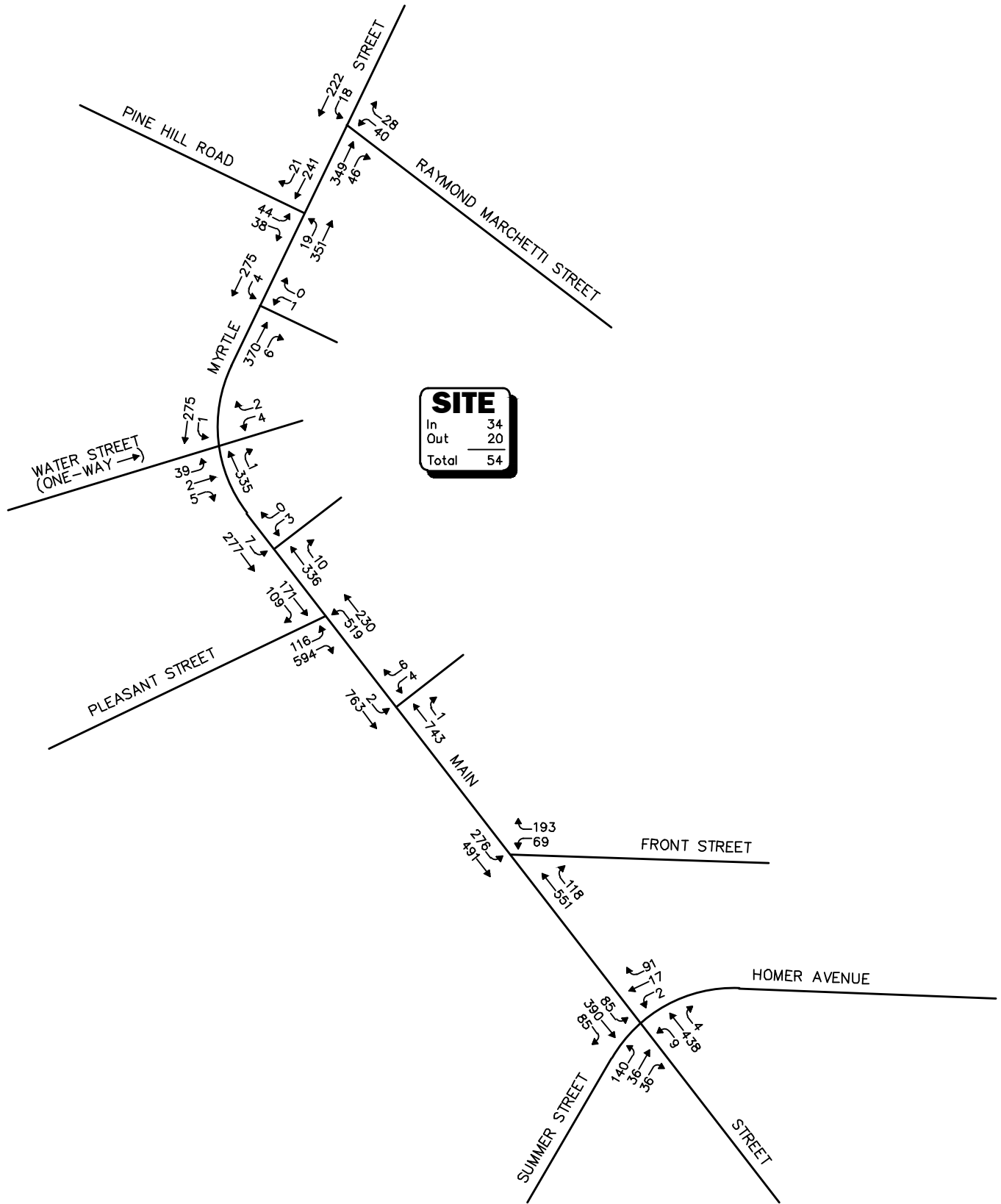
Attachments



ATTACHMENTS

REVISED TRAFFIC VOLUME NETWORKS (FIGURES 3R – 16R)
TURNING MOVEMENT COUNT DATA (MYRTLE STREET AT PINE HILL ROAD)
REVISED MOTOR VEHICLE CRASH DATA TABLE (TABLE 4R)
REVISED MASSDOT CRASH RATE WORKSHEETS
BACKGROUND DEVELOPMENT TRAFFIC VOLUME NETWORKS
RESIDENTIAL TRIP DISTRIBUTION
REVISED TRAFFIC OPERATIONS ANALYSIS TABLES (TABLE 10R, 11R AND 13R)
REVISED CAPACITY ANALYSIS WORKSHEETS
PROJECT PARKING DEMAND CALCULATIONS
EMBARC PRELIMINARY RETAIL/COMMERCIAL SPACE SCHEMATIC
EMBARC PARKING/LOADING/BIKE STORAGE EXHIBIT
BOHLER LANDSCAPE PLAN (L-101)

REVISED TRAFFIC VOLUME NETWORKS (FIGURES 3R – 16R)

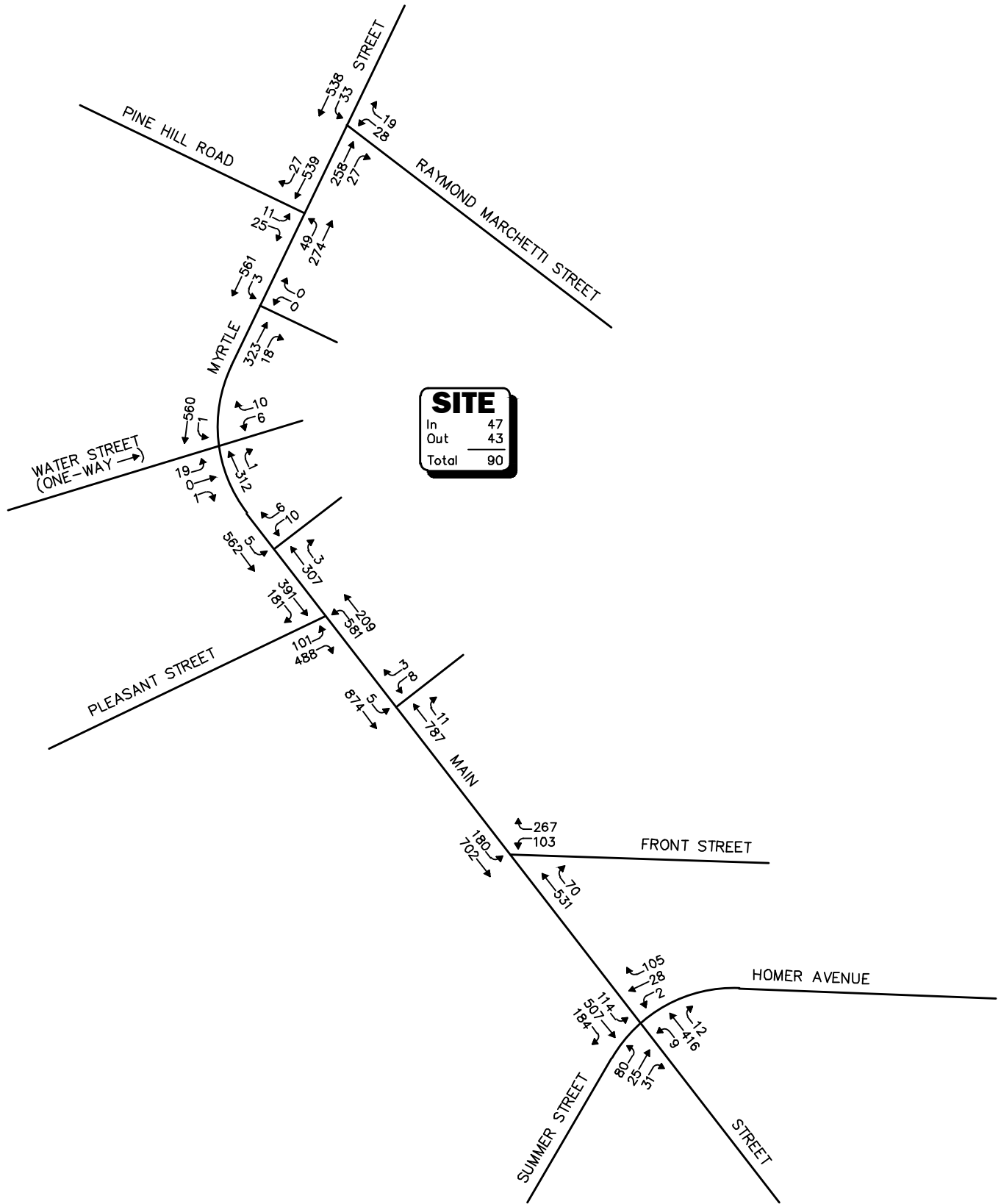


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
 Not To Scale

Figure 3R

**2024 Existing
 Weekday Morning
 Peak-Hour Traffic Volumes**



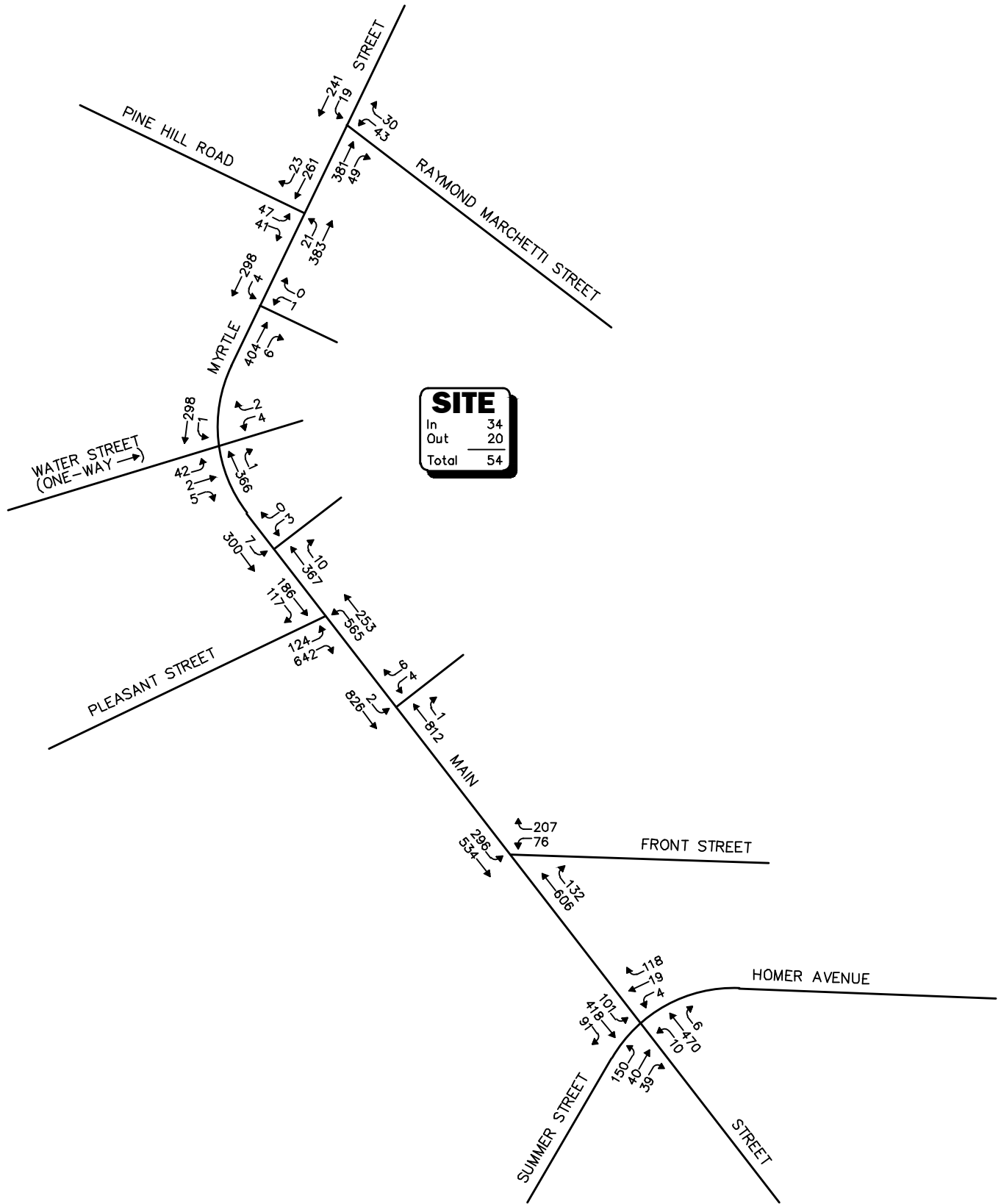


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
 Not To Scale

Figure 4R

2024 Existing
 Weekday Evening
 Peak-Hour Traffic Volumes



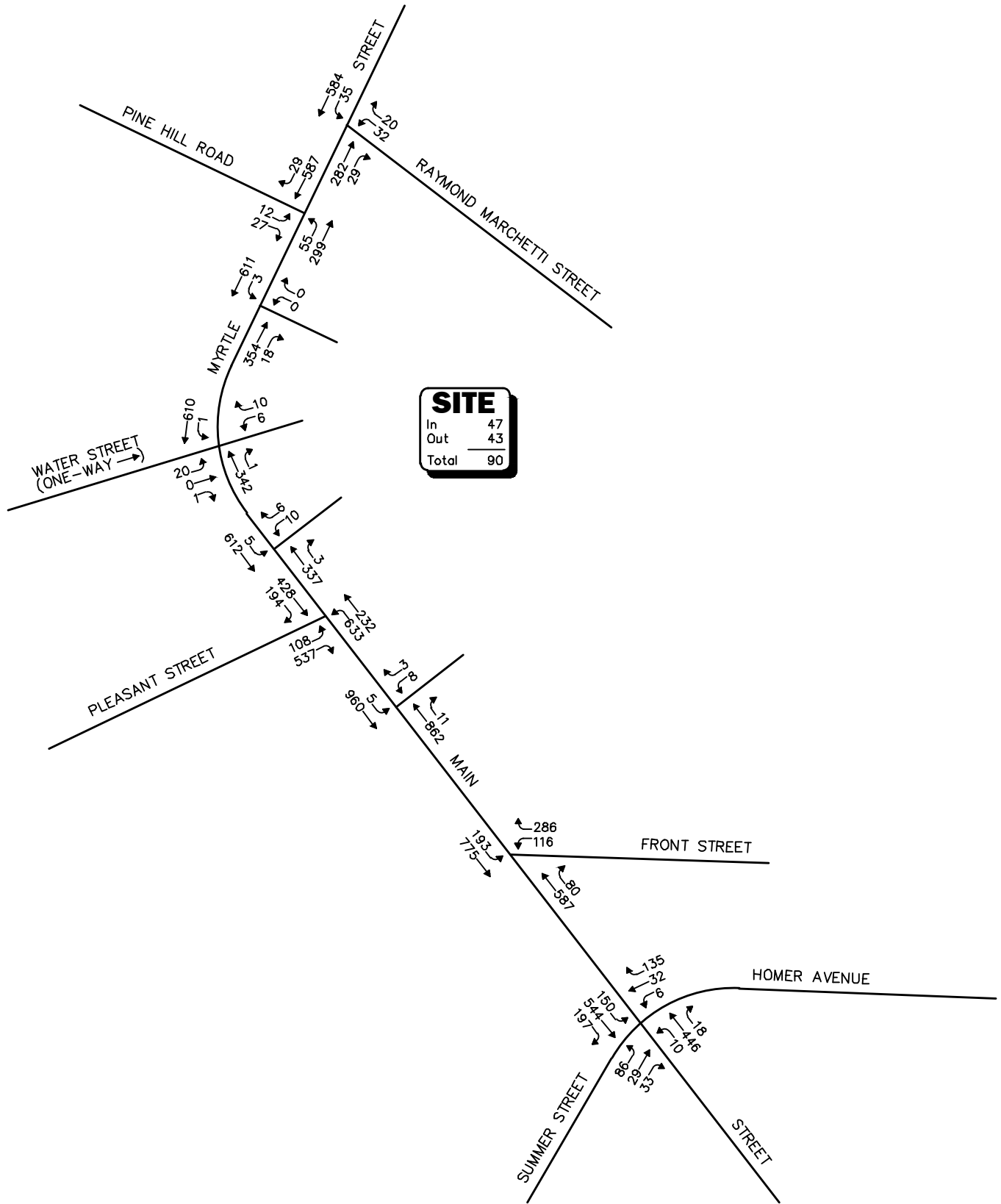


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
 Not To Scale

Figure 5R

**2031 No-Build
 Weekday Morning
 Peak-Hour Traffic Volumes**





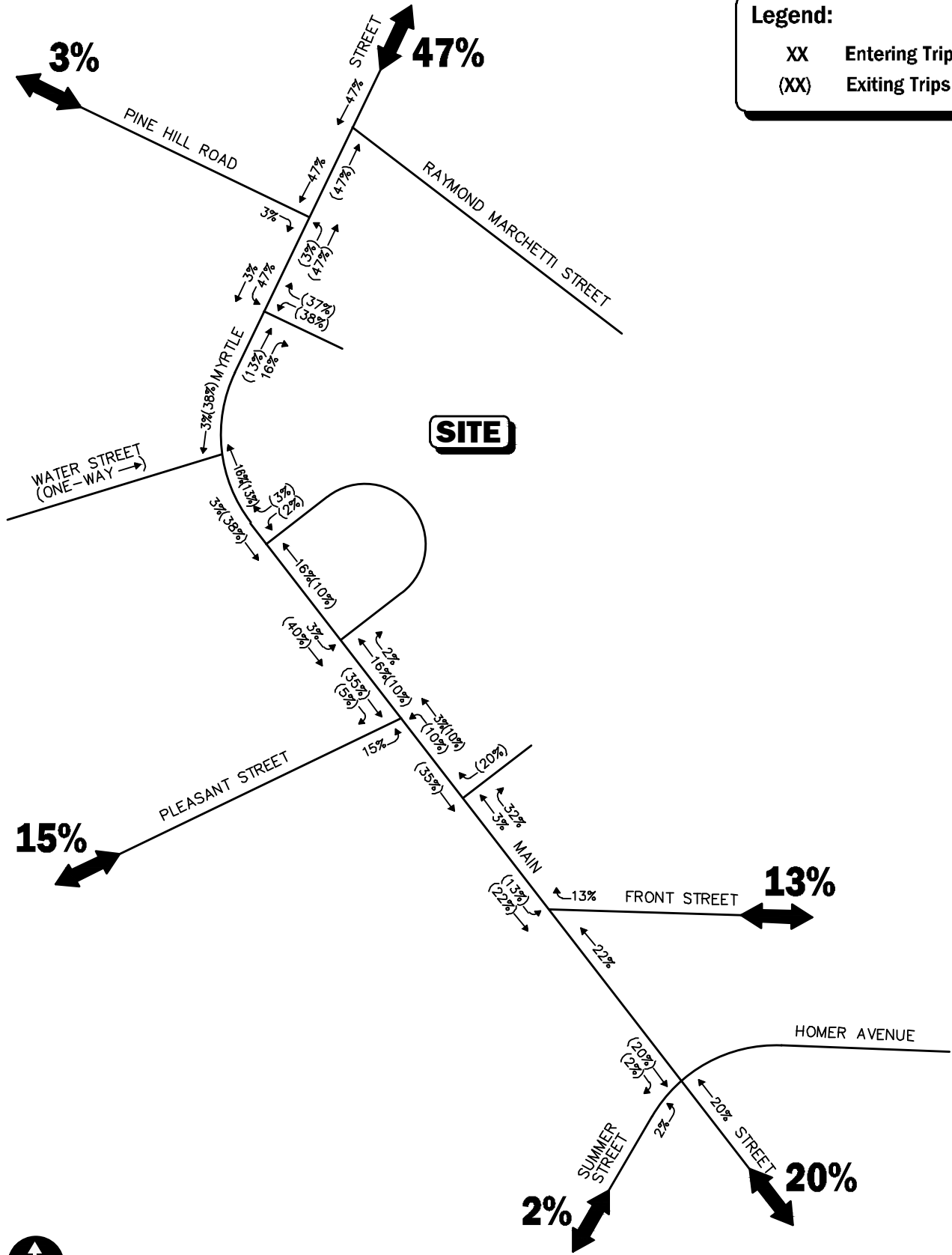
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
 Not To Scale

Figure 6R

**2031 No-Build
 Weekday Evening
 Peak-Hour Traffic Volumes**



Legend:
 XX Entering Trips
 (XX) Exiting Trips

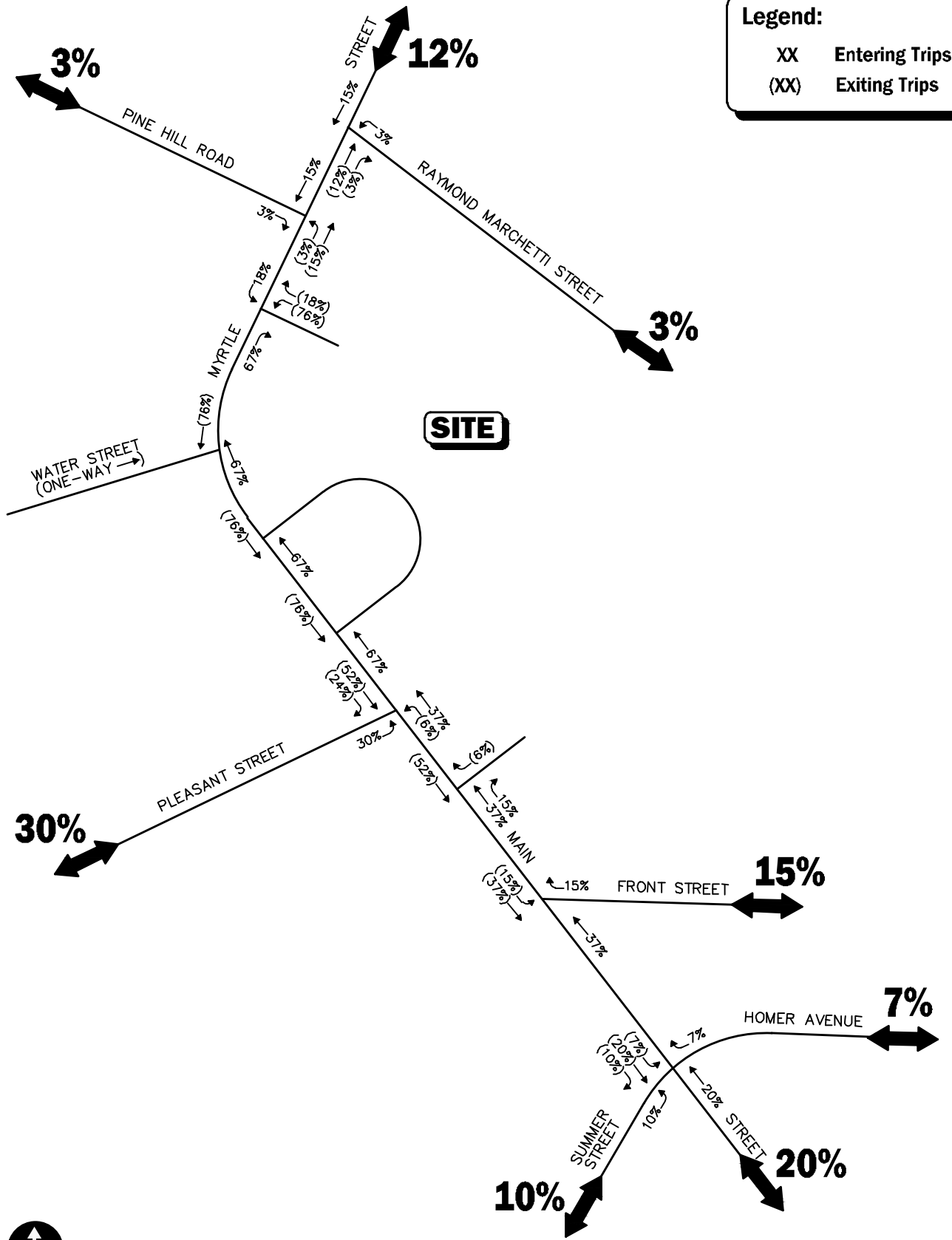


Not To Scale

Figure 7R
 Trip Distribution Map
 Residential Component



R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/24/2025 10:38:03 AM



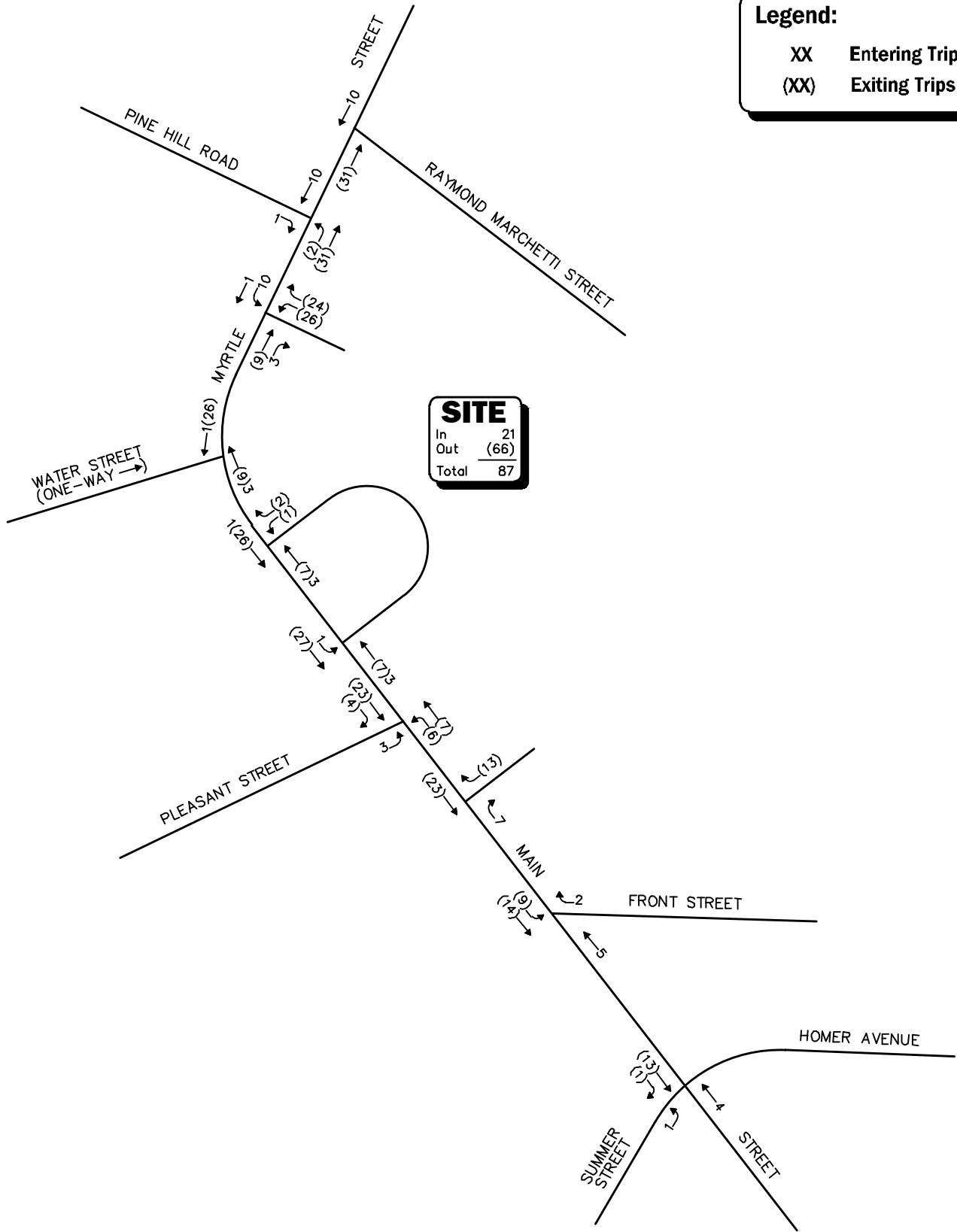
Not To Scale **Figure 8R**



**Trip Distribution Map
 Commercial Component**

Legend:

- XX Entering Trips
- (XX) Exiting Trips



Not To Scale

Figure 9R

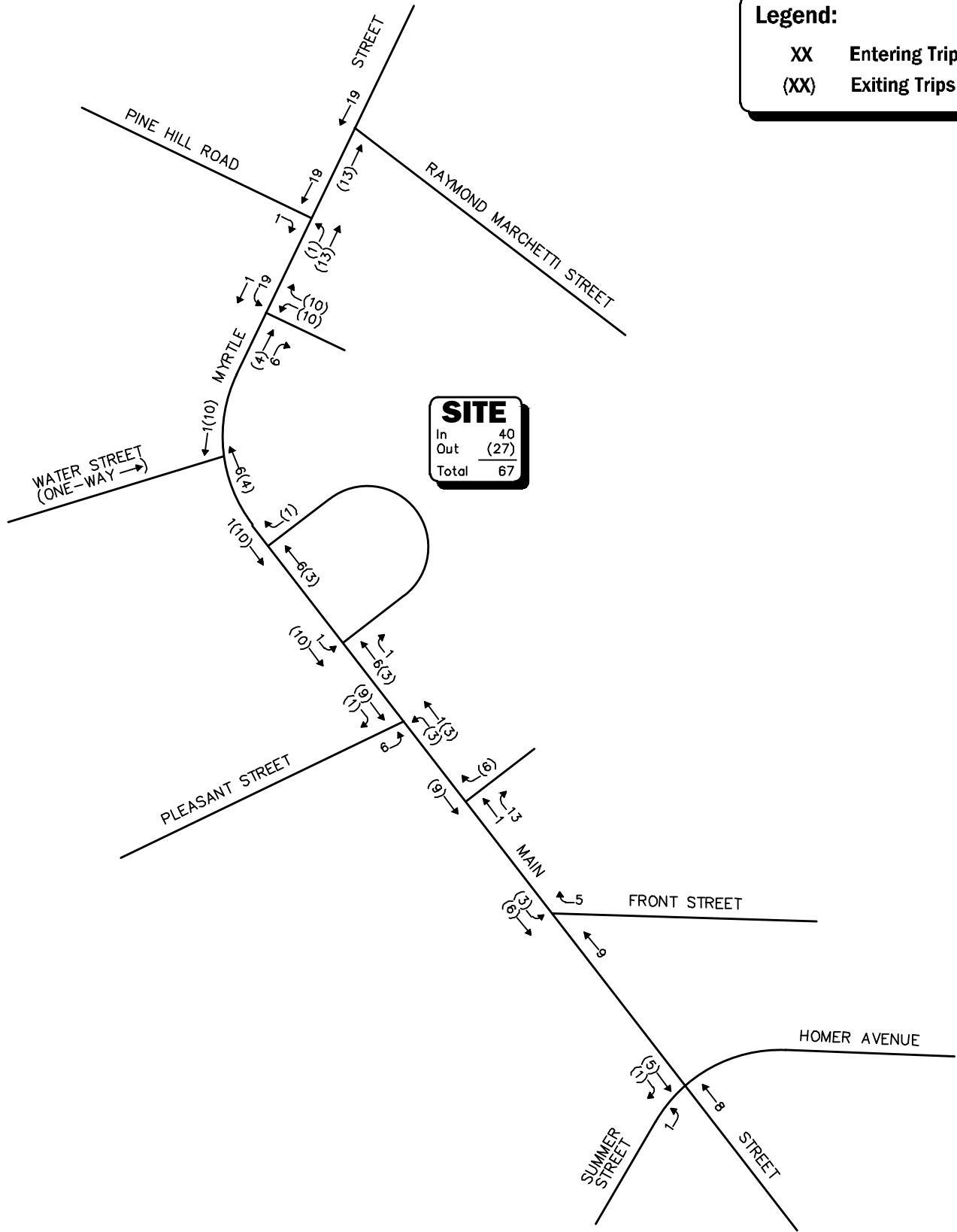


Project-Generated Residential Component Weekday Morning Peak-Hour Traffic Volumes

R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/24/2025 10:22:49 AM

Legend:

- XX Entering Trips
- (XX) Exiting Trips



Not To Scale

Figure 10R

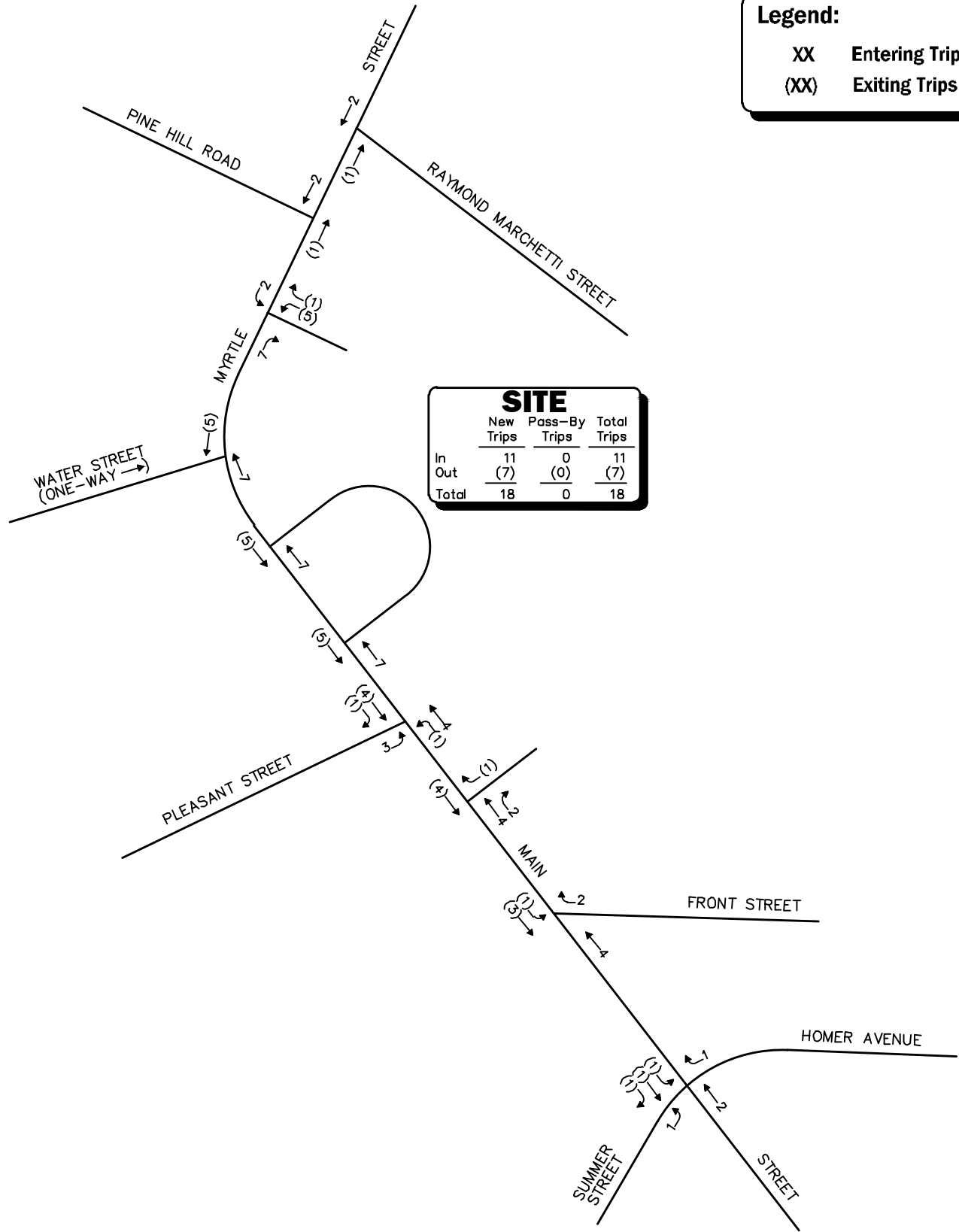


Project-Generated Residential Component Weekday Evening Peak-Hour Traffic Volumes

R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/24/2025 10:24:37 AM

Legend:

- XX Entering Trips
- (XX) Exiting Trips



SITE			
	New Trips	Pass-By Trips	Total Trips
In	11	0	11
Out	(7)	(0)	(7)
Total	18	0	18

Not To Scale



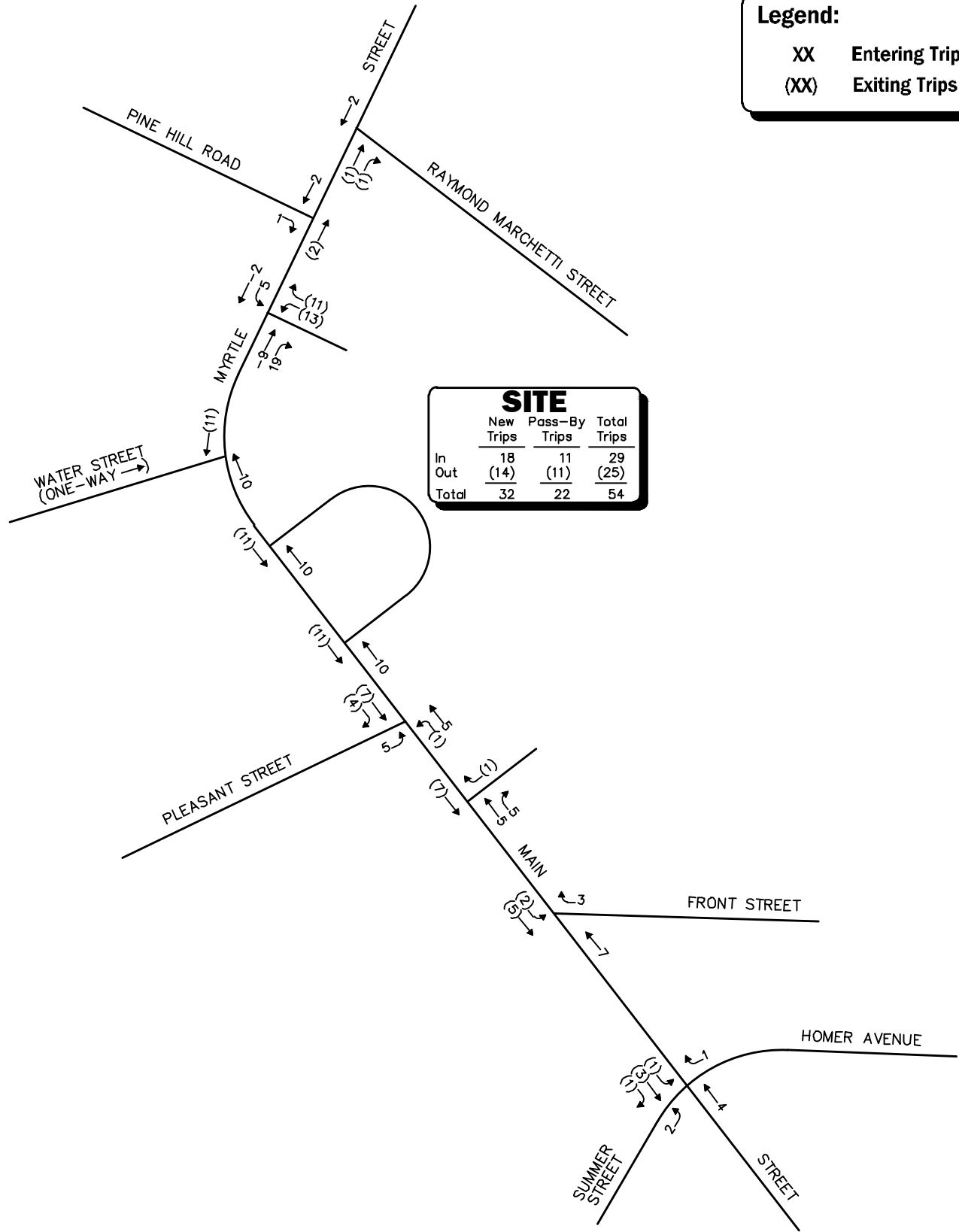
Figure 11R

**Project-Generated
Retail Component
Weekday Morning
Peak-Hour Traffic Volumes**

R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/21/2025 10:00:20 AM

Legend:

