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PRINCIPALS
Robert J. Michaud, P.E.
Ronald D. Desrosiers, P.E., PTOE
Daniel J. Mills, P.E., PTOE

MEMORANDUM

DATE: March 29, 2019

TO: Ms. Jessica Bessette, AIA, LEED AP BD+C
Arrowstreet
10 Post Office Square, Suite 700N
Boston MA 02109

FROM: Daniel J. Mills, P.E., PTOE – Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Proposed Newton Early Childhood Program Relocation**
687 Watertown Street – Newton, MA

MDM Transportation Consultants, Inc. (MDM) has prepared this traffic and circulation assessment for the proposed relocation of the existing Newton Early Childhood Program (NECP) located at 150 Jackson Road in Newton, Massachusetts. The location of the proposed site relative to the adjacent roadway network is shown in **Figure 1.** This evaluation documents anticipated traffic generation characteristics and pick-up/drop-off operations for the proposed school relocation to 687 Watertown Street, quantifies the existing and proposed school operations, quantifies incremental traffic impacts of the Site development on area roadways, reviews peak parking demands, and identifies recommended site access and circulation features to accommodate school traffic operations. Key findings of the study are as follows:

- *Proposed Site Programming.* The NECP proposes to expand its enrollment from 230 students to 305 students and expand from 80 to 100 staff. Site programming information for the existing NECP indicate the use of parent vehicles, staff vehicles and school vans. The school currently and will continue to have three critical study periods that include a typical morning drop-off peak hour (8:15 – 9:15 am), a weekday midday pick-up period (11:30 am – 12:30 pm, and a weekday afternoon peak hour (1:45 – 2:45 pm). Trip generation during the critical weekday morning drop-off peak hour was 200 vehicle-trips (121 entering and 79 exiting), including 69 parent/guardian drop-off vehicles, 12 school vans and 40 staff vehicles. The actual number of concurrently vehicles parked onsite during the critical morning drop-off period was observed to be 132 vehicles broken down as follows; 6 vans, 80 staff vehicles, and 46 parent vehicles.

Figure 1

Site Location

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Dwg No. 1022 Population Map.dwg

- *Projected Trip Generation.* Trip generation for the expansion and relocation of the NECP is based on empirical observations conducted at the exiting NECP site (150 Jackson Street). With the proposed relocation and student/staff expansion in place, the projected peak design volumes for school pick-up/drop-off activity (i.e., trips that must be actively managed by NECP) will be 228 auto and 22 van trips during the weekday morning drop-off period, 126 auto and 9 van trips during the weekday midday pick-up period and 111 auto and 16 van trips during the weekday afternoon pick-up period.

- *Capacity Analysis.* Baseline traffic operating levels at area intersections are at an overall level-of-service (LOS) C or better during the typical weekday morning, weekday midday and weekday afternoon analysis periods with the exception of the Albemarle Road approaches to Crafts Street which operates at LOS F condition during the weekday morning peak hour. Due to the relocation of the Horace Mann Elementary school program, traffic increases associated with the NECP relocation will not notably impact traffic operating levels. However, the Albemarle Road approaches to Crafts Street will continue to operate with long delays under the Design Year Conditions during the pick-up and drop-off periods. Independent of the NECP project, MDM recommends that a signal warrant analysis be conducted at the intersection of Albemarle Road and Crafts Street to determine whether traffic signal control is appropriate for this intersection.

- *Site Access and Circulation*. Site access and circulation recommendations should be incorporated into the preliminary site plan to facilitate safe and efficient pedestrian and vehicle operations at the site. MDM recommends that the NECP develop a traffic management plan (TMP) aimed at enhancing school pick-up/drop-off operations, parking activity and site circulation including elements noted in this evaluation. MDM also recommends additions to the TMP plan and changes to the on-site parking areas to accommodate the proposed project as outlined under *Site Circulation and Parking Supply*.

- *Peak Parking Demand.* The peak parking demand for the proposed use of the Site is estimated at 166 parked vehicles (100 staff vehicles, 60 parent/guardian vehicles and 6 vans) during the critical morning drop-off period and 153 parked vehicles (100 staff vehicles, 49 parent/guardian vehicles and 4 vans) during the midday pick-up period. NECP extended school year program (i.e., summer program) will require coordination with recreational program parking occurring at the Albemarle Fields.

The proposed NECP relocation is expected to generate traffic that is not expected to materially impact roadway operations at the study intersections. Peak parking demand for NECP are estimated to be 166 spaces based on observations conducted at the existing NECP facility at 150 Jackson Street with adjustment for projected student and staff increases. The preliminary parking plan utilizing the proposed on-site parking spaces as well as the on-street parking along Albemarle Road and Watertown Street is expected to accommodate the peak parking requirements for the Site under typical peak pick-up/drop-off operating conditions.

PROJECT DESCRIPTION

Existing Conditions

The NECP Site (150 Jackson Road, Newton, MA 02122) has an existing enrollment of 230± students and 80± staff. Site access includes a single full-access driveway located along Jackson Road.

The existing operations are as follows:

- *NECP School Operations.* The general hours of operation for the NECP are 8:15 AM to 2:45 PM on Monday, Wednesday, Thursday, and Friday. On Tuesday's the school operates on half days from 8:15 AM to 12:30 PM.

- *Drop-Off Period*. The NECP drop-off periods are spread over two time periods at the end of the commuter peak (8:15 AM to 9:15 AM)

- *Pick-Up Periods.* The NECP has two dismissal periods pick-up periods during a full-day schedule with peak activity between 11:30 AM to 12:30 PM and between 1:45 PM to 2:45 PM.

- *Staff Levels.* Staff includes approximately 80 total staff members which includes approximately 42 full-time and 38 part time staff.

- *Van Drop-Off/Pick-Up.* Approximately 12 vans service the school during the weekday morning drop-off period and the weekday midday and afternoon pick-up periods. Vans also service the site throughout the school day. Traditional yellow school buses do not service the NECP.

Proposed Newton Early Childhood Program

Under the proposed development plan, the NECP proposes to relocate from 150 Jackson Street to the Site (687 Watertown Street) and expand its enrollment and staffing level. The hours of

operation and van usage are expected to remain consistent with its existing operation at 150 Jackson Street The preliminary site layout prepared by Arrowstreet, Inc. is presented in **Figure 2**.

BASELINE TRAFFIC CHARACTERISTICS

An overview of existing (Baseline) roadway conditions, traffic volume characteristics and public transportation opportunities is provided below.