- XX Entering Trips
- (XX) Exiting Trips



Not To Scale

Figure 12R

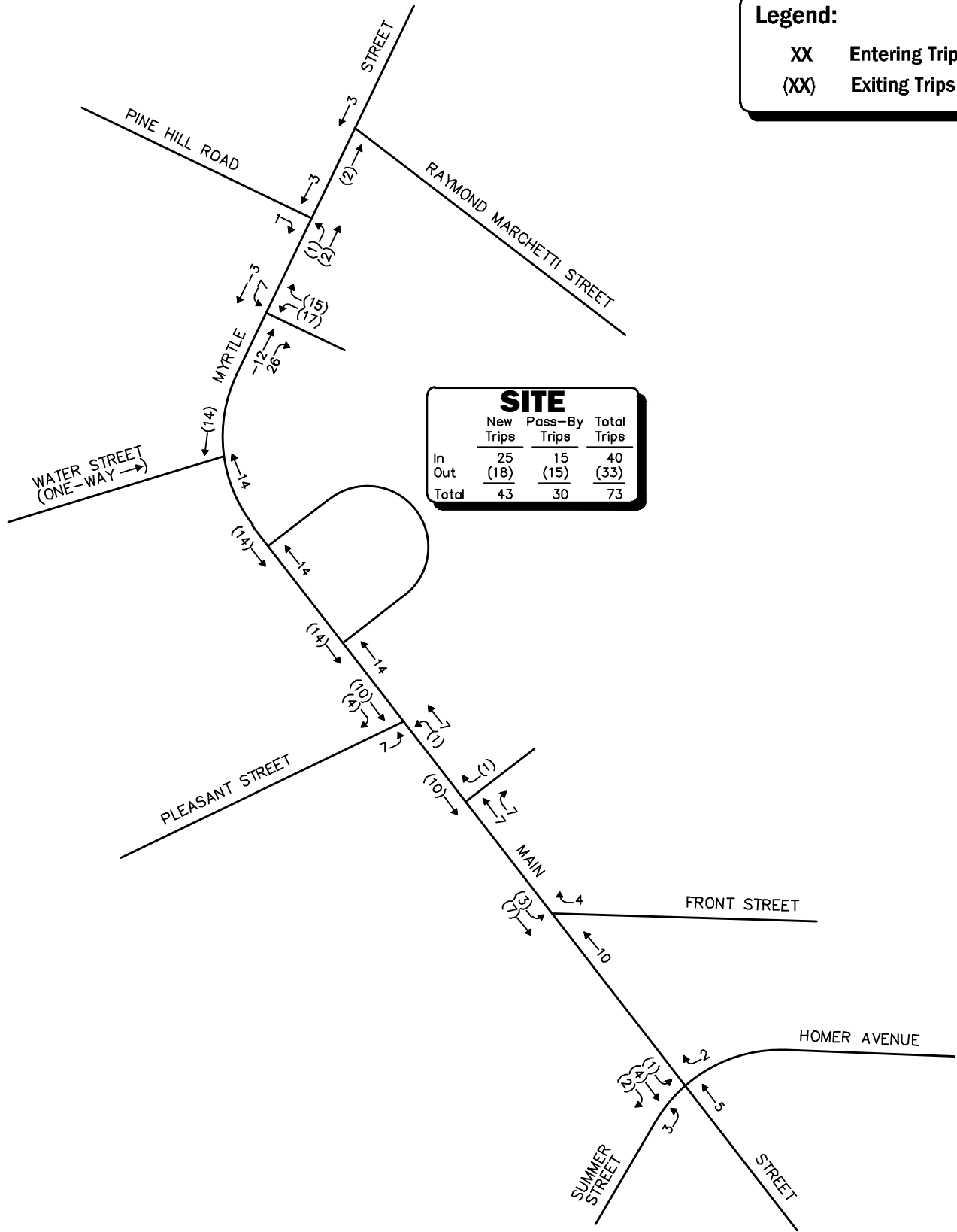


Project-Generated Retail Component Weekday Evening Peak-Hour Traffic Volumes

R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/21/2025 10:01:18 AM

Legend:

- XX Entering Trips
- (XX) Exiting Trips



Not To Scale



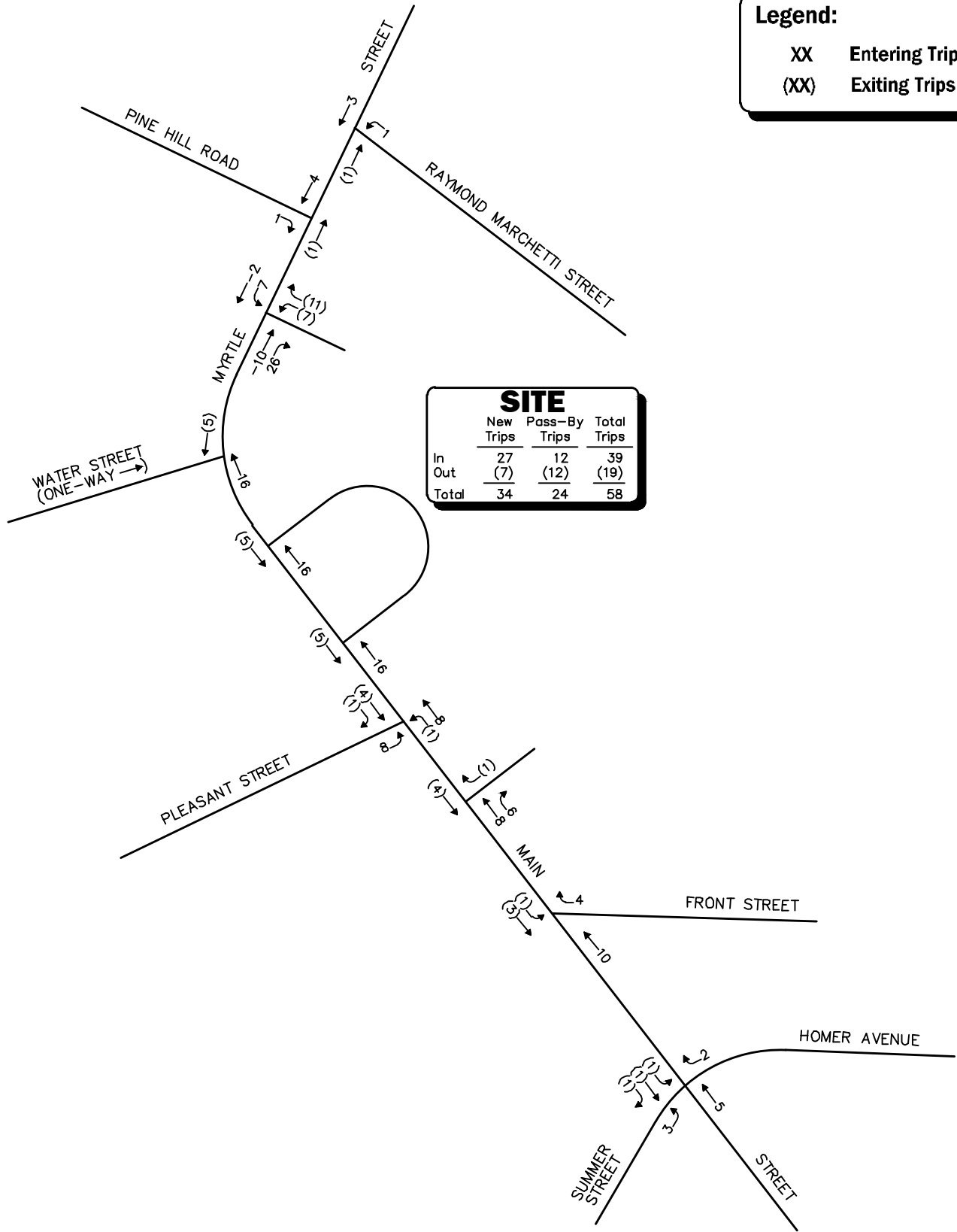
Figure 13R

Project-Generated
Restaurant Component
Weekday Morning
Peak-Hour Traffic Volumes

R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/21/2025 10:02:04 AM

Legend:

- XX Entering Trips
- (XX) Exiting Trips



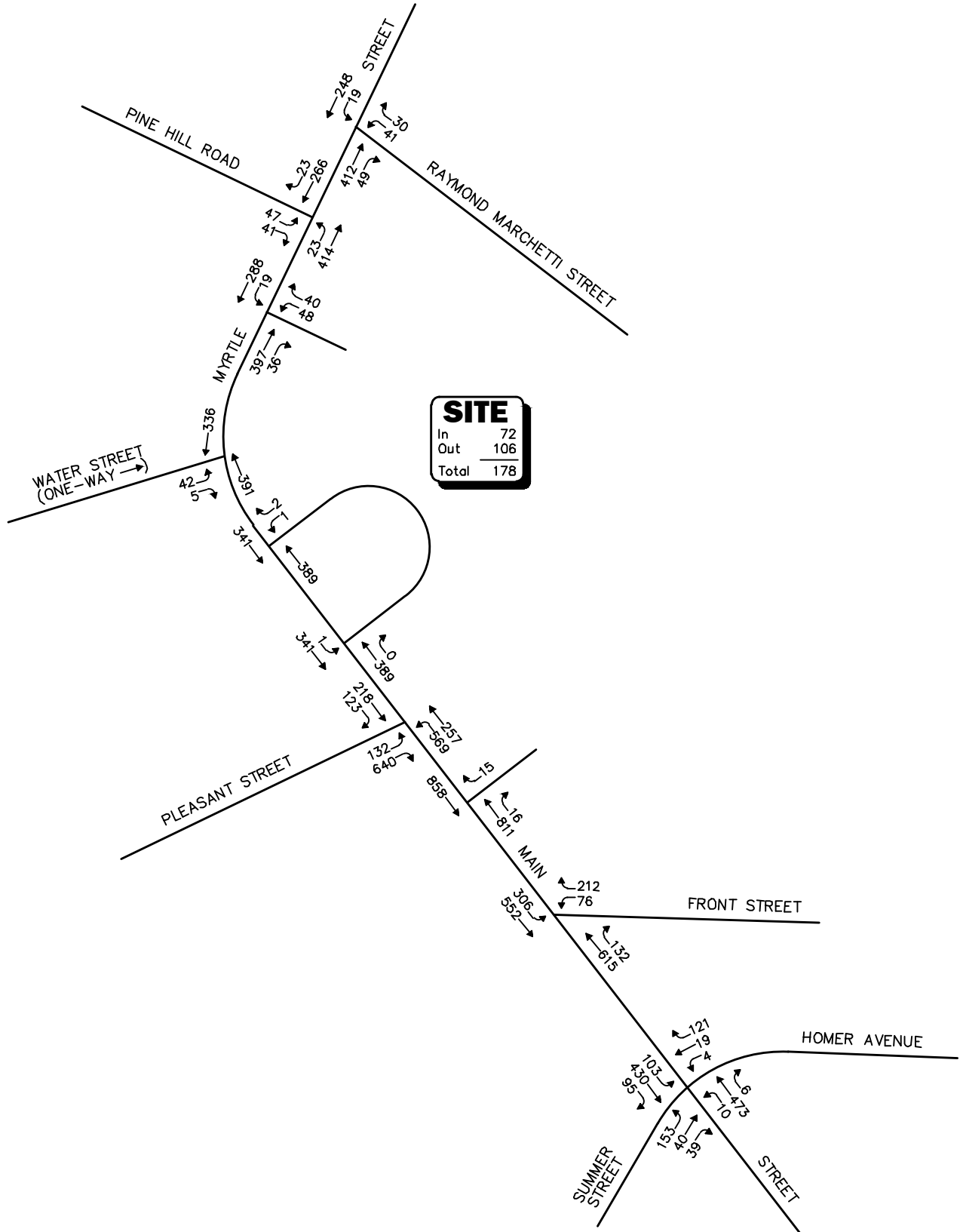
Not To Scale

Figure 14R



Project-Generated Restaurant Component Weekday Evening Peak-Hour Traffic Volumes

R:\9837\Graphics\RtoC February 2025\9837NT2.dwg, 2/21/2025 10:02:47 AM



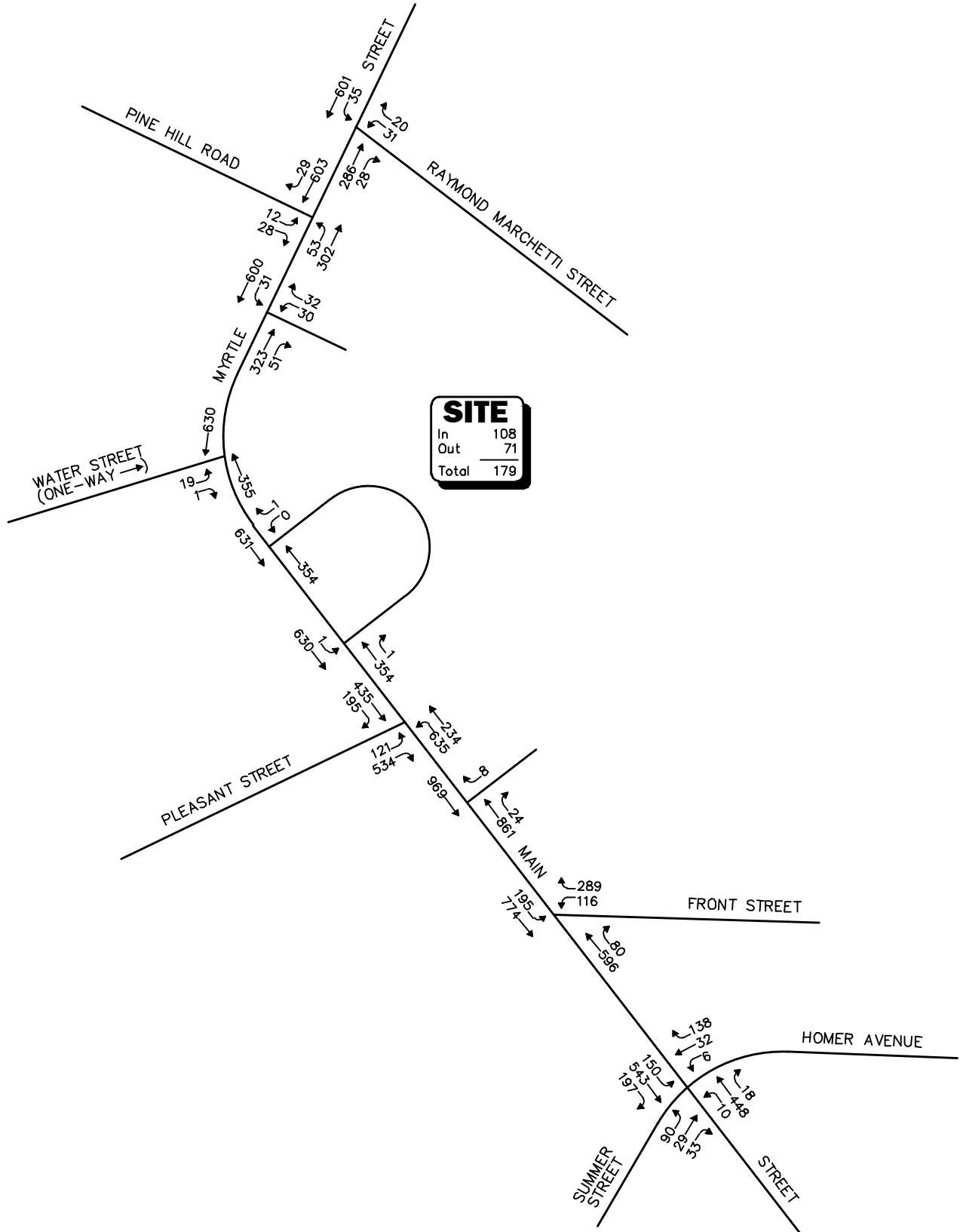
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 15R



**2031 Build
Weekday Morning
Peak-Hour Traffic Volumes**



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 16R



**2031 Build
 Weekday Evening
 Peak-Hour Traffic Volumes**

TURNING MOVEMENT COUNT DATA (MYRTLE STREET AT PINE HILL ROAD)

Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Myrtle St From North		Myrtle St From South		Pine Hill Rd From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	35	1	2	58	2	2	100
07:15 AM	44	0	3	76	5	5	133
07:30 AM	55	12	1	66	12	5	151
07:45 AM	47	0	2	67	14	9	139
Total	181	13	8	267	33	21	523
08:00 AM	72	2	5	63	10	9	161
08:15 AM	49	5	8	96	5	12	175
08:30 AM	41	1	4	76	3	4	129
08:45 AM	49	1	2	58	4	6	120
Total	211	9	19	293	22	31	585
Grand Total	392	22	27	560	55	52	1108
Apprch %	94.7	5.3	4.6	95.4	51.4	48.6	
Total %	35.4	2	2.4	50.5	5	4.7	
Cars	389	21	24	555	53	49	1091
% Cars	99.2	95.5	88.9	99.1	96.4	94.2	98.5
Trucks	3	1	3	5	2	3	17
% Trucks	0.8	4.5	11.1	0.9	3.6	5.8	1.5

Start Time	Myrtle St From North			Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	55	12	67	1	66	67	12	5	17	151
07:45 AM	47	0	47	2	67	69	14	9	23	139
08:00 AM	72	2	74	5	63	68	10	9	19	161
08:15 AM	49	5	54	8	96	104	5	12	17	175
Total Volume	223	19	242	16	292	308	41	35	76	626
% App. Total	92.1	7.9		5.2	94.8		53.9	46.1		
PHF	.774	.396	.818	.500	.760	.740	.732	.729	.826	.894
Cars	220	18	238	14	288	302	40	34	74	614
% Cars	98.7	94.7	98.3	87.5	98.6	98.1	97.6	97.1	97.4	98.1
Trucks	3	1	4	2	4	6	1	1	2	12
% Trucks	1.3	5.3	1.7	12.5	1.4	1.9	2.4	2.9	2.6	1.9

Accurate Counts

978-664-2565

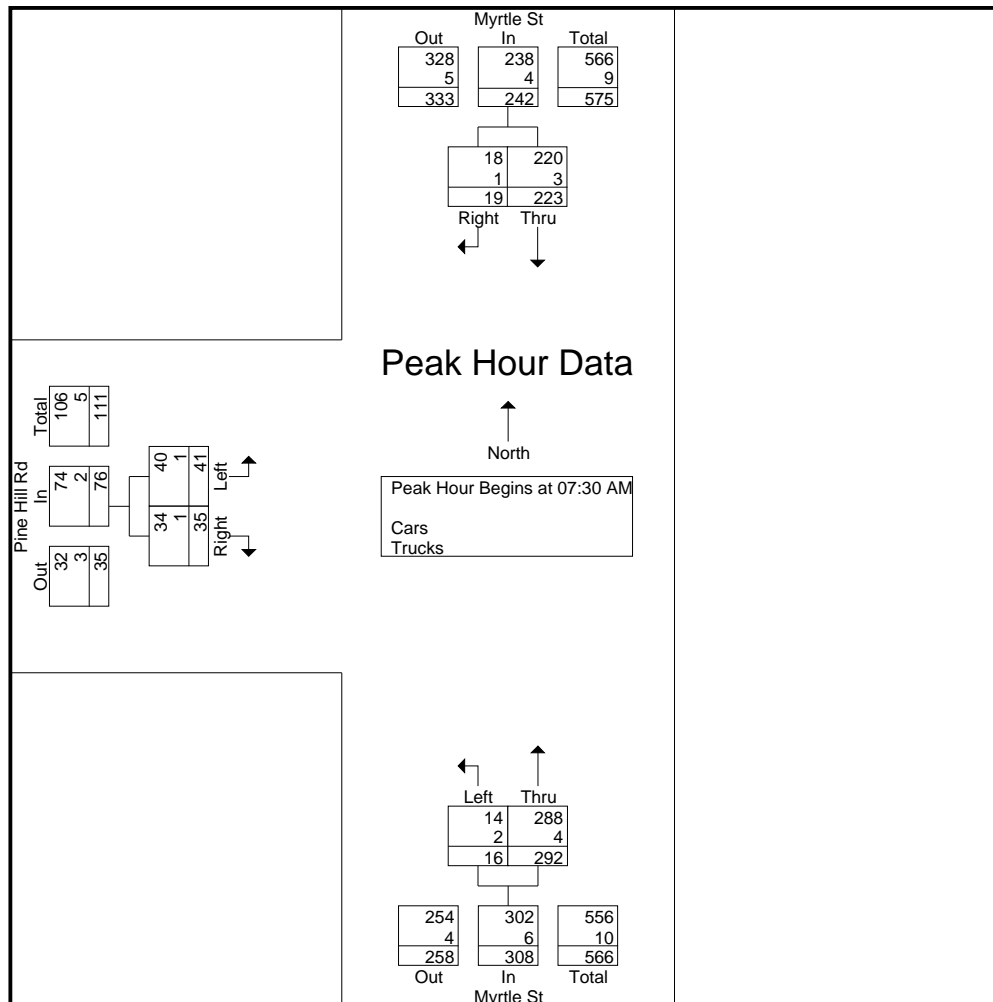
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 2

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM			07:45 AM			07:30 AM		
+0 mins.	55	12	67	2	67	69	12	5	17
+15 mins.	47	0	47	5	63	68	14	9	23
+30 mins.	72	2	74	8	96	104	10	9	19
+45 mins.	49	5	54	4	76	80	5	12	17
Total Volume	223	19	242	19	302	321	41	35	76
% App. Total	92.1	7.9		5.9	94.1		53.9	46.1	
PHF	.774	.396	.818	.594	.786	.772	.732	.729	.826
Cars	220	18	238	17	298	315	40	34	74
% Cars	98.7	94.7	98.3	89.5	98.7	98.1	97.6	97.1	97.4
Trucks	3	1	4	2	4	6	1	1	2
% Trucks	1.3	5.3	1.7	10.5	1.3	1.9	2.4	2.9	2.6

Accurate Counts

978-664-2565

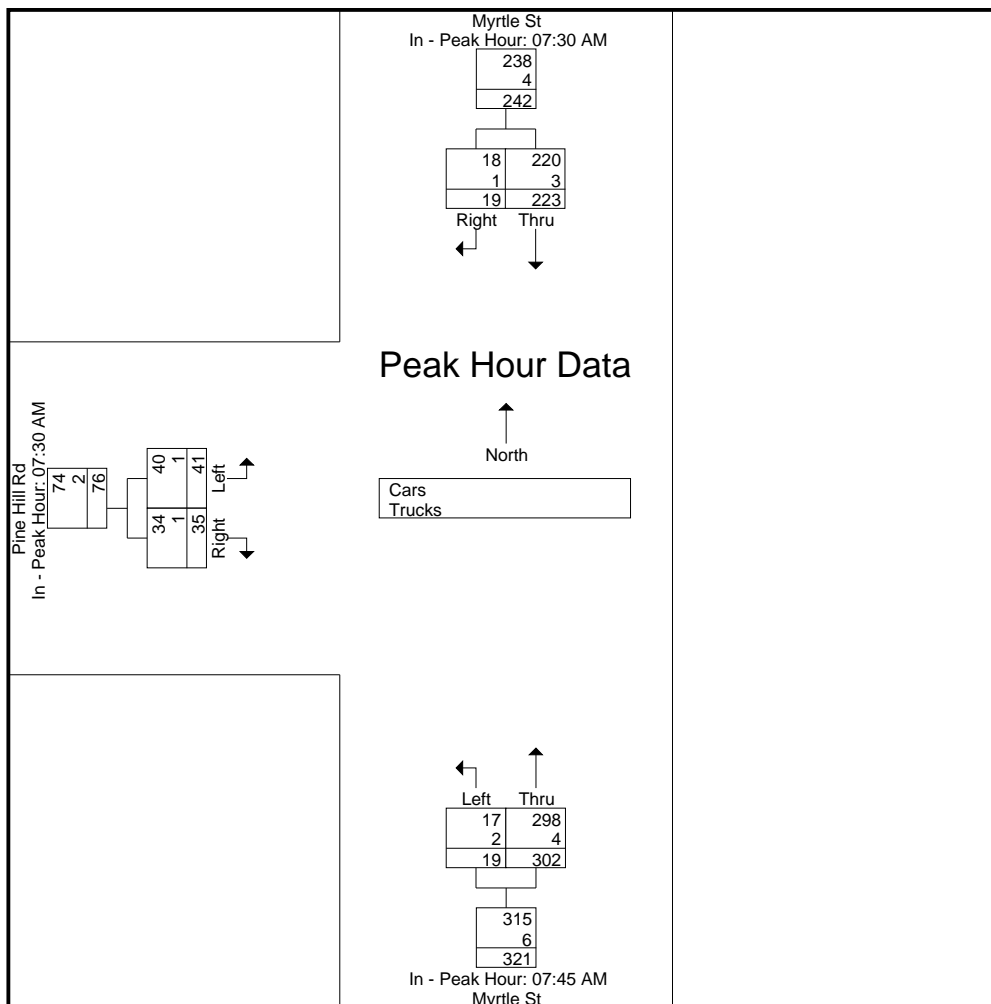
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 3

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 4

Groups Printed- Cars

Start Time	Myrtle St From North		Myrtle St From South		Pine Hill Rd From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	35	1	1	57	2	2	98
07:15 AM	44	0	3	76	4	5	132
07:30 AM	54	11	1	66	12	4	148
07:45 AM	47	0	2	66	13	9	137
Total	180	12	7	265	31	20	515
08:00 AM	70	2	5	61	10	9	157
08:15 AM	49	5	6	95	5	12	172
08:30 AM	41	1	4	76	3	4	129
08:45 AM	49	1	2	58	4	4	118
Total	209	9	17	290	22	29	576
Grand Total	389	21	24	555	53	49	1091
Apprch %	94.9	5.1	4.1	95.9	52	48	
Total %	35.7	1.9	2.2	50.9	4.9	4.5	

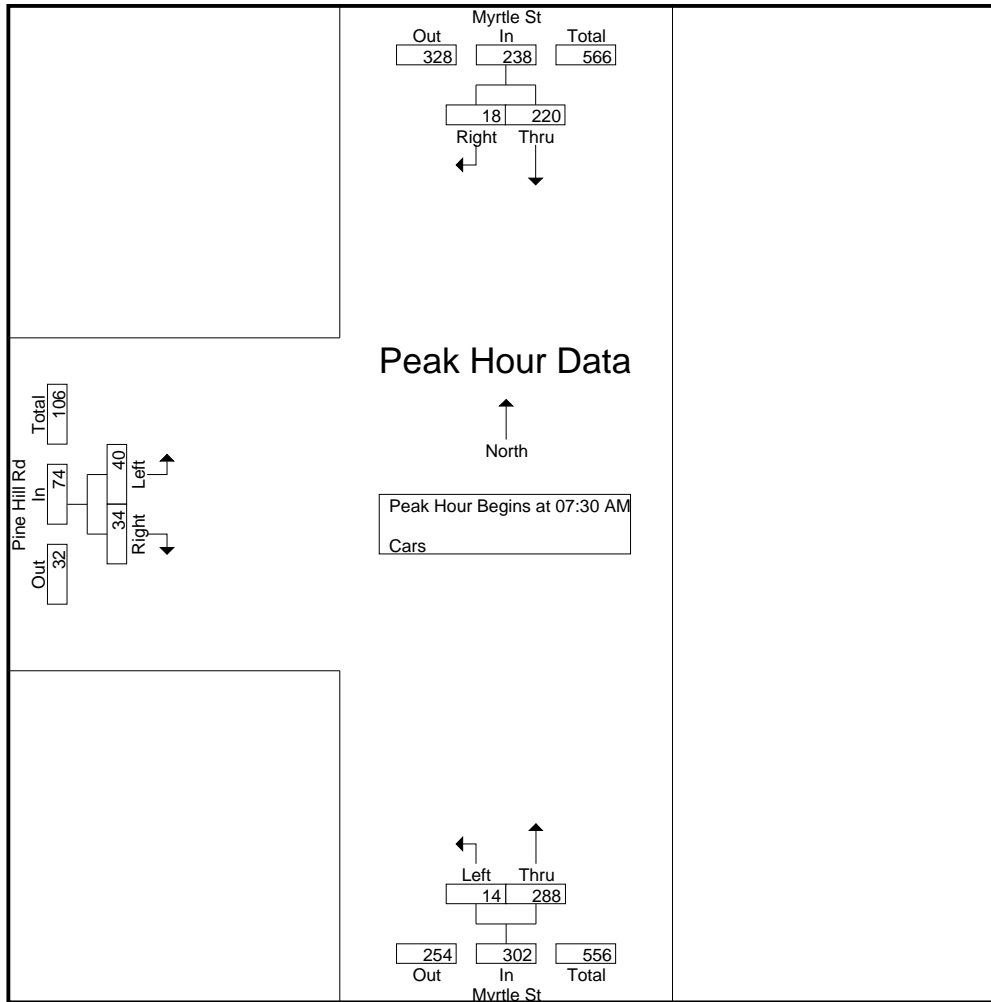
Start Time	Myrtle St From North			Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	54	11	65	1	66	67	12	4	16	148
07:45 AM	47	0	47	2	66	68	13	9	22	137
08:00 AM	70	2	72	5	61	66	10	9	19	157
08:15 AM	49	5	54	6	95	101	5	12	17	172
Total Volume	220	18	238	14	288	302	40	34	74	614
% App. Total	92.4	7.6		4.6	95.4		54.1	45.9		
PHF	.786	.409	.826	.583	.758	.748	.769	.708	.841	.892

Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM			07:45 AM			07:30 AM		
+0 mins.	54	11	65	2	66	68	12	4	16
+15 mins.	47	0	47	5	61	66	13	9	22
+30 mins.	70	2	72	6	95	101	10	9	19
+45 mins.	49	5	54	4	76	80	5	12	17
Total Volume	220	18	238	17	298	315	40	34	74
% App. Total	92.4	7.6		5.4	94.6		54.1	45.9	
PHF	.786	.409	.826	.708	.784	.780	.769	.708	.841

Accurate Counts

978-664-2565

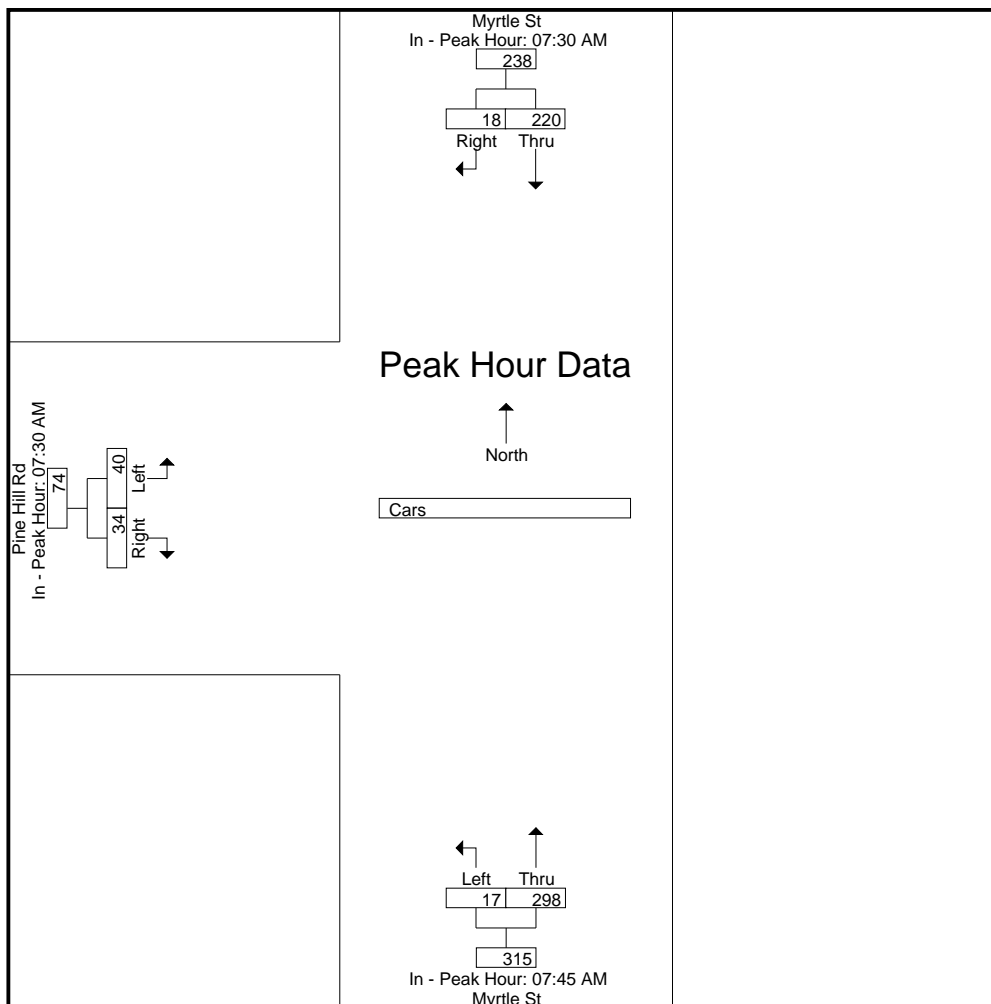
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 6

N/S Street : Myrtle Street
E/W Street : Pine Hill Road
City/State : Ashland, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 7

Groups Printed- Trucks

Start Time	Myrtle St From North		Myrtle St From South		Pine Hill Rd From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	0	0	1	1	0	0	2
07:15 AM	0	0	0	0	1	0	1
07:30 AM	1	1	0	0	0	1	3
07:45 AM	0	0	0	1	1	0	2
Total	1	1	1	2	2	1	8
08:00 AM	2	0	0	2	0	0	4
08:15 AM	0	0	2	1	0	0	3
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	2	2
Total	2	0	2	3	0	2	9
Grand Total	3	1	3	5	2	3	17
Apprch %	75	25	37.5	62.5	40	60	
Total %	17.6	5.9	17.6	29.4	11.8	17.6	

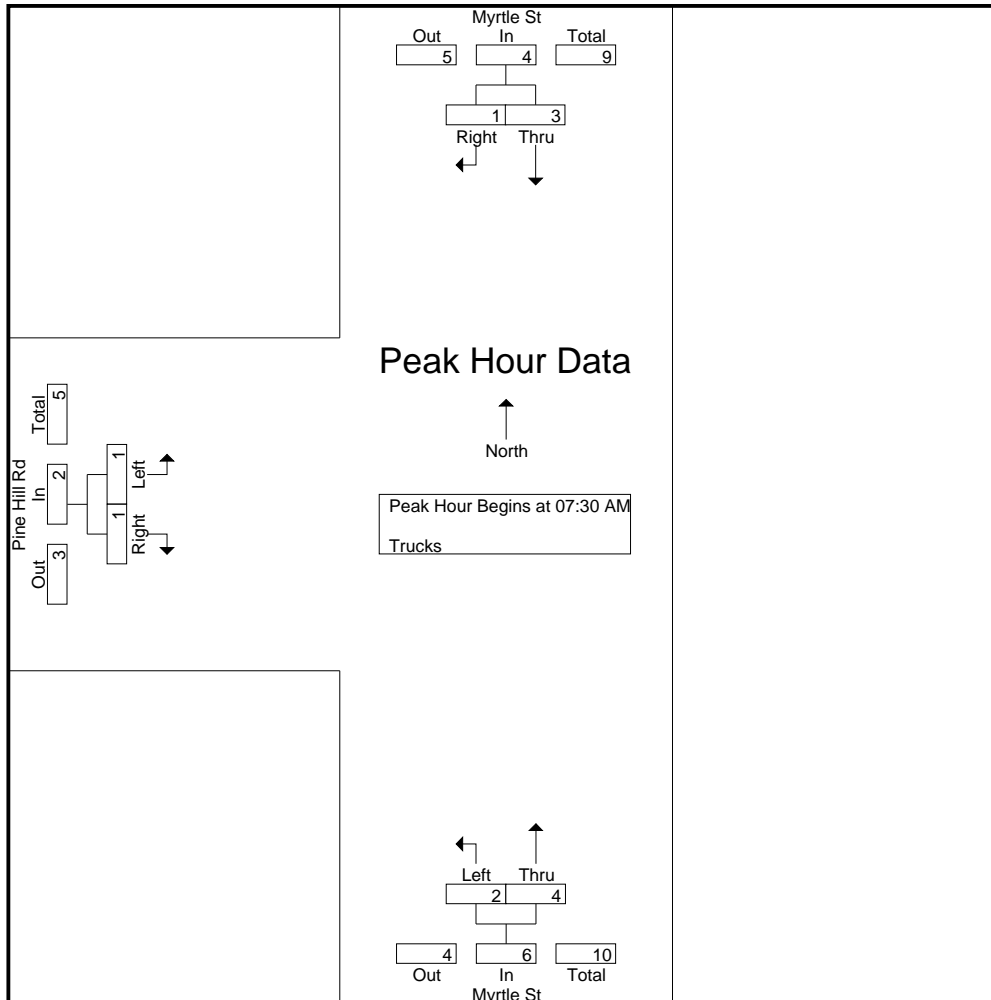
Start Time	Myrtle St From North			Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	1	1	2	0	0	0	0	1	1	3
07:45 AM	0	0	0	0	1	1	1	0	1	2
08:00 AM	2	0	2	0	2	2	0	0	0	4
08:15 AM	0	0	0	2	1	3	0	0	0	3
Total Volume	3	1	4	2	4	6	1	1	2	12
% App. Total	75	25		33.3	66.7		50	50		
PHF	.375	.250	.500	.250	.500	.500	.250	.250	.500	.750

Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			07:30 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	1	1	2	0	1	1	1	0	1
+30 mins.	0	0	0	0	2	2	0	1	1
+45 mins.	2	0	2	2	1	3	1	0	1
Total Volume	3	1	4	2	4	6	2	1	3
% App. Total	75	25		33.3	66.7		66.7	33.3	
PHF	.375	.250	.500	.250	.500	.500	.500	.250	.750

Accurate Counts

978-664-2565

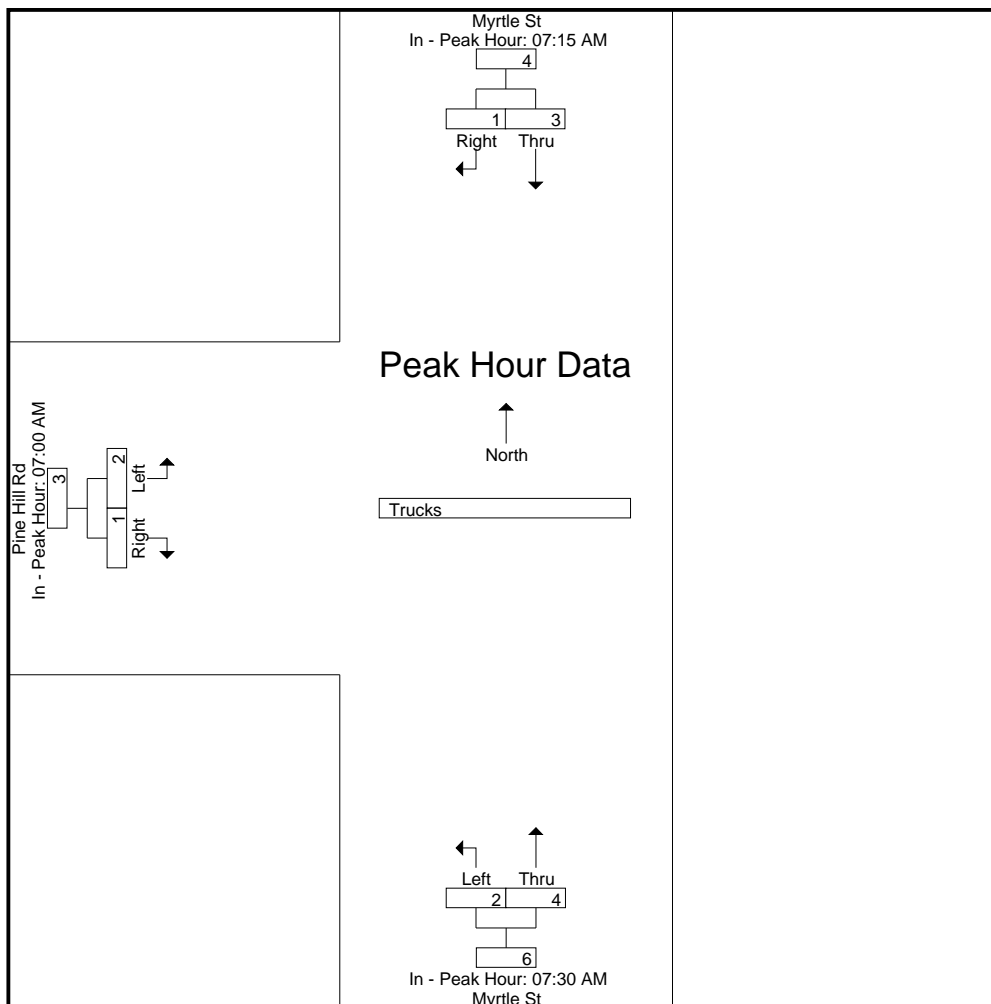
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 9

N/S Street : Myrtle Street
E/W Street : Pine Hill Road
City/State : Ashland, MA
Weather : Cloudy

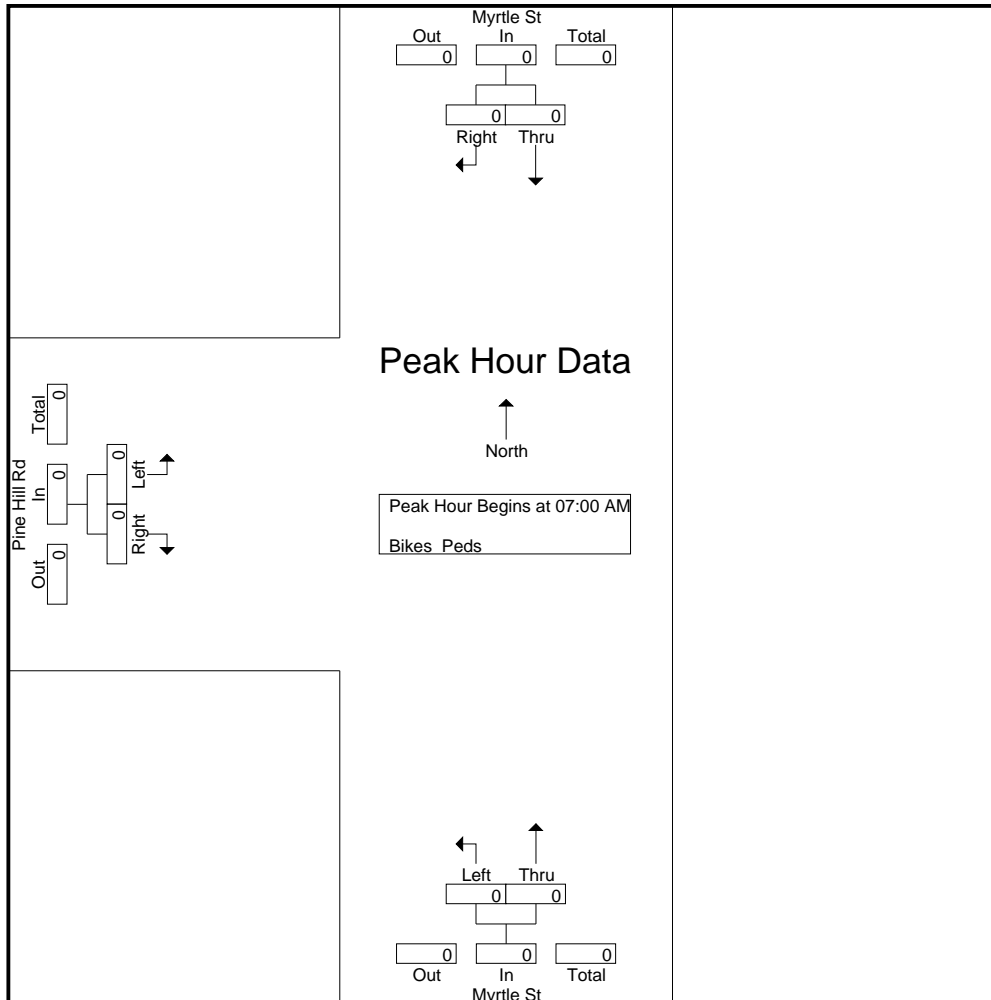


Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

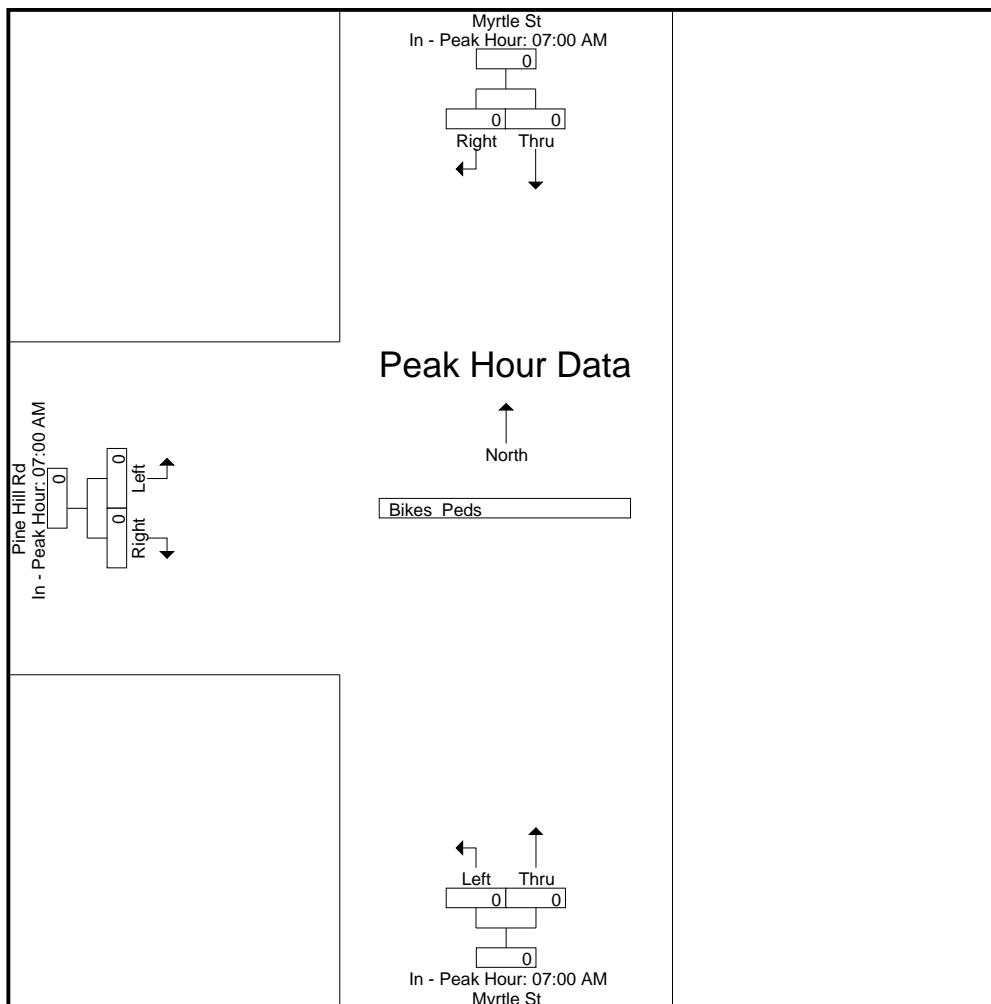
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 12

N/S Street : Myrtle Street
E/W Street : Pine Hill Road
City/State : Ashland, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Myrtle St From North		Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	Left	Thru	Left	Right			
04:00 PM	91	11	7	50	3	7	169		
04:15 PM	130	7	10	44	1	7	199		
04:30 PM	123	6	13	70	3	6	221		
04:45 PM	124	5	14	72	3	5	223		
Total	468	29	44	236	10	25	812		
05:00 PM	121	7	8	67	3	5	211		
05:15 PM	108	4	9	44	1	2	168		
05:30 PM	81	1	15	43	3	9	152		
05:45 PM	115	2	7	48	1	7	180		
Total	425	14	39	202	8	23	711		
Grand Total	893	43	83	438	18	48	1523		
Apprch %	95.4	4.6	15.9	84.1	27.3	72.7			
Total %	58.6	2.8	5.4	28.8	1.2	3.2			
Cars	888	42	83	435	18	48	1514		
% Cars	99.4	97.7	100	99.3	100	100	99.4		
Trucks	5	1	0	3	0	0	9		
% Trucks	0.6	2.3	0	0.7	0	0	0.6		

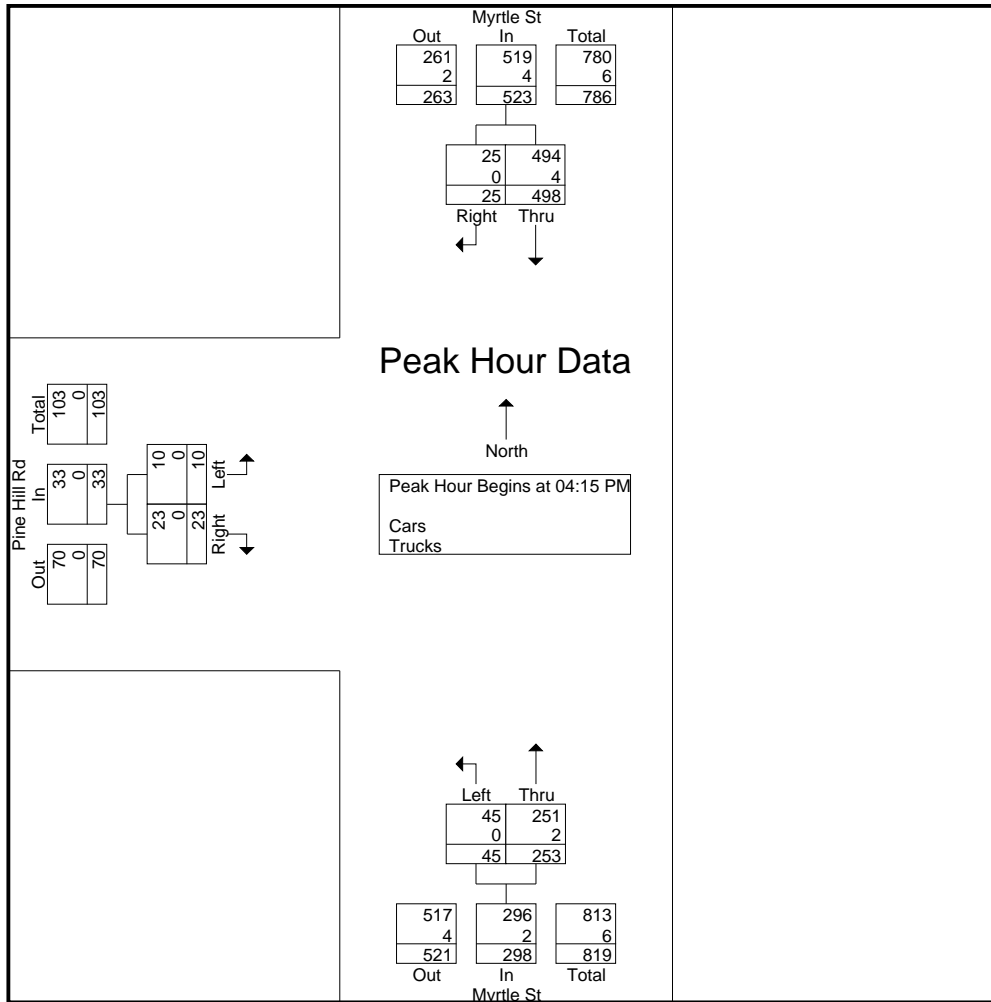
Start Time	Myrtle St From North			Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	130	7	137	10	44	54	1	7	8	199
04:30 PM	123	6	129	13	70	83	3	6	9	221
04:45 PM	124	5	129	14	72	86	3	5	8	223
05:00 PM	121	7	128	8	67	75	3	5	8	211
Total Volume	498	25	523	45	253	298	10	23	33	854
% App. Total	95.2	4.8		15.1	84.9		30.3	69.7		
PHF	.958	.893	.954	.804	.878	.866	.833	.821	.917	.957
Cars	494	25	519	45	251	296	10	23	33	848
% Cars	99.2	100	99.2	100	99.2	99.3	100	100	100	99.3
Trucks	4	0	4	0	2	2	0	0	0	6
% Trucks	0.8	0	0.8	0	0.8	0.7	0	0	0	0.7

Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:00 PM		
+0 mins.	130	7	137	10	44	54	3	7	10
+15 mins.	123	6	129	13	70	83	1	7	8
+30 mins.	124	5	129	14	72	86	3	6	9
+45 mins.	121	7	128	8	67	75	3	5	8
Total Volume	498	25	523	45	253	298	10	25	35
% App. Total	95.2	4.8		15.1	84.9		28.6	71.4	
PHF	.958	.893	.954	.804	.878	.866	.833	.893	.875
Cars	494	25	519	45	251	296	10	25	35
% Cars	99.2	100	99.2	100	99.2	99.3	100	100	100
Trucks	4	0	4	0	2	2	0	0	0
% Trucks	0.8	0	0.8	0	0.8	0.7	0	0	0

Accurate Counts

978-664-2565

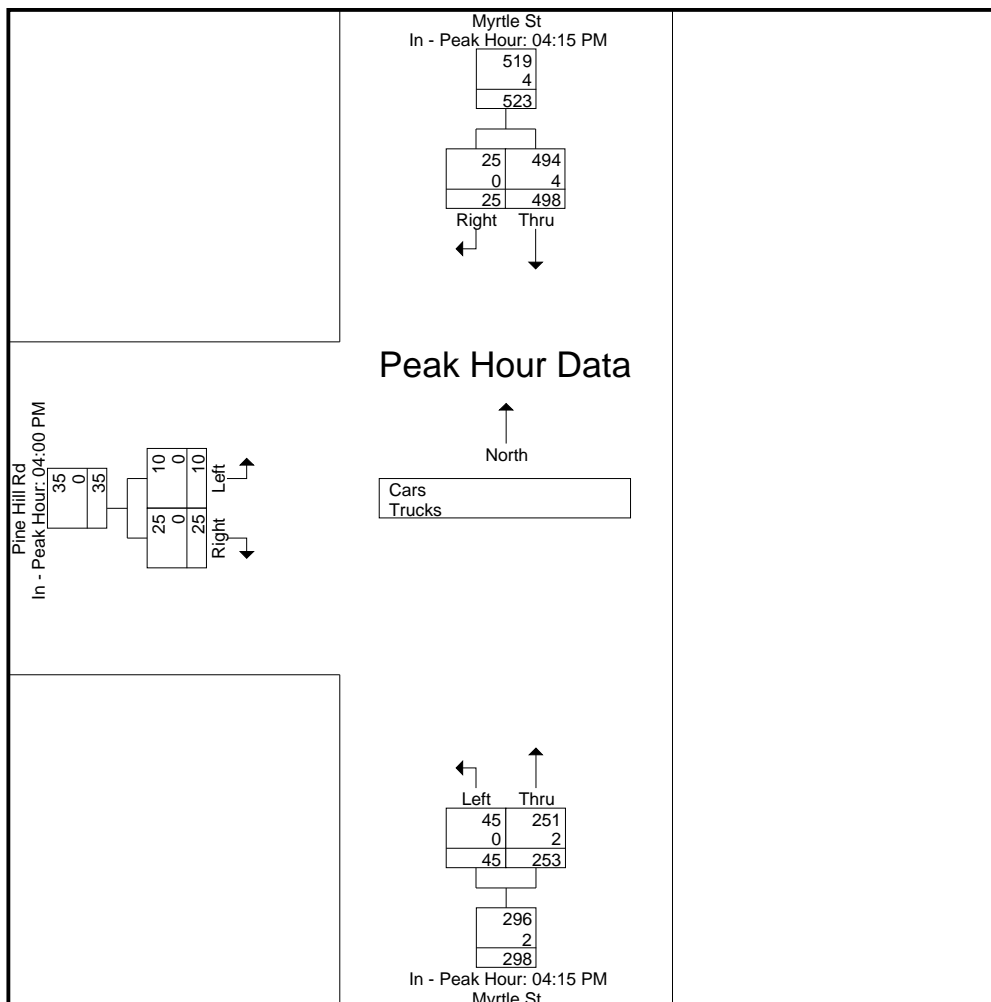
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 3

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 4

Groups Printed- Cars

Start Time	Myrtle St From North		Myrtle St From South		Pine Hill Rd From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	90	11	7	49	3	7	167
04:15 PM	127	7	10	44	1	7	196
04:30 PM	122	6	13	69	3	6	219
04:45 PM	124	5	14	71	3	5	222
Total	463	29	44	233	10	25	804
05:00 PM	121	7	8	67	3	5	211
05:15 PM	108	3	9	44	1	2	167
05:30 PM	81	1	15	43	3	9	152
05:45 PM	115	2	7	48	1	7	180
Total	425	13	39	202	8	23	710
Grand Total	888	42	83	435	18	48	1514
Apprch %	95.5	4.5	16	84	27.3	72.7	
Total %	58.7	2.8	5.5	28.7	1.2	3.2	

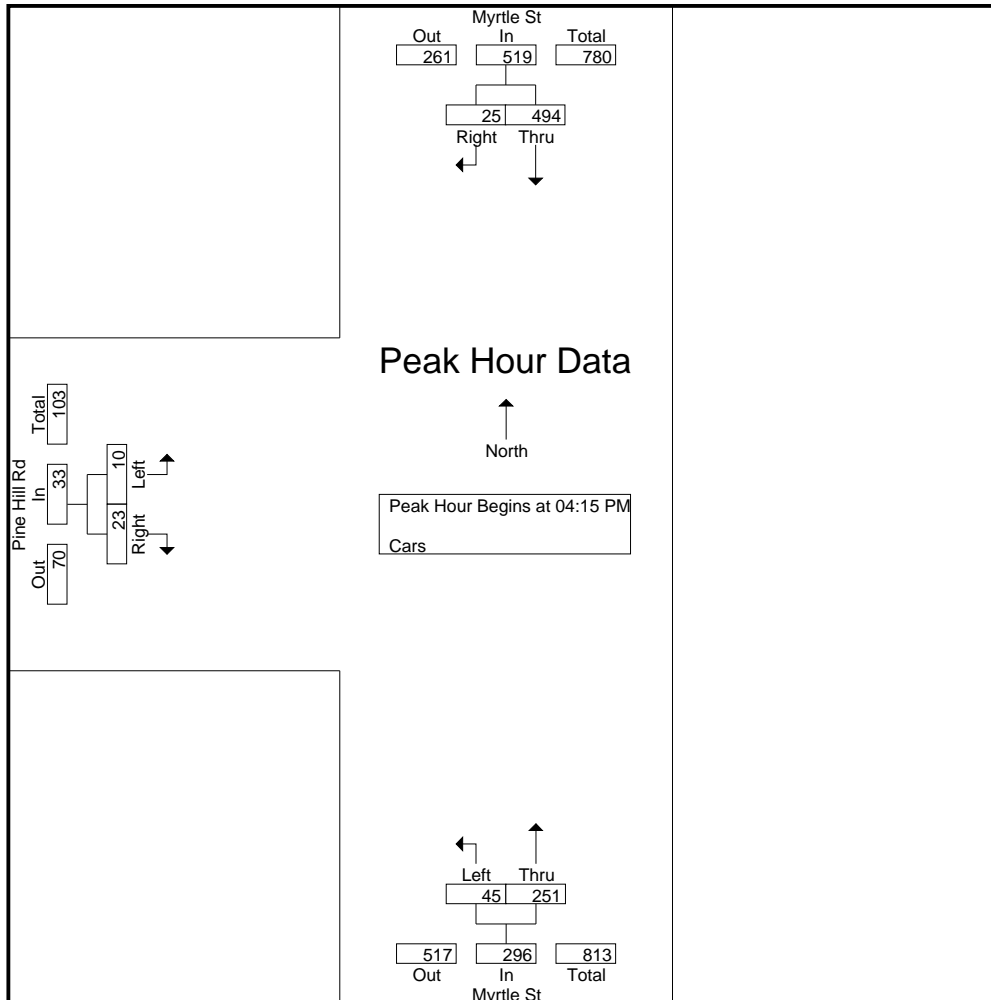
Start Time	Myrtle St From North			Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	127	7	134	10	44	54	1	7	8	196
04:30 PM	122	6	128	13	69	82	3	6	9	219
04:45 PM	124	5	129	14	71	85	3	5	8	222
05:00 PM	121	7	128	8	67	75	3	5	8	211
Total Volume	494	25	519	45	251	296	10	23	33	848
% App. Total	95.2	4.8		15.2	84.8		30.3	69.7		
PHF	.972	.893	.968	.804	.884	.871	.833	.821	.917	.955

Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:00 PM		
+0 mins.	127	7	134	10	44	54	3	7	10
+15 mins.	122	6	128	13	69	82	1	7	8
+30 mins.	124	5	129	14	71	85	3	6	9
+45 mins.	121	7	128	8	67	75	3	5	8
Total Volume	494	25	519	45	251	296	10	25	35
% App. Total	95.2	4.8		15.2	84.8		28.6	71.4	
PHF	.972	.893	.968	.804	.884	.871	.833	.893	.875

Accurate Counts

978-664-2565

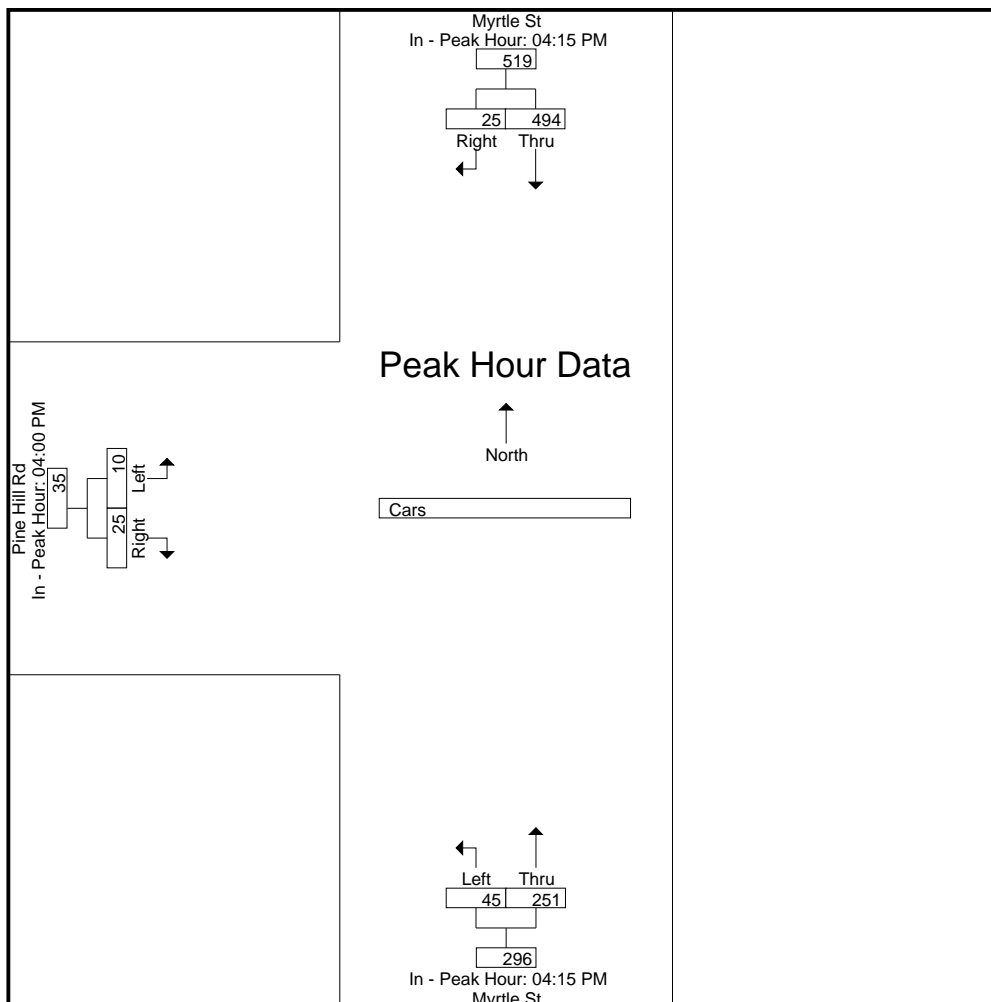
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 6

N/S Street : Myrtle Street
E/W Street : Pine Hill Road
City/State : Ashland, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 7

Groups Printed- Trucks

Start Time	Myrtle St From North		Myrtle St From South		Pine Hill Rd From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	1	0	0	1	0	0	2
04:15 PM	3	0	0	0	0	0	3
04:30 PM	1	0	0	1	0	0	2
04:45 PM	0	0	0	1	0	0	1
Total	5	0	0	3	0	0	8
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1
Grand Total	5	1	0	3	0	0	9
Apprch %	83.3	16.7	0	100	0	0	
Total %	55.6	11.1	0	33.3	0	0	

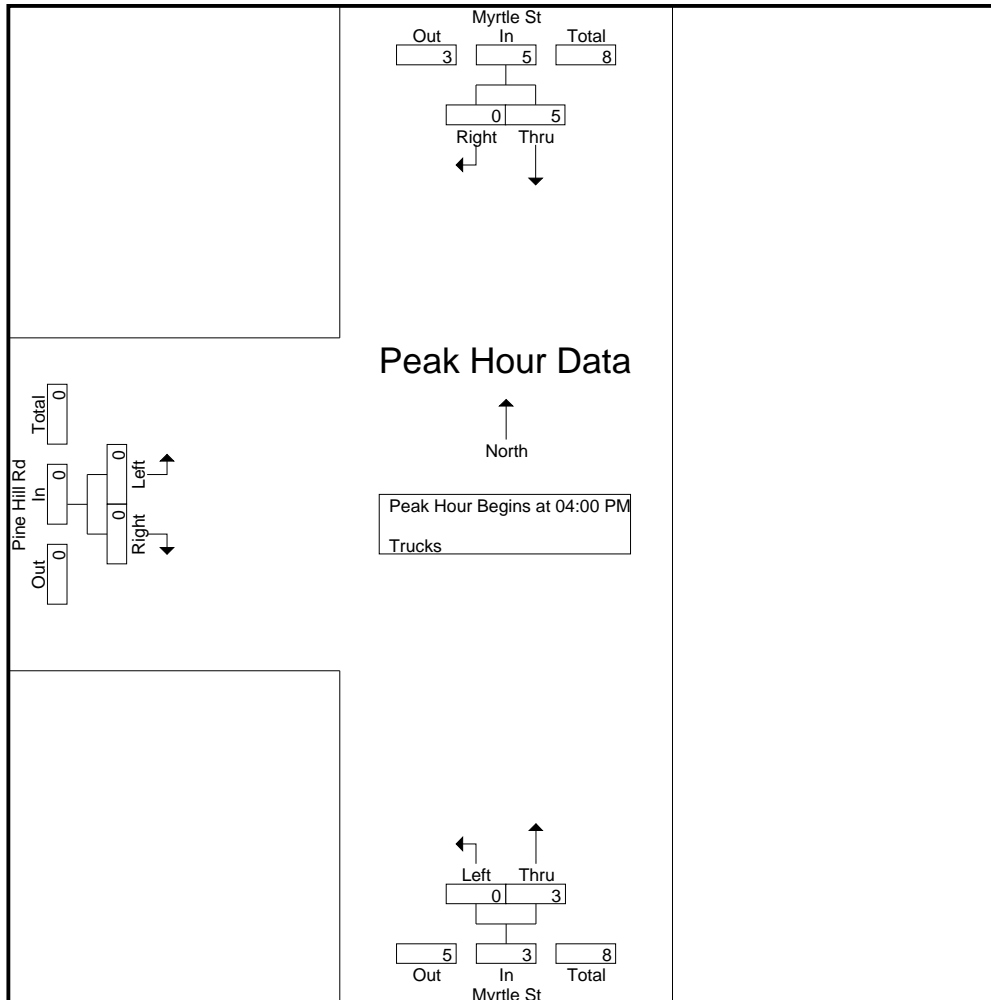
Start Time	Myrtle St From North			Myrtle St From South			Pine Hill Rd From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	1	0	1	0	1	1	0	0	0	2
04:15 PM	3	0	3	0	0	0	0	0	0	3
04:30 PM	1	0	1	0	1	1	0	0	0	2
04:45 PM	0	0	0	0	1	1	0	0	0	1
Total Volume	5	0	5	0	3	3	0	0	0	8
% App. Total	100	0	100	0	100	100	0	0	0	100
PHF	.417	.000	.417	.000	.750	.750	.000	.000	.000	.667

Accurate Counts

978-664-2565

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy

File Name : 98370001
 Site Code : 98370001
 Start Date : 2/11/2025
 Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	1	0	1	0	1	1	0	0	0
+15 mins.	3	0	3	0	0	0	0	0	0
+30 mins.	1	0	1	0	1	1	0	0	0
+45 mins.	0	0	0	0	1	1	0	0	0
Total Volume	5	0	5	0	3	3	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.417	.000	.417	.000	.750	.750	.000	.000	.000

Accurate Counts

978-664-2565

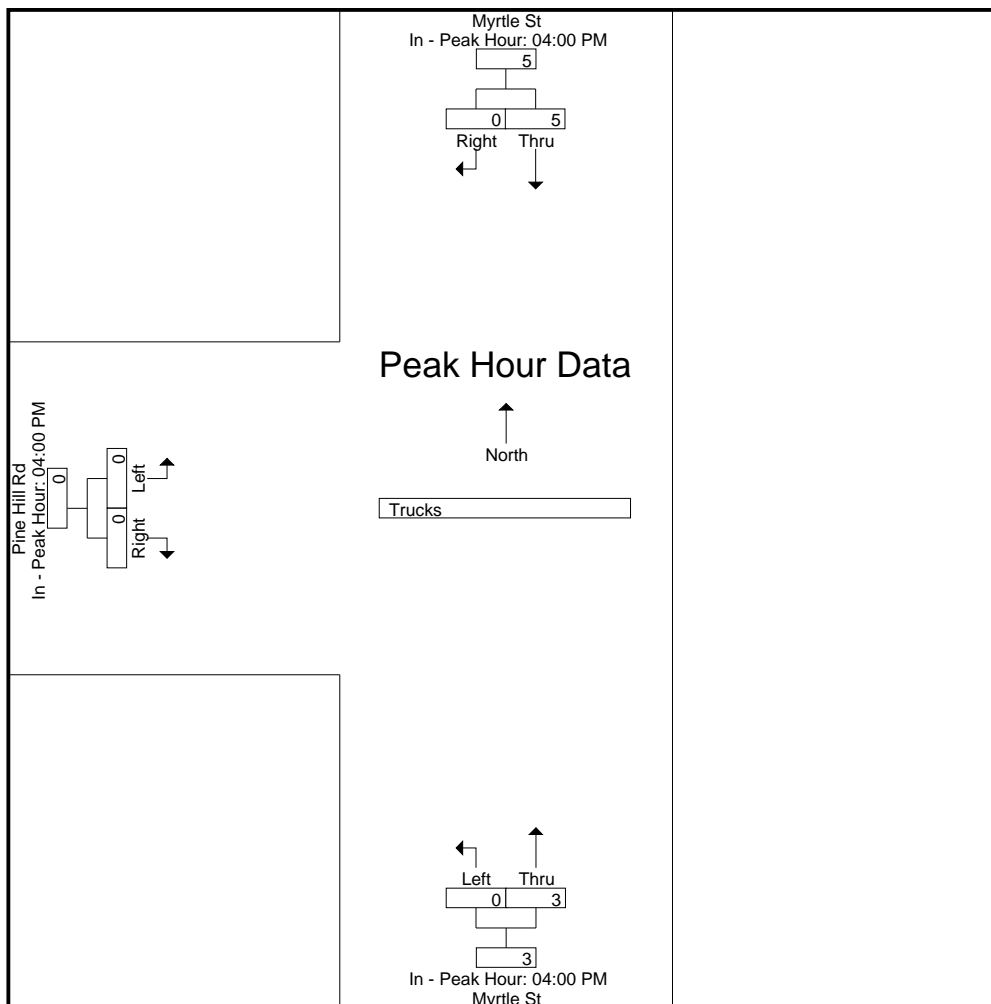
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 9

N/S Street : Myrtle Street
E/W Street : Pine Hill Road
City/State : Ashland, MA
Weather : Cloudy



Accurate Counts

978-664-2565

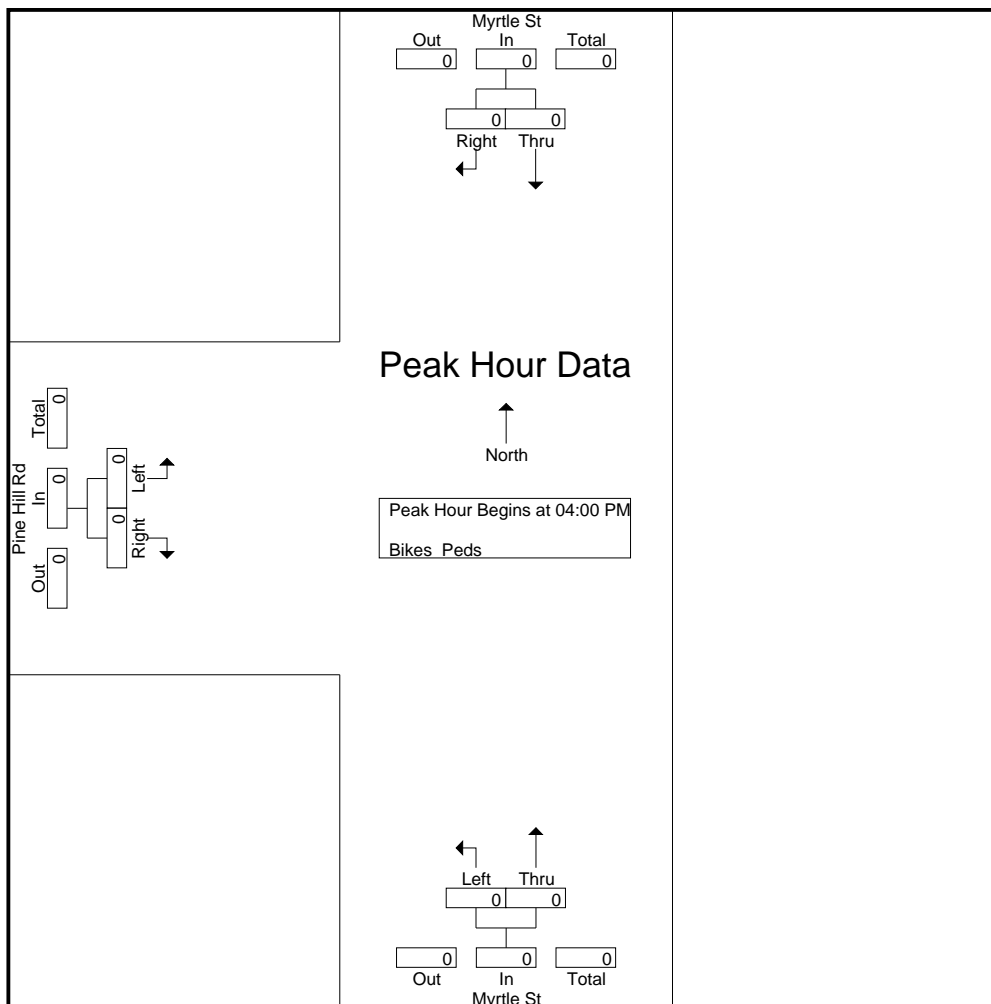
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 11