Albemarle Road

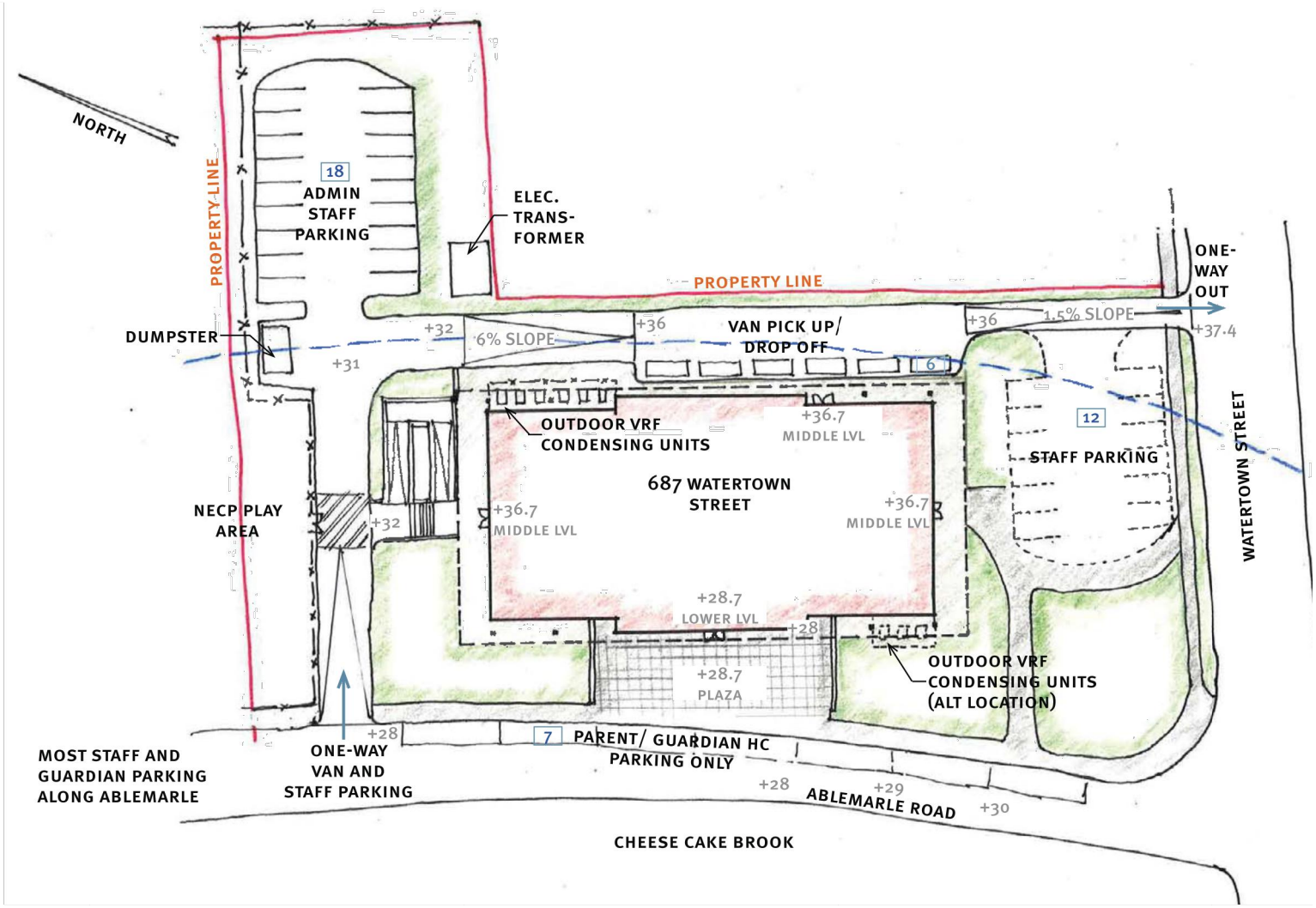
Albemarle Road is classified by the Massachusetts Department of Transportation (MassDOT) as a Urban Collector roadway under City jurisdiction. Albemarle Road connects Crafts Street to the north with Watertown Street to the south. Albemarle Road provides two-way traffic flow with a local brook (Cheese Cake Brook) and grass median separating the northbound and southbound travel direction. The roadway varies in width from 18 to 24 feet in each travel direction. Sidewalks are provided along the easterly side of the roadway and intermittently along the westerly side of the roadway. Parking is restricted along the Horace Mann School frontage; likewise, parking is restricted near the Gath Memorial Pool to accommodate school buses during arrival and dismissal periods. Land uses along Albemarle Road include residential uses, the Horace Mann School (Site), a playground and recreational fields, a public pool complex and the Fessenden School. A walking path to the F. A. Day Middle School is also provided along Albemarle Road.

Watertown Street

Watertown Street is generally an east-west roadway under local jurisdiction within the study area. Watertown Street is classified by the MassDOT as an Urban Principle Arterial roadway and provides a connection between Washington Street to the west and Watertown Square to the east. Watertown Street provides a single travel lane in each direction within the study area with additional travel lanes provided at major intersections. On-street parking is provided along the site frontage. Sidewalks are provided along both sides of Watertown Street within the study area with marked crosswalks and pedestrian indications at signalized intersections. The posted (regulatory) speed limit on Watertown Street is generally 35 miles per hour outside the 20 mile per hour school zone. Land uses within the study area include residential uses, the Horace Mann Elementary School and the John M. Barry Boys & Girls Club.

Crafts Street

Crafts Street is classified by the MassDOT as an Urban Minor Arterial roadway under City jurisdiction. Crafts Street connects Waltham Street to the west with Washington Street to the east. Crafts Street provides a single travel lane in each direction within the study area with additional travel lanes provided at major intersections. Sidewalks are provided along both



Scale: Not to Scale

Site Plan Source: Arrowstreet Inc.

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Figure 2

Preliminary Site Layout

Date: March 2019
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sides of Watertown Street within the study area. Land uses along Crafts Street within the immediate study area primarily include residential uses, athletic fields and the Fessenden Ice Rink.

Public Transportation Facilities

The Massachusetts Bay Transportation Authority (MBTA) operates the Newtonville MBTA Commuter Rail Station on the Framingham/Worcester Line approximately 0.5 miles from the Site. Additionally, the MBTA operates two bus lines adjacent to the Site with stops at the Newtonville MBTA station. Specific route and schedule information is provided in the **Appendix**.

- **Route 59 – Needham Junction – Watertown Square:** This line provides service between the Needham Junction and Watertown Square via Watertown Street with a stop provided at the intersection of Watertown Street and Walnut Street approximately 0.25 miles from the site.

- **Route 556 – Waltham Highlands – Downtown Boston:** This line provides service between the Waltham Highlands and Downtown Boston via Crafts Street with a stop provided at the intersection of Crafts Street and Albemarle Road approximately 0.5 miles from the site.

The MBTA provides bus service in the immediate area generally between 6am and 8pm during weekdays. This route also provides connections to/from several "T" stations and connecting bus routes. For planning purposes no credit (reduction) was taken for use of public transportation by school staff or students.

Baseline Traffic Data

Traffic volume data was collected in February 2019 at the study area intersections during the weekday morning (7:00 AM - 9:15 AM), weekday midday (11:30 AM – 12:30 PM) and weekday afternoon (1:00 PM to 4:00 PM) periods to coincide with peak traffic activity of the NECP and the adjacent streets. Review of MassDOT permanent count station data indicates that February is a below-average traffic month (approximately 8 percent below average month conditions). An adjustment (8% increase) was made to the traffic counts to represent average conditions. The resulting Baseline weekday morning, weekday midday and weekday afternoon peak-hour traffic volumes for the study intersections are depicted in **Figure 3**, **Figure 4**, and **Figure 5**. Turning movement counts and permanent count station data are provided in the **Attachments**.

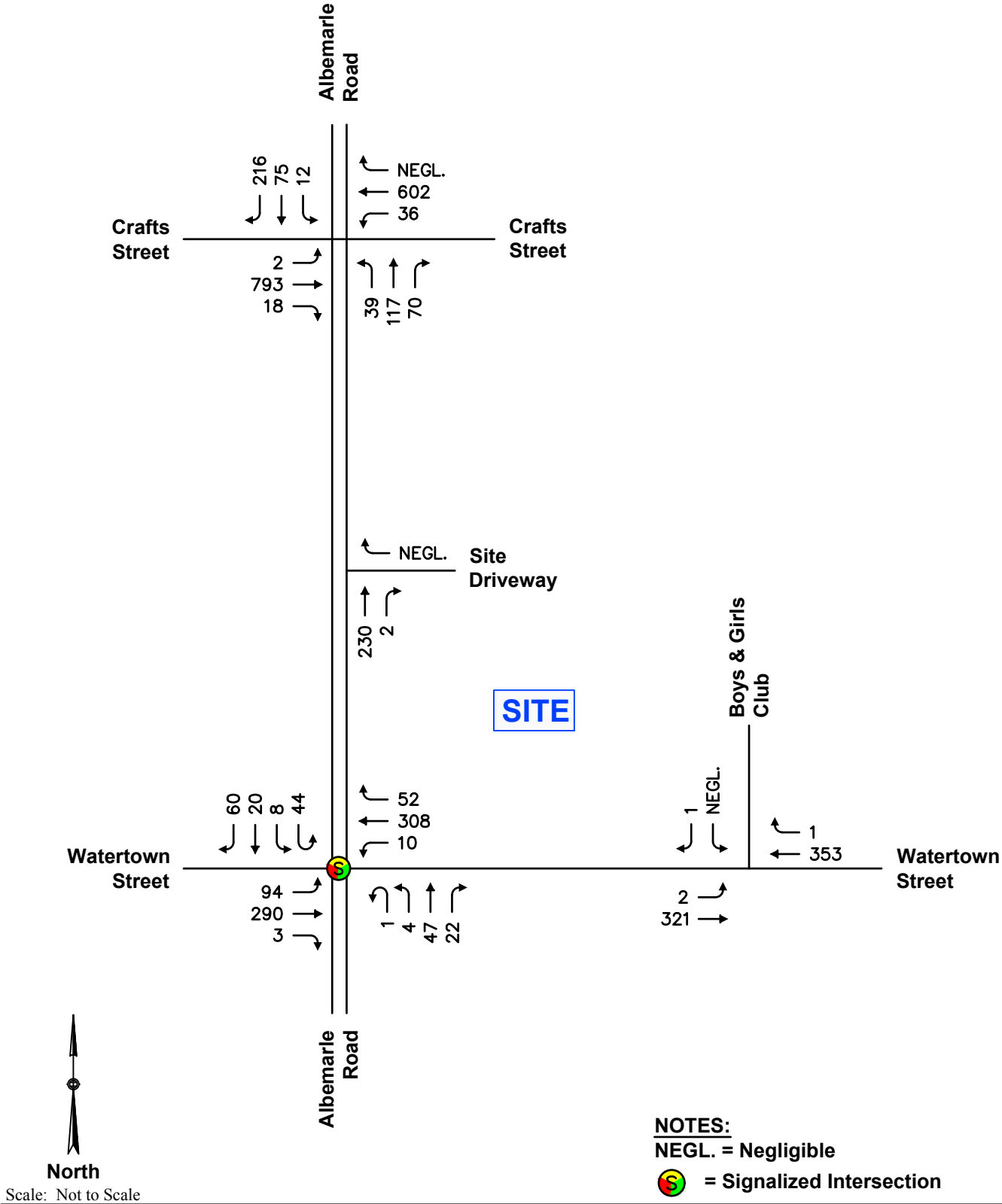

Figure 3

MDM TRANSPORTATION CONSULTANTS, INC.
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2019 Baseline Conditions
Weekday Morning Peak Hour Volumes
687 Watertown Street