N/S Street : Myrtle Street
 E/W Street : Pine Hill Road
 City/State : Ashland, MA
 Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

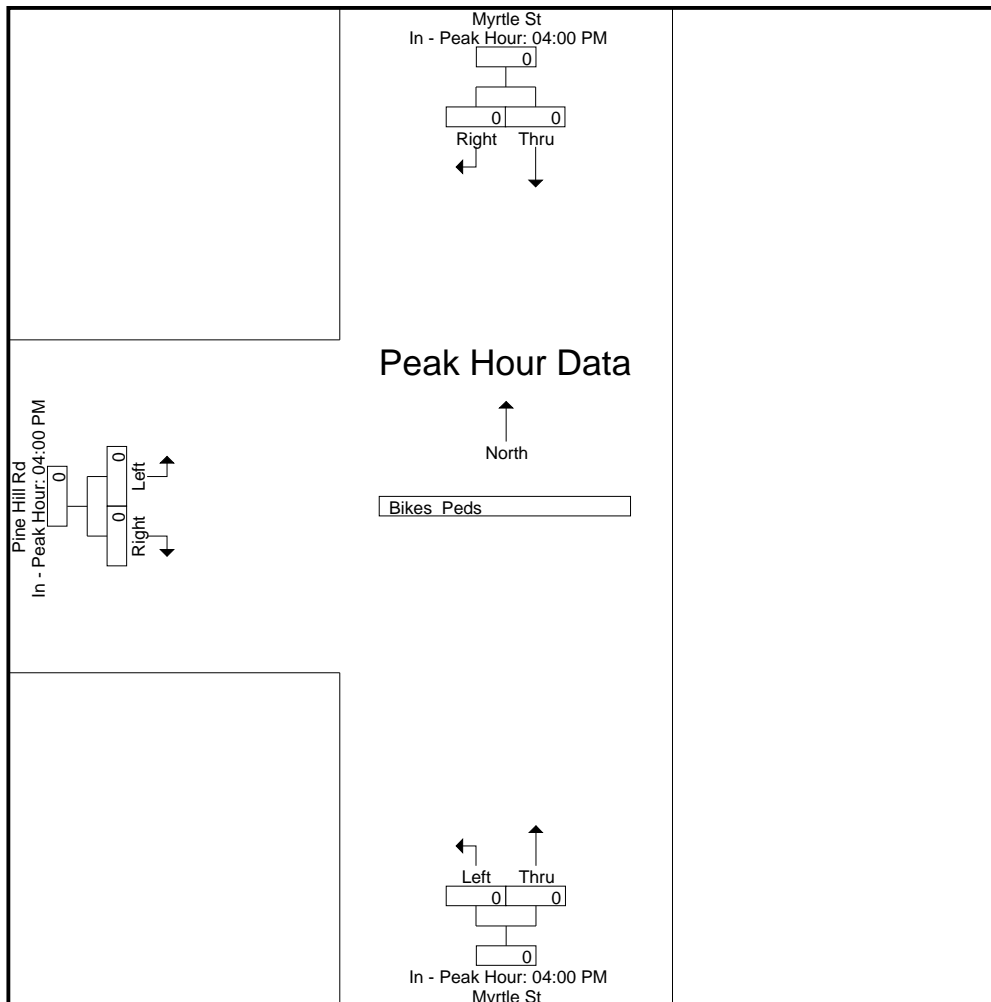
File Name : 98370001

Site Code : 98370001

Start Date : 2/11/2025

Page No : 12

N/S Street : Myrtle Street
E/W Street : Pine Hill Road
City/State : Ashland, MA
Weather : Cloudy



REVISED MOTOR VEHICLE CRASH DATA TABLE (TABLE 4R)

Table 4R
MOTOR VEHICLE CRASH DATA SUMMARY^a

	Myrtle St./ Raymond Marchetti St.	Myrtle St./ Pine Hill Rd.	Myrtle St./ 10-60 Main St. Dwy.	Myrtle St./ Main St./ Water St.	Main St./ LFX Dwy.	Main St./ Pleasant St.	Main St./ CrossFit Dwy.	Main St./ Front St.	Main St./ Homer Ave./ Summer St.
Traffic Control Type: ^b	U	U	U	U	U	S	U	S	S
<i>Year:</i>									
2017	2	0	0	0	0	2	0	5	2
2018	0	0	0	2	1	0	1	2	5
2019	1	0	0	0	0	3	0	1	2
2020	0	0	0	0	0	1	0	1	1
<u>2021</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>2</u>	<u>0</u>	<u>3</u>	<u>2</u>
Total	3	0	0	2	4	8	1	12	12
Average Rate ^c	0.60	0.00	0.00	0.40	0.80	1.60	0.20	2.40	2.40
MassDOT Crash Rate: ^d	0.57/0.61	0.57/0.61	0.57/0.61	0.57/0.61	0.57/0.61	0.78/0.89	0.57/0.61	0.78/0.89	0.78/0.89
Significant? ^e	No	No	No	No	No	No	No	No	No
<i>Type:</i>									
Angle	1	0	0	1	0	3	1	7	4
Rear-End	2	0	0	1	1	2	0	1	4
Head-On	0	0	0	0	0	0	0	0	0
Sideswipe	0	0	0	0	0	1	0	3	1
Fixed Object	0	0	0	0	3	2	0	1	2
Pedestrian/Bicycle	0	0	0	0	0	0	0	0	1
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	0	0	2	4	8	1	12	12
<i>Day of Week:</i>									
Monday through Friday	3	0	0	2	4	7	0	11	11
Saturday	0	0	0	0	0	0	0	1	0
<u>Sunday</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>1</u>
Total	3	0	0	2	4	8	1	12	12
<i>Conditions:</i>									
Clear	3	0	0	0	4	7	1	11	9
Cloudy	0	0	0	1	0	1	0	1	2
Rain	0	0	0	0	0	0	0	0	1
Snow/Ice	0	0	0	1	0	0	0	0	0
<u>Not Reported</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	0	0	2	4	8	1	12	12
<i>Lighting:</i>									
Daylight	3	0	0	1	0	6	1	10	7
Dawn/Dusk	0	0	0	0	0	0	0	0	1
Dark (Road Lit)	0	0	0	1	4	2	0	2	4
<u>Dark (Road Unlit)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	0	0	2	4	8	1	12	12
<i>Severity:</i>									
Property Damage Only	3	0	0	2	4	6	1	12	10
Personal Injury	0	0	0	0	0	1	0	0	2
Fatality	0	0	0	0	0	0	0	0	0
<u>Not Reported</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	0	0	2	4	8	1	12	12

^aSource: MassDOT Safety Management/Traffic Operations Unit records, 2017 through 2021.

^bTraffic Control Type: U = unsignalized; S = signalized.

^cCrash rate per million vehicles entering the intersection.

^dStatewide/District crash rates

^eThe intersection crash rate is significant if it is found to exceed either the MassDOT Statewide crash rate, or the crash rate for the MassDOT Highway Division District in which the Project is located (District 3).

REVISED MASSDOT CRASH RATE WORKSHEETS

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Ashland COUNT DATE : 2/27/2024

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

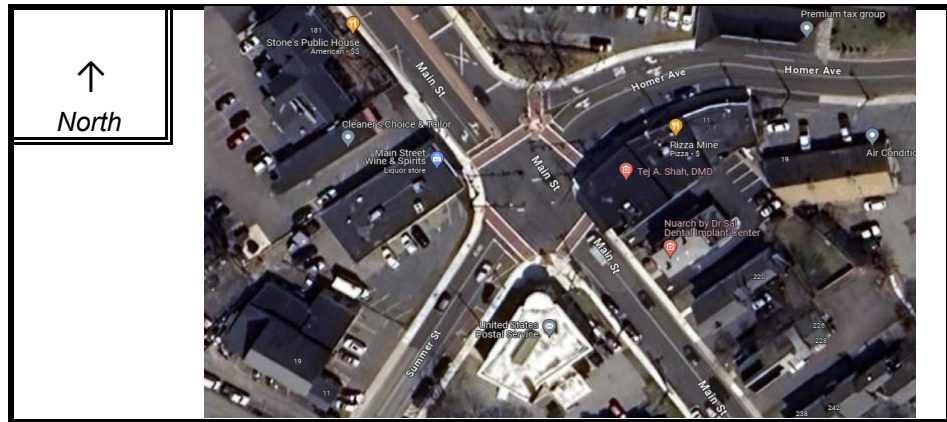
~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Summer Street

Homer Avenue

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	136	135	437	805		1,513

"K" FACTOR :	0.090	INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :	16,811
--------------	--------------	--	---------------

TOTAL # OF CRASHES :	12	# OF YEARS :	5	AVERAGE # OF CRASHES PER YEAR (A) :	2.40
----------------------	----	--------------	---	---------------------------------------	-------------

CRASH RATE CALCULATION :

0.39

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : Below Statewide and District Crash Rates

Project Title & Date: Proposed Mixed-Use Development

BACKGROUND DEVELOPMENT TRAFFIC VOLUME NETWORKS

MEMORANDUM

DATE: December 12, 2023

TO: Mr. Richard A. Salvo, P.E.
Engineering Alliance
194 Central Street
Saugus, MA 01906

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Proposed Mixed-Use Development**
Homer Avenue, Ashland, MA



MDM Transportation Consultants, Inc. (MDM) has conducted a trip generation assessment for proposed redevelopment of property at 9-49 Homer Avenue in Ashland, Massachusetts. This memorandum summarizes the traffic generation characteristics of existing and proposed site uses based on application of industry standard trip rates and methodology to estimate relative peak hour and daily trip increases associated with the mixed-use redevelopment.

Project Description

The project Site is an approximate 1-acre tract of land located along Homer Avenue in Ashland, Massachusetts. The Site is currently occupied by two residential homes, a commercial autobody repair garage, approximately 2,800± square feet of retail space, and a 4,000± square foot barber/hair salon. The proposed redevelopment of the site will retain the barber/hair salon use but will replace the other existing uses with a mixed-use development comprising 29 residential units and 8,550± square feet of retail/commercial space. Access is proposed to include a curb cut on Homer Avenue designated as a one-way enter-only driveway and a curb cut along Alden Street designated as a one-way exit-only driveway. Parking to support the proposed building is anticipated to include a mix of surface and garage parking. A preliminary site plan sketch for the project prepared by Engineering Alliance, Inc. is shown in **Figure 1**.

Projected Traffic Volumes

The trip generation estimates for the proposed redevelopment of the Site are provided for the weekday morning and weekday evening periods, which correspond to the critical analysis periods for the proposed uses and adjacent street traffic flow. For planning purposes, the total traffic generated by the project including the existing barber shop to remain plus trips estimated for new uses using trip rates published in ITE *Trip Generation*² for LUC 221 (Multifamily Housing, Mid-Rise) and LUC 822 (Strip Retail Plaza <40 ksf). **Table 2** presents a summary of the site trip generation for the proposed uses on the Site. To remain conservative no trip credits (reduction) were taken for alternative transportation modes or telecommuting. Trip generation calculations are provided in the **Attachments**.

TABLE 2
TRIP-GENERATION SUMMARY – ITE BASIS (PROPOSED REDEVELOPMENT)

Peak Hour/Direction	Residential Apartments (29 Units)¹	Commercial Strip Mall (8.55ksf)²	Barber/Hair Salon (3.975ksf)³	TOTAL
<i>Weekday Morning Peak Hour:</i>				
Entering	3	12	3	18
<u>Exiting</u>	<u>8</u>	<u>8</u>	<u>2</u>	<u>18</u>
Total	11	20	5	36
<i>Weekday Evening Peak Hour:</i>				
Entering	7	28	1	36
<u>Exiting</u>	<u>4</u>	<u>28</u>	<u>5</u>	<u>37</u>
Total	11	56	6	73
<i>Weekday Daily (24-Hour):</i>	132	466	n/a	598+Barber

Source: ITE *Trip Generation*, 11th Edition; 2021 with no reduction for alternative transportation modes.

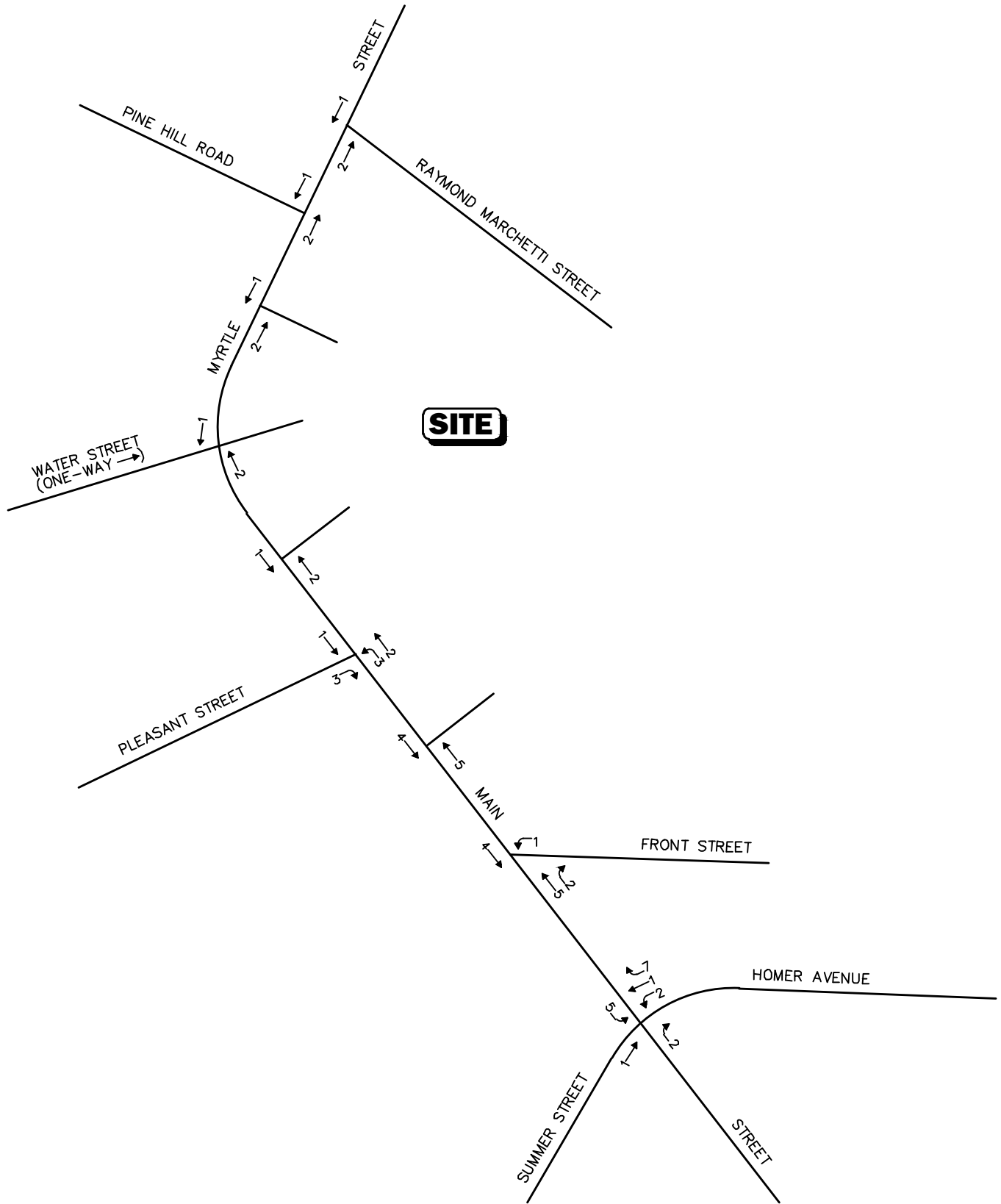
¹Based on ITE Trip Generation 11th Edition trip rates for LUC 221 – Multifamily Housing (Mid-Rise) applied to 29 units.

²Based on ITE Trip Generation 11th Edition trip rates for LUC 822 – Strip Retail Plaza (<40ksf) applied to 8,550 square feet.

³As found in Table 1.

As summarized in **Table 2**, the proposed development is estimated to generate approximately 36 vehicle trips (18 entering and 18 exiting) during the weekday morning peak hour, 73 vehicle trips (36 entering and 37 exiting) during the weekday evening peak hour, and approximately 600 vehicle trips on a weekday (exclusive of barber shop to remain) with 50 percent entering and exiting.

²Ibid 1

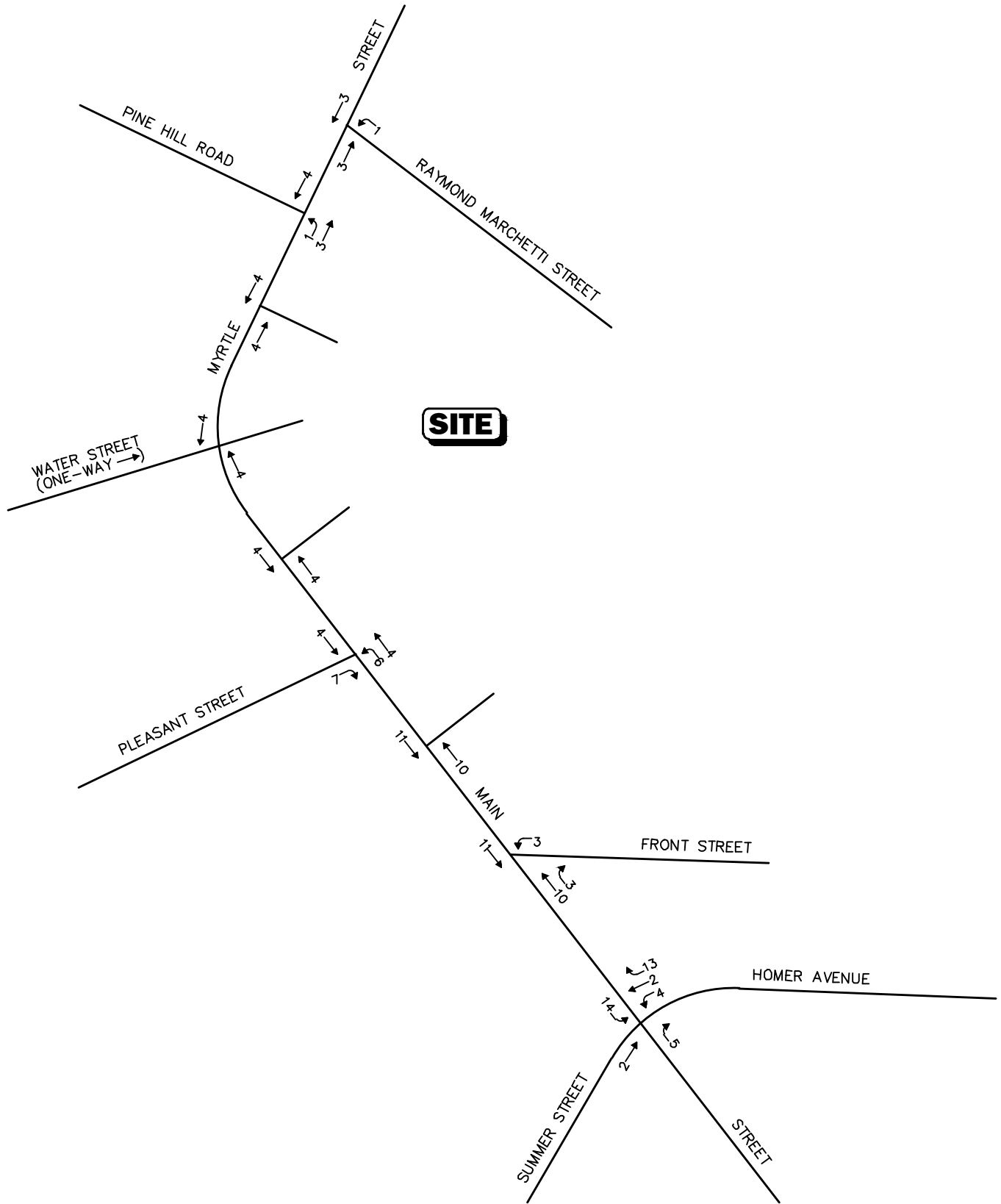


Not To Scale



Figure A-1R

Proposed Mixed-Use Development
9-49 Homer Avenue
Weekday Morning
Peak-Hour Traffic Volumes



Not To Scale



Figure A-2R

Proposed Mixed-Use Development
9-49 Homer Avenue
Weekday Evening
Peak-Hour Traffic Volumes

TRAFFIC IMPACT AND ACCESS STUDY

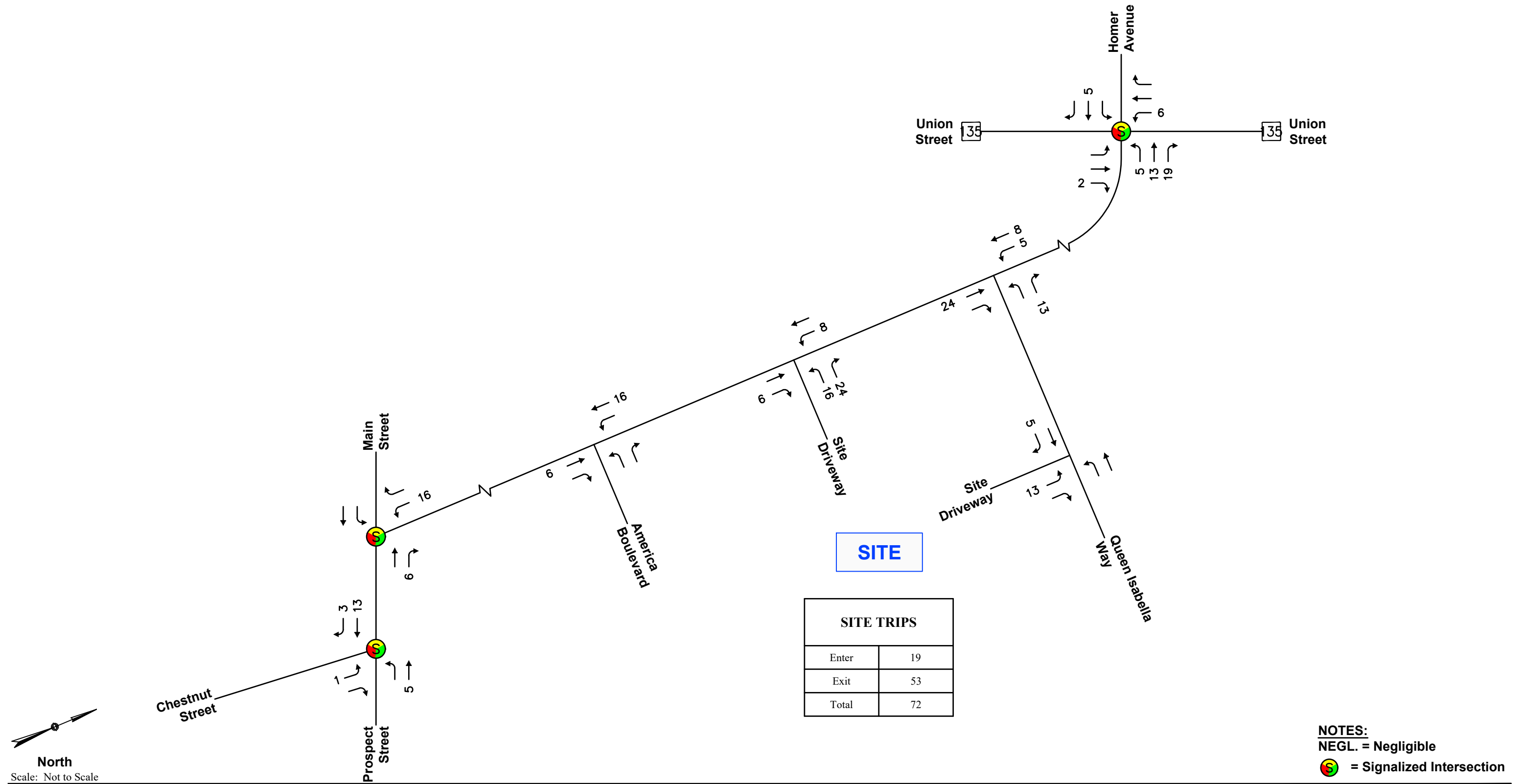
PROPOSED MIXED-USE DEVELOPMENT

*100 Chestnut Street
Ashland, Massachusetts*

Prepared for:
Baystone Development

June 2021

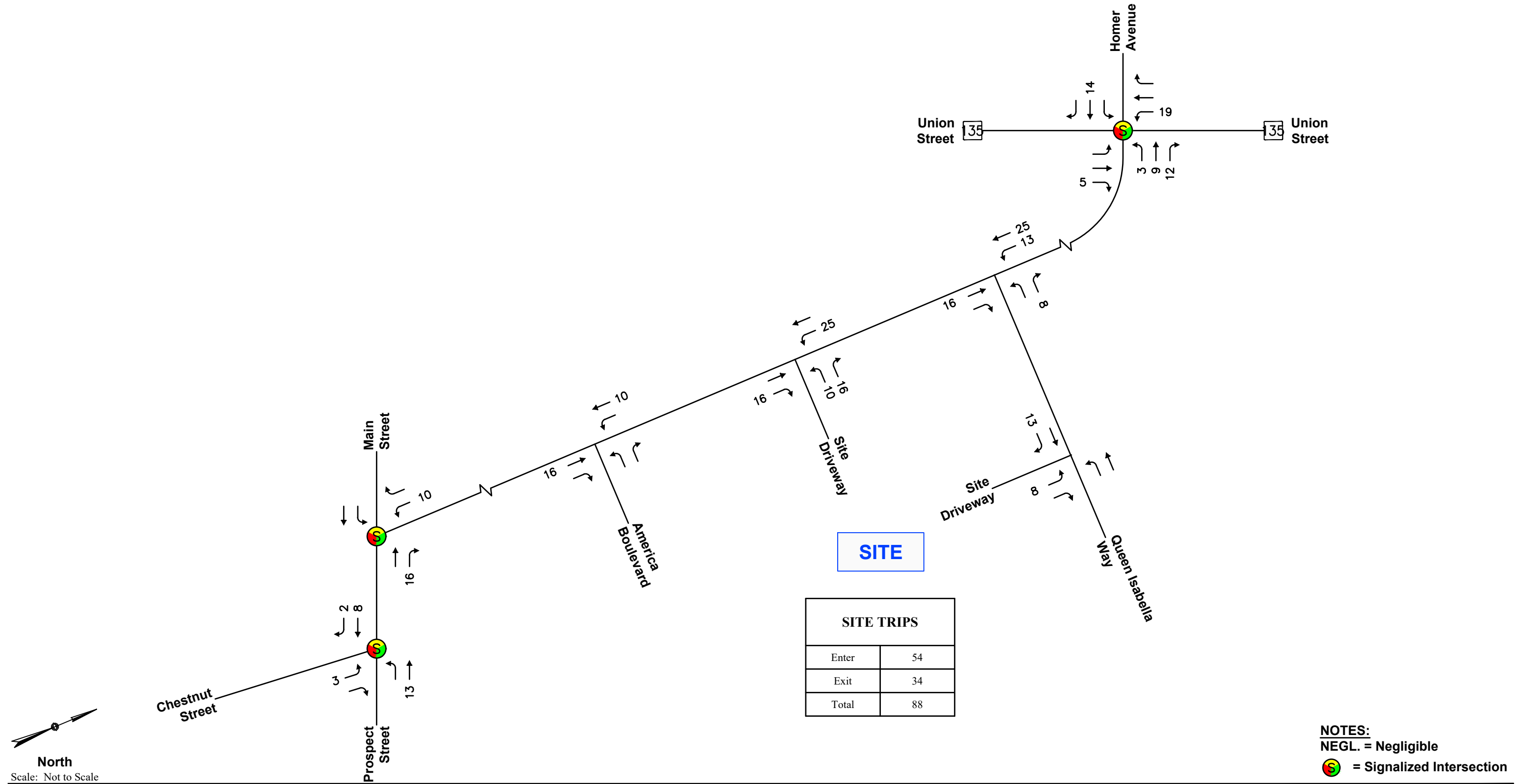
MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers




North
 Scale: Not to Scale

Figure 8

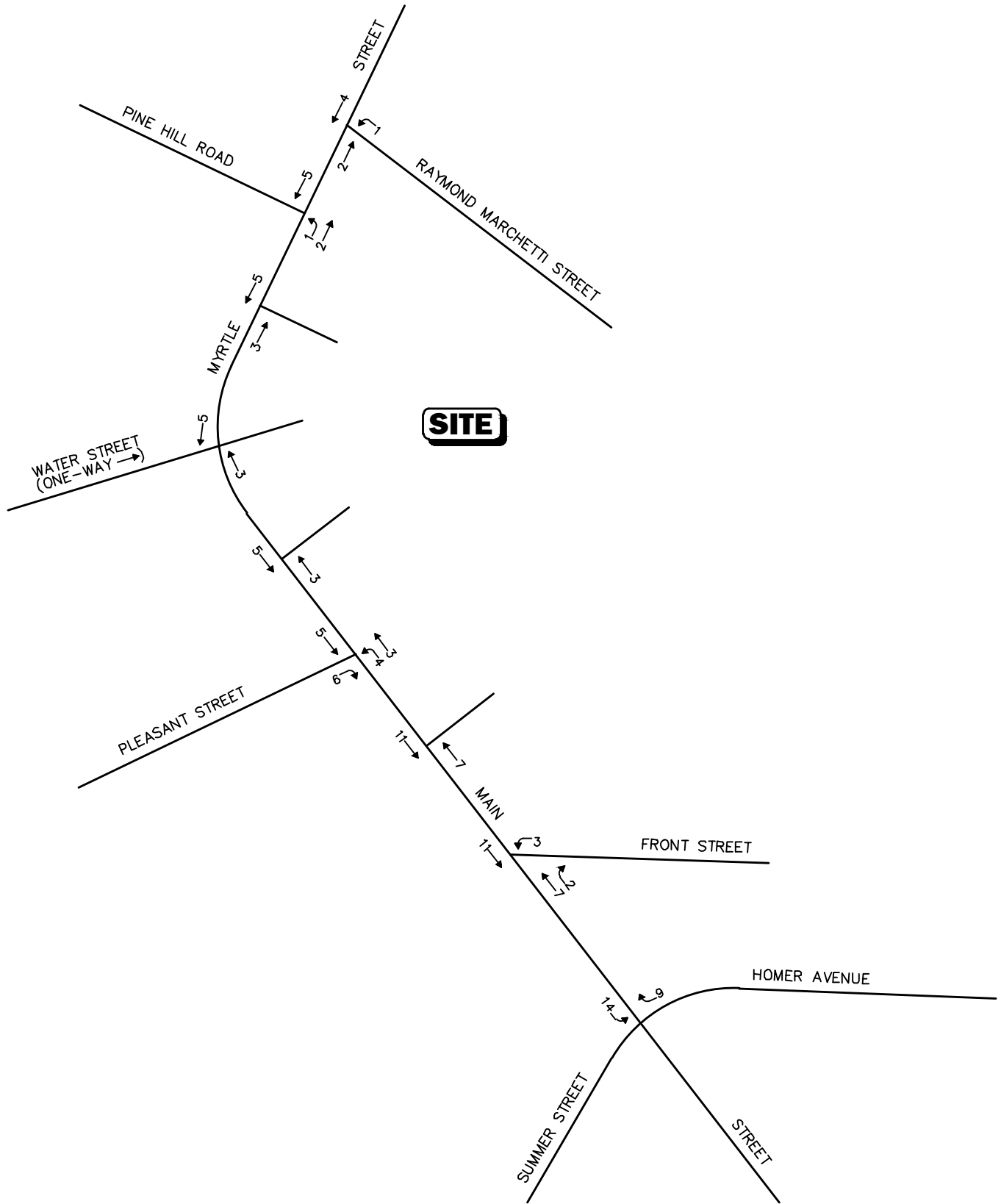
Trip Generation
Weekday Morning Peak Hour Traffic Volumes



NOTES:
 NEGL. = Negligible
 = Signalized Intersection

North
 Scale: Not to Scale

Figure 9
Trip Generation
Weekday Evening Peak Hour Traffic Volumes



Not To Scale



Figure A-4R

Proposed Mixed-Use Development
100 Chestnut Street
Weekday Evening
Peak-Hour Traffic Volumes

RESIDENTIAL TRIP DISTRIBUTION

REVISED TRAFFIC OPERATIONS ANALYSIS TABLES (TABLES 10R, 11R AND 13R)

Table 10R
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Main Street at Pleasant Street												
<i>Weekday Morning:</i>												
Pleasant Street EB LT	0.54	26.5	C	2/4	0.56	27.1	C	2/4	0.59	28.0	C	2/4
Pleasant Street EB RT	0.44	13.9	B	0/1	0.54	14.2	B	1/2	0.57	14.2	B	1/2
Main Street NB LT	0.70	6.1	A	1/10	0.78	7.7	A	1/11	0.81	9.4	A	1/12
Main Street NB TH	0.21	2.5	A	0/2	0.24	2.5	A	0/2	0.24	2.5	A	0/2
Main Street SB TH	0.31	16.2	B	2/5	0.36	17.8	B	2/5	0.44	19.4	B	3/7
Main Street SB RT	0.08	9.3	A	0/1	0.09	9.9	A	0/1	0.09	10.3	B	0/1
Overall	--	10.8	B	--	--	11.6	B	--	--	12.5	B	--
<i>Weekday Evening:</i>												
Pleasant Street EB LT	0.52	35.2	D	2/4	0.53	35.0	D	2/4	0.59	37.0	D	3/5
Pleasant Street EB RT	0.44	16.6	B	2/3	0.51	16.3	B	2/4	0.51	16.3	B	2/4
Main Street NB LT	0.84	24.8	C	2/16	0.95	41.0	D	4/21	0.96	43.7	D	5/21
Main Street NB TH	0.17	1.7	A	1/1	0.19	1.7	A	1/1	0.19	1.7	A	1/1
Main Street SB TH	0.65	26.1	C	7/15	0.76	32.2	C	8/17	0.78	32.9	C	8/17
Main Street SB RT	0.17	12.1	B	1/2	0.20	13.1	B	1/3	0.20	13.1	B	1/3
Overall	--	19.9	B	--	--	25.9	C	--	--	27.1	C	--
Main Street at Front Street												
<i>Weekday Morning:</i>												
Front Street WB LT	0.40	25.2	C	1/2	0.44	25.6	C	2/3	0.44	25.6	C	2/3
Front Street WB RT	0.16	16.5	B	0/1	0.17	16.6	B	0/1	0.17	16.6	B	0/1
Main Street NB TH	0.60	11.8	B	5/11	0.66	12.8	B	6/11	0.67	13.0	B	6/12
Main Street NB RT	0.09	3.7	A	0/0	0.10	3.7	A	0/0	0.10	3.8	A	0/0
Main Street SB RT	0.60	7.9	A	1/2	0.70	12.1	B	1/3	0.74	14.1	B	1/3
Main Street SB TH	0.40	3.5	A	2/3	0.44	3.6	A	2/4	0.45	3.4	A	2/4
Overall	--	9.5	A	--	--	10.5	B	--	--	10.8	B	--
<i>Weekday Evening:</i>												
Front Street WB LT	0.52	34.8	C	2/4	0.57	36.4	D	3/5	0.57	36.4	D	3/5
Front Street WB RT	0.18	26.2	C	0/1	0.19	26.0	C	0/1	0.20	26.0	C	0/1
Main Street NB TH	0.62	14.8	B	5/22	0.69	17.4	B	5/25	0.70	17.8	B	5/26
Main Street NB RT	0.05	2.8	A	0/1	0.06	3.5	A	0/1	0.06	3.6	A	0/1
Main Street SB RT	0.40	10.3	B	2/6	0.47	11.9	B	2/5	0.48	12.3	B	2/6
Main Street SB TH	0.60	12.4	B	10/24	0.67	14.1	B	11/28	0.66	14.2	B	11/28
Overall	--	15.8	B	--	--	17.4	B	--	--	17.6	B	--

See notes at end of table.