Date: March 2019
Dwg No. 1022 Monitoring - Newton.dwg

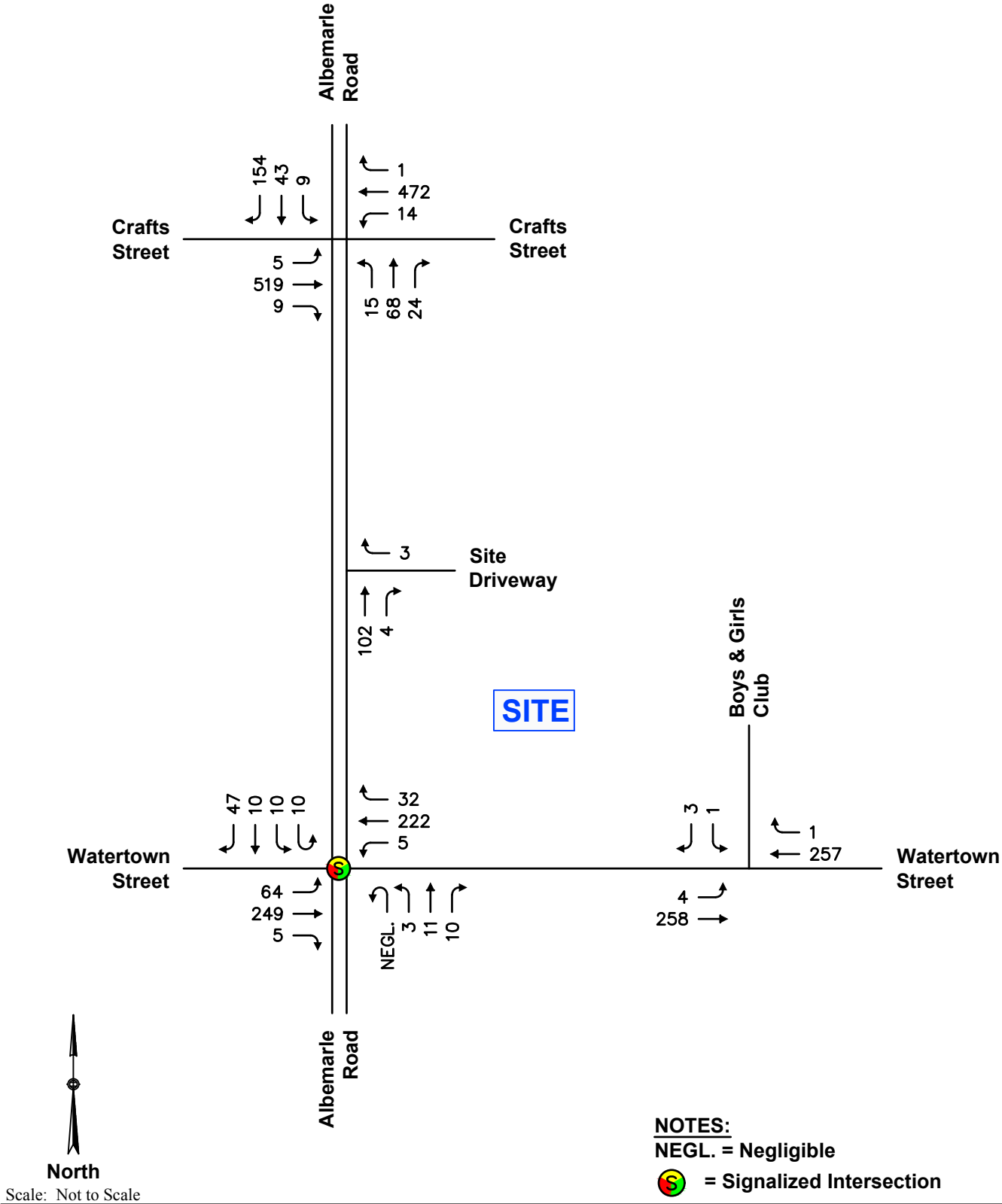

Figure 4

MDM TRANSPORTATION CONSULTANTS, INC.
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2019 Baseline Conditions
Weekday Midday Peak Hour Volumes
687 Watertown Street

Date: March 2019
Dwg No. 1022 Monitoring - Newton.dwg

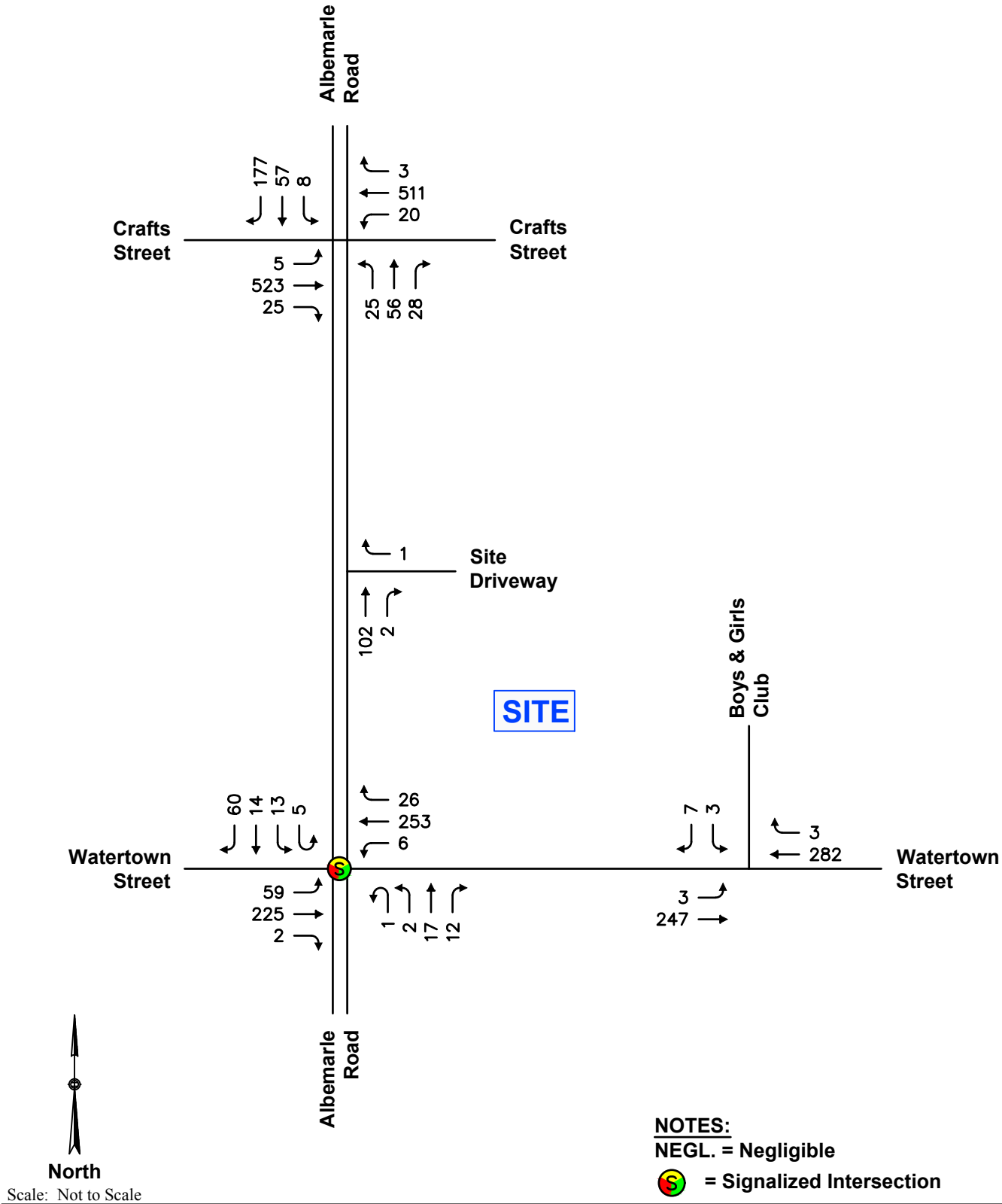

Figure 5

MDM TRANSPORTATION CONSULTANTS, INC.
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2019 Baseline Conditions
Weekday Afternoon Peak Hour Volumes
687 Watertown Street

Date: February 2019
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Existing Trip Generation – NECP

Existing site trips generated by NECP were observed during critical school activity periods including the weekday morning drop-off period, weekday midday pick-up period, and weekday afternoon pick-up period on Thursday, January 31, 2019 between 7:00 AM and 6:00 PM. A detailed trip generation summary for the site, based on the existing student enrollment of 230± students and approximately 80 staff, including a breakdown of vehicular trips by staff member, student pick-up/drop off and van service is presented in **Table 1** and described below.

TABLE 1
OBSERVED NEWTON EARLY CHILDHOOD PROGRAM TRIP-GENERATION
(150 JACKSON STREET)

Period	Vehicle-trips[1] Staff Auto	Student Auto	Van	Total
Weekday Morning Drop-Off Period (8:15-9:15 AM):				
Enter	40	69	12	**121**
Exit	--	69	10	**79**
Total	40	138	22	**200**
Weekday Midday Pick-Up Period (11:30 AM-12:30 PM):				
Enter	--	49	3	**52**
Exit	5	49	6	**60**
Total	5	98	9	**112**
Weekday Afternoon Pick-Up Period (1:45-2:45 PM):				
Enter	--	27	6	**33**
Exit	15	42	10	**67**
Total	15	69	16	**100**

[1]Peak hour trips based on empirical trip generation observed at NECP (150 Jackson Street) on January 31, 2019.

As presented in **Table 1,**

- *Weekday Morning Drop-Off Period.* Trip generation during the critical weekday morning drop-off peak hour was 200 vehicle-trips (121 entering and 79 exiting), including 69 parent/guardian drop-off vehicles, 12 school vans and 40 staff vehicles.

- *Weekday Midday Peak Period.* Trip generation during the weekday midday site peak hour was 112 vehicle-trips (52 entering and 60 exiting), including 49 parent/guardian drop-off/pick-up vehicles and 6 school vans and 5 staff vehicles.

- *Weekday Afternoon Pick-up Period.* Trip generation during the weekday afternoon peak hour was 100 vehicle-trips (33 entering and 67 exiting), including 42 parent/guardian pick-up vehicles, 10 school vans and 15 staff vehicles. Seven school vans were observed to queue concurrently in the parking lot.

Note that school staff also make trips to the site before, during and after the school day and therefore all staff do not necessarily arrive and depart during the peak traffic periods described above.

DESIGN YEAR TRAFFIC VOLUMES

Design Year traffic conditions are developed by relocating the existing site trips generated by NECP at 150 Jackson Road, including projected increase in staff and student enrollment, estimating likely travel patterns for these trips and adding them to the Baseline traffic networks. In addition, traffic volume for turning movements related to the existing Horace Mann Elementary School were reduced to account for the that school's relocation. Specific methodologies and assumptions used to estimate trips and trip distribution are discussed below.

Projected Site Trip Generation – NECP

Trip generation (NECP) was projected for the critical school activity periods including the weekday morning drop-off period, weekday midday pick-up period and weekday afternoon pick-up period. Based on NECP projections, the addition of four additional classrooms will yield a total of twenty additional parent vehicles and twenty additional staff vehicles. A detailed trip generation summary for the site, including a breakdown of vehicular trips by staff member, student pick-up/drop off and van service is presented in **Table 2** and is described below.

TABLE 2
PROJECTED NEWTON EARLY CHILDHOOD PROGRAM TRIP-GENERATION

Period	Vehicle-trips[1] Staff Auto	Student Auto	Van	Total
Weekday Morning Drop-Off Period (8:15-9:15 AM):				
Enter	50	89	12	**151**
Exit	--	89	10	**99**
Total	50	178	22	**250**
Weekday Midday Pick-Up Period (11:30 AM-12:30 PM):				
Enter	--	59	3	**62**
Exit	8	59	6	**73**
Total	8	118	9	**135**
Weekday Afternoon Pick-Up Period (1:45-2:45 PM):				
Enter	--	37	6	**43**
Exit	22	52	10	**84**
Total	22	89	16	**127**

[1]Peak hour trips based on empirical trip generation observed at NECP on January 31, 2019 with projected increases based on information provided by NECP staff.

As presented in **Table 2,**

- *Weekday Morning Drop-Off Period.* The relocated and expanded NECP during the critical weekday morning drop-off peak hour is estimated to generate 250 vehicle-trips (151 entering and 99 exiting).
- *Weekday Midday Pick-Up Period.* Trip generation during the weekday midday peak hour is estimated at 135 vehicle-trips (62 entering and 73 exiting).
- *Weekday Afternoon Pick-Up Period.* Trip generation during the weekday afternoon peak hour is estimated at 127 vehicle-trips (43 entering and 84 exiting).

Trip Distribution

Trip distribution for the relocated and expanded NECP facility was derived by evaluating existing population data from the 2010 Census for the City of Newton which provides a breakdown of population centers by Census tract. The distribution also accounts for the existing roadway network and travel patterns within the area. Trip distribution for school staff are based on zip code information provided by NECP and likely travel route. The estimated

trip distribution pattern for the trips to/from the site are presented in **Figure 6**. Detailed calculations are provided in the **Attachments**.

Design Year Traffic Volumes

Site-Generated trips for the development were assigned to the roadway network using the trip-generation estimates shown in **Table 2** and the distribution patterns described above. The resulting site-generated traffic generation on area roadways for the weekday morning (drop-off period), weekday midday (pick-up period), and weekday afternoon (pick-up period) peak hours are presented in **Figure 7**, **Figure 8**, and **Figure 9**.

The 2019 Design Year traffic volume networks were developed by reducing traffic volume for turning movements related to the existing Horace Mann Elementary School by approximately 25% to account for that school's relocation and adding the NECP projected site trips to the Baseline traffic volume networks. The resulting 2019 Design Year traffic volume networks are presented in **Figure 10**, **Figure 11** and **Figure 12**.

OPERATIONS ANALYSIS

This section provides an overview of operational analysis methodology, intersection capacity analysis of driveway and study intersections under Existing (Baseline) and projected Design Year Conditions.

Capacity Analysis

Intersection capacity analyses are presented in this section for the Baseline and Design Year traffic-volume conditions. Capacity analyses, conducted in accordance with EEA/MassDOT guidelines, provide an index of how well the roadway facilities serve the traffic demands placed upon them. The operational results provide the basis for recommended access and roadway improvements in the following section.

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the 2010 Highway Capacity Manual (HCM). The resulting analysis presents a level-of-service (LOS) designation for individual intersection movements. The LOS is a letter designation that provides a qualitative measure of operating conditions based on several factors including roadway geometry, speeds, ambient traffic volumes, traffic controls, and driver characteristics. Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of LOS, depending on the time of day, day of week, or period of year. A range of six levels of service are defined on the basis of average delay, ranging from LOS A (the least delay) to LOS F (delays greater than 50 seconds for unsignalized movements and delays greater than 80 seconds for signalized movements). The specific control delays and associated LOS designations are presented in the **Attachments**.