Table 10R (Continued)

SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
<i>Main Street at Homer Avenue and Summer Street</i>												
<i>Weekday Morning:</i>												
Summer Street EB LT/TH/RT	1.17	143.1	F	5/9	1.28	181.6	F	5/9	1.30	190.0	F	5/10
Homer Avenue WB LT/TH	0.09	22.1	C	1/1	0.11	22.3	C	1/1	0.11	22.3	C	1/1
Homer Avenue WB RT	0.08	22.1	C	0/0	0.10	22.2	C	0/1	0.10	22.2	C	0/1
Main Street NB LT/TH/RT	0.44	8.5	A	2/10	0.47	8.9	A	2/12	0.47	8.9	A	2/12
Main Street SB LT/TH	0.54	6.5	A	1/14	0.61	7.3	A	1/16	0.62	7.4	A	1/16
Main Street SB RT	0.05	3.5	A	0/0	0.06	3.3	A	0/1	0.06	3.1	A	0/1
Overall	--	32.5	C	--	--	39.3	D	--	--	40.5	D	--
<i>Weekday Evening:</i>												
Summer Street EB LT/TH/RT	0.58	34.5	C	3/5	0.63	36.3	D	3/5	0.64	36.7	D	3/5
Homer Avenue WB LT/TH	0.12	28.6	C	1/2	0.15	28.6	C	1/2	0.15	28.4	C	1/2
Homer Avenue WB RT	0.08	28.4	C	0/1	0.10	28.3	C	0/2	0.10	28.1	C	0/2
Main Street NB LT/TH/RT	0.41	8.4	A	3/11	0.45	9.0	A	3/12	0.45	9.1	A	4/12
Main Street SB LT/TH	0.68	8.6	A	3/22	0.80	11.3	B	4/26	0.80	11.5	B	4/26
Main Street SB RT	0.16	5.8	A	0/2	0.17	5.6	A	0/2	0.17	5.7	A	0/2
Overall	--	12.5	B	--	--	14.1	B	--	--	14.4	B	--

^aVolume-to-capacity ratio.

^bControl (signal) delay per vehicle in seconds.

^cLevel of service.

^dQueue length in vehicles.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 11R
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak-Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Myrtle Street at Raymond Marchetti Street</i>												
<i>Weekday Morning:</i>												
Raymond Marchetti Street WB LT/RT	68	15.2	C	1	73	16.5	C	1	71	17.2	C	1
Myrtle Street NB TH/RT	395	0.0	A	0	430	0.0	A	0	461	0.0	A	0
Myrtle Street SB LT/TH	240	0.6	A	0	260	0.6	A	0	267	0.6	A	0
<i>Weekday Evening:</i>												
Raymond Marchetti Street WB LT/RT	47	15.7	C	1	52	17.5	C	1	51	17.8	C	1
Myrtle Street NB TH/RT	285	0.0	A	0	311	0.0	A	0	314	0.0	A	0
Myrtle Street SB LT/TH	571	0.5	A	0	619	0.5	A	0	636	0.4	A	0
<i>Myrtle Street at Pine Hill Road</i>												
<i>Weekday Morning:</i>												
Pine Hill Road EB LT/RT	82	13.5	B	1	88	14.4	B	1	88	14.9	B	1
Myrtle Street NB LT/TH	370	0.4	A	0	404	0.4	A	0	437	0.4	A	0
Myrtle Street SB TH/RT	262	0.0	A	0	284	0.0	A	0	289	0.0	A	0
<i>Weekday Evening:</i>												
Pine Hill Road EB LT/RT	36	15.5	C	1	39	16.9	C	1	40	17.2	C	1
Myrtle Street NB LT/TH	323	1.4	A	0	354	1.4	A	0	355	1.4	A	0
Myrtle Street SB TH/RT	566	0.0	A	0	616	0.0	A	0	632	0.0	A	0
<i>Myrtle Street at 10-50 Main Street Driveway</i>												
<i>Weekday Morning:</i>												
Project Site Driveway WB LT/RT	1	15.5	C	0	1	16.6	C	0	88	69.4	F	11
Myrtle Street NB TH/RT	376	0.0	A	0	410	0.0	A	0	433	0.0	A	0
Myrtle Street SB LT/TH	279	0.1	A	0	302	0.1	A	0	307	0.5	A	0
<i>Weekday Evening:</i>												
Project Site Driveway WB LT/RT	0	0.0	A	0	0	0.0	A	0	62	34.6	D	5
Myrtle Street NB TH/RT	341	0.0	A	0	372	0.0	A	0	374	0.0	A	0
Myrtle Street SB LT/TH	564	0.0	A	0	614	0.0	A	0	631	0.4	A	0
<i>Main Street/Myrtle Street at Water Street/10-50 Main Street Driveway</i>												
<i>Weekday Morning:</i>												
Water Street EB LT/TH/RT	46	17.4	C	1	49	19.2	C	1	47	18.1	C	1
Project Site Driveway WB LT/RT	6	14.7	B	0	6	15.7	C	0	--	--	--	--
Main Street NB TH/RT	336	0.0	A	0	367	0.0	A	0	391	0.0	A	0
Myrtle Street SB TH/LT	276	0.0	A	0	299	0.0	A	0	336	0.0	A	0
<i>Weekday Evening:</i>												
Water Street EB LT/TH/RT	20	20.8	C	1	21	23.4	C	1	20	20.1	C	1
Project Site Driveway WB LT/RT	16	13.9	B	0	16	14.9	B	0	--	--	--	--
Main Street NB TH/RT	313	0.0	A	0	343	0.0	A	0	355	0.0	A	0
Myrtle Street SB TH/LT	561	0.0	A	0	611	0.0	A	0	630	0.0	A	0

See notes at end of table.

Table 11R (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak-Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Main Street at LFX Enterprise Driveway												
<i>Weekday Morning:</i>												
Project Site Driveway WB LT/RT	3	15.4	C	0	3	16.5	C	0	Driveway Closed Under Build Condition			
Main Street NB TH/RT	346	0.0	A	0	377	0.0	A	0				
Main Street SB TH/LT	284	0.2	A	0	307	0.2	A	0				
<i>Weekday Evening:</i>												
Project Site Driveway WB LT/RT	16	15.0	B	0	16	16.1	C	0				
Main Street NB TH/RT	310	0.0	A	0	340	0.0	A	0				
Main Street SB TH/LT	567	0.1	A	0	617	0.1	A	0				
Main Street at CrossFit Driveway												
<i>Weekday Morning:</i>												
Project Site Driveway WB LT/RT	10	27.2	D	1	10	32.3	D	1	15	16.6	C	1
Main Street NB TH/RT	744	0.0	A	0	813	0.0	A	0	827	0.0	A	0
Main Street SB LT/TH	765	0.0	A	0	828	0.0	A	0	858	0.0	A	0
<i>Weekday Evening:</i>												
Project Site Driveway WB LT/RT	11	47.7	E	1	11	64.3	F	2	8	16.5	C	0
Main Street NB TH/RT	798	0.0	A	0	873	0.0	A	0	885	0.0	A	0
Main Street SB LT/TH	879	0.1	A	0	965	0.1	A	0	969	0.0	A	0
Main Street at Center North Driveway												
<i>Weekday Morning:</i>												
Project Site Driveway WB LT/RT	--	--	--	--	--	--	--	--	3	12.2	B	0
Main Street NB TH/RT	--	--	--	--	--	--	--	--	389	0.0	A	0
Main Street SB LT/TH	--	--	--	--	--	--	--	--	341	0.0	A	0
<i>Weekday Evening:</i>												
Project Site Driveway WB LT/RT	--	--	--	--	--	--	--	--	1	10.4	B	0
Main Street NB TH/RT	--	--	--	--	--	--	--	--	354	0.0	A	0
Main Street SB LT/TH	--	--	--	--	--	--	--	--	631	0.0	A	0

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel of service.

^dQueue length in vehicles.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 13R
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-Hour/Movement	2031 No-Build				2031 Build				2031 Build (Mitigated)			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Main Street at Pleasant Street												
<i>Weekday Morning:</i>												
Pleasant Street EB LT	0.56	27.1	C	2/4	0.59	28.0	C	2/4	0.50	31.5	C	3/5
Pleasant Street EB RT	0.54	14.2	B	1/2	0.57	14.2	B	1/2	0.60	18.0	B	2/3
Main Street NB LT	0.78	7.7	A	1/11	0.81	9.4	A	1/12	0.77	8.5	A	1/14
Main Street NB TH	0.24	2.5	A	0/2	0.24	2.5	A	0/2	0.23	3.1	A	1/3
Main Street SB TH	0.36	17.8	B	2/5	0.44	19.4	B	3/7	0.39	21.8	C	4/9
Main Street SB RT	0.09	9.9	A	0/1	0.09	10.3	B	0/1	0.09	10.5	B	0/1
Overall	--	11.6	B	--	--	12.5	B	--	--	14.0	B	--
<i>Weekday Evening:</i>												
Pleasant Street EB LT	0.53	35.0	D	2/4	0.59	37.0	D	3/5	0.63	40.0	D	3/5
Pleasant Street EB RT	0.51	16.3	B	2/4	0.51	16.3	B	2/4	0.52	16.8	B	2/4
Main Street NB LT	0.95	41.0	D	4/21	0.96	43.7	D	5/21	0.95	28.6	C	9/19
Main Street NB TH	0.19	1.7	A	1/1	0.19	1.7	A	1/1	0.19	3.0	A	1/2
Main Street SB TH	0.76	32.2	C	8/17	0.78	32.9	C	8/17	0.76	31.3	C	8/17
Main Street SB RT	0.20	13.1	B	1/3	0.20	13.1	B	1/3	0.20	13.1	B	1/3
Overall	--	25.9	C	--	--	27.1	C	--	--	22.7	C	--
Main Street at Front Street												
<i>Weekday Morning:</i>												
Front Street WB LT	0.44	25.6	C	2/3	0.44	25.6	C	2/3	0.65	45.1	D	2/4
Front Street WB RT	0.17	16.6	B	0/1	0.17	16.6	B	0/1	0.17	25.2	C	0/2
Main Street NB TH	0.66	12.8	B	6/11	0.67	13.0	B	6/12	0.58	9.3	A	1/9
Main Street NB RT	0.10	3.7	A	0/0	0.10	3.8	A	0/0	0.10	2.7	A	0/0
Main Street SB LT	0.70	12.1	B	1/3	0.74	14.1	B	1/3	0.61	9.5	A	1/2
Main Street SB TH	0.44	3.6	A	2/4	0.45	3.4	A	2/4	0.41	3.0	A	2/5
Overall	--	10.5	B	--	--	10.8	B	--	--	10.7	B	--
<i>Weekday Evening:</i>												
Front Street WB LT	0.57	36.4	D	3/5	0.57	36.4	D	3/5	0.66	42.6	D	3/6
Front Street WB RT	0.19	26.0	C	0/1	0.20	26.0	C	0/1	0.20	29.5	C	0/1
Main Street NB TH	0.69	17.4	B	5/25	0.70	17.8	B	5/26	0.64	14.1	B	5/23
Main Street NB RT	0.06	3.5	A	0/1	0.06	3.6	A	0/1	0.06	3.6	A	0/1
Main Street SB LT	0.47	11.9	B	2/5	0.48	12.3	B	2/6	0.48	7.0	A	1/4
Main Street SB TH	0.67	14.1	B	11/28	0.66	14.2	B	11/28	0.65	7.1	A	2/27
Overall	--	17.4	B	--	--	17.6	B	--	--	14.3	B	--

See notes at end of table.

Table 13R (Continued)

MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-Hour/Movement	2031 No-Build				2031 Build				2031 Build (Mitigated)			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
<i>Main Street at Summer Street and Homer Avenue</i>												
<i>Weekday Morning:</i>												
Summer Street EB LT/TH/RT	1.28	181.6	F	5/9	1.30	190.0	F	5/10	0.84	45.9	D	5/9
Homer Avenue WB LT/TH	0.11	22.3	C	1/1	0.11	22.3	C	1/1	0.07	23.9	C	1/1
Homer Avenue WB RT	0.10	22.2	C	0/1	0.10	22.2	C	0/1	0.10	24.1	C	0/1
Main Street NB LT/TH/RT	0.47	8.9	A	2/12	0.47	8.9	A	2/12	0.49	12.3	B	4/13
Main Street SB LT/TH	0.61	7.3	A	1/16	0.62	7.4	A	1/16	0.64	10.8	B	4/19
Main Street SB RT	0.06	3.3	A	0/1	0.06	3.1	A	0/1	0.06	5.9	A	0/1
Overall	--	39.3	D	--	--	40.5	D	--	--	18.5	B	--
<i>Weekday Evening:</i>												
Summer Street EB LT/TH/RT	0.63	36.3	D	3/5	0.64	36.7	D	3/5	0.64	36.7	D	3/5
Homer Avenue WB LT/TH	0.15	28.6	C	1/2	0.15	28.4	C	1/2	0.15	28.4	C	1/2
Homer Avenue WB RT	0.10	28.3	C	0/2	0.10	28.1	C	0/2	0.10	28.1	C	0/2
Main Street NB LT/TH/RT	0.45	9.0	A	3/12	0.45	9.1	A	4/12	0.45	9.1	A	4/12
Main Street SB LT/TH	0.80	11.3	B	4/26	0.80	11.5	B	4/26	0.80	11.5	B	5/26
Main Street SB RT	0.17	5.6	A	0/2	0.17	5.7	A	0/2	0.17	4.0	A	0/1
Overall	--	14.1	B	--	--	14.4	B	--	--	14.2	B	--

^aVolume-to-capacity ratio.

^bControl (signal) delay per vehicle in seconds.

^cLevel of service.

^dQueue length in vehicles.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements

REVISED CAPACITY ANALYSIS WORKSHEETS

2024 Existing Weekday Morning Peak-Hour
2024 Existing Weekday Evening Peak-Hour
2031 No-Build Weekday Morning Peak-Hour
2031 No-Build Weekday Evening Peak-Hour
2031 Build Weekday Morning Peak-Hour
2031 Build Weekday Evening Peak-Hour
2031 Build Weekday Morning Peak-Hour (Mitigated)
2031 Build Weekday Evening Peak-Hour (Mitigated)

2024 Existing Weekday Morning Peak-Hour

1 - 2024 Existing Weekday Morning
 1: Myrtle Street & Raymond Marchetti Street

02/14/2025

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	40	28	349	46	18	222
Future Vol, veh/h	40	28	349	46	18	222
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	81	81	85	85
Heavy Vehicles, %	3	8	0	5	0	1
Mvmt Flow	47	33	431	57	21	261

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	763	459	0	0	488
Stage 1	459	-	-	-	-
Stage 2	304	-	-	-	-
Critical Hdwy	6.43	6.28	-	-	4.1
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.372	-	-	2.2
Pot Cap-1 Maneuver	371	590	-	-	1086
Stage 1	634	-	-	-	-
Stage 2	747	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	363	590	-	-	1086
Mov Cap-2 Maneuver	363	-	-	-	-
Stage 1	634	-	-	-	-
Stage 2	729	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.22	0	0.63
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	431	135
HCM Lane V/C Ratio	-	-	0.184	0.02
HCM Ctrl Dly (s/v)	-	-	15.2	8.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

1 - 2024 Existing Weekday Morning
 2: Myrtle Street & Pine Hill Road

02/14/2025

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	44	38	19	351	241	21
Future Vol, veh/h	44	38	19	351	241	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	41	21	382	262	23

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	696	273	285	0	0
Stage 1	273	-	-	-	-
Stage 2	423	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	408	765	1277	-	-
Stage 1	773	-	-	-	-
Stage 2	661	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	399	765	1277	-	-
Mov Cap-2 Maneuver	399	-	-	-	-
Stage 1	757	-	-	-	-
Stage 2	661	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.49	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	92	-	513	-	-
HCM Lane V/C Ratio	0.016	-	0.174	-	-
HCM Ctrl Dly (s/v)	7.9	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

1 - 2024 Existing Weekday Morning
 3: Myrtle Street & 10-50 Main Street Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	1	0	370	6	4	275
Future Vol, veh/h	1	0	370	6	4	275
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	25	25	75	75	88	88
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	0	493	8	5	313

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	819	497	0	0	501	0
Stage 1	497	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	348	577	-	-	1073	-
Stage 1	615	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	346	577	-	-	1073	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.52	0	0.12
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	346	26
HCM Lane V/C Ratio	-	-	0.012	0.004
HCM Ctrl Dly (s/v)	-	-	15.5	8.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	2	5	4	0	2	0	335	1	1	275	0
Future Vol, veh/h	39	2	5	4	0	2	0	335	1	1	275	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	83	83	83	50	50	50	76	76	76	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	3	0
Mvmt Flow	47	2	6	8	0	4	0	441	1	1	313	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	756	757	313	757	756	441	-	0	0	442	0	0
Stage 1	315	315	-	441	441	-	-	-	-	-	-	-
Stage 2	441	442	-	316	315	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	-	-	-	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	-	-
Pot Cap-1 Maneuver	327	339	732	326	340	620	0	-	-	1129	-	0
Stage 1	700	659	-	599	580	-	0	-	-	-	-	0
Stage 2	599	580	-	699	659	-	0	-	-	-	-	0
Platoon blocked, %												
Mov Cap-1 Maneuver	325	339	732	321	339	620	-	-	-	1129	-	-
Mov Cap-2 Maneuver	325	339	-	321	339	-	-	-	-	-	-	-
Stage 1	700	659	-	599	580	-	-	-	-	-	-	-
Stage 2	595	580	-	690	659	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	17.37		14.72		0		0.03	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	346	382	7	-
HCM Lane V/C Ratio	-	-	0.16	0.031	0.001	-
HCM Ctrl Dly (s/v)	-	-	17.4	14.7	8.2	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0	-

1 - 2024 Existing Weekday Morning
5: Main Street & LFX Enterprise Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	3	0	336	10	7	277
Future Vol, veh/h	3	0	336	10	7	277
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	25	25	71	71	93	93
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	12	0	473	14	8	298

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	793	480	0	0	487
Stage 1	480	-	-	-	-
Stage 2	313	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	360	590	-	-	1086
Stage 1	626	-	-	-	-
Stage 2	746	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	357	590	-	-	1086
Mov Cap-2 Maneuver	357	-	-	-	-
Stage 1	626	-	-	-	-
Stage 2	740	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.43	0	0.21
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	357	44
HCM Lane V/C Ratio	-	-	0.034	0.007
HCM Ctrl Dly (s/v)	-	-	15.4	8.3
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	0

1 - 2024 Existing Weekday Morning
6: Main Street & Pleasant Street

02/14/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	116	594	519	230	171	109	
Future Volume (vph)	116	594	519	230	171	109	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478	
Flt Permitted	0.950		0.515				
Satd. Flow (perm)	1728	1568	959	1818	1756	1478	
Satd. Flow (RTOR)		626				117	
Adj. Flow (vph)	127	653	577	256	184	117	
Lane Group Flow (vph)	127	653	577	256	184	117	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	5.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	13.0		21.0	37.0	16.0	13.0	10.0
Total Split (%)	21.7%		35.0%	61.7%	26.7%	21.7%	17%
Maximum Green (s)	9.0		17.0	32.0	11.0	9.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.54	0.62	0.66	0.20	0.28	0.13	
Control Delay (s/veh)	32.8	3.8	7.8	2.5	17.4	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	32.8	3.8	7.8	2.5	17.4	2.7	
Queue Length 50th (ft)	43	5	15	6	46	0	
Queue Length 95th (ft)	89	30	#257	42	115	25	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	259	1059	898	1266	657	921	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.49	0.62	0.64	0.20	0.28	0.13	

Intersection Summary

Cycle Length: 60

1 - 2024 Existing Weekday Morning
 6: Main Street & Pleasant Street

02/14/2025

Actuated Cycle Length: 60

Offset: 17 (28%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

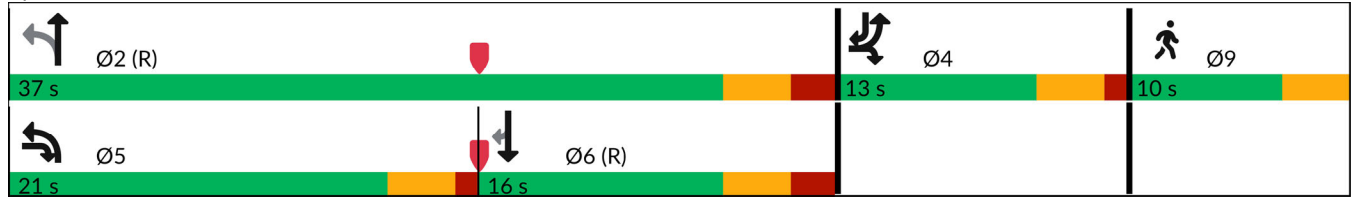
Natural Cycle: 60

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Main Street & Pleasant Street



1 - 2024 Existing Weekday Morning
6: Main Street & Pleasant Street

02/14/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	116	594	519	230	171	109
Future Volume (vph)	116	594	519	230	171	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478
Flt Permitted	0.95	1.00	0.52	1.00	1.00	1.00
Satd. Flow (perm)	1728	1568	960	1818	1756	1478
Peak-hour factor, PHF	0.91	0.91	0.90	0.90	0.93	0.93
Adj. Flow (vph)	127	653	577	256	184	117
RTOR Reduction (vph)	0	381	0	0	0	64
Lane Group Flow (vph)	127	272	577	256	184	53
Heavy Vehicles (%)	1%	3%	2%	1%	1%	2%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	8.2	23.5	38.4	38.4	19.1	27.3
Effective Green, g (s)	8.2	23.5	38.4	39.4	20.1	27.3
Actuated g/C Ratio	0.14	0.39	0.64	0.66	0.34	0.46
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	614	820	1193	588	672
v/s Ratio Prot	c0.07	0.17	c0.18	0.14	0.10	0.01
v/s Ratio Perm			c0.27			0.03
v/c Ratio	0.54	0.44	0.70	0.21	0.31	0.08
Uniform Delay, d1	24.1	13.4	6.1	4.1	14.8	9.2
Progression Factor	1.00	1.00	0.61	0.51	1.00	1.00
Incremental Delay, d2	2.4	0.5	2.4	0.4	1.4	0.1
Delay (s)	26.5	13.9	6.1	2.5	16.2	9.3
Level of Service	C	B	A	A	B	A
Approach Delay (s/veh)	16.0			5.0	13.5	
Approach LOS	B			A	B	

Intersection Summary

HCM 2000 Control Delay (s/veh)	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

1 - 2024 Existing Weekday Morning
7: Main Street & Crossfit Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	4	6	743	1	2	763
Future Vol, veh/h	4	6	743	1	2	763
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	91	91	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	8	12	816	1	2	877













Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1699	817	0	0	818	0
Stage 1	817	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	103	380	-	-	819	-
Stage 1	438	-	-	-	-	-
Stage 2	408	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	102	380	-	-	819	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	438	-	-	-	-	-
Stage 2	406	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	27.24	0	0.02
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	182	5
HCM Lane V/C Ratio	-	-	0.11	0.003
HCM Ctrl Dly (s/v)	-	-	27.2	9.4
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	0.4	0

1 - 2024 Existing Weekday Morning
8: Main Street & Front Street

02/14/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	69	193	551	118	276	491	
Future Volume (vph)	69	193	551	118	276	491	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818	
Flt Permitted	0.950				0.274		
Satd. Flow (perm)	1711	1583	1818	1531	515	1818	
Satd. Flow (RTOR)		247		105			
Adj. Flow (vph)	88	247	626	134	303	540	
Lane Group Flow (vph)	88	247	626	134	303	540	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	12.0		11.0	12.0	10.0	21.0	27.0
Total Split (%)	20.0%		18.3%	20.0%	16.7%	35.0%	45%
Maximum Green (s)	7.0		6.0	7.0	5.0	16.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.40	0.40	0.60	0.11	0.60	0.40	
Control Delay (s/veh)	29.8	5.0	12.5	1.0	7.8	3.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	29.8	5.0	12.5	1.0	7.8	3.7	
Queue Length 50th (ft)	30	0	122	0	19	39	
Queue Length 95th (ft)	57	28	m258	m0	49	74	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	228	603	1039	1205	507	1342	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.41	0.60	0.11	0.60	0.40	
Intersection Summary							
Cycle Length: 60							

1 - 2024 Existing Weekday Morning
 8: Main Street & Front Street

02/14/2025

Actuated Cycle Length: 60

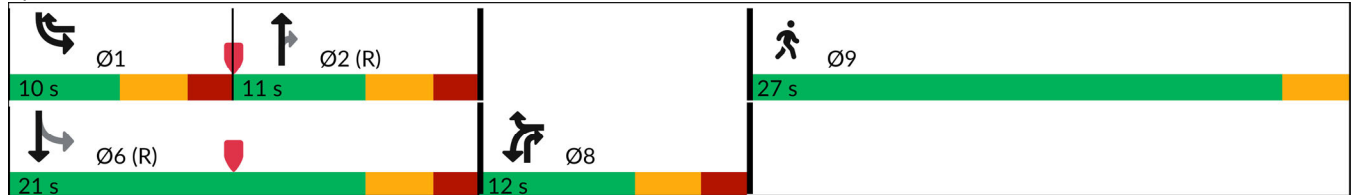
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection













Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Splits and Phases: 8: Main Street & Front Street



						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	193	551	118	276	491
Future Volume (vph)	69	193	551	118	276	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.27	1.00
Satd. Flow (perm)	1711	1583	1818	1531	516	1818
Peak-hour factor, PHF	0.78	0.78	0.88	0.88	0.91	0.91
Adj. Flow (vph)	88	247	626	134	303	540
RTOR Reduction (vph)	0	178	0	32	0	0
Lane Group Flow (vph)	88	69	626	103	303	540
Heavy Vehicles (%)	2%	2%	1%	2%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	6.7	16.7	33.3	40.0	43.3	43.3
Effective Green, g (s)	7.7	16.7	34.3	42.0	44.3	44.3
Actuated g/C Ratio	0.13	0.28	0.57	0.70	0.74	0.74
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	219	440	1039	1173	508	1342
v/s Ratio Prot	c0.05	0.04	0.34	0.01	c0.06	0.30
v/s Ratio Perm				0.06	c0.38	
v/c Ratio	0.40	0.16	0.60	0.09	0.60	0.40
Uniform Delay, d1	24.0	16.3	8.4	2.9	5.0	2.9
Progression Factor	1.00	1.00	1.14	1.28	1.26	0.92
Incremental Delay, d2	1.2	0.2	2.2	0.0	1.6	0.8
Delay (s)	25.2	16.5	11.8	3.7	7.9	3.5
Level of Service	C	B	B	A	A	A
Approach Delay (s/veh)	18.8		10.4			5.1
Approach LOS	B		B			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			9.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	17.0
Intersection Capacity Utilization			58.5%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

1 - 2024 Existing Weekday Morning
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	140	36	36	2	17	91	9	438	4	85	390	85
Future Volume (vph)	140	36	36	2	17	91	9	438	4	85	390	85
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977				0.850		0.999				0.850
Flt Protected		0.968			0.994			0.999			0.991	
Satd. Flow (prot)	0	1703	0	0	1826	1546	0	1860	0	0	1852	1652
Flt Permitted		0.785			0.965			0.991			0.858	
Satd. Flow (perm)	0	1381	0	0	1772	1546	0	1845	0	0	1604	1652
Satd. Flow (RTOR)		14				200		1				127
Adj. Flow (vph)	169	43	43	3	22	118	9	452	4	89	411	89
Lane Group Flow (vph)	0	255	0	0	25	118	0	465	0	0	500	89
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	13.0	13.0		13.0	13.0	13.0	16.0	16.0		7.0	23.0	23.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%	21.7%	26.7%	26.7%		11.7%	38.3%	38.3%
Maximum Green (s)	8.0	8.0		8.0	8.0	8.0	11.0	11.0		3.0	18.0	18.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		1.16		0.09	0.29		0.39			0.48	0.08	
Control Delay (s/veh)		140.5		23.1	2.8		9.5			10.5	1.1	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		140.5		23.1	2.8		9.5			10.5	1.1	
Queue Length 50th (ft)		~109		8	0		48			24	0	
Queue Length 95th (ft)		#210		22	0		#251			#334	6	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		219		265	401		1187			1031	1107	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		1.16		0.09	0.29		0.39			0.48	0.08	
Intersection Summary												
Cycle Length: 60												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	40%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

1 - 2024 Existing Weekday Morning
 9: Main Street & Summer Street/Homer Avenue

02/14/2025

Actuated Cycle Length: 60

Offset: 58 (97%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

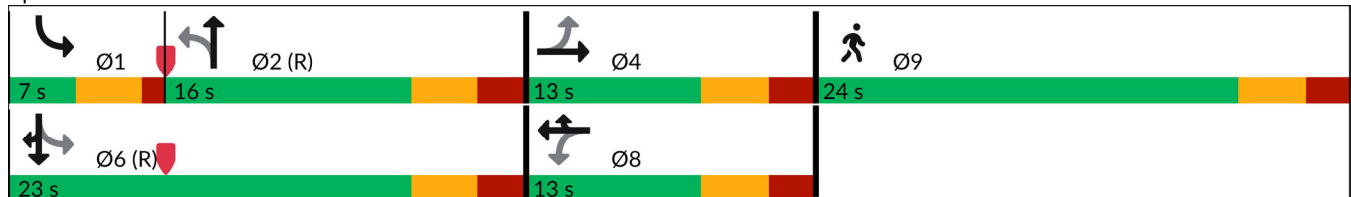
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: Main Street & Summer Street/Homer Avenue



1 - 2024 Existing Weekday Morning
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	140	36	36	2	17	91	9	438	4	85	390	85
Future Volume (vph)	140	36	36	2	17	91	9	438	4	85	390	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.98			1.00	0.85		1.00			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1703			1826	1546		1860			1853	1652
Flt Permitted		0.79			0.97	1.00		0.99			0.86	1.00
Satd. Flow (perm)		1382			1773	1546		1845			1605	1652
Peak-hour factor, PHF	0.83	0.83	0.83	0.77	0.77	0.77	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	169	43	43	3	22	118	9	452	4	89	411	89
RTOR Reduction (vph)	0	12	0	0	0	100	0	0	0	0	0	38
Lane Group Flow (vph)	0	243	0	0	25	18	0	465	0	0	500	51
Heavy Vehicles (%)	3%	0%	0%	0%	0%	1%	0%	2%	0%	0%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.0			8.0	8.0		33.6			33.6	33.6
Effective Green, g (s)		9.0			9.0	9.0		34.6			34.6	34.6
Actuated g/C Ratio		0.15			0.15	0.15		0.58			0.58	0.58
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		207			265	231		1063			925	952
v/s Ratio Prot						0.01						0.03
v/s Ratio Perm		c0.18			0.01			0.25			c0.31	
v/c Ratio		1.17			0.09	0.08		0.44			0.54	0.05
Uniform Delay, d1		25.5			22.0	21.9		7.2			7.8	5.5
Progression Factor		1.00			1.00	1.00		1.00			0.75	0.61
Incremental Delay, d2		117.6			0.2	0.1		1.3			0.6	0.1
Delay (s)		143.1			22.1	22.1		8.5			6.5	3.5
Level of Service		F			C	C		A			A	A
Approach Delay (s/veh)		143.1			22.1			8.5			6.0	
Approach LOS		F			C			A			A	

Intersection Summary

HCM 2000 Control Delay (s/veh)	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2024 Existing Weekday Evening Peak-Hour

2 - 2024 Existing Weekday Evening
 1: Myrtle Street & Raymond Marchetti Street

02/14/2025

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	28	19	258	27	33	538
Future Vol, veh/h	28	19	258	27	33	538
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	81	81	97	97	96	96
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	35	23	266	28	34	560

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	909	280	0	0	294
Stage 1	280	-	-	-	-
Stage 2	629	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	308	764	-	-	1279
Stage 1	772	-	-	-	-
Stage 2	535	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	296	764	-	-	1279
Mov Cap-2 Maneuver	296	-	-	-	-
Stage 1	772	-	-	-	-
Stage 2	514	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.74	0	0.46
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	393	104
HCM Lane V/C Ratio	-	-	0.148	0.027
HCM Ctrl Dly (s/v)	-	-	15.7	7.9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	11	25	49	274	539	27
Future Vol, veh/h	11	25	49	274	539	27
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	12	27	53	298	586	29

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1005	601	615	0	-	0
Stage 1	601	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	268	501	964	-	-	-
Stage 1	548	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	250	501	964	-	-	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	511	-	-	-	-	-
Stage 2	674	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15.46	1.36	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	273	-	383	-	-
HCM Lane V/C Ratio	0.055	-	0.102	-	-
HCM Ctrl Dly (s/v)	9	0	15.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

2 - 2024 Existing Weekday Evening
 3: Myrtle Street & 10-50 Main Street Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	0	0	323	18	3	561
Future Vol, veh/h	0	0	323	18	3	561
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	25	25	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	0	0	340	19	3	591

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	946	349	0	0	359
Stage 1	349	-	-	-	-
Stage 2	597	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	293	698	-	-	1211
Stage 1	718	-	-	-	-
Stage 2	554	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	291	698	-	-	1211
Mov Cap-2 Maneuver	291	-	-	-	-
Stage 1	718	-	-	-	-
Stage 2	552	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0.04
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	10
HCM Lane V/C Ratio	-	-	-	0.003
HCM Ctrl Dly (s/v)	-	-	0	8
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	0	1	6	0	10	0	312	1	1	560	0
Future Vol, veh/h	19	0	1	6	0	10	0	312	1	1	560	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	68	68	68	57	57	57	98	98	98	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	28	0	1	11	0	18	0	318	1	1	589	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	910	911	589	910	910	319	-	0	0	319	0	0
Stage 1	592	592	-	319	319	-	-	-	-	-	-	-
Stage 2	318	319	-	592	592	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	-	-	-	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	-	-
Pot Cap-1 Maneuver	258	276	512	257	276	726	0	-	-	1252	-	0
Stage 1	496	497	-	697	657	-	0	-	-	-	-	0
Stage 2	697	656	-	496	497	-	0	-	-	-	-	0
Platoon blocked, %												
Mov Cap-1 Maneuver	251	276	512	256	276	726	-	-	-	1252	-	-
Mov Cap-2 Maneuver	251	276	-	256	276	-	-	-	-	-	-	-
Stage 1	496	497	-	697	657	-	-	-	-	-	-	-
Stage 2	680	656	-	494	497	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	20.77		13.95		0		0.01	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	258	430	3	-
HCM Lane V/C Ratio	-	-	0.114	0.065	0.001	-
HCM Ctrl Dly (s/v)	-	-	20.8	13.9	7.9	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	0	-

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	10	6	307	3	5	562
Future Vol, veh/h	10	6	307	3	5	562
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	67	67	98	98	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	15	9	313	3	5	598

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	923	315	0	0	316	0
Stage 1	315	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	302	730	-	-	1255	-
Stage 1	745	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	300	730	-	-	1255	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.97	0	0.07
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	16
HCM Lane V/C Ratio	-	-	0.062	0.004
HCM Ctrl Dly (s/v)	-	-	15	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

2 - 2024 Existing Weekday Evening
6: Main Street & Pleasant Street

02/14/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	101	488	581	209	391	181	
Future Volume (vph)	101	488	581	209	391	181	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507	
Flt Permitted	0.950		0.266				
Satd. Flow (perm)	1711	1583	495	1837	1773	1507	
Satd. Flow (RTOR)		378				144	
Adj. Flow (vph)	106	514	625	225	425	197	
Lane Group Flow (vph)	106	514	625	225	425	197	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	1.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	15.0		30.0	55.0	25.0	15.0	10.0
Total Split (%)	18.8%		37.5%	68.8%	31.3%	18.8%	13%
Maximum Green (s)	11.0		26.0	50.0	20.0	11.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							4
v/c Ratio	0.52	0.55	0.82	0.16	0.60	0.21	
Control Delay (s/veh)	42.0	5.2	22.8	1.7	26.9	4.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	42.0	5.2	22.8	1.7	26.9	4.2	
Queue Length 50th (ft)	49	34	54	8	167	11	
Queue Length 95th (ft)	98	62	#403	25	#374	52	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	235	957	788	1387	705	941	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.45	0.54	0.79	0.16	0.60	0.21	

Intersection Summary

Cycle Length: 80

2 - 2024 Existing Weekday Evening
 6: Main Street & Pleasant Street

02/14/2025

Actuated Cycle Length: 80

Offset: 17 (21%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

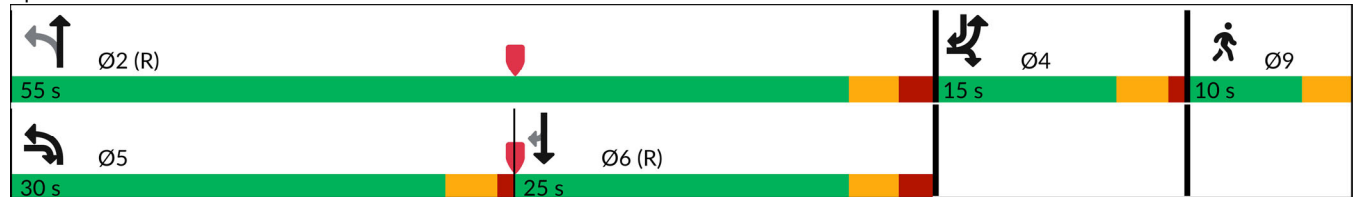
Natural Cycle: 70

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Main Street & Pleasant Street



2 - 2024 Existing Weekday Evening
6: Main Street & Pleasant Street

02/14/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	101	488	581	209	391	181
Future Volume (vph)	101	488	581	209	391	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507
Flt Permitted	0.95	1.00	0.27	1.00	1.00	1.00
Satd. Flow (perm)	1711	1583	496	1837	1773	1507
Peak-hour factor, PHF	0.95	0.95	0.93	0.93	0.92	0.92
Adj. Flow (vph)	106	514	625	225	425	197
RTOR Reduction (vph)	0	216	0	0	0	76
Lane Group Flow (vph)	106	298	625	225	425	121
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	9.6	34.2	57.0	57.0	28.4	38.0
Effective Green, g (s)	9.6	34.2	57.0	58.0	29.4	38.0
Actuated g/C Ratio	0.12	0.43	0.71	0.73	0.37	0.48
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	205	676	745	1331	651	715
v/s Ratio Prot	c0.06	0.19	c0.26	0.12	0.24	0.02
v/s Ratio Perm			c0.34			0.06
v/c Ratio	0.52	0.44	0.84	0.17	0.65	0.17
Uniform Delay, d1	33.0	16.1	12.1	3.4	21.1	12.0
Progression Factor	1.00	1.00	1.46	0.42	1.00	1.00
Incremental Delay, d2	2.2	0.5	7.2	0.2	5.0	0.1
Delay (s)	35.2	16.6	24.8	1.7	26.1	12.1
Level of Service	D	B	C	A	C	B
Approach Delay (s/veh)	19.8			18.7	21.7	
Approach LOS	B			B	C	

Intersection Summary

HCM 2000 Control Delay (s/veh)	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

2 - 2024 Existing Weekday Evening
7: Main Street & Crossfit Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	8	3	787	11	5	874
Future Vol, veh/h	8	3	787	11	5	874
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	34	34	96	96	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	24	9	820	11	5	930













Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1766	826	0	0	831	0
Stage 1	826	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	93	375	-	-	810	-
Stage 1	434	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	375	-	-	810	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	378	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	47.73	0	0.05
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	116	10
HCM Lane V/C Ratio	-	-	0.279	0.007
HCM Ctrl Dly (s/v)	-	-	47.7	9.5
HCM Lane LOS	-	-	E	A
HCM 95th %tile Q(veh)	-	-	1.1	0

2 - 2024 Existing Weekday Evening
8: Main Street & Front Street

02/14/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	103	267	531	70	180	702	
Future Volume (vph)	103	267	531	70	180	702	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818	
Flt Permitted	0.950				0.263		
Satd. Flow (perm)	1745	1615	1818	1561	495	1818	
Satd. Flow (RTOR)		293		59			
Adj. Flow (vph)	113	293	584	77	189	739	
Lane Group Flow (vph)	113	293	584	77	189	739	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	15.0		24.0	15.0	14.0	38.0	27.0
Total Split (%)	18.8%		30.0%	18.8%	17.5%	47.5%	34%
Maximum Green (s)	10.0		19.0	10.0	9.0	33.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.52	0.46	0.59	0.07	0.38	0.58	
Control Delay (s/veh)	41.3	4.5	18.9	2.0	10.9	15.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	41.3	4.5	18.9	2.0	10.9	15.8	
Queue Length 50th (ft)	53	0	110	0	36	244	
Queue Length 95th (ft)	103	28	#556	m9	136	#598	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	239	639	995	1163	511	1285	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.47	0.46	0.59	0.07	0.37	0.58	
Intersection Summary							
Cycle Length: 80							

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 80

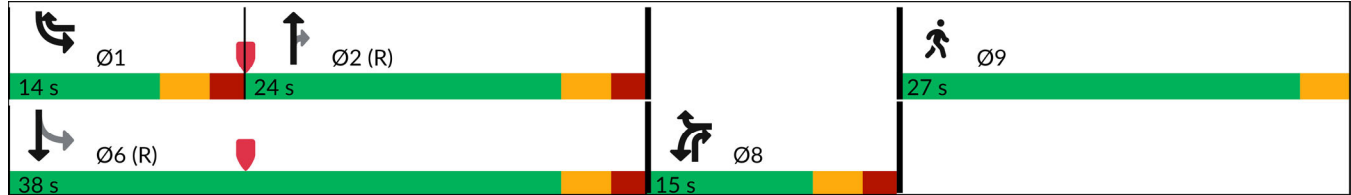
Control Type: Actuated-Coordinated













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

Queue shown is maximum after two cycles.

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

Splits and Phases: 8: Main Street & Front Street



						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	267	531	70	180	702
Future Volume (vph)	103	267	531	70	180	702
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.26	1.00
Satd. Flow (perm)	1745	1615	1818	1561	495	1818
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95
Adj. Flow (vph)	113	293	584	77	189	739
RTOR Reduction (vph)	0	231	0	21	0	0
Lane Group Flow (vph)	113	62	584	56	189	739
Heavy Vehicles (%)	0%	0%	1%	0%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	9.0	16.8	40.4	49.4	53.2	53.2
Effective Green, g (s)	10.0	16.8	41.4	51.4	54.2	54.2
Actuated g/C Ratio	0.13	0.21	0.52	0.64	0.68	0.68
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	218	339	940	1080	477	1231
v/s Ratio Prot	c0.06	0.04	0.32	0.01	0.04	c0.41
v/s Ratio Perm				0.03	0.22	
v/c Ratio	0.52	0.18	0.62	0.05	0.40	0.60
Uniform Delay, d1	32.7	26.0	13.7	5.3	7.4	7.0
Progression Factor	1.00	1.00	0.87	0.52	1.32	1.50
Incremental Delay, d2	2.1	0.3	2.9	0.0	0.5	1.8
Delay (s)	34.8	26.2	14.8	2.8	10.3	12.4
Level of Service	C	C	B	A	B	B
Approach Delay (s/veh)	28.6		13.4			11.9
Approach LOS	C		B			B
Intersection Summary						
HCM 2000 Control Delay (s/veh)			15.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	17.0
Intersection Capacity Utilization			53.6%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

2 - 2024 Existing Weekday Evening
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	↔
Traffic Volume (vph)	80	25	31	2	28	105	9	416	12	114	507	184
Future Volume (vph)	80	25	31	2	28	105	9	416	12	114	507	184
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969				0.850		0.996				0.850
Flt Protected		0.971			0.997			0.999			0.991	
Satd. Flow (prot)	0	1716	0	0	1831	1561	0	1855	0	0	1849	1652
Flt Permitted		0.798			0.984			0.987			0.840	
Satd. Flow (perm)	0	1410	0	0	1807	1561	0	1833	0	0	1568	1652
Satd. Flow (RTOR)		17				150		2				95
Adj. Flow (vph)	88	27	34	2	33	124	10	447	13	123	545	198
Lane Group Flow (vph)	0	149	0	0	35	124	0	470	0	0	668	198
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	20.0	20.0		20.0	20.0	20.0	26.0	26.0		10.0	36.0	36.0
Total Split (%)	25.0%	25.0%		25.0%	25.0%	25.0%	32.5%	32.5%		12.5%	45.0%	45.0%
Maximum Green (s)	15.0	15.0		15.0	15.0	15.0	21.0	21.0		6.0	31.0	31.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.60		0.12	0.32		0.38			0.63	0.17	
Control Delay (s/veh)		37.4		27.9	5.8		9.3			12.4	4.4	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		37.4		27.9	5.8		9.3			12.4	4.4	
Queue Length 50th (ft)		61		15	0		69			73	0	
Queue Length 95th (ft)		117		36	25		271			#536	43	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		295		361	432		1246			1065	1152	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		0.51		0.10	0.29		0.38			0.63	0.17	
Intersection Summary												
Cycle Length: 80												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	30%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2 - 2024 Existing Weekday Evening
 9: Main Street & Summer Street/Homer Avenue

02/14/2025

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: Main Street & Summer Street/Homer Avenue



2 - 2024 Existing Weekday Evening
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	80	25	31	2	28	105	9	416	12	114	507	184
Future Volume (vph)	80	25	31	2	28	105	9	416	12	114	507	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.97			1.00	0.85		1.00			1.00	0.85
Flt Protected		0.97			1.00	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1717			1831	1561		1856			1849	1652
Flt Permitted		0.80			0.98	1.00		0.99			0.84	1.00
Satd. Flow (perm)		1411			1807	1561		1833			1567	1652
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	88	27	34	2	33	124	10	447	13	123	545	198
RTOR Reduction (vph)	0	14	0	0	0	104	0	1	0	0	0	35
Lane Group Flow (vph)	0	135	0	0	35	20	0	469	0	0	668	163
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	2%	0%	1%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.2			12.2	12.2		49.4			49.4	49.4
Effective Green, g (s)		13.2			13.2	13.2		50.4			50.4	50.4
Actuated g/C Ratio		0.16			0.16	0.16		0.63			0.63	0.63
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		232			298	257		1154			987	1040
v/s Ratio Prot						0.01						0.10
v/s Ratio Perm		c0.10			0.02			0.26			c0.43	
v/c Ratio		0.58			0.12	0.08		0.41			0.68	0.16
Uniform Delay, d1		30.8			28.4	28.3		7.4			9.5	6.1
Progression Factor		1.00			1.00	1.00		1.00			0.74	0.91
Incremental Delay, d2		3.7			0.2	0.1		1.1			1.6	0.3
Delay (s)		34.5			28.6	28.4		8.4			8.6	5.8
Level of Service		C			C	C		A			A	A
Approach Delay (s/veh)		34.5			28.4			8.4			8.0	
Approach LOS		C			C			A			A	

Intersection Summary		
HCM 2000 Control Delay (s/veh)	12.5	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.66	
Actuated Cycle Length (s)	80.0	Sum of lost time (s) 17.0
Intersection Capacity Utilization	80.4%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

2031 No-Build Weekday Morning Peak-Hour

3 - 2031 No-Build Weekday Morning
 1: Myrtle Street & Raymond Marchetti Street

02/14/2025

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	43	30	381	49	19	241
Future Vol, veh/h	43	30	381	49	19	241
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	81	81	85	85
Heavy Vehicles, %	3	8	0	5	0	1
Mvmt Flow	50	35	470	60	22	284

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	829	501	0	0	531	0
Stage 1	501	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.43	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	339	558	-	-	1047	-
Stage 1	607	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	331	558	-	-	1047	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	607	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.51	0	0.62
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	397	132
HCM Lane V/C Ratio	-	-	0.214	0.021
HCM Ctrl Dly (s/v)	-	-	16.5	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	41	21	383	261	23
Future Vol, veh/h	47	41	21	383	261	23
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	51	45	23	416	284	25

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	758	296	309	0	0
Stage 1	296	-	-	-	-
Stage 2	462	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	375	743	1252	-	-
Stage 1	755	-	-	-	-
Stage 2	634	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	366	743	1252	-	-
Mov Cap-2 Maneuver	366	-	-	-	-
Stage 1	737	-	-	-	-
Stage 2	634	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	14.37	0.41	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	94	-	479	-	-
HCM Lane V/C Ratio	0.018	-	0.2	-	-
HCM Ctrl Dly (s/v)	7.9	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

3 - 2031 No-Build Weekday Morning
 3: Myrtle Street & 10-50 Main Street Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	404	6	4	298
Future Vol, veh/h	1	0	404	6	4	298
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	25	25	75	75	88	88
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	0	539	8	5	339

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	890	543	0	0	547	0
Stage 1	543	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	316	544	-	-	1033	-
Stage 1	586	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	314	544	-	-	1033	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	716	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.61	0	0.11
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	314	24
HCM Lane V/C Ratio	-	-	0.013	0.004
HCM Ctrl Dly (s/v)	-	-	16.6	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	42	2	5	4	0	2	0	366	1	1	298	0
Future Vol, veh/h	42	2	5	4	0	2	0	366	1	1	298	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	83	83	83	50	50	50	76	76	76	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	3	0
Mvmt Flow	51	2	6	8	0	4	0	482	1	1	339	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	822	824	339	824	823	482	-	0	0	483	0	0
Stage 1	341	341	-	482	482	-	-	-	-	-	-	-
Stage 2	482	483	-	342	341	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	-	-	-	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	-	-
Pot Cap-1 Maneuver	295	310	708	294	311	588	0	-	-	1090	-	0
Stage 1	678	642	-	569	556	-	0	-	-	-	-	0
Stage 2	570	556	-	677	642	-	0	-	-	-	-	0
Platoon blocked, %												
Mov Cap-1 Maneuver	293	310	708	289	310	588	-	-	-	1090	-	-
Mov Cap-2 Maneuver	293	310	-	289	310	-	-	-	-	-	-	-
Stage 1	677	641	-	569	556	-	-	-	-	-	-	-
Stage 2	566	556	-	668	641	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	19.21		15.71		0		0.03	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	312	348	6	-
HCM Lane V/C Ratio	-	-	0.189	0.034	0.001	-
HCM Ctrl Dly (s/v)	-	-	19.2	15.7	8.3	0
HCM Lane LOS	-	-	C	C	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	0	-

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	3	0	367	10	7	300
Future Vol, veh/h	3	0	367	10	7	300
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	25	25	71	71	93	93
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	12	0	517	14	8	323

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	862	524	0	0	531	0
Stage 1	524	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	328	557	-	-	1047	-
Stage 1	598	-	-	-	-	-
Stage 2	727	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	325	557	-	-	1047	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.48	0	0.19
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	325	41
HCM Lane V/C Ratio	-	-	0.037	0.007
HCM Ctrl Dly (s/v)	-	-	16.5	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	0

3 - 2031 No-Build Weekday Morning
6: Main Street & Pleasant Street

02/14/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	124	642	565	253	186	117	
Future Volume (vph)	124	642	565	253	186	117	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478	
Flt Permitted	0.950		0.483				
Satd. Flow (perm)	1728	1568	900	1818	1756	1478	
Satd. Flow (RTOR)		606				126	
Adj. Flow (vph)	136	705	628	281	200	126	
Lane Group Flow (vph)	136	705	628	281	200	126	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	5.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	13.0		21.0	37.0	16.0	13.0	10.0
Total Split (%)	21.7%		35.0%	61.7%	26.7%	21.7%	17%
Maximum Green (s)	9.0		17.0	32.0	11.0	9.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.56	0.67	0.73	0.22	0.32	0.14	
Control Delay (s/veh)	33.4	5.2	10.0	2.5	18.2	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	33.4	5.2	10.0	2.5	18.2	2.7	
Queue Length 50th (ft)	46	18	16	7	50	0	
Queue Length 95th (ft)	95	41	#265	m42	124	25	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	259	1061	870	1259	620	896	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.53	0.66	0.72	0.22	0.32	0.14	

Intersection Summary

Cycle Length: 60

3 - 2031 No-Build Weekday Morning
 6: Main Street & Pleasant Street

02/14/2025

Actuated Cycle Length: 60

Offset: 17 (28%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

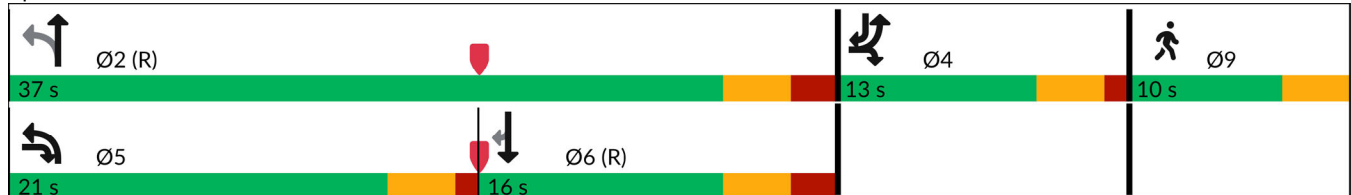
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Main Street & Pleasant Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	124	642	565	253	186	117
Future Volume (vph)	124	642	565	253	186	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478
Flt Permitted	0.95	1.00	0.48	1.00	1.00	1.00
Satd. Flow (perm)	1728	1568	899	1818	1756	1478
Peak-hour factor, PHF	0.91	0.91	0.90	0.90	0.93	0.93
Adj. Flow (vph)	136	705	628	281	200	126
RTOR Reduction (vph)	0	356	0	0	0	71
Lane Group Flow (vph)	136	349	628	281	200	55
Heavy Vehicles (%)	1%	3%	2%	1%	1%	2%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	8.4	24.8	38.2	38.2	17.8	26.2
Effective Green, g (s)	8.4	24.8	38.2	39.2	18.8	26.2
Actuated g/C Ratio	0.14	0.41	0.64	0.65	0.31	0.44
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	241	648	810	1187	550	645
v/s Ratio Prot	c0.08	0.22	c0.21	0.15	0.11	0.01
v/s Ratio Perm			c0.28			0.03
v/c Ratio	0.56	0.54	0.78	0.24	0.36	0.09
Uniform Delay, d1	24.1	13.3	6.6	4.3	16.0	9.9
Progression Factor	1.00	1.00	0.58	0.49	1.00	1.00
Incremental Delay, d2	3.0	0.9	3.8	0.4	1.9	0.1
Delay (s)	27.1	14.2	7.7	2.5	17.8	9.9
Level of Service	C	B	A	A	B	A
Approach Delay (s/veh)	16.2			6.0	14.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

3 - 2031 No-Build Weekday Morning
7: Main Street & Crossfit Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	4	6	812	1	2	826
Future Vol, veh/h	4	6	812	1	2	826
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	91	91	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	8	12	892	1	2	949

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1847	893	0	0	893	0
Stage 1	893	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	83	343	-	-	768	-
Stage 1	403	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	83	343	-	-	768	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	403	-	-	-	-	-
Stage 2	375	-	-	-	-	-













Approach	WB	NB	SB
HCM Ctrl Dly, s/v	32.32	0	0.02
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	152	4
HCM Lane V/C Ratio	-	-	0.132	0.003
HCM Ctrl Dly (s/v)	-	-	32.3	9.7
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	0.4	0

3 - 2031 No-Build Weekday Morning

8: Main Street & Front Street

02/14/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	76	207	606	132	296	534	
Future Volume (vph)	76	207	606	132	296	534	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818	
Flt Permitted	0.950				0.235		
Satd. Flow (perm)	1711	1583	1818	1531	442	1818	
Satd. Flow (RTOR)		265		107			
Adj. Flow (vph)	97	265	689	150	325	587	
Lane Group Flow (vph)	97	265	689	150	325	587	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	12.0		11.0	12.0	10.0	21.0	27.0
Total Split (%)	20.0%		18.3%	20.0%	16.7%	35.0%	45%
Maximum Green (s)	7.0		6.0	7.0	5.0	16.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.44	0.42	0.66	0.13	0.71	0.44	
Control Delay (s/veh)	30.9	5.0	13.6	1.1	12.8	3.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	30.9	5.0	13.6	1.1	12.8	3.8	
Queue Length 50th (ft)	33	0	136	0	21	44	
Queue Length 95th (ft)	61	28	m281	m0	m#61	94	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	228	616	1039	1205	460	1342	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.43	0.43	0.66	0.12	0.71	0.44	
Intersection Summary							
Cycle Length: 60							

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 90

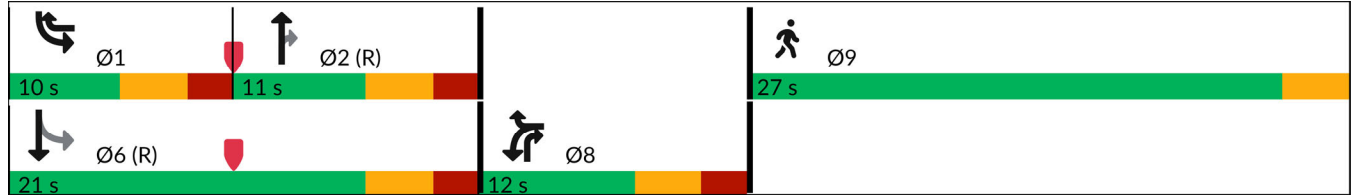
Control Type: Actuated-Coordinated













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

Queue shown is maximum after two cycles.

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

Splits and Phases: 8: Main Street & Front Street



						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	76	207	606	132	296	534
Future Volume (vph)	76	207	606	132	296	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.24	1.00
Satd. Flow (perm)	1711	1583	1818	1531	443	1818
Peak-hour factor, PHF	0.78	0.78	0.88	0.88	0.91	0.91
Adj. Flow (vph)	97	265	689	150	325	587
RTOR Reduction (vph)	0	191	0	32	0	0
Lane Group Flow (vph)	97	74	689	118	325	587
Heavy Vehicles (%)	2%	2%	1%	2%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	6.7	16.7	33.3	40.0	43.3	43.3
Effective Green, g (s)	7.7	16.7	34.3	42.0	44.3	44.3
Actuated g/C Ratio	0.13	0.28	0.57	0.70	0.74	0.74
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	219	440	1039	1173	461	1342
v/s Ratio Prot	c0.06	0.05	0.38	0.01	c0.07	0.32
v/s Ratio Perm				0.06	c0.45	
v/c Ratio	0.44	0.17	0.66	0.10	0.70	0.44
Uniform Delay, d1	24.2	16.4	8.9	2.9	6.2	3.0
Progression Factor	1.00	1.00	1.13	1.28	1.29	0.88
Incremental Delay, d2	1.4	0.2	2.7	0.0	4.1	0.9
Delay (s)	25.6	16.6	12.8	3.7	12.1	3.6
Level of Service	C	B	B	A	B	A
Approach Delay (s/veh)	19.0		11.2			6.6
Approach LOS	B		B			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

3 - 2031 No-Build Weekday Morning
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	150	40	39	4	19	118	10	470	6	101	418	91
Future Volume (vph)	150	40	39	4	19	118	10	470	6	101	418	91
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977				0.850		0.998				0.850
Flt Protected		0.968			0.992			0.999			0.990	
Satd. Flow (prot)	0	1703	0	0	1822	1546	0	1858	0	0	1851	1652
Flt Permitted		0.784			0.949			0.990			0.834	
Satd. Flow (perm)	0	1380	0	0	1743	1546	0	1842	0	0	1559	1652
Satd. Flow (RTOR)		14				200		1				127
Adj. Flow (vph)	181	48	47	5	25	153	10	485	6	106	440	96
Lane Group Flow (vph)	0	276	0	0	30	153	0	501	0	0	546	96
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	13.0	13.0		13.0	13.0	13.0	16.0	16.0		7.0	23.0	23.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%	21.7%	26.7%	26.7%		11.7%	38.3%	38.3%
Maximum Green (s)	8.0	8.0		8.0	8.0	8.0	11.0	11.0		3.0	18.0	18.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		1.27		0.11	0.38		0.42			0.54	0.09	
Control Delay (s/veh)		177.9		23.3	5.1		10.3			11.9	1.2	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		177.9		23.3	5.1		10.3			11.9	1.2	
Queue Length 50th (ft)		~126		10	0		53			26	0	
Queue Length 95th (ft)		#230		25	13		#301			#385	11	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		218		261	401		1185			1003	1107	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		1.27		0.11	0.38		0.42			0.54	0.09	

Intersection Summary

Cycle Length: 60

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	40%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

3 - 2031 No-Build Weekday Morning
 9: Main Street & Summer Street/Homer Avenue

02/14/2025

Actuated Cycle Length: 60

Offset: 58 (97%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

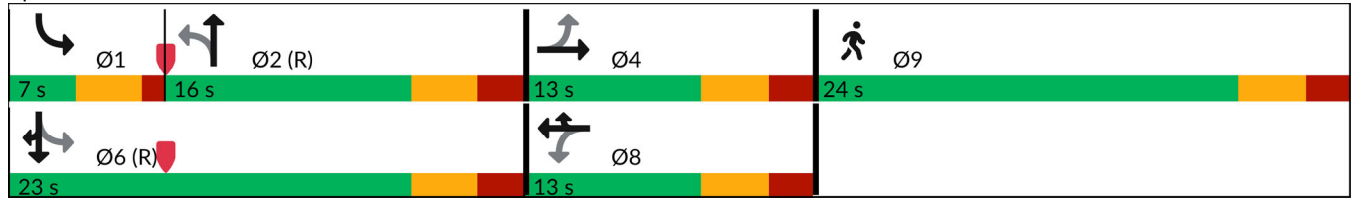
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: Main Street & Summer Street/Homer Avenue



3 - 2031 No-Build Weekday Morning
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	150	40	39	4	19	118	10	470	6	101	418	91
Future Volume (vph)	150	40	39	4	19	118	10	470	6	101	418	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.98			1.00	0.85		1.00			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1704			1821	1546		1859			1852	1652
Flt Permitted		0.78			0.95	1.00		0.99			0.83	1.00
Satd. Flow (perm)		1380			1743	1546		1842			1560	1652
Peak-hour factor, PHF	0.83	0.83	0.83	0.77	0.77	0.77	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	181	48	47	5	25	153	10	485	6	106	440	96
RTOR Reduction (vph)	0	12	0	0	0	130	0	0	0	0	0	41
Lane Group Flow (vph)	0	264	0	0	30	23	0	501	0	0	546	55
Heavy Vehicles (%)	3%	0%	0%	0%	0%	1%	0%	2%	0%	0%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.0			8.0	8.0		33.6			33.6	33.6
Effective Green, g (s)		9.0			9.0	9.0		34.6			34.6	34.6
Actuated g/C Ratio		0.15			0.15	0.15		0.58			0.58	0.58
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		207			261	231		1062			899	952
v/s Ratio Prot						0.01						0.03
v/s Ratio Perm		c0.19			0.02			0.27			c0.35	
v/c Ratio		1.28			0.11	0.10		0.47			0.61	0.06
Uniform Delay, d1		25.5			22.1	22.0		7.4			8.3	5.6
Progression Factor		1.00			1.00	1.00		1.00			0.75	0.58
Incremental Delay, d2		156.1			0.2	0.2		1.5			1.1	0.1
Delay (s)		181.6			22.3	22.2		8.9			7.3	3.3
Level of Service		F			C	C		A			A	A
Approach Delay (s/veh)		181.6			22.2			8.9			6.7	
Approach LOS		F			C			A			A	

Intersection Summary

HCM 2000 Control Delay (s/veh)	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2031 No-Build Weekday Evening Peak-Hour

4 - 2031 No-Build Weekday Evening
 1: Myrtle Street & Raymond Marchetti Street

02/14/2025

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	32	20	282	29	35	584
Future Vol, veh/h	32	20	282	29	35	584
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	81	81	97	97	96	96
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	40	25	291	30	36	608

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	987	306	0	0	321	0
Stage 1	306	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	277	739	-	-	1251	-
Stage 1	752	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	265	739	-	-	1251	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	17.53	0	0.45
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	351	102
HCM Lane V/C Ratio	-	-	0.183	0.029
HCM Ctrl Dly (s/v)	-	-	17.5	8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	12	27	55	299	587	29
Future Vol, veh/h	12	27	55	299	587	29
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	13	29	60	325	638	32

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1098	654	670	0	0
Stage 1	654	-	-	-	-
Stage 2	445	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	235	467	921	-	-
Stage 1	517	-	-	-	-
Stage 2	646	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	217	467	921	-	-
Mov Cap-2 Maneuver	217	-	-	-	-
Stage 1	476	-	-	-	-
Stage 2	646	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	16.91	1.43	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	280	-	344	-	-
HCM Lane V/C Ratio	0.065	-	0.123	-	-
HCM Ctrl Dly (s/v)	9.2	0	16.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	354	18	3	611
Future Vol, veh/h	0	0	354	18	3	611
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	25	25	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	0	0	373	19	3	643

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1032	382	0	0	392	0
Stage 1	382	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	260	670	-	-	1178	-
Stage 1	694	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	259	670	-	-	1178	-
Mov Cap-2 Maneuver	259	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0.04
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	9
HCM Lane V/C Ratio	-	-	-	0.003
HCM Ctrl Dly (s/v)	-	-	0	8.1
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

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	20	0	1	6	0	10	0	342	1	1	610	0
Future Vol, veh/h	20	0	1	6	0	10	0	342	1	1	610	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	68	68	68	57	57	57	98	98	98	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	29	0	1	11	0	18	0	349	1	1	642	0

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	993	994	642	994	994	349	-	0	0	350	0	0
Stage 1	644	644	-	349	349	-	-	-	-	-	-	-
Stage 2	349	350	-	644	644	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	-	-	-	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	-	-
Pot Cap-1 Maneuver	226	247	478	226	247	698	0	-	-	1220	-	0
Stage 1	465	471	-	671	637	-	0	-	-	-	-	0
Stage 2	671	636	-	465	471	-	0	-	-	-	-	0
Platoon blocked, %												
Mov Cap-1 Maneuver	220	247	478	225	247	698	-	-	-	1220	-	-
Mov Cap-2 Maneuver	220	247	-	225	247	-	-	-	-	-	-	-
Stage 1	464	470	-	671	637	-	-	-	-	-	-	-
Stage 2	655	636	-	463	470	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	23.43		14.93			0			0.01		
HCM LOS	C		B								

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	226	390	3	-
HCM Lane V/C Ratio	-	-	0.137	0.072	0.001	-
HCM Ctrl Dly (s/v)	-	-	23.4	14.9	8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.2	0	-

4 - 2031 No-Build Weekday Evening
 5: Main Street & LFX Enterprise Driveway

02/14/2025

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	10	6	337	3	5	612
Future Vol, veh/h	10	6	337	3	5	612
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	67	67	98	98	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	15	9	344	3	5	651

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1007	345	0	0	347	0
Stage 1	345	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	269	702	-	-	1223	-
Stage 1	721	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	267	702	-	-	1223	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	513	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.1	0	0.06
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	348	15
HCM Lane V/C Ratio	-	-	0.069	0.004
HCM Ctrl Dly (s/v)	-	-	16.1	8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.2	0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	108	537	633	232	428	194	
Future Volume (vph)	108	537	633	232	428	194	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507	
Flt Permitted	0.950		0.199				
Satd. Flow (perm)	1711	1583	371	1837	1773	1507	
Satd. Flow (RTOR)		360				141	
Adj. Flow (vph)	114	565	681	249	465	211	
Lane Group Flow (vph)	114	565	681	249	465	211	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	1.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	15.0		30.0	55.0	25.0	15.0	10.0
Total Split (%)	18.8%		37.5%	68.8%	31.3%	18.8%	13%
Maximum Green (s)	11.0		26.0	50.0	20.0	11.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							4
v/c Ratio	0.53	0.59	0.93	0.18	0.70	0.24	
Control Delay (s/veh)	41.9	6.9	37.2	1.7	30.8	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	41.9	6.9	37.2	1.7	30.8	4.8	
Queue Length 50th (ft)	54	54	106	8	188	14	
Queue Length 95th (ft)	104	88	#513	m27	#423	59	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	235	948	732	1376	663	908	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.49	0.60	0.93	0.18	0.70	0.23	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 17 (21%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 90

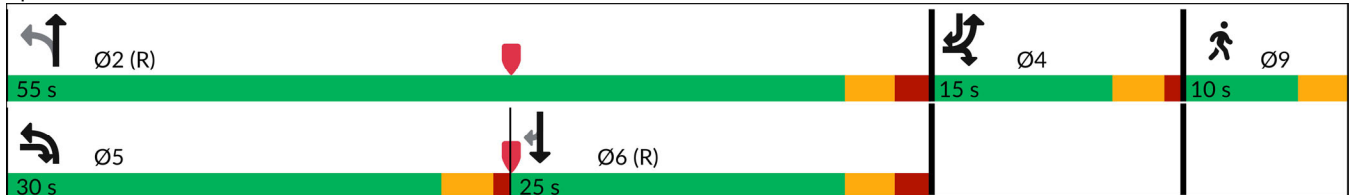
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Main Street & Pleasant Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	108	537	633	232	428	194
Future Volume (vph)	108	537	633	232	428	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507
Flt Permitted	0.95	1.00	0.20	1.00	1.00	1.00
Satd. Flow (perm)	1711	1583	370	1837	1773	1507
Peak-hour factor, PHF	0.95	0.95	0.93	0.93	0.92	0.92
Adj. Flow (vph)	114	565	681	249	465	211
RTOR Reduction (vph)	0	198	0	0	0	76
Lane Group Flow (vph)	114	367	681	249	465	135
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	10.1	36.1	56.5	56.5	26.5	36.6
Effective Green, g (s)	10.1	36.1	56.5	57.5	27.5	36.6
Actuated g/C Ratio	0.13	0.45	0.71	0.72	0.34	0.46
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	216	714	716	1320	609	689
v/s Ratio Prot	c0.07	0.23	c0.31	0.14	0.26	0.02
v/s Ratio Perm			c0.36			0.06
v/c Ratio	0.53	0.51	0.95	0.19	0.76	0.20
Uniform Delay, d1	32.7	15.7	17.6	3.7	23.4	12.9
Progression Factor	1.00	1.00	1.22	0.39	1.00	1.00
Incremental Delay, d2	2.3	0.6	19.6	0.3	8.8	0.1
Delay (s)	35.0	16.3	41.0	1.7	32.2	13.1
Level of Service	D	B	D	A	C	B
Approach Delay (s/veh)	19.5			30.4	26.2	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

4 - 2031 No-Build Weekday Evening
7: Main Street & Crossfit Driveway

02/14/2025

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	8	3	862	11	5	960
Future Vol, veh/h	8	3	862	11	5	960
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	34	34	96	96	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	24	9	898	11	5	1021

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1936	904	0	0	909	0
Stage 1	904	-	-	-	-	-
Stage 2	1032	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	73	338	-	-	757	-
Stage 1	399	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	72	338	-	-	757	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	399	-	-	-	-	-
Stage 2	341	-	-	-	-	-













Approach	WB	NB	SB
HCM Ctrl Dly, s/v	64.35	0	0.05
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	92	9
HCM Lane V/C Ratio	-	-	0.353	0.007
HCM Ctrl Dly (s/v)	-	-	64.3	9.8
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	1.4	0

4 - 2031 No-Build Weekday Evening

8: Main Street & Front Street

02/14/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	116	286	587	80	193	775	
Future Volume (vph)	116	286	587	80	193	775	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818	
Flt Permitted	0.950				0.217		
Satd. Flow (perm)	1745	1615	1818	1561	408	1818	
Satd. Flow (RTOR)		314		61			
Adj. Flow (vph)	127	314	645	88	203	816	
Lane Group Flow (vph)	127	314	645	88	203	816	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	15.0		24.0	15.0	14.0	38.0	27.0
Total Split (%)	18.8%		30.0%	18.8%	17.5%	47.5%	34%
Maximum Green (s)	10.0		19.0	10.0	9.0	33.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.57	0.48	0.65	0.08	0.46	0.64	
Control Delay (s/veh)	43.3	4.6	20.9	2.5	11.4	17.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	43.3	4.6	20.9	2.5	11.4	17.2	
Queue Length 50th (ft)	60	0	124	1	35	268	
Queue Length 95th (ft)	114	29	#632	m13	m132	#688	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	239	655	986	1156	459	1281	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.53	0.48	0.65	0.08	0.44	0.64	
Intersection Summary							
Cycle Length: 80							

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 90

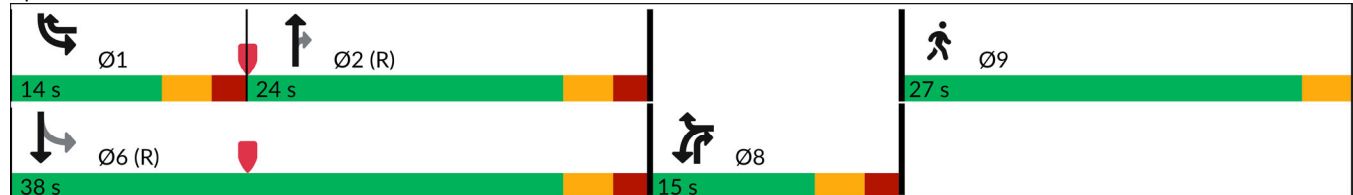
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 8: Main Street & Front Street





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	286	587	80	193	775
Future Volume (vph)	116	286	587	80	193	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.22	1.00
Satd. Flow (perm)	1745	1615	1818	1561	408	1818
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95
Adj. Flow (vph)	127	314	645	88	203	816
RTOR Reduction (vph)	0	246	0	22	0	0
Lane Group Flow (vph)	127	68	645	66	203	816
Heavy Vehicles (%)	0%	0%	1%	0%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	9.2	17.2	40.0	49.2	53.0	53.0
Effective Green, g (s)	10.2	17.2	41.0	51.2	54.0	54.0
Actuated g/C Ratio	0.13	0.22	0.51	0.64	0.68	0.68
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	222	347	931	1077	430	1227
v/s Ratio Prot	c0.07	0.04	0.35	0.01	0.05	c0.45
v/s Ratio Perm				0.03	0.27	
v/c Ratio	0.57	0.19	0.69	0.06	0.47	0.67
Uniform Delay, d1	32.8	25.7	14.7	5.4	8.8	7.7
Progression Factor	1.00	1.00	0.91	0.64	1.28	1.55
Incremental Delay, d2	3.5	0.3	3.9	0.0	0.6	2.2
Delay (s)	36.4	26.0	17.4	3.5	11.9	14.1
Level of Service	D	C	B	A	B	B
Approach Delay (s/veh)	29.0		15.7			13.6
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

4 - 2031 No-Build Weekday Evening
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	86	29	33	6	32	135	10	446	18	150	544	197
Future Volume (vph)	86	29	33	6	32	135	10	446	18	150	544	197
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970				0.850		0.995				0.850
Flt Protected		0.972			0.992			0.999			0.989	
Satd. Flow (prot)	0	1718	0	0	1822	1561	0	1854	0	0	1846	1652
Flt Permitted		0.795			0.960			0.984			0.797	
Satd. Flow (perm)	0	1405	0	0	1763	1561	0	1826	0	0	1488	1652
Satd. Flow (RTOR)		16				159		2				95
Adj. Flow (vph)	95	32	36	7	38	159	11	480	19	161	585	212
Lane Group Flow (vph)	0	163	0	0	45	159	0	510	0	0	746	212
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	20.0	20.0		20.0	20.0	20.0	26.0	26.0		10.0	36.0	36.0
Total Split (%)	25.0%	25.0%		25.0%	25.0%	25.0%	32.5%	32.5%		12.5%	45.0%	45.0%
Maximum Green (s)	15.0	15.0		15.0	15.0	15.0	21.0	21.0		6.0	31.0	31.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.65		0.15	0.40		0.41			0.74	0.18	
Control Delay (s/veh)		40.0		28.3	8.2		9.9			14.9	4.4	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		40.0		28.3	8.2		9.9			14.9	4.4	
Queue Length 50th (ft)		68		19	0		81			84	1	
Queue Length 95th (ft)		128		43	40		302			#645	m52	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		293		352	439		1234			1005	1147	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		0.56		0.13	0.36		0.41			0.74	0.18	
Intersection Summary												
Cycle Length: 80												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	30%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

4 - 2031 No-Build Weekday Evening
 9: Main Street & Summer Street/Homer Avenue

02/14/2025

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 9: Main Street & Summer Street/Homer Avenue