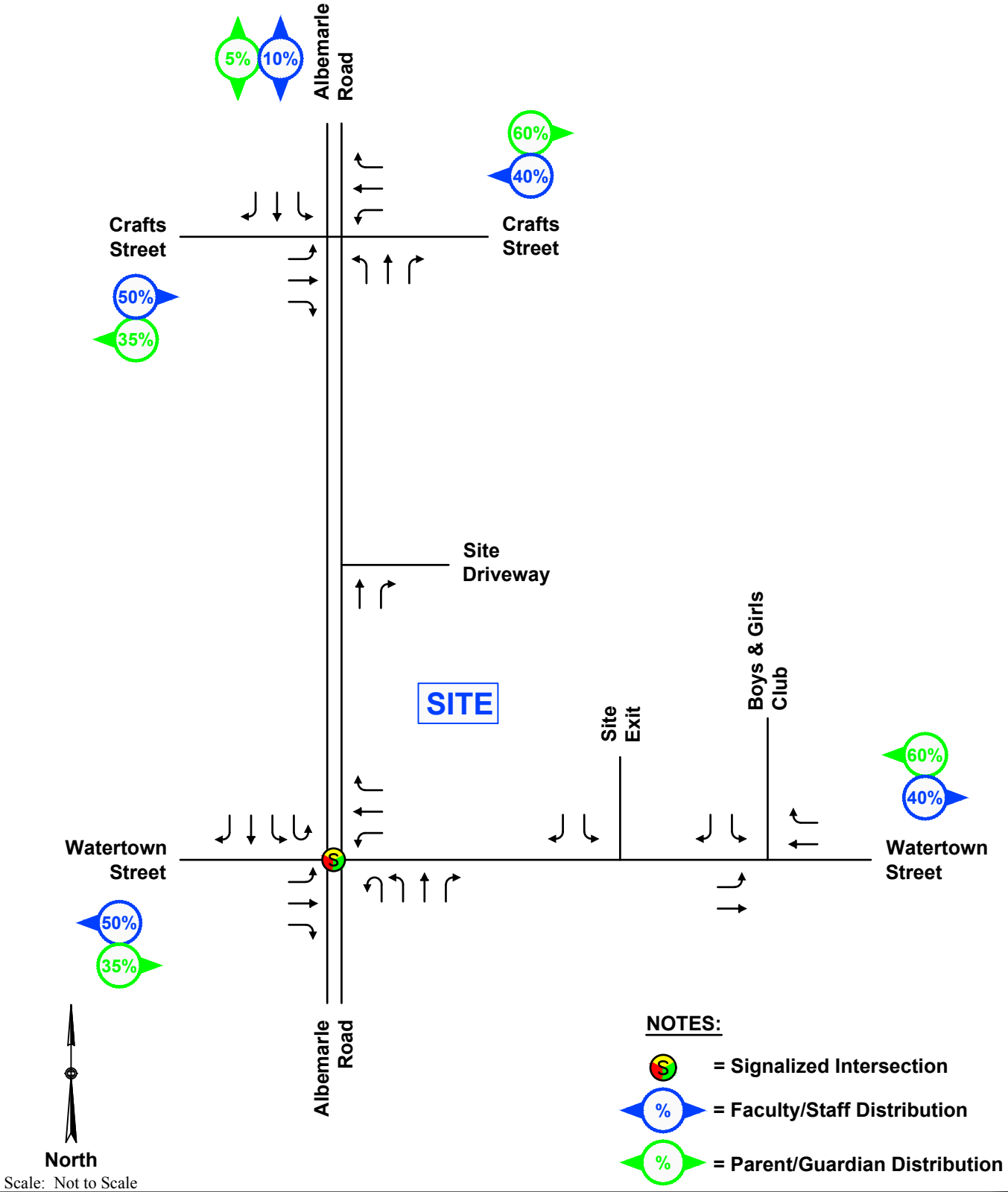

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Figure 6

Trip Distribution

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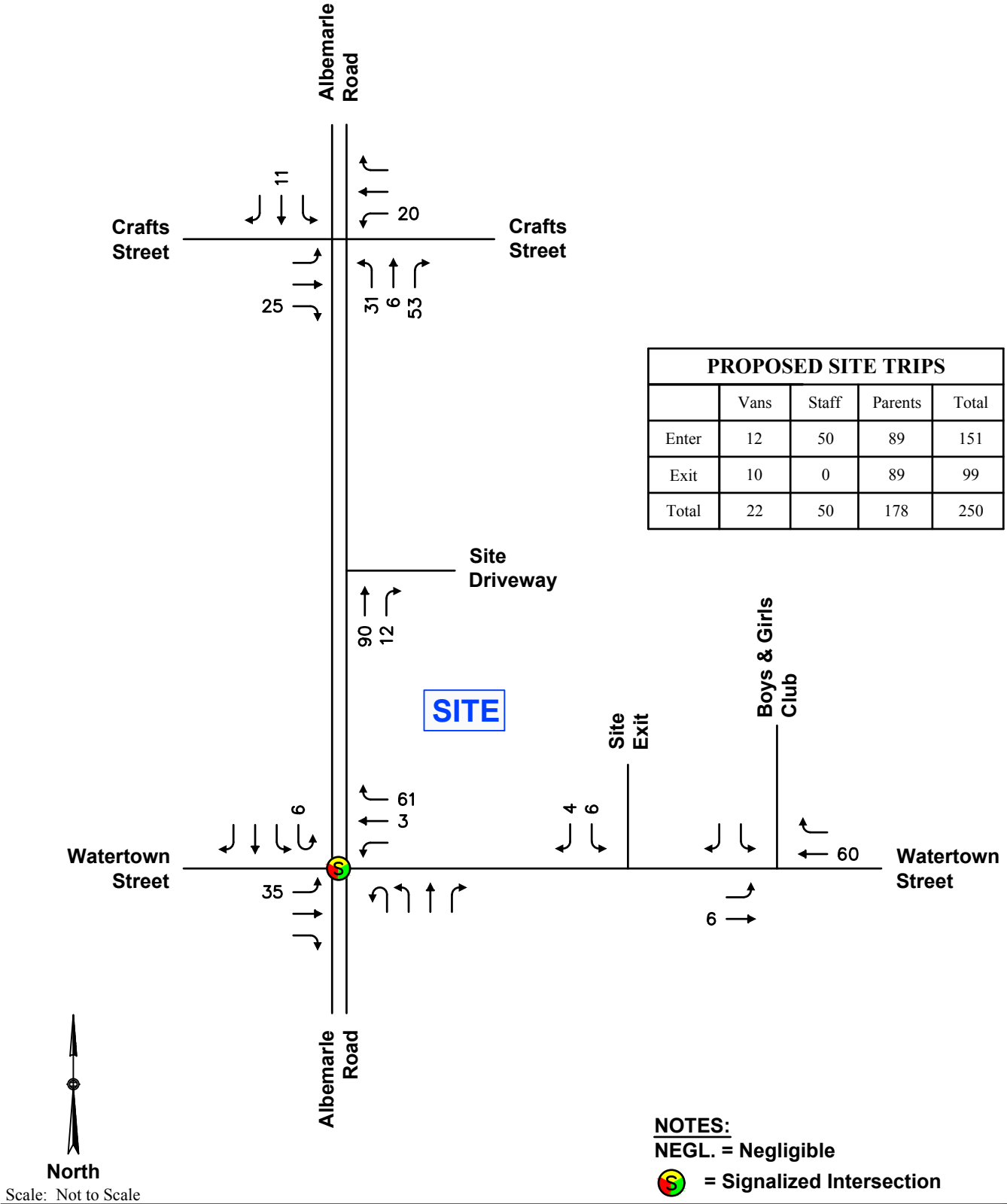

PROPOSED SITE TRIPS				
	Vans	Staff	Parents	Total
Enter	12	50	89	151
Exit	10	0	89	99
Total	22	50	178	250

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 7

MDM TRANSPORTATION CONSULTANTS, INC.
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Trip Generation
Weekday Morning Peak Hour Volumes
687 Watertown Street

Date: March 2019
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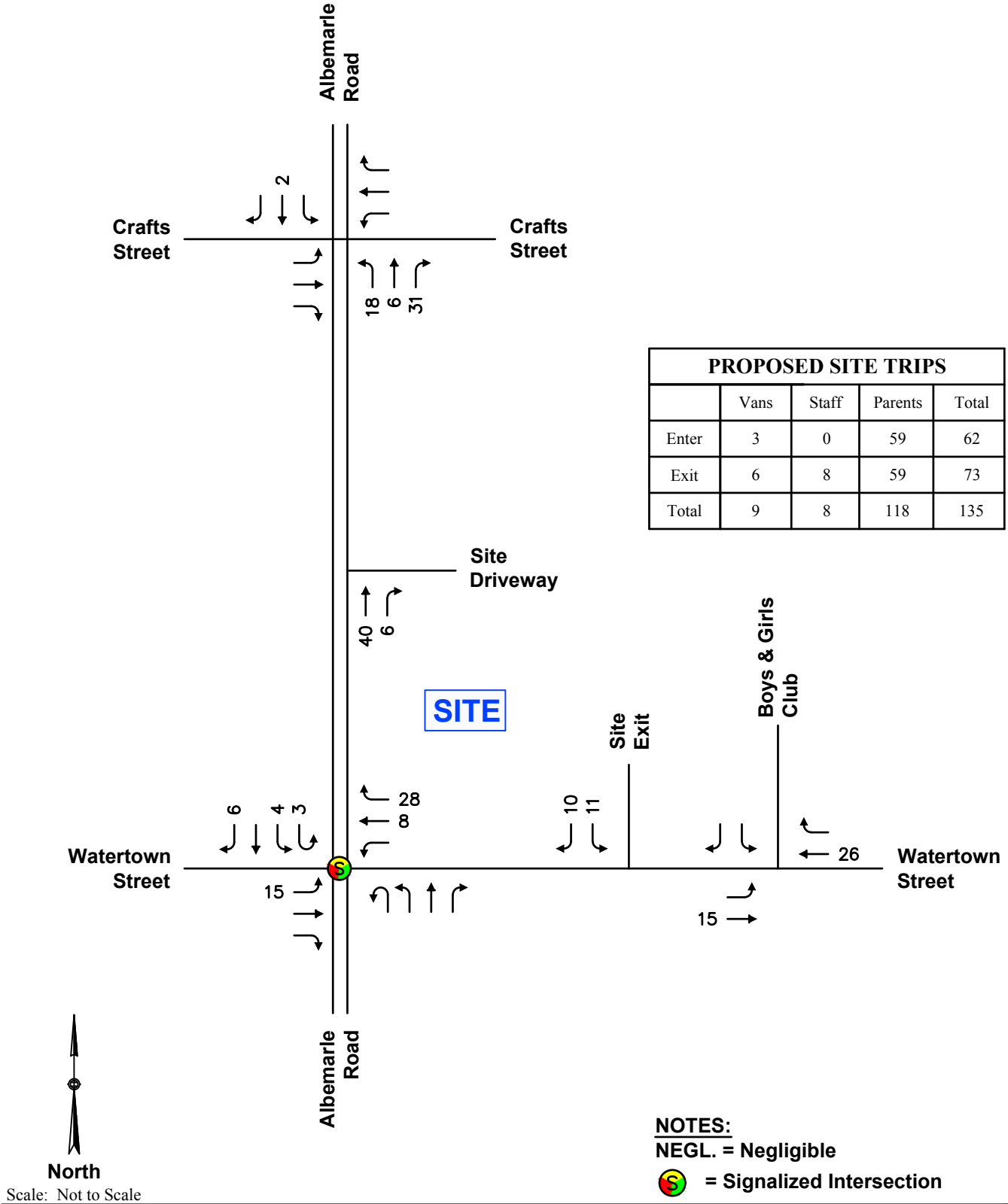