4 - 2031 No-Build Weekday Evening
 9: Main Street & Summer Street/Homer Avenue

02/14/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	↕
Traffic Volume (vph)	86	29	33	6	32	135	10	446	18	150	544	197
Future Volume (vph)	86	29	33	6	32	135	10	446	18	150	544	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.97			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1718			1822	1561		1854			1847	1652
Flt Permitted		0.79			0.96	1.00		0.98			0.80	1.00
Satd. Flow (perm)		1405			1763	1561		1827			1487	1652
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	95	32	36	7	38	159	11	480	19	161	585	212
RTOR Reduction (vph)	0	13	0	0	0	132	0	1	0	0	0	36
Lane Group Flow (vph)	0	150	0	0	45	27	0	509	0	0	746	176
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	2%	0%	1%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.5			12.5	12.5		49.1			49.1	49.1
Effective Green, g (s)		13.5			13.5	13.5		50.1			50.1	50.1
Actuated g/C Ratio		0.17			0.17	0.17		0.63			0.63	0.63
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		237			297	263		1144			931	1034
v/s Ratio Prot						0.02						0.11
v/s Ratio Perm		c0.11			0.03			0.28			c0.50	
v/c Ratio		0.63			0.15	0.10		0.45			0.80	0.17
Uniform Delay, d1		30.9			28.4	28.1		7.7			11.2	6.3
Progression Factor		1.00			1.00	1.00		1.00			0.65	0.86
Incremental Delay, d2		5.4			0.2	0.2		1.3			4.0	0.3
Delay (s)		36.3			28.6	28.3		9.0			11.3	5.6
Level of Service		D			C	C		A			B	A
Approach Delay (s/veh)		36.3			28.4			9.0			10.1	
Approach LOS		D			C			A			B	

Intersection Summary

HCM 2000 Control Delay (s/veh)	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2031 Build Weekday Morning Peak-Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	41	30	412	49	19	248
Future Vol, veh/h	41	30	412	49	19	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	81	81	85	85
Heavy Vehicles, %	3	8	0	5	0	1
Mvmt Flow	48	35	509	60	22	292

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	875	539	0	0	569	0
Stage 1	539	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.43	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	318	531	-	-	1013	-
Stage 1	583	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	310	531	-	-	1013	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	17.24	0	0.61
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	376	128
HCM Lane V/C Ratio	-	-	0.219	0.022
HCM Ctrl Dly (s/v)	-	-	17.2	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	47	41	23	414	266	23
Future Vol, veh/h	47	41	23	414	266	23
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	51	45	25	450	289	25

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	802	302	314	0	0
Stage 1	302	-	-	-	-
Stage 2	500	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	353	738	1246	-	-
Stage 1	750	-	-	-	-
Stage 2	609	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	344	738	1246	-	-
Mov Cap-2 Maneuver	344	-	-	-	-
Stage 1	730	-	-	-	-
Stage 2	609	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	14.93	0.42	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	95	-	458	-	-
HCM Lane V/C Ratio	0.02	-	0.209	-	-
HCM Ctrl Dly (s/v)	7.9	0	14.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

Intersection						
Int Delay, s/veh	19.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	40	397	36	19	288
Future Vol, veh/h	48	40	397	36	19	288
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	25	25	75	75	88	88
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	192	160	529	48	22	327

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	924	553	0	0	577	0
Stage 1	553	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	302	536	-	-	1006	-
Stage 1	580	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	294	536	-	-	1006	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	69.4	0	0.54
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	370	111
HCM Lane V/C Ratio	-	-	0.952	0.021
HCM Ctrl Dly (s/v)	-	-	69.4	8.7
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	10.4	0.1

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	42	5	0	391	336	0
Future Vol, veh/h	42	5	0	391	336	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	83	83	76	76	88	88
Heavy Vehicles, %	0	0	0	0	3	0
Mvmt Flow	51	6	0	514	382	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	896	382	-	0	-	0
Stage 1	382	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	-	-
Pot Cap-1 Maneuver	313	670	0	-	-	0
Stage 1	694	-	0	-	-	0
Stage 2	604	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	313	670	-	-	-	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	18.06	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 332	-
HCM Lane V/C Ratio	- 0.171	-
HCM Ctrl Dly (s/v)	- 18.1	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 0.6	-

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	1	2	389	0	0	341
Future Vol, veh/h	1	2	389	0	0	341
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	1	2	423	0	0	371

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	793	423	0	0	423	0
Stage 1	423	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	357	631	-	-	1136	-
Stage 1	661	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	357	631	-	-	1136	-
Mov Cap-2 Maneuver	357	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	698	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.21	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	503	1136
HCM Lane V/C Ratio	-	-	0.006	-
HCM Ctrl Dly (s/v)	-	-	12.2	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

5 - 2031 Build Weekday Morning
7: Main Street & Pleasant Street

02/25/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	132	640	569	257	218	123	
Future Volume (vph)	132	640	569	257	218	123	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478	
Flt Permitted	0.950		0.432				
Satd. Flow (perm)	1728	1568	805	1818	1756	1478	
Satd. Flow (RTOR)		569				132	
Adj. Flow (vph)	145	703	632	286	234	132	
Lane Group Flow (vph)	145	703	632	286	234	132	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	5.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	13.0		21.0	37.0	16.0	13.0	10.0
Total Split (%)	21.7%		35.0%	61.7%	26.7%	21.7%	17%
Maximum Green (s)	9.0		17.0	32.0	11.0	9.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.60	0.67	0.76	0.23	0.39	0.15	
Control Delay (s/veh)	35.0	5.8	11.6	2.5	20.0	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	35.0	5.8	11.6	2.5	20.0	2.7	
Queue Length 50th (ft)	50	24	17	7	60	0	
Queue Length 95th (ft)	#103	47	#291	m43	#164	26	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	259	1041	830	1258	604	887	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.68	0.76	0.23	0.39	0.15	

Intersection Summary

Cycle Length: 60

5 - 2031 Build Weekday Morning
 7: Main Street & Pleasant Street

02/25/2025

Actuated Cycle Length: 60

Offset: 17 (28%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

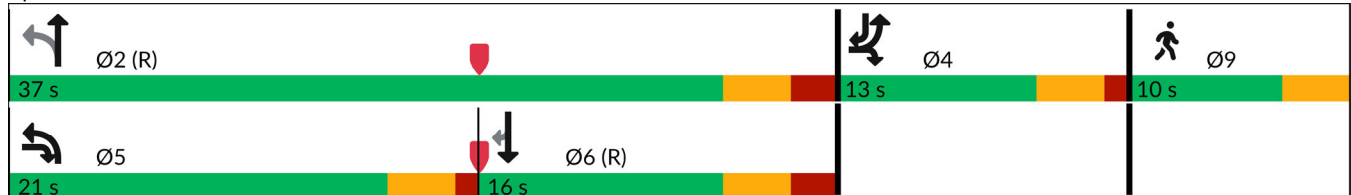
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Main Street & Pleasant Street



5 - 2031 Build Weekday Morning
7: Main Street & Pleasant Street

02/25/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	132	640	569	257	218	123
Future Volume (vph)	132	640	569	257	218	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478
Flt Permitted	0.95	1.00	0.43	1.00	1.00	1.00
Satd. Flow (perm)	1728	1568	805	1818	1756	1478
Peak-hour factor, PHF	0.91	0.91	0.90	0.90	0.93	0.93
Adj. Flow (vph)	145	703	632	286	234	132
RTOR Reduction (vph)	0	328	0	0	0	75
Lane Group Flow (vph)	145	375	632	286	234	57
Heavy Vehicles (%)	1%	3%	2%	1%	1%	2%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	8.5	25.4	38.1	38.1	17.2	25.7
Effective Green, g (s)	8.5	25.4	38.1	39.1	18.2	25.7
Actuated g/C Ratio	0.14	0.42	0.64	0.65	0.30	0.43
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	244	663	782	1184	532	633
v/s Ratio Prot	c0.08	0.24	c0.23	0.16	0.13	0.01
v/s Ratio Perm			c0.29			0.03
v/c Ratio	0.59	0.57	0.81	0.24	0.44	0.09
Uniform Delay, d1	24.1	13.1	6.9	4.3	16.8	10.2
Progression Factor	1.00	1.00	0.62	0.49	1.00	1.00
Incremental Delay, d2	3.9	1.1	5.1	0.4	2.6	0.1
Delay (s)	28.0	14.2	9.4	2.5	19.4	10.3
Level of Service	C	B	A	A	B	B
Approach Delay (s/veh)	16.6			7.3	16.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	811	16	0	858
Future Vol, veh/h	0	15	811	16	0	858
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	91	91	87	87
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	30	891	18	0	986













Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1886	900	0	0	909	0
Stage 1	900	-	-	-	-	-
Stage 2	986	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	79	340	-	-	758	-
Stage 1	400	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	79	340	-	-	758	-
Mov Cap-2 Maneuver	79	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.61	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	340	758
HCM Lane V/C Ratio	-	-	0.088	-
HCM Ctrl Dly (s/v)	-	-	16.6	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.3	0

5 - 2031 Build Weekday Morning
 9: Main Street & Front Street

02/25/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	76	212	615	132	306	552	
Future Volume (vph)	76	212	615	132	306	552	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818	
Flt Permitted	0.950				0.229		
Satd. Flow (perm)	1711	1583	1818	1531	431	1818	
Satd. Flow (RTOR)		272		106			
Adj. Flow (vph)	97	272	699	150	336	607	
Lane Group Flow (vph)	97	272	699	150	336	607	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	12.0		11.0	12.0	10.0	21.0	27.0
Total Split (%)	20.0%		18.3%	20.0%	16.7%	35.0%	45%
Maximum Green (s)	7.0		6.0	7.0	5.0	16.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.44	0.43	0.67	0.13	0.74	0.45	
Control Delay (s/veh)	30.9	5.0	13.8	1.1	14.9	3.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	30.9	5.0	13.8	1.1	14.9	3.6	
Queue Length 50th (ft)	33	0	138	0	21	43	
Queue Length 95th (ft)	61	29	m286	m0	m#70	92	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	228	621	1039	1205	453	1342	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.43	0.44	0.67	0.12	0.74	0.45	
Intersection Summary							
Cycle Length: 60							

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 90

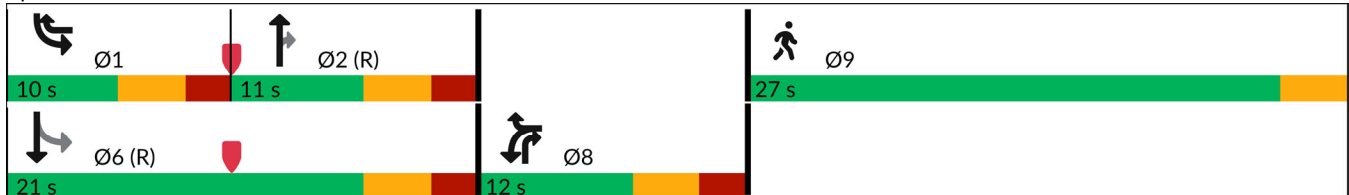
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.













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

Splits and Phases: 9: Main Street & Front Street



5 - 2031 Build Weekday Morning
 9: Main Street & Front Street

02/25/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	76	212	615	132	306	552
Future Volume (vph)	76	212	615	132	306	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.23	1.00
Satd. Flow (perm)	1711	1583	1818	1531	431	1818
Peak-hour factor, PHF	0.78	0.78	0.88	0.88	0.91	0.91
Adj. Flow (vph)	97	272	699	150	336	607
RTOR Reduction (vph)	0	196	0	32	0	0
Lane Group Flow (vph)	97	76	699	118	336	607
Heavy Vehicles (%)	2%	2%	1%	2%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	6.7	16.7	33.3	40.0	43.3	43.3
Effective Green, g (s)	7.7	16.7	34.3	42.0	44.3	44.3
Actuated g/C Ratio	0.13	0.28	0.57	0.70	0.74	0.74
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	219	440	1039	1173	453	1342
v/s Ratio Prot	c0.06	0.05	0.38	0.01	c0.07	0.33
v/s Ratio Perm				0.06	c0.47	
v/c Ratio	0.44	0.17	0.67	0.10	0.74	0.45
Uniform Delay, d1	24.2	16.4	8.9	2.9	6.5	3.1
Progression Factor	1.00	1.00	1.13	1.29	1.33	0.82
Incremental Delay, d2	1.4	0.2	2.8	0.0	5.4	0.9
Delay (s)	25.6	16.6	13.0	3.8	14.1	3.4
Level of Service	C	B	B	A	B	A
Approach Delay (s/veh)	19.0		11.3			7.2
Approach LOS	B		B			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			10.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	17.0
Intersection Capacity Utilization			63.5%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

5 - 2031 Build Weekday Morning
 10: Main Street & Summer Street/Homer Avenue

02/25/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Future Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977				0.850		0.998				0.850
Flt Protected		0.968			0.992			0.999			0.990	
Satd. Flow (prot)	0	1703	0	0	1822	1546	0	1858	0	0	1851	1652
Flt Permitted		0.783			0.949			0.989			0.836	
Satd. Flow (perm)	0	1378	0	0	1743	1546	0	1840	0	0	1563	1652
Satd. Flow (RTOR)		14				200		1				127
Adj. Flow (vph)	184	48	47	5	25	157	10	488	6	108	453	100
Lane Group Flow (vph)	0	279	0	0	30	157	0	504	0	0	561	100
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	13.0	13.0		13.0	13.0	13.0	16.0	16.0		7.0	23.0	23.0
Total Split (%)	21.7%	21.7%		21.7%	21.7%	21.7%	26.7%	26.7%		11.7%	38.3%	38.3%
Maximum Green (s)	8.0	8.0		8.0	8.0	8.0	11.0	11.0		3.0	18.0	18.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		1.28		0.11	0.39		0.43			0.56	0.09	
Control Delay (s/veh)		183.2		23.3	5.5		10.4			12.1	1.2	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		183.2		23.3	5.5		10.4			12.1	1.2	
Queue Length 50th (ft)		~129		10	0		53			26	0	
Queue Length 95th (ft)		#233		25	14		#304			#398	11	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		218		261	401		1183			1005	1107	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		1.28		0.11	0.39		0.43			0.56	0.09	

Intersection Summary

Cycle Length: 60

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	40%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

5 - 2031 Build Weekday Morning
 10: Main Street & Summer Street/Homer Avenue

02/25/2025

Actuated Cycle Length: 60

Offset: 58 (97%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

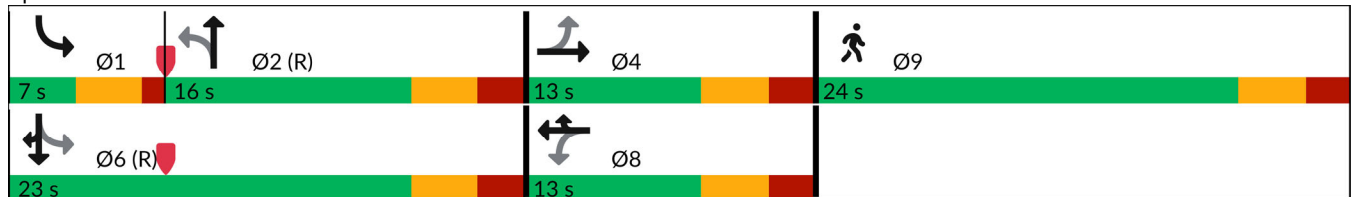
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Main Street & Summer Street/Homer Avenue



5 - 2031 Build Weekday Morning
 10: Main Street & Summer Street/Homer Avenue

02/25/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	↔
Traffic Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Future Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.98			1.00	0.85		1.00			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1704			1821	1546		1859			1852	1652
Flt Permitted		0.78			0.95	1.00		0.99			0.84	1.00
Satd. Flow (perm)		1378			1744	1546		1841			1563	1652
Peak-hour factor, PHF	0.83	0.83	0.83	0.77	0.77	0.77	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	184	48	47	5	25	157	10	488	6	108	453	100
RTOR Reduction (vph)	0	12	0	0	0	133	0	0	0	0	0	42
Lane Group Flow (vph)	0	267	0	0	30	24	0	504	0	0	561	58
Heavy Vehicles (%)	3%	0%	0%	0%	0%	1%	0%	2%	0%	0%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.0			8.0	8.0		33.6			33.6	33.6
Effective Green, g (s)		9.0			9.0	9.0		34.6			34.6	34.6
Actuated g/C Ratio		0.15			0.15	0.15		0.58			0.58	0.58
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		206			261	231		1061			901	952
v/s Ratio Prot						0.02						0.03
v/s Ratio Perm		c0.19			0.02			0.27			c0.36	
v/c Ratio		1.30			0.11	0.10		0.47			0.62	0.06
Uniform Delay, d1		25.5			22.1	22.0		7.4			8.4	5.6
Progression Factor		1.00			1.00	1.00		1.00			0.74	0.54
Incremental Delay, d2		164.5			0.2	0.2		1.5			1.2	0.1
Delay (s)		190.0			22.3	22.2		8.9			7.4	3.1
Level of Service		F			C	C		A			A	A
Approach Delay (s/veh)		190.0			22.2			8.9			6.8	
Approach LOS		F			C			A			A	

Intersection Summary

HCM 2000 Control Delay (s/veh)	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2031 Build Weekday Evening Peak-Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	31	20	286	28	35	601
Future Vol, veh/h	31	20	286	28	35	601
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	81	81	97	97	96	96
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	38	25	295	29	36	626

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1008	309	0	0	324
Stage 1	309	-	-	-	-
Stage 2	699	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	269	735	-	-	1247
Stage 1	749	-	-	-	-
Stage 2	497	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	257	735	-	-	1247
Mov Cap-2 Maneuver	257	-	-	-	-
Stage 1	749	-	-	-	-
Stage 2	474	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	17.76	0	0.44
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	345	99
HCM Lane V/C Ratio	-	-	0.183	0.029
HCM Ctrl Dly (s/v)	-	-	17.8	8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	12	28	53	302	603	29
Future Vol, veh/h	12	28	53	302	603	29
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	13	30	58	328	655	32

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1115	671	687	0	-	0
Stage 1	671	-	-	-	-	-
Stage 2	443	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	230	456	907	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	456	907	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	647	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	17.17	1.38	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	269	-	339	-	-
HCM Lane V/C Ratio	0.064	-	0.128	-	-
HCM Ctrl Dly (s/v)	9.2	0	17.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection						
Int Delay, s/veh	6.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	32	323	51	31	600
Future Vol, veh/h	30	32	323	51	31	600
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	25	25	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	120	128	340	54	33	632

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1064	367	0	0	394
Stage 1	367	-	-	-	-
Stage 2	697	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	249	683	-	-	1176
Stage 1	705	-	-	-	-
Stage 2	498	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	238	683	-	-	1176
Mov Cap-2 Maneuver	238	-	-	-	-
Stage 1	705	-	-	-	-
Stage 2	477	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	34.65	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	359	88
HCM Lane V/C Ratio	-	-	0.691	0.028
HCM Ctrl Dly (s/v)	-	-	34.6	8.1
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	4.9	0.1

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	19	1	0	355	630	0
Future Vol, veh/h	19	1	0	355	630	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	68	68	98	98	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	28	1	0	362	663	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1025	663	-	0	-	0
Stage 1	663	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	-	-
Pot Cap-1 Maneuver	263	465	0	-	-	0
Stage 1	516	-	0	-	-	0
Stage 2	709	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	263	465	-	-	-	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	20.06	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 268	-
HCM Lane V/C Ratio	- 0.11	-
HCM Ctrl Dly (s/v)	- 20.1	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 0.4	-

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	0	1	354	0	0	631
Future Vol, veh/h	0	1	354	0	0	631
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	1	385	0	0	686

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1071	385	0	0	385	0
Stage 1	385	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	245	663	-	-	1174	-
Stage 1	688	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	245	663	-	-	1174	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	500	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.44	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	663	1174
HCM Lane V/C Ratio	-	-	0.002	-
HCM Ctrl Dly (s/v)	-	-	10.4	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

6 - 2031 Build Weekday Evening
7: Main Street & Pleasant Street

02/25/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	121	534	635	234	435	195	
Future Volume (vph)	121	534	635	234	435	195	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507	
Flt Permitted	0.950		0.190				
Satd. Flow (perm)	1711	1583	354	1837	1773	1507	
Satd. Flow (RTOR)		357				139	
Adj. Flow (vph)	127	562	683	252	473	212	
Lane Group Flow (vph)	127	562	683	252	473	212	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	1.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	15.0		30.0	55.0	25.0	15.0	10.0
Total Split (%)	18.8%		37.5%	68.8%	31.3%	18.8%	13%
Maximum Green (s)	11.0		26.0	50.0	20.0	11.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							4
v/c Ratio	0.59	0.59	0.94	0.18	0.71	0.24	
Control Delay (s/veh)	44.3	6.9	39.7	1.7	31.4	4.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	44.3	6.9	39.7	1.7	31.4	4.9	
Queue Length 50th (ft)	60	54	114	8	193	15	
Queue Length 95th (ft)	114	89	#521	m27	#432	60	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	235	948	725	1375	662	906	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.54	0.59	0.94	0.18	0.71	0.23	

Intersection Summary

Cycle Length: 80

6 - 2031 Build Weekday Evening
 7: Main Street & Pleasant Street

02/25/2025

Actuated Cycle Length: 80

Offset: 17 (21%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 90

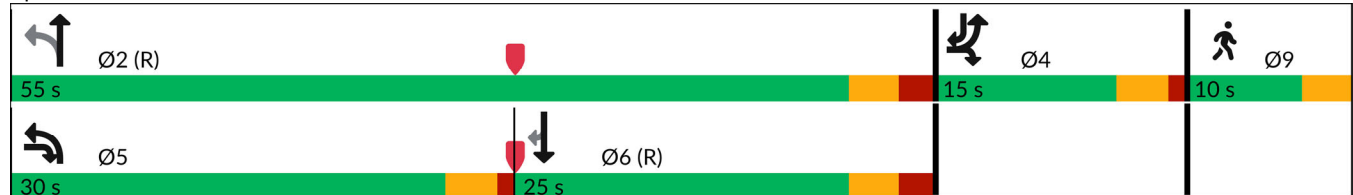
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Main Street & Pleasant Street



6 - 2031 Build Weekday Evening
7: Main Street & Pleasant Street

02/25/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	121	534	635	234	435	195
Future Volume (vph)	121	534	635	234	435	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507
Flt Permitted	0.95	1.00	0.19	1.00	1.00	1.00
Satd. Flow (perm)	1711	1583	354	1837	1773	1507
Peak-hour factor, PHF	0.95	0.95	0.93	0.93	0.92	0.92
Adj. Flow (vph)	127	562	683	252	473	212
RTOR Reduction (vph)	0	196	0	0	0	75
Lane Group Flow (vph)	127	366	683	252	473	137
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	10.1	36.1	56.5	56.5	26.5	36.6
Effective Green, g (s)	10.1	36.1	56.5	57.5	27.5	36.6
Actuated g/C Ratio	0.13	0.45	0.71	0.72	0.34	0.46
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	216	714	710	1320	609	689
v/s Ratio Prot	c0.07	0.23	c0.31	0.14	0.27	0.03
v/s Ratio Perm			c0.37			0.07
v/c Ratio	0.59	0.51	0.96	0.19	0.78	0.20
Uniform Delay, d1	33.0	15.7	18.1	3.7	23.5	12.9
Progression Factor	1.00	1.00	1.21	0.39	1.00	1.00
Incremental Delay, d2	4.0	0.6	21.7	0.3	9.4	0.1
Delay (s)	37.0	16.3	43.7	1.7	32.9	13.1
Level of Service	D	B	D	A	C	B
Approach Delay (s/veh)	20.1			32.4	26.8	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	8	861	24	0	969
Future Vol, veh/h	0	8	861	24	0	969
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	34	34	96	96	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	24	897	25	0	1031















Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1940	909	0	0	922	0
Stage 1	909	-	-	-	-	-
Stage 2	1031	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	73	336	-	-	749	-
Stage 1	396	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	336	-	-	749	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	396	-	-	-	-	-
Stage 2	347	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.53	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	749
HCM Lane V/C Ratio	-	-	0.07	-
HCM Ctrl Dly (s/v)	-	-	16.5	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.2	0

6 - 2031 Build Weekday Evening
 9: Main Street & Front Street

02/25/2025

								Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (vph)	116	289	596	80	195	774		
Future Volume (vph)	116	289	596	80	195	774		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		0.850		0.850				
Flt Protected	0.950				0.950			
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818		
Flt Permitted	0.950				0.210			
Satd. Flow (perm)	1745	1615	1818	1561	395	1818		
Satd. Flow (RTOR)		318		60				
Adj. Flow (vph)	127	318	655	88	205	815		
Lane Group Flow (vph)	127	318	655	88	205	815		
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA		
Protected Phases	8	8 1	2	8	1	6	9	
Permitted Phases				2	6			
Detector Phase	8	8 1	2	8	1	6		
Switch Phase								
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0	
Total Split (s)	15.0		24.0	15.0	14.0	38.0	27.0	
Total Split (%)	18.8%		30.0%	18.8%	17.5%	47.5%	34%	
Maximum Green (s)	10.0		19.0	10.0	9.0	33.0	24.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0		
Lead/Lag			Lag		Lead			
Lead-Lag Optimize?			Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None		C-Min	None	None	C-Min	None	
Walk Time (s)							7.0	
Flash Don't Walk (s)							17.0	
Pedestrian Calls (#/hr)							2	
v/c Ratio	0.57	0.48	0.66	0.08	0.47	0.64		
Control Delay (s/veh)	43.3	4.6	21.2	2.6	11.6	17.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	43.3	4.6	21.2	2.6	11.6	17.2		
Queue Length 50th (ft)	60	0	128	1	36	273		
Queue Length 95th (ft)	114	29	#643	m14	m133	#687		
Internal Link Dist (ft)	1068		403			431		
Turn Bay Length (ft)		55		115	110			
Base Capacity (vph)	239	658	985	1155	452	1281		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.53	0.48	0.66	0.08	0.45	0.64		
Intersection Summary								
Cycle Length: 80								

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 90

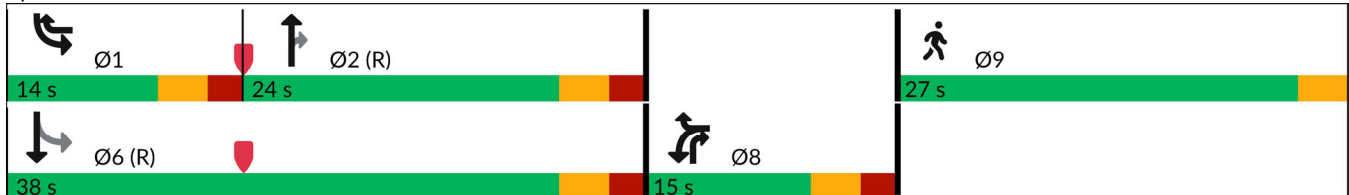
Control Type: Actuated-Coordinated













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

Queue shown is maximum after two cycles.

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

Splits and Phases: 9: Main Street & Front Street



						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	289	596	80	195	774
Future Volume (vph)	116	289	596	80	195	774
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.21	1.00
Satd. Flow (perm)	1745	1615	1818	1561	395	1818
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95
Adj. Flow (vph)	127	318	655	88	205	815
RTOR Reduction (vph)	0	250	0	22	0	0
Lane Group Flow (vph)	127	68	655	66	205	815
Heavy Vehicles (%)	0%	0%	1%	0%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	9.2	17.2	40.0	49.2	53.0	53.0
Effective Green, g (s)	10.2	17.2	41.0	51.2	54.0	54.0
Actuated g/C Ratio	0.13	0.22	0.51	0.64	0.68	0.68
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	222	347	931	1077	423	1227
v/s Ratio Prot	c0.07	0.04	0.36	0.01	0.05	c0.45
v/s Ratio Perm				0.03	0.27	
v/c Ratio	0.57	0.20	0.70	0.06	0.48	0.66
Uniform Delay, d1	32.8	25.7	14.9	5.4	9.0	7.7
Progression Factor	1.00	1.00	0.92	0.66	1.30	1.57
Incremental Delay, d2	3.5	0.3	4.1	0.0	0.7	2.2
Delay (s)	36.4	26.0	17.8	3.6	12.3	14.2
Level of Service	D	C	B	A	B	B
Approach Delay (s/veh)	29.0		16.1			13.8
Approach LOS	C		B			B
Intersection Summary						
HCM 2000 Control Delay (s/veh)			17.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	17.0
Intersection Capacity Utilization			58.6%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

6 - 2031 Build Weekday Evening
 10: Main Street & Summer Street/Homer Avenue

02/25/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	↔
Traffic Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Future Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971				0.850		0.995				0.850
Flt Protected		0.971			0.992			0.999			0.989	
Satd. Flow (prot)	0	1719	0	0	1822	1561	0	1854	0	0	1846	1652
Flt Permitted		0.792			0.960			0.984			0.795	
Satd. Flow (perm)	0	1402	0	0	1763	1561	0	1826	0	0	1484	1652
Satd. Flow (RTOR)		15				162		2				95
Adj. Flow (vph)	99	32	36	7	38	162	11	482	19	161	584	212
Lane Group Flow (vph)	0	167	0	0	45	162	0	512	0	0	745	212
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	20.0	20.0		20.0	20.0	20.0	26.0	26.0		10.0	36.0	36.0
Total Split (%)	25.0%	25.0%		25.0%	25.0%	25.0%	32.5%	32.5%		12.5%	45.0%	45.0%
Maximum Green (s)	15.0	15.0		15.0	15.0	15.0	21.0	21.0		6.0	31.0	31.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.67		0.15	0.41		0.42			0.75	0.19	
Control Delay (s/veh)		41.0		28.2	8.2		9.9			15.0	4.4	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		41.0		28.2	8.2		9.9			15.0	4.4	
Queue Length 50th (ft)		70		19	0		83			83	0	
Queue Length 95th (ft)		132		43	41		304			#645	m52	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		292		352	441		1231			1000	1144	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		0.57		0.13	0.37		0.42			0.75	0.19	
Intersection Summary												
Cycle Length: 80												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	30%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

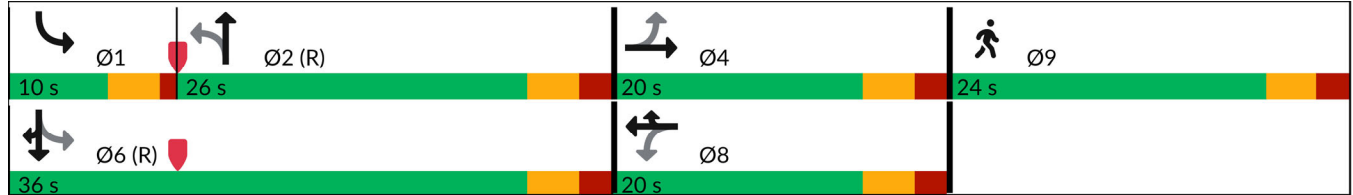
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Main Street & Summer Street/Homer Avenue



6 - 2031 Build Weekday Evening
 10: Main Street & Summer Street/Homer Avenue

02/25/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Future Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.97			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1719			1822	1561		1854			1847	1652
Flt Permitted		0.79			0.96	1.00		0.98			0.80	1.00
Satd. Flow (perm)		1402			1763	1561		1827			1485	1652
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	99	32	36	7	38	162	11	482	19	161	584	212
RTOR Reduction (vph)	0	12	0	0	0	134	0	1	0	0	0	36
Lane Group Flow (vph)	0	155	0	0	45	28	0	511	0	0	745	176
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	2%	0%	1%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.7			12.7	12.7		48.9			48.9	48.9
Effective Green, g (s)		13.7			13.7	13.7		49.9			49.9	49.9
Actuated g/C Ratio		0.17			0.17	0.17		0.62			0.62	0.62
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		240			301	267		1139			926	1030
v/s Ratio Prot						0.02						0.11
v/s Ratio Perm		c0.11			0.03			0.28			c0.50	
v/c Ratio		0.64			0.15	0.10		0.45			0.80	0.17
Uniform Delay, d1		30.9			28.2	28.0		7.9			11.4	6.3
Progression Factor		1.00			1.00	1.00		1.00			0.65	0.86
Incremental Delay, d2		5.8			0.2	0.2		1.3			4.1	0.3
Delay (s)		36.7			28.4	28.1		9.1			11.5	5.7
Level of Service		D			C	C		A			B	A
Approach Delay (s/veh)		36.7			28.2			9.1			10.2	
Approach LOS		D			C			A			B	

Intersection Summary		
HCM 2000 Control Delay (s/veh)	14.4	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.78	
Actuated Cycle Length (s)	80.0	Sum of lost time (s) 17.0
Intersection Capacity Utilization	87.3%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group

2031 Build Weekday Morning Peak-Hour (Mitigated)

7 - 2031 Build Weekday Morning (Mitigated)

7: Main Street & Pleasant Street

02/20/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	132	640	569	257	218	123	
Future Volume (vph)	132	640	569	257	218	123	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478	
Flt Permitted	0.950		0.455				
Satd. Flow (perm)	1728	1568	848	1818	1756	1478	
Satd. Flow (RTOR)		506				132	
Adj. Flow (vph)	145	703	632	286	234	132	
Lane Group Flow (vph)	145	703	632	286	234	132	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	5.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	21.0		30.0	49.0	19.0	21.0	10.0
Total Split (%)	26.3%		37.5%	61.3%	23.8%	26.3%	13%
Maximum Green (s)	17.0		26.0	44.0	14.0	17.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.50	0.69	0.74	0.22	0.36	0.14	
Control Delay (s/veh)	35.3	6.3	10.2	3.3	24.8	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	35.3	6.3	10.2	3.3	24.8	2.7	
Queue Length 50th (ft)	65	46	30	12	88	0	
Queue Length 95th (ft)	116	61	#350	69	#210	29	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	367	1067	898	1284	657	989	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.40	0.66	0.70	0.22	0.36	0.13	

Intersection Summary

Cycle Length: 80

7 - 2031 Build Weekday Morning (Mitigated)

7: Main Street & Pleasant Street

02/20/2025

Actuated Cycle Length: 80

Offset: 26 (33%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

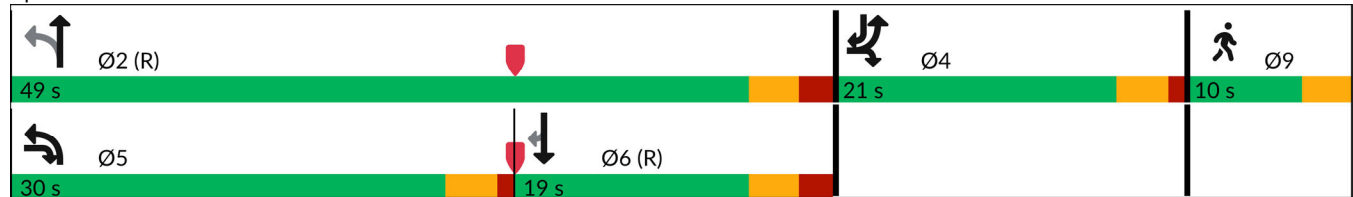
Natural Cycle: 60

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 7: Main Street & Pleasant Street



7 - 2031 Build Weekday Morning (Mitigated)

7: Main Street & Pleasant Street

02/20/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	132	640	569	257	218	123
Future Volume (vph)	132	640	569	257	218	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1728	1568	1770	1818	1756	1478
Flt Permitted	0.95	1.00	0.46	1.00	1.00	1.00
Satd. Flow (perm)	1728	1568	848	1818	1756	1478
Peak-hour factor, PHF	0.91	0.91	0.90	0.90	0.93	0.93
Adj. Flow (vph)	145	703	632	286	234	132
RTOR Reduction (vph)	0	278	0	0	0	66
Lane Group Flow (vph)	145	425	632	286	234	66
Heavy Vehicles (%)	1%	3%	2%	1%	1%	2%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	13.5	36.1	53.1	53.1	26.5	40.0
Effective Green, g (s)	13.5	36.1	53.1	54.1	27.5	40.0
Actuated g/C Ratio	0.17	0.45	0.66	0.68	0.34	0.50
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	291	707	823	1229	603	739
v/s Ratio Prot	0.08	c0.27	c0.22	0.16	0.13	0.02
v/s Ratio Perm			c0.29			0.03
v/c Ratio	0.50	0.60	0.77	0.23	0.39	0.09
Uniform Delay, d1	30.2	16.5	7.9	5.0	19.9	10.5
Progression Factor	1.00	1.00	0.60	0.54	1.00	1.00
Incremental Delay, d2	1.3	1.4	3.7	0.4	1.9	0.1
Delay (s)	31.5	18.0	8.5	3.1	21.8	10.5
Level of Service	C	B	A	A	C	B
Approach Delay (s/veh)	20.3			6.8	17.7	
Approach LOS	C			A	B	

Intersection Summary













HCM 2000 Control Delay (s/veh)	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

7 - 2031 Build Weekday Morning (Mitigated)

9: Main Street & Front Street

02/20/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	76	212	615	132	306	552	
Future Volume (vph)	76	212	615	132	306	552	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818	
Flt Permitted	0.950				0.279		
Satd. Flow (perm)	1711	1583	1818	1531	525	1818	
Satd. Flow (RTOR)		272		101			
Adj. Flow (vph)	97	272	699	150	336	607	
Lane Group Flow (vph)	97	272	699	150	336	607	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	11.0		30.0	11.0	12.0	42.0	27.0
Total Split (%)	13.8%		37.5%	13.8%	15.0%	52.5%	34%
Maximum Green (s)	6.0		25.0	6.0	7.0	37.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.65	0.48	0.58	0.12	0.61	0.41	
Control Delay (s/veh)	57.4	6.8	9.6	0.9	6.9	3.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	57.4	6.8	9.6	0.9	6.9	3.1	
Queue Length 50th (ft)	48	0	212	7	48	108	
Queue Length 95th (ft)	#91	34	21	m0	31	57	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	149	566	1204	1245	552	1477	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.65	0.48	0.58	0.12	0.61	0.41	
Intersection Summary							
Cycle Length: 80							

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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













Splits and Phases: 9: Main Street & Front Street



7 - 2031 Build Weekday Morning (Mitigated)