PROPOSED SITE TRIPS				
	Vans	Staff	Parents	Total
Enter	3	0	59	62
Exit	6	8	59	73
Total	9	8	118	135

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 8

MDM TRANSPORTATION CONSULTANTS, INC.
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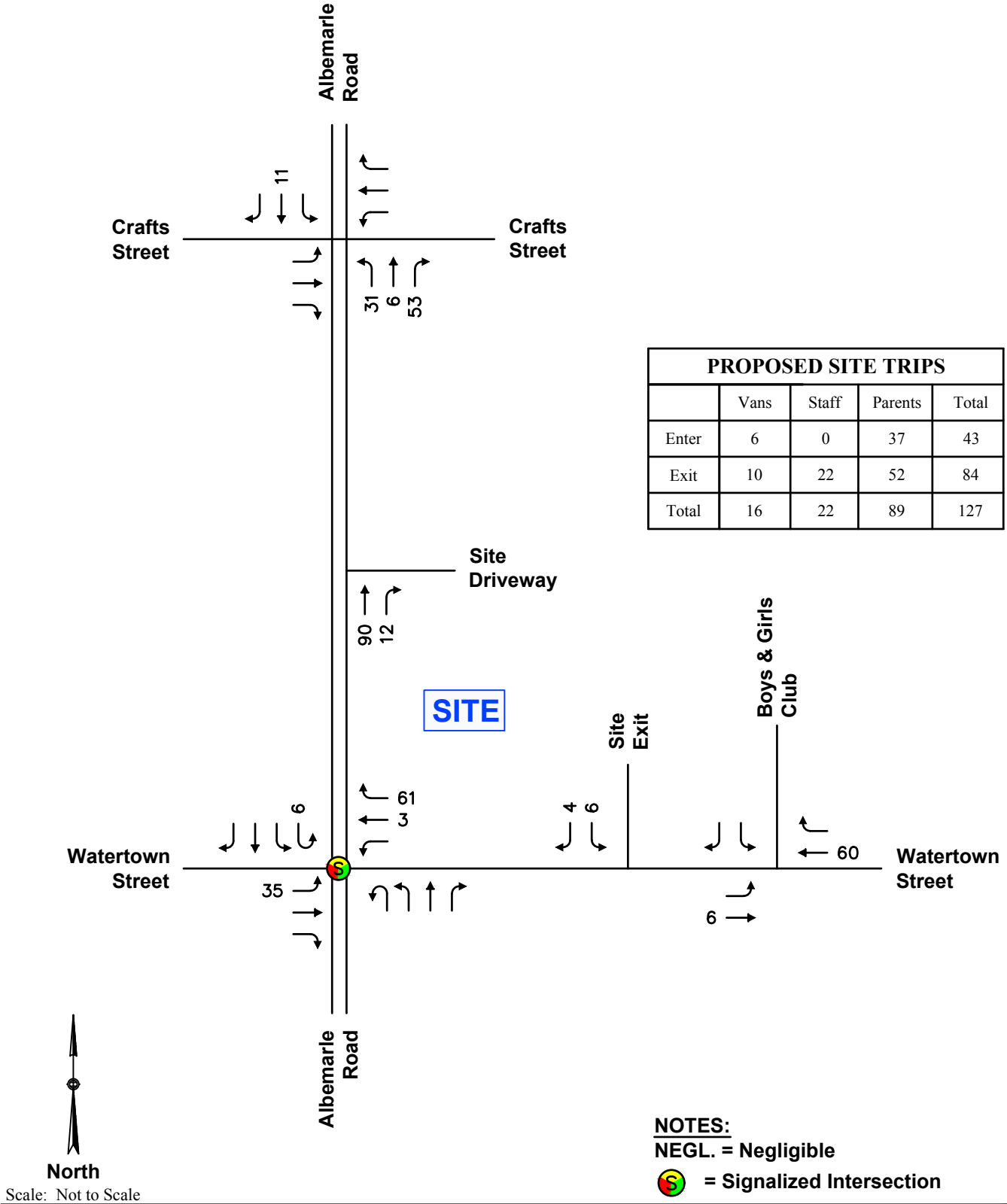
Trip Generation
Weekday Midday Peak Hour Volumes
687 Watertown Street

Date: March 2019
Dwg No. 1022 Monitoring - Newton.dwg



PROPOSED SITE TRIPS				
	Vans	Staff	Parents	Total
Enter	6	0	37	43
Exit	10	22	52	84
Total	16	22	89	127

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 9

MDM TRANSPORTATION CONSULTANTS, INC.
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Trip Generation
Weekday Afternoon Peak Hour Volumes
687 Watertown Street

Date: March 2019
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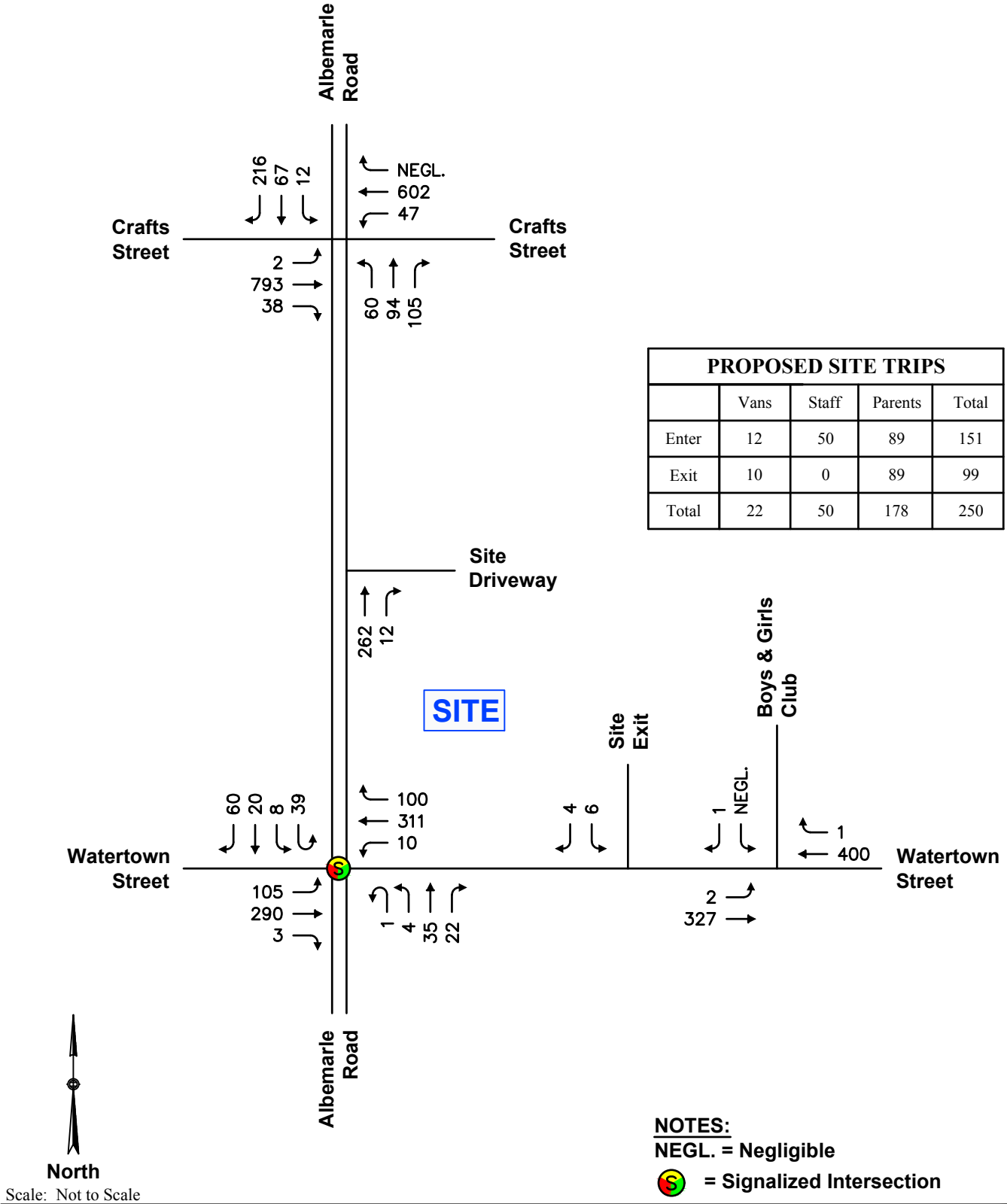