9: Main Street & Front Street

02/20/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	76	212	615	132	306	552
Future Volume (vph)	76	212	615	132	306	552
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1583	1818	1531	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.28	1.00
Satd. Flow (perm)	1711	1583	1818	1531	525	1818
Peak-hour factor, PHF	0.78	0.78	0.88	0.88	0.91	0.91
Adj. Flow (vph)	97	272	699	150	336	607
RTOR Reduction (vph)	0	211	0	25	0	0
Lane Group Flow (vph)	97	61	699	125	336	607
Heavy Vehicles (%)	2%	2%	1%	2%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	6.0	18.0	52.0	58.0	64.0	64.0
Effective Green, g (s)	7.0	18.0	53.0	60.0	65.0	65.0
Actuated g/C Ratio	0.09	0.23	0.66	0.75	0.81	0.81
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	149	356	1204	1224	552	1477
v/s Ratio Prot	c0.06	0.04	0.38	0.01	c0.06	0.33
v/s Ratio Perm				0.07	c0.43	
v/c Ratio	0.65	0.17	0.58	0.10	0.61	0.41
Uniform Delay, d1	35.3	25.0	7.4	2.7	5.1	2.1
Progression Factor	1.00	1.00	1.01	0.99	1.55	1.09
Incremental Delay, d2	9.8	0.2	1.8	0.0	1.6	0.7
Delay (s)	45.1	25.2	9.3	2.7	9.5	3.0
Level of Service	D	C	A	A	A	A
Approach Delay (s/veh)	30.4		8.1			5.3
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

7 - 2031 Build Weekday Morning (Mitigated)
 10: Main Street & Summer Street/Homer Avenue

02/20/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	↕
Traffic Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Future Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977				0.850		0.998				0.850
Flt Protected		0.968			0.992			0.999			0.990	
Satd. Flow (prot)	0	1703	0	0	1822	1546	0	1858	0	0	1851	1652
Flt Permitted		0.783			0.952			0.989			0.832	
Satd. Flow (perm)	0	1378	0	0	1749	1546	0	1840	0	0	1556	1652
Satd. Flow (RTOR)		12				157		1				95
Adj. Flow (vph)	184	48	47	5	25	157	10	488	6	108	453	100
Lane Group Flow (vph)	0	279	0	0	30	157	0	504	0	0	561	100
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	24.0	24.0		24.0	24.0	24.0	27.0	27.0		7.0	34.0	34.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	30.0%	33.8%	33.8%		8.8%	42.5%	42.5%
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	22.0	22.0		3.0	29.0	29.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.84		0.07	0.33		0.45			0.59	0.10	
Control Delay (s/veh)		51.2		23.6	6.4		12.8			14.3	2.7	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		51.2		23.6	6.4		12.8			14.3	2.7	
Queue Length 50th (ft)		125		11	0		106			102	1	
Queue Length 95th (ft)		#215		27	28		327			#460	m15	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		353		437	504		1123			950	1045	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		0.79		0.07	0.31		0.45			0.59	0.10	
Intersection Summary												
Cycle Length: 80												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	28%
Maximum Green (s)	17.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

7 - 2031 Build Weekday Morning (Mitigated)
 10: Main Street & Summer Street/Homer Avenue

02/20/2025

Actuated Cycle Length: 80

Offset: 46 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

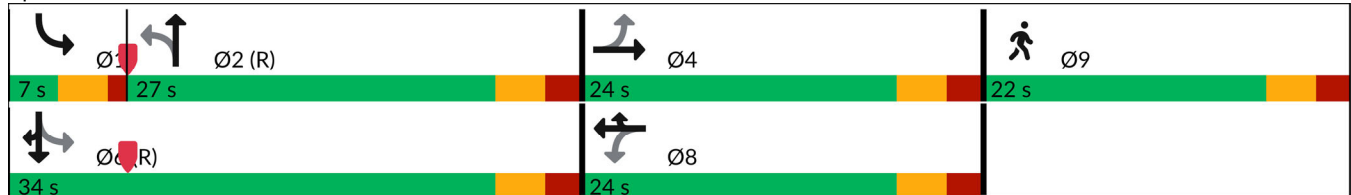
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Main Street & Summer Street/Homer Avenue



7 - 2031 Build Weekday Morning (Mitigated)
 10: Main Street & Summer Street/Homer Avenue

02/20/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕			↕	↗
Traffic Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Future Volume (vph)	153	40	39	4	19	121	10	473	6	103	430	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.98			1.00	0.85		1.00			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1704			1821	1546		1859			1852	1652
Flt Permitted		0.78			0.95	1.00		0.99			0.83	1.00
Satd. Flow (perm)		1378			1748	1546		1841			1556	1652
Peak-hour factor, PHF	0.83	0.83	0.83	0.77	0.77	0.77	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	184	48	47	5	25	157	10	488	6	108	453	100
RTOR Reduction (vph)	0	9	0	0	0	120	0	0	0	0	0	42
Lane Group Flow (vph)	0	270	0	0	30	37	0	504	0	0	561	58
Heavy Vehicles (%)	3%	0%	0%	0%	0%	1%	0%	2%	0%	0%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.8			17.8	17.8		43.8			43.8	43.8
Effective Green, g (s)		18.8			18.8	18.8		44.8			44.8	44.8
Actuated g/C Ratio		0.24			0.24	0.24		0.56			0.56	0.56
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		323			410	363		1030			871	925
v/s Ratio Prot						0.02						0.04
v/s Ratio Perm		c0.20			0.02			0.27			c0.36	
v/c Ratio		0.84			0.07	0.10		0.49			0.64	0.06
Uniform Delay, d1		29.1			23.8	24.0		10.7			12.1	8.0
Progression Factor		1.00			1.00	1.00		1.00			0.77	0.72
Incremental Delay, d2		16.8			0.1	0.1		1.7			1.5	0.1
Delay (s)		45.9			23.9	24.1		12.3			10.8	5.9
Level of Service		D			C	C		B			B	A
Approach Delay (s/veh)		45.9			24.1			12.3			10.1	
Approach LOS		D			C			B			B	

Intersection Summary

HCM 2000 Control Delay (s/veh)	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2031 Build Weekday Evening Peak-Hour (Mitigated)

8 - 2031 Build Weekday Evening (Mitigated)

7: Main Street & Pleasant Street

02/20/2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	121	534	635	234	435	195	
Future Volume (vph)	121	534	635	234	435	195	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507	
Flt Permitted	0.950		0.201				
Satd. Flow (perm)	1711	1583	374	1837	1773	1507	
Satd. Flow (RTOR)		357				139	
Adj. Flow (vph)	127	562	683	252	473	212	
Lane Group Flow (vph)	127	562	683	252	473	212	
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	4 5	5	2	6	4	9
Permitted Phases			2			6	
Detector Phase	4	4 5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	4.0		6.0	5.0	6.0	4.0	1.0
Minimum Split (s)	8.0		10.0	10.0	11.0	8.0	10.0
Total Split (s)	14.0		30.0	56.0	26.0	14.0	10.0
Total Split (%)	17.5%		37.5%	70.0%	32.5%	17.5%	13%
Maximum Green (s)	10.0		26.0	51.0	21.0	10.0	7.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0		1.0	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0		0.0	-1.0	-1.0	0.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Min	C-Min	None	None
Walk Time (s)							6.0
Flash Don't Walk (s)							1.0
Pedestrian Calls (#/hr)							4
v/c Ratio	0.64	0.59	0.93	0.18	0.70	0.24	
Control Delay (s/veh)	48.8	7.3	28.4	3.0	29.9	4.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	48.8	7.3	28.4	3.0	29.9	4.9	
Queue Length 50th (ft)	61	56	227	43	188	15	
Queue Length 95th (ft)	#126	93	#464	20	#421	60	
Internal Link Dist (ft)	549			58	64		
Turn Bay Length (ft)		70	60			70	
Base Capacity (vph)	213	945	737	1391	678	901	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.60	0.59	0.93	0.18	0.70	0.24	

Intersection Summary

Cycle Length: 80

8 - 2031 Build Weekday Evening (Mitigated)

7: Main Street & Pleasant Street

02/20/2025

Actuated Cycle Length: 80

Offset: 44 (55%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

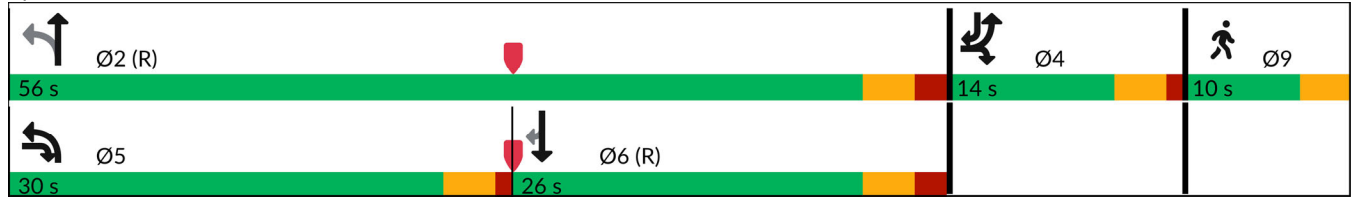
Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 7: Main Street & Pleasant Street



8 - 2031 Build Weekday Evening (Mitigated)

7: Main Street & Pleasant Street

02/20/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	121	534	635	234	435	195
Future Volume (vph)	121	534	635	234	435	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	10	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1711	1583	1770	1837	1773	1507
Flt Permitted	0.95	1.00	0.20	1.00	1.00	1.00
Satd. Flow (perm)	1711	1583	374	1837	1773	1507
Peak-hour factor, PHF	0.95	0.95	0.93	0.93	0.92	0.92
Adj. Flow (vph)	127	562	683	252	473	212
RTOR Reduction (vph)	0	199	0	0	0	75
Lane Group Flow (vph)	127	363	683	252	473	137
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Actuated Green, G (s)	9.4	35.4	57.2	57.2	27.2	36.6
Effective Green, g (s)	9.4	35.4	57.2	58.2	28.2	36.6
Actuated g/C Ratio	0.12	0.44	0.72	0.73	0.35	0.46
Clearance Time (s)	4.0		4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	201	700	721	1336	624	689
v/s Ratio Prot	c0.07	0.23	c0.31	0.14	0.27	0.02
v/s Ratio Perm			c0.37			0.07
v/c Ratio	0.63	0.52	0.95	0.19	0.76	0.20
Uniform Delay, d1	33.7	16.1	17.3	3.4	22.9	12.9
Progression Factor	1.00	1.00	0.56	0.79	1.00	1.00
Incremental Delay, d2	6.3	0.7	18.8	0.3	8.4	0.1
Delay (s)	40.0	16.8	28.6	3.0	31.3	13.1
Level of Service	D	B	C	A	C	B
Approach Delay (s/veh)	21.1			21.7	25.6	
Approach LOS	C			C	C	













Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

8 - 2031 Build Weekday Evening (Mitigated)

9: Main Street & Front Street

02/20/2025

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	116	289	596	80	195	774	
Future Volume (vph)	116	289	596	80	195	774	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818	
Flt Permitted	0.950				0.249		
Satd. Flow (perm)	1745	1615	1818	1561	468	1818	
Satd. Flow (RTOR)		318		66			
Adj. Flow (vph)	127	318	655	88	205	815	
Lane Group Flow (vph)	127	318	655	88	205	815	
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8 1	2	8	1	6	9
Permitted Phases				2	6		
Detector Phase	8	8 1	2	8	1	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	27.0
Total Split (s)	13.0		30.0	13.0	10.0	40.0	27.0
Total Split (%)	16.3%		37.5%	16.3%	12.5%	50.0%	34%
Maximum Green (s)	8.0		25.0	8.0	5.0	35.0	24.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		C-Min	None	None	C-Min	None
Walk Time (s)							7.0
Flash Don't Walk (s)							17.0
Pedestrian Calls (#/hr)							2
v/c Ratio	0.66	0.54	0.60	0.07	0.47	0.62	
Control Delay (s/veh)	52.2	6.0	17.2	2.5	9.3	10.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	52.2	6.0	17.2	2.5	9.3	10.3	
Queue Length 50th (ft)	62	0	128	1	9	45	
Queue Length 95th (ft)	#135	32	#568	m18	m#95	#670	
Internal Link Dist (ft)	1068		403			431	
Turn Bay Length (ft)		55		115	110		
Base Capacity (vph)	196	577	1085	1201	436	1313	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.65	0.55	0.60	0.07	0.47	0.62	
Intersection Summary							
Cycle Length: 80							

8 - 2031 Build Weekday Evening (Mitigated)

9: Main Street & Front Street

02/20/2025

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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













Splits and Phases: 9: Main Street & Front Street



8 - 2031 Build Weekday Evening (Mitigated)

9: Main Street & Front Street

02/20/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	289	596	80	195	774
Future Volume (vph)	116	289	596	80	195	774
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	11	12	11
Total Lost time (s)	4.0	5.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745	1615	1818	1561	1787	1818
Flt Permitted	0.95	1.00	1.00	1.00	0.25	1.00
Satd. Flow (perm)	1745	1615	1818	1561	469	1818
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.95	0.95
Adj. Flow (vph)	127	318	655	88	205	815
RTOR Reduction (vph)	0	267	0	21	0	0
Lane Group Flow (vph)	127	51	655	67	205	815
Heavy Vehicles (%)	0%	0%	1%	0%	1%	1%
Turn Type	Prot	pt+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	8 1	2	8	1	6
Permitted Phases				2	6	
Actuated Green, G (s)	7.8	12.8	44.4	52.2	54.4	54.4
Effective Green, g (s)	8.8	12.8	45.4	54.2	55.4	55.4
Actuated g/C Ratio	0.11	0.16	0.57	0.68	0.69	0.69
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	258	1031	1135	423	1258
v/s Ratio Prot	c0.07	0.03	0.36	0.01	0.04	c0.45
v/s Ratio Perm				0.04	0.30	
v/c Ratio	0.66	0.20	0.64	0.06	0.48	0.65
Uniform Delay, d1	34.2	29.1	11.7	4.3	7.6	6.9
Progression Factor	1.00	1.00	0.97	0.82	0.83	0.75
Incremental Delay, d2	8.4	0.4	2.8	0.0	0.7	2.0
Delay (s)	42.6	29.5	14.1	3.6	7.0	7.1
Level of Service	D	C	B	A	A	A
Approach Delay (s/veh)	33.3		12.9			7.1
Approach LOS	C		B			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			14.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	17.0
Intersection Capacity Utilization			58.6%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

8 - 2031 Build Weekday Evening (Mitigated)
 10: Main Street & Summer Street/Homer Avenue

02/20/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔			↔	↔
Traffic Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Future Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971				0.850		0.995				0.850
Flt Protected		0.971			0.992			0.999			0.989	
Satd. Flow (prot)	0	1719	0	0	1822	1561	0	1854	0	0	1846	1652
Flt Permitted		0.792			0.960			0.984			0.795	
Satd. Flow (perm)	0	1402	0	0	1763	1561	0	1826	0	0	1484	1652
Satd. Flow (RTOR)		15				162		2				95
Adj. Flow (vph)	99	32	36	7	38	162	11	482	19	161	584	212
Lane Group Flow (vph)	0	167	0	0	45	162	0	512	0	0	745	212
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	10.0	10.0		3.0	10.0	10.0
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	15.0	15.0		7.0	15.0	15.0
Total Split (s)	20.0	20.0		20.0	20.0	20.0	26.0	26.0		10.0	36.0	36.0
Total Split (%)	25.0%	25.0%		25.0%	25.0%	25.0%	32.5%	32.5%		12.5%	45.0%	45.0%
Maximum Green (s)	15.0	15.0		15.0	15.0	15.0	21.0	21.0		6.0	31.0	31.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0	-1.0		-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	C-Min
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.67		0.15	0.41		0.42			0.75	0.19	
Control Delay (s/veh)		41.0		28.2	8.2		9.9			15.0	3.1	
Queue Delay		0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay (s/veh)		41.0		28.2	8.2		9.9			15.0	3.1	
Queue Length 50th (ft)		70		19	0		83			126	0	
Queue Length 95th (ft)		132		43	41		304			#646	m21	
Internal Link Dist (ft)		399		672			569			403		
Turn Bay Length (ft)						65						65
Base Capacity (vph)		292		352	441		1231			1000	1144	
Starvation Cap Reductn		0		0	0		0			0	0	
Spillback Cap Reductn		0		0	0		0			0	0	
Storage Cap Reductn		0		0	0		0			0	0	
Reduced v/c Ratio		0.57		0.13	0.37		0.42			0.75	0.19	
Intersection Summary												
Cycle Length: 80												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	24.0
Total Split (%)	30%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	10.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

8 - 2031 Build Weekday Evening (Mitigated)
 10: Main Street & Summer Street/Homer Avenue

02/20/2025

Actuated Cycle Length: 80

Offset: 11 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Main Street & Summer Street/Homer Avenue



8 - 2031 Build Weekday Evening (Mitigated)
 10: Main Street & Summer Street/Homer Avenue

02/20/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	↕
Traffic Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Future Volume (vph)	90	29	33	6	32	138	10	448	18	150	543	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	11	12	12	12	12	12	13
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.97			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.97			0.99	1.00		1.00			0.99	1.00
Satd. Flow (prot)		1719			1822	1561		1854			1847	1652
Flt Permitted		0.79			0.96	1.00		0.98			0.80	1.00
Satd. Flow (perm)		1402			1763	1561		1827			1485	1652
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	99	32	36	7	38	162	11	482	19	161	584	212
RTOR Reduction (vph)	0	12	0	0	0	134	0	1	0	0	0	36
Lane Group Flow (vph)	0	155	0	0	45	28	0	511	0	0	745	176
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	2%	0%	1%	2%	1%
Turn Type	Perm	NA		Perm	NA	Prot	Perm	NA		pm+pt	NA	Prot
Protected Phases		4			8	8		2		1	6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.7			12.7	12.7		48.9			48.9	48.9
Effective Green, g (s)		13.7			13.7	13.7		49.9			49.9	49.9
Actuated g/C Ratio		0.17			0.17	0.17		0.62			0.62	0.62
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		240			301	267		1139			926	1030
v/s Ratio Prot						0.02						0.11
v/s Ratio Perm		c0.11			0.03			0.28			c0.50	
v/c Ratio		0.64			0.15	0.10		0.45			0.80	0.17
Uniform Delay, d1		30.9			28.2	28.0		7.9			11.4	6.3
Progression Factor		1.00			1.00	1.00		1.00			0.65	0.59
Incremental Delay, d2		5.8			0.2	0.2		1.3			4.1	0.3
Delay (s)		36.7			28.4	28.1		9.1			11.5	4.0
Level of Service		D			C	C		A			B	A
Approach Delay (s/veh)		36.7			28.2			9.1			9.9	
Approach LOS		D			C			A			A	

Intersection Summary

HCM 2000 Control Delay (s/veh)	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

PROJECT PARKING DEMAND CALCULATIONS

The Sanctuary at Ashland Mills (9837)

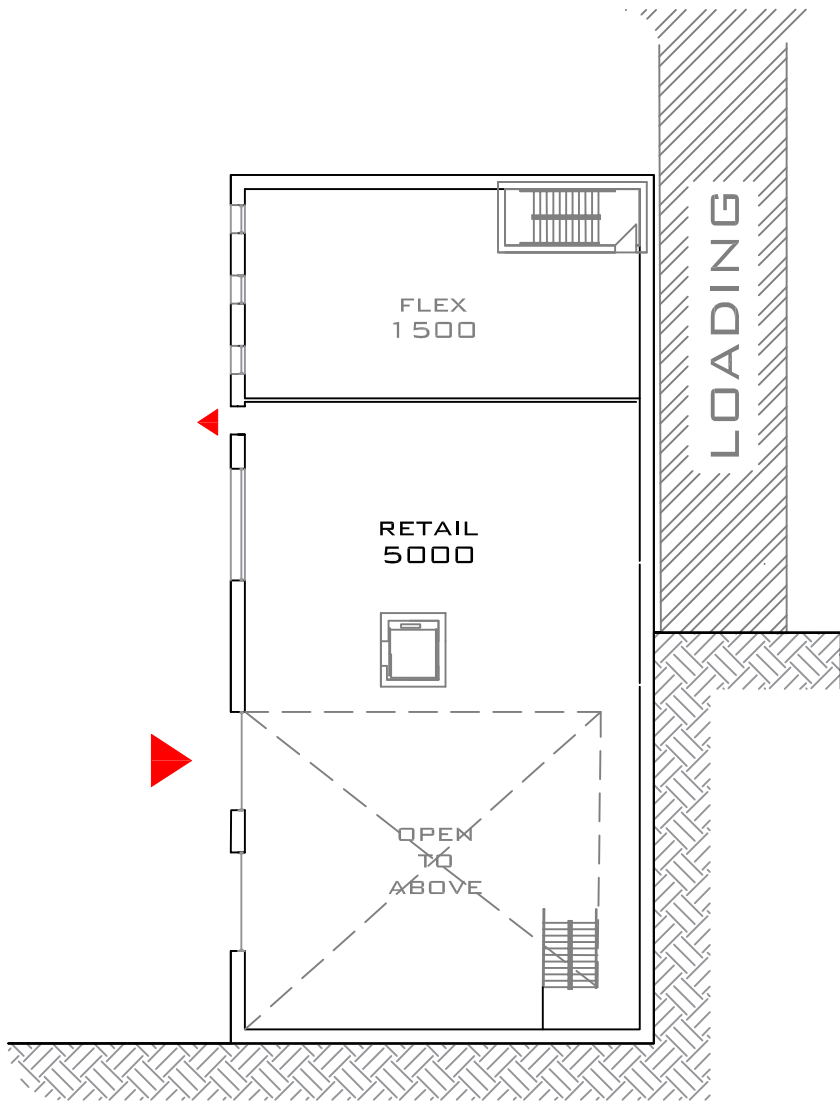
Shared Parking Analysis

24-Feb-25

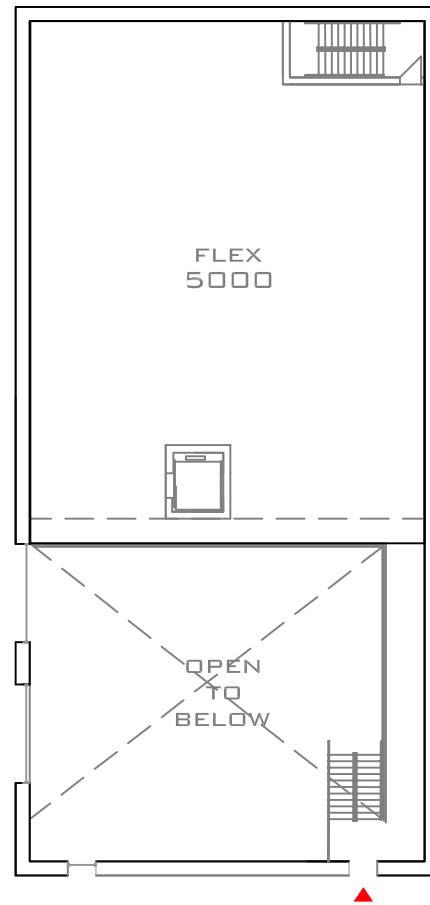
Land Use	Size	Variable	Ave. Peak Demand	Peak Demand
<i>Residential</i>	250	units	1.23	308
<i>Retail</i>	6,500	sf	2.79	19
<i>Restaurant</i>	5,000	sf	8.34	42

Hour Beginning	Residential		Retail		Restaurant		Total
	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	
12:00 - 4:00 AM	100%	308	0%	0	0%	0	308
5:00	96%	296	0%	0	0%	0	296
6:00	86%	265	0%	0	0%	0	265
7:00	77%	237	0%	0	0%	0	237
8:00	66%	203	19%	4	64%	27	234
9:00	60%	185	33%	7	74%	31	223
10:00	57%	176	47%	9	82%	35	220
11:00	55%	170	55%	11	89%	38	219
12:00	52%	160	89%	17	100%	42	219
1:00	50%	154	100%	19	86%	36	209
2:00	52%	160	73%	14	57%	24	198
3:00	51%	157	73%	14	44%	19	190
4:00	57%	176	66%	13	39%	17	206
5:00	62%	191	70%	14	62%	26	231
6:00	65%	200	75%	15	73%	31	246
7:00	68%	210	70%	14	95%	40	264
8:00	75%	231	54%	11	76%	32	274
9:00	82%	253	48%	10	0%	0	263
10:00	87%	268	0%	0	0%	0	268
11:00	91%	280	0%	0	0%	0	280

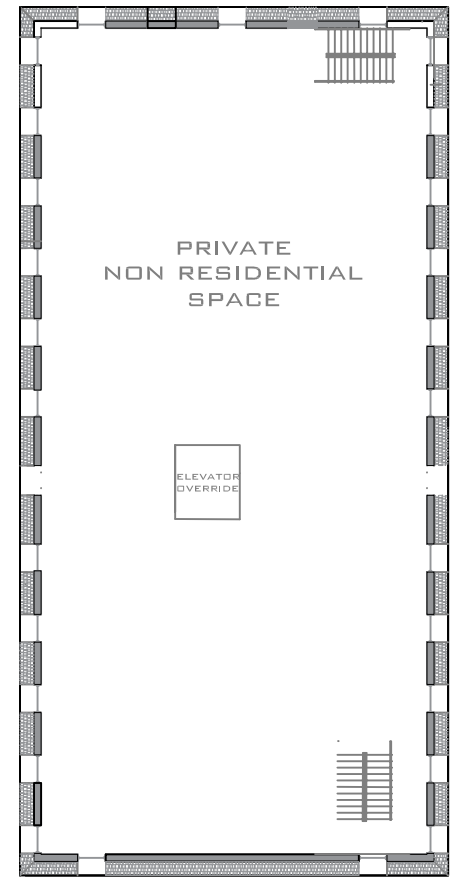
EMBARC PRELIMINARY RETAIL/COMMERCIAL SPACE SCHEMATIC



BASEMENT



FIRST



SECOND

**PRELIMINARY SCHEMATIC RETAIL/COMMERCIAL SPACE
FEBRUARY 26, 2025**

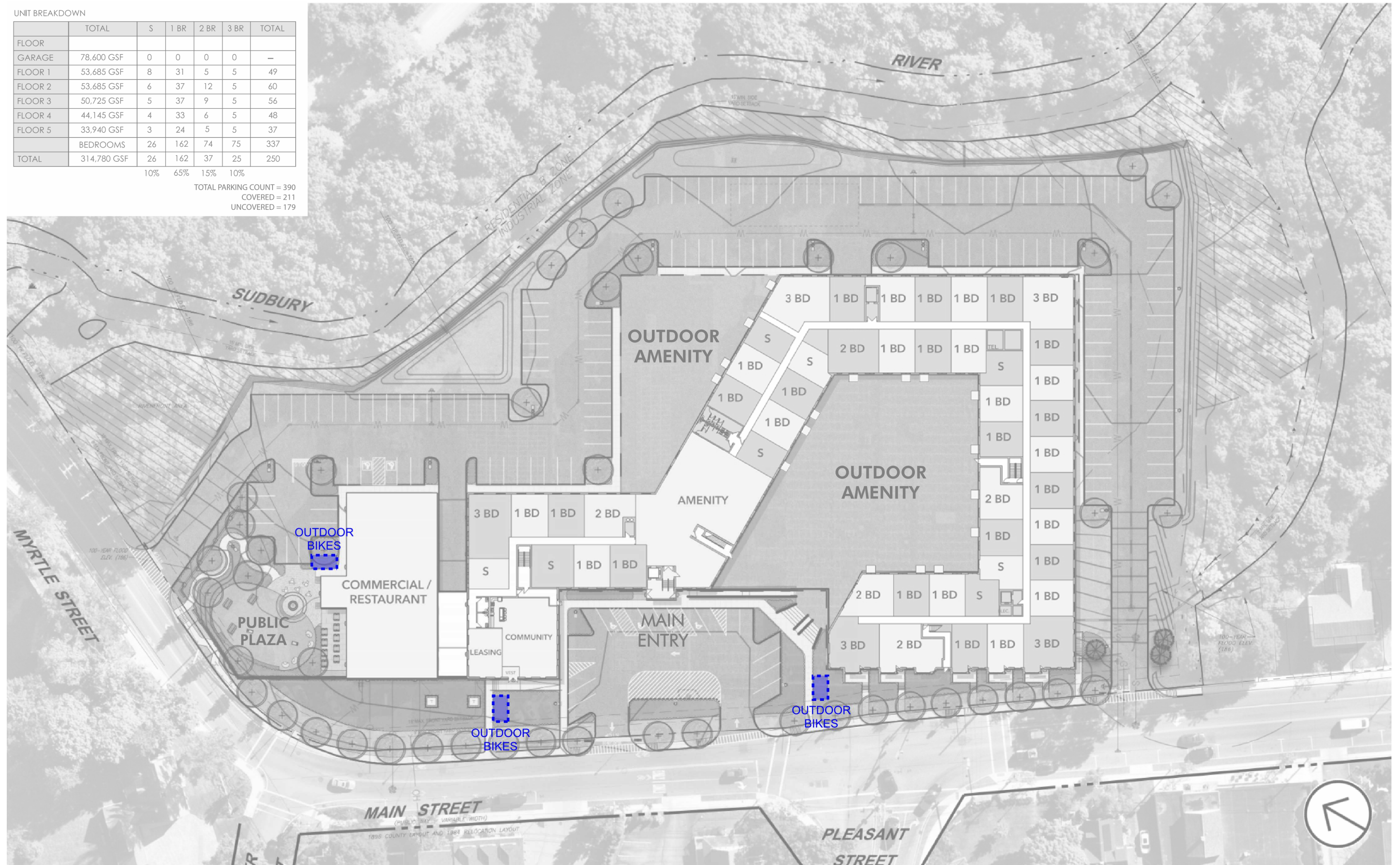
EMBARC PARKING/LOADING/BIKE STORAGE EXHIBIT

UNIT BREAKDOWN

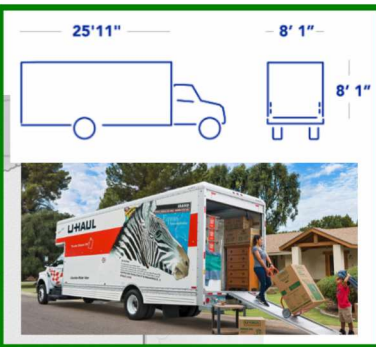
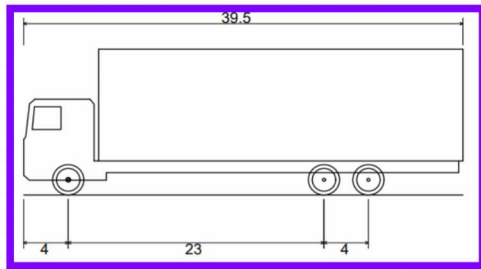
FLOOR	TOTAL	S	1 BR	2 BR	3 BR	TOTAL
GARAGE	78,600 GSF	0	0	0	0	-
FLOOR 1	53,685 GSF	8	31	5	5	49
FLOOR 2	53,685 GSF	6	37	12	5	60
FLOOR 3	50,725 GSF	5	37	9	5	56
FLOOR 4	44,145 GSF	4	33	6	5	48
FLOOR 5	33,940 GSF	3	24	5	5	37
	BEDROOMS	26	162	74	75	337
TOTAL	314,780 GSF	26	162	37	25	250

10% 65% 15% 10%

TOTAL PARKING COUNT = 390
COVERED = 211
UNCOVERED = 179



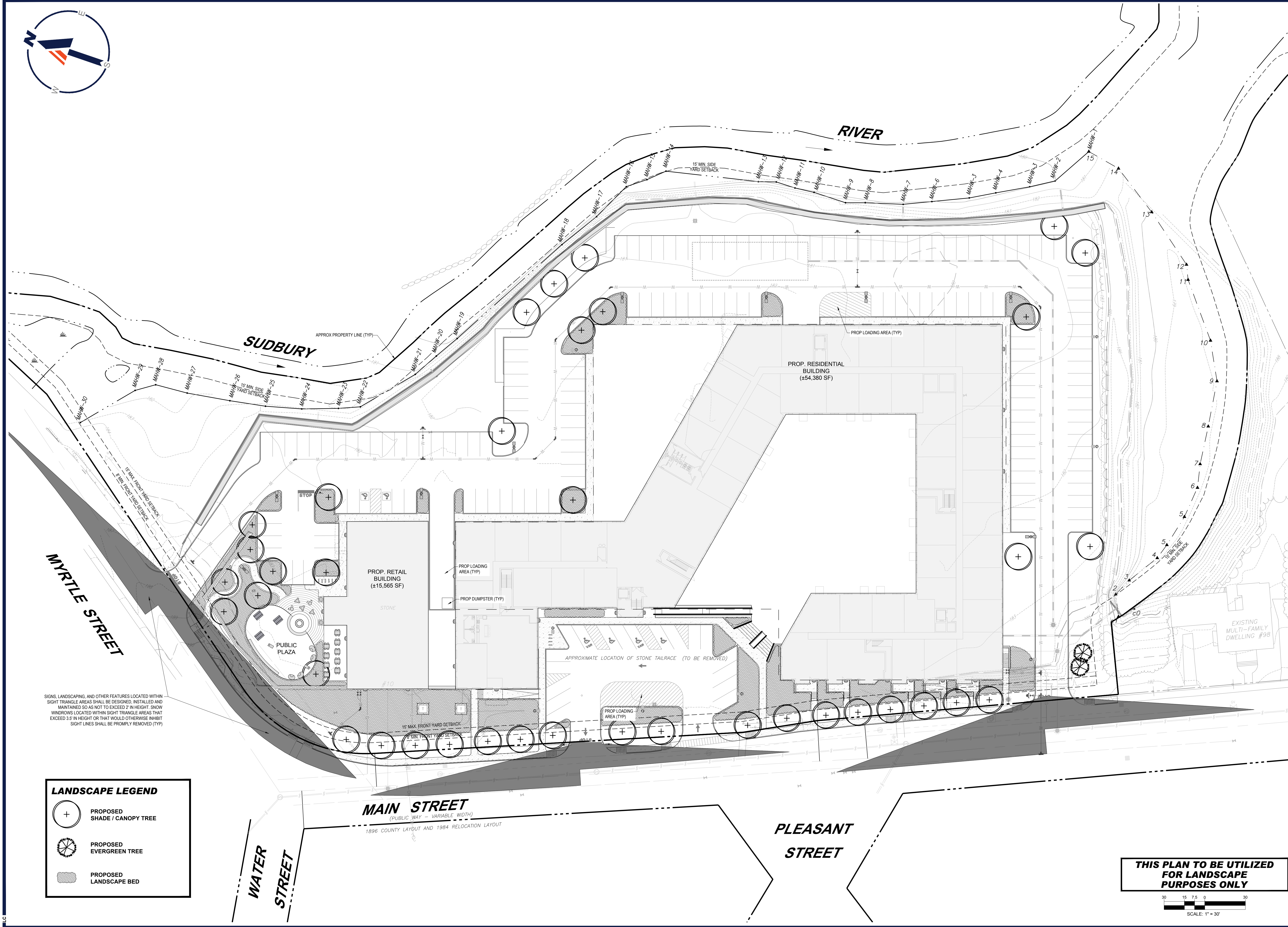
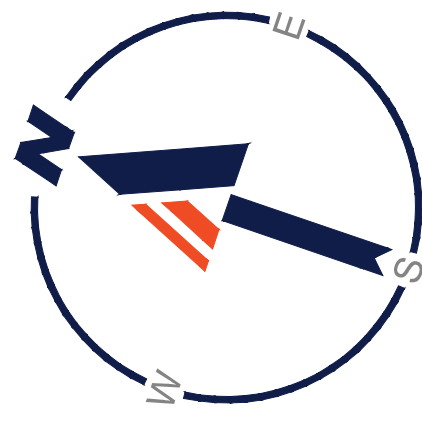
SU-40 TRUCK AT LOADING



26FT BOX TRUCK AT RESIDENTIAL MOVE-IN



BOHLER LANDSCAPE PLAN (L-101)

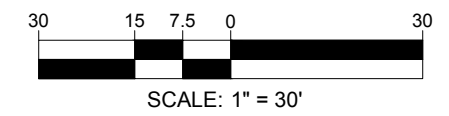


LANDSCAPE LEGEND

	PROPOSED SHADE / CANOPY TREE
	PROPOSED EVERGREEN TREE
	PROPOSED LANDSCAPE BED

SIGNS, LANDSCAPING, AND OTHER FEATURES LOCATED WITHIN SIGHT TRIANGLE AREAS SHALL BE DESIGNED, INSTALLED AND MAINTAINED SO AS NOT TO EXCEED 7' IN HEIGHT. SNOW WINDROWS LOCATED WITHIN SIGHT TRIANGLE AREAS THAT EXCEED 3.5' IN HEIGHT OR THAT WOULD OTHERWISE INHIBIT SIGHT LINES SHALL BE PROMPTLY REMOVED (TYP)

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY



BOHLER
 SITE CIVIL AND CONSULTING ENGINEERING
 PROGRAM MANAGEMENT
 LANDSCAPE ARCHITECTURE
 SUSTAINABLE DESIGN
 PERMITTING SERVICES
 TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	CHECKED BY
1	07/15/2024	ADDED EPA MONITORING WELLS	JAK
2	08/01/2024	COMPREHENSIVE PERMIT	CSE
3	02/25/2025	TRAFFIC COMMENTS	JAK

811
 Know what's below. Call before you dig.
 ALWAYS CALL 811
 It's fast. It's free. It's the law.

COMPREHENSIVE PERMIT PLANS

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PROJECT No.: MAA230359-00-3B
 DRAWN BY: CSE
 CHECKED BY: JAK
 DATE: 02/25/2025
 CAD ID: P-CIVIL-L101

PROJECT:
PRELIMINARY SITE DEVELOPMENT PLANS
 FOR
SLV ASHLAND, LLC
 PROPOSED 40B DEVELOPMENT "THE SANCTUARY AT ASHLAND MILLS"
 MAP: 14 | LOT: 128
 50 MAIN STREET
 TOWN OF ASHLAND MASSACHUSETTS

BOHLER
 352 TURNPIKE ROAD, 3rd FLOOR
 SOUTHBOROUGH, MA 01772
 Phone: (508) 480-9900
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 VERMONT No. 01551
 WISCONSIN No. 25047

SHEET TITLE:
LANDSCAPE PLAN
 SHEET NUMBER:
L-101
 REVISION 3 - 02/25/2025

P:\2023\MAA230359\00\DRAWINGS\PLAN SET\CIVIL SITE PLANS\SP-CIVIL-LL01.MAA230359-00-3B-LAYOUT_L101.LSPC