PROPOSED SITE TRIPS				
	Vans	Staff	Parents	Total
Enter	12	50	89	151
Exit	10	0	89	99
Total	22	50	178	250

Figure 10

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2019 Design Year Conditions
Weekday Morning Peak Hour Volumes
687 Watertown Street

Date: March 2019
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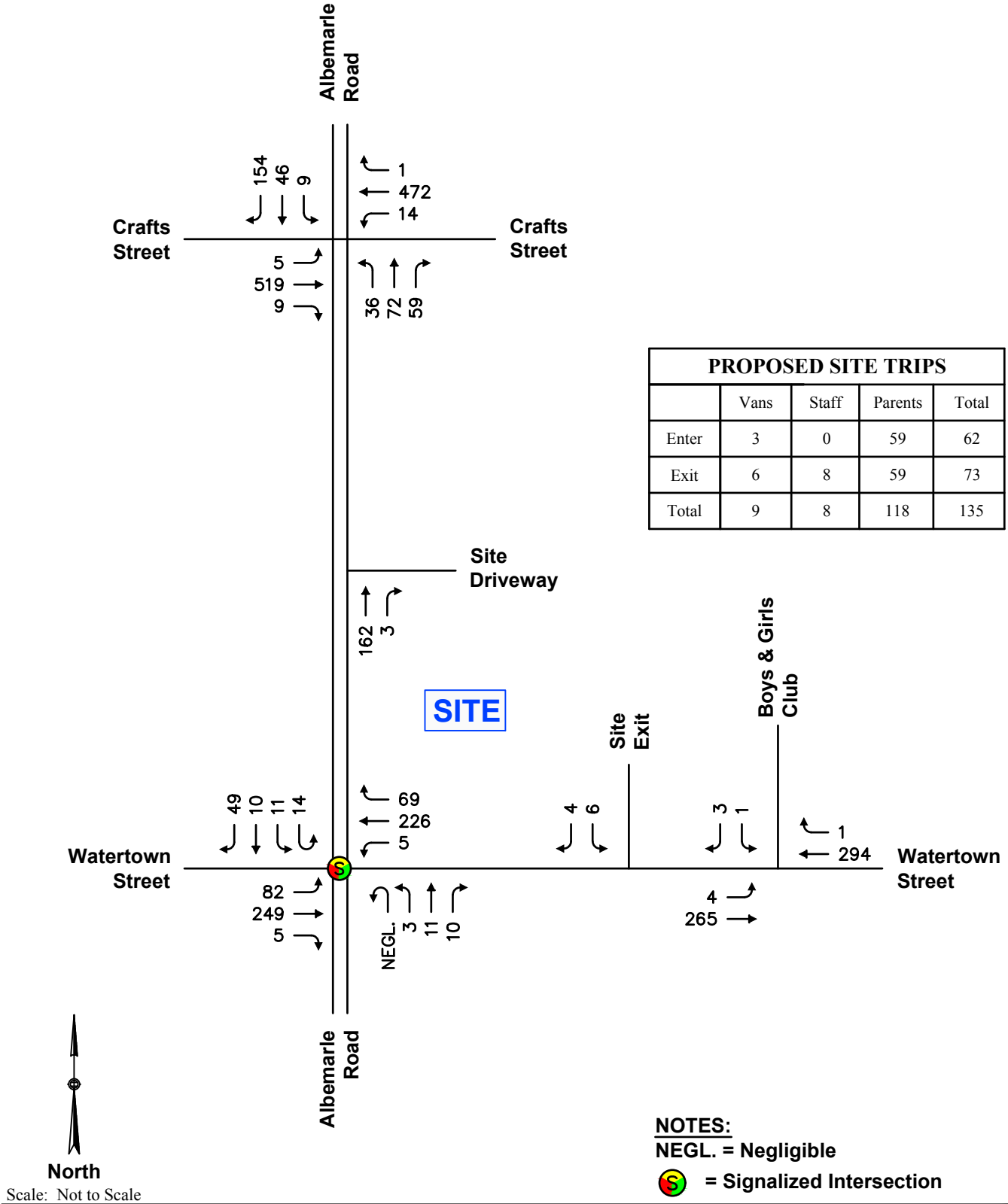

PROPOSED SITE TRIPS				
	Vans	Staff	Parents	Total
Enter	3	0	59	62
Exit	6	8	59	73
Total	9	8	118	135

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Figure 11
2019 Design Year Conditions
Weekday Midday Peak Hour Volumes
687 Watertown Street

Date: March 2019
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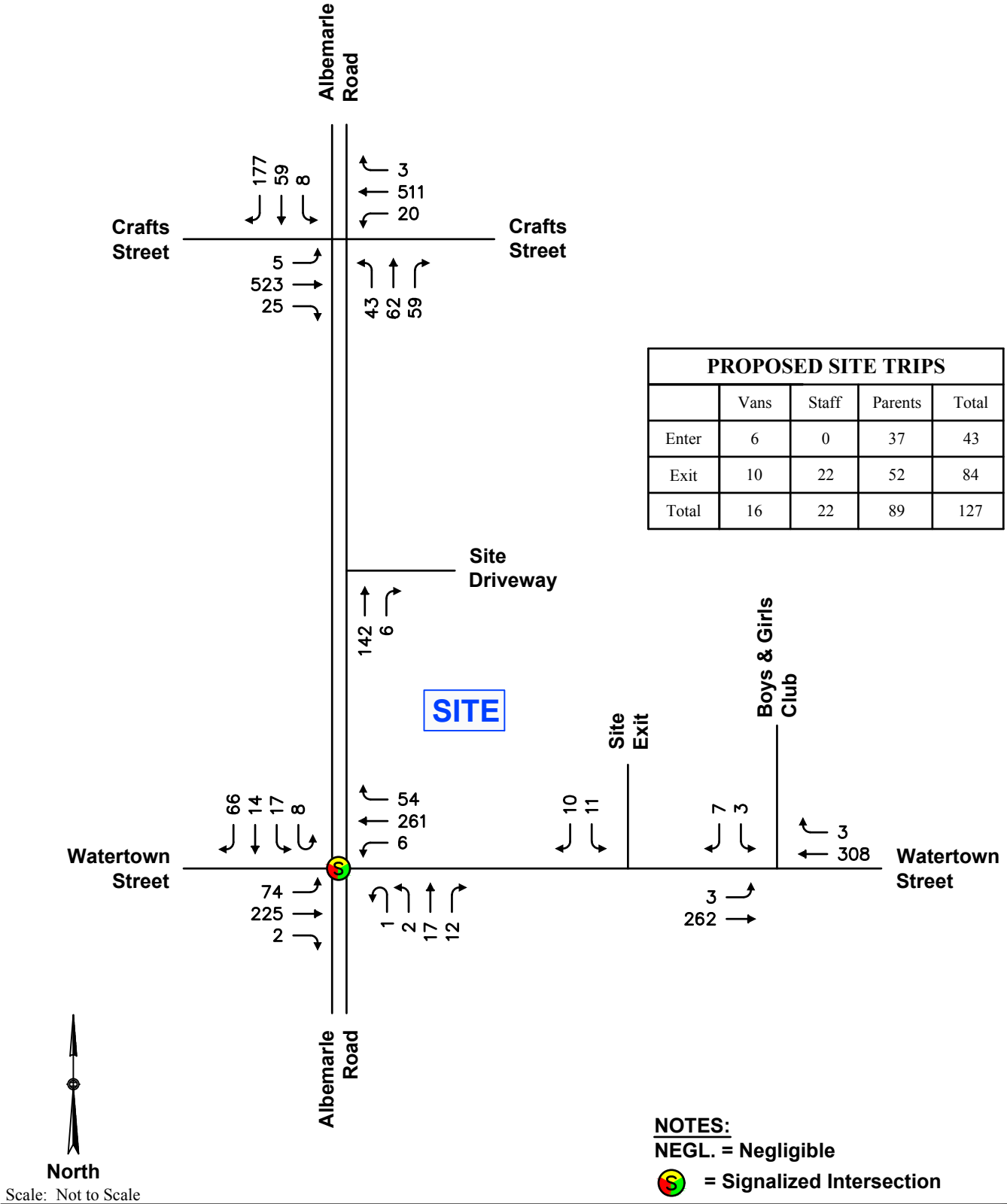

PROPOSED SITE TRIPS				
	Vans	Staff	Parents	Total
Enter	6	0	37	43
Exit	10	22	52	84
Total	16	22	89	127

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Figure 12

MDM TRANSPORTATION CONSULTANTS, INC.
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2019 Design Year Conditions
Weekday Afternoon Peak Hour Volumes
687 Watertown Street

Date: March 2019
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Capacity Analysis Results

Level-of-Service (LOS) analyses were conducted for the Baseline and Design Year conditions for the study intersections. The results of the intersection capacity analyses are summarized below in **Table 4, Table 5** and **Table 6**. Detailed analysis results are presented in the **Attachments**.

TABLE 4
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MORNING DROP-OFF PEAK HOUR (8:15 – 9:15 AM)

	2019 Baseline Condition			2019 Design Year Condition		
Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Albemarle Road at Watertown Street						
Eastbound	0.32	11	B	0.28	13	B
Westbound	0.40	12	B	0.40	13	B
Northbound	0.36	29	C	0.27	26	C
Southbound	0.36	23	C	0.40	13	B
Total	0.40	14	B	0.40	15	B
Watertown Street at Boys & Girls Club Driveway						
Eastbound	0.00	<5	A	0.00	<5	A
Westbound	0.00	<5	A	0.00	<5	A
Southbound	0.00	11	B	0.00	11	B
Albemarle Road at Site Driveway						
Westbound	0.00	<5	A	n/a	n/a	n/a
Northbound	0.00	<5	A	n/a	n/a	n/a
Albemarle Road at Crafts Street						
Eastbound	0.00	<5	A	0.00	<5	A
Westbound	0.05	<5	A	0.07	<5	A
Northbound	>1.0	>50	F	>1.0	>50	F
Southbound	>1.0	>50	F	>1.0	>50	F
Watertown Street at Site Driveway						
Eastbound	n/a	n/a	n/a	0.00	<5	A
Westbound	n/a	n/a	n/a	0.00	<5	A
Southbound	n/a	n/a	n/a	0.03	14	B

[1]Volume-to-capacity ratio
[2]Average control delay per vehicle (in seconds)
[3]Level of service

TABLE 5
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MIDDAY PICK-UP PEAK HOUR (11:30 – 12:30 PM)

	2019 Baseline Condition			2019 Design Year Condition		
Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Albemarle Road at Watertown Street						
Eastbound	0.21	7	A	0.24	8	A
Westbound	0.21	7	A	0.27	7	A
Northbound	0.10	22	C	0.10	22	C
Southbound	0.24	18	B	0.25	18	B
Total	0.24	9	A	0.27	9	A
Watertown Street at Boys & Girls Club Driveway						
Eastbound	0.00	<5	A	0.00	<5	A
Westbound	0.00	<5	A	0.00	<5	A
Southbound	0.01	11	B	0.01	11	B
Albemarle Road at Site Driveway						
Westbound	0.01	9	A	n/a	n/a	n/a
Northbound	0.00	<5	A	n/a	n/a	n/a
Albemarle Road at Crafts Street						
Eastbound	0.01	<5	A	0.01	<5	A
Westbound	0.02	<5	A	0.02	<5	A
Northbound	0.65	>50	F	>1.0	>50	F
Southbound	0.66	33	D	0.69	36	D
Watertown Street at Site Driveway						
Eastbound	n/a	n/a	n/a	0.00	<5	A
Westbound	n/a	n/a	n/a	0.00	<5	A
Southbound	n/a	n/a	n/a	0.02	12	B

[1]Volume-to-capacity ratio
[2]Average control delay per vehicle (in seconds)
[3]Level of service

TABLE 6
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY AFTERNOON PEAK HOUR (1:45 – 2:45 PM)

	2019 Baseline Condition			2019 Design Year Condition		
Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Albemarle Road at Watertown Street						
Eastbound	0.21	7	A	0.21	7	A
Westbound	0.26	8	A	0.30	8	A
Northbound	0.14	22	C	0.14	22	C
Southbound	0.30	17	B	0.32	17	B
Total	0.30	9	A	0.32	10	B
Watertown Street at Boys & Girls Club Driveway						
Eastbound	0.00	<5	A	0.00	<5	A
Westbound	0.00	<5	A	0.00	<5	A
Southbound	0.02	11	B	0.02	11	B
Albemarle Road at Site Driveway						
Westbound	0.00	9	A	n/a	n/a	n/a
Northbound	0.00	<5	A	n/a	n/a	n/a
Albemarle Road at Crafts Street						
Eastbound	0.01	<5	A	0.01	<5	A
Westbound	0.02	<5	A	0.02	<5	A
Northbound	>1.0	>50	F	>1.0	>50	F
Southbound	0.88	>50	F	0.92	>50	F
Watertown Street at Site Driveway						
Eastbound	n/a	n/a	n/a	0.00	<5	A
Westbound	n/a	n/a	n/a	0.00	<5	A
Southbound	n/a	n/a	n/a	0.04	12	B

[1]Volume-to-capacity ratio
[2]Average control delay per vehicle (in seconds)
[3]Level of service

As summarized in **Table 4**, **Table 5** and **Table 6**, baseline traffic operating levels at area intersections are at an overall level-of-service (LOS) C or better during the typical weekday morning, weekday midday and weekday afternoon analysis periods with the exception of the Albemarle Road approaches to Crafts Street which operates at LOS F condition during the weekday morning peak hour. Due to the relocation of the Horace Mann Elementary school program, traffic increases associated with the NECP relocation will not notably impact traffic operating levels. However, the Albemarle Road approaches to Crafts Street will continue to operate with long delays under the Design Year Conditions during the pick-up and drop-off periods. Independent of the NECP project, MDM recommends that a signal warrant analysis be conducted at the intersection of Albemarle Road and Crafts Street to determine whether traffic signal control is appropriate for this intersection.

PARKING EVALUATION

The following parking evaluation includes a survey of existing NECP parking activity during the weekday (7:00 – 4:00 pm) and quantifies the adequacy of the parking supply to meet the projected peak parking demands of NECP at 687 Watertown Street. NECP currently enrolls approximately 230 students with approximately 80 staff. Based on NECP projections, the addition of four additional classrooms will yield a total of twenty additional parent vehicles and twenty additional staff vehicles. Based on the preliminary site plan, the proposed NECP site will provide 30 staff parking spaces on-site with the remaining staff and parent/guardian parking activity primarily occurring in parking zones along the easterly side of Albemarle Road between the school and the Gath Memorial Pool, along the westerly side of Albemarle Road, along Watertown Street and on other side street where on-street parking is permitted.

Existing (Baseline) Parking Observations

In order to quantify current staff, parent and van parking demands for NECP, a parking accumulation survey was conducted at the existing NECP location (150 Jackson Street) on Thursday, January 31, 2019 between 7:00 AM – 4:00 PM to identify parking trends. The results of the survey are presented in **Figure 13** which illustrates the existing NECP parking demand in fifteen minute increments. **Table 7** provides a summary of the observed peak parking demands for the existing NECP during the critical weekday morning drop-off period and weekday midday pick-up period. Note that seven vehicles were observed to be parked in the Newtonville Satellite Parking section of 150 Jackson Street and have been excluded from the NECP parking analysis. Detailed parking observations are provided in the **Attachments**.

TABLE 7
EXISTING PEAK PARKING DEMAND SUMMARY[1]

Period	Peak Parking Demand			
	Staff Auto	Student Auto	Van	Total
Weekday Morning Drop-Off Period (8:15 AM – 9:15 AM)	80	46	6	132
Weekday Afternoon Pick-Up Period (11:30 AM – 12:30 PM)	80	40	4	124

[1]Based on field observations of the existing Newton Early Childhood Program on Thursday, January 31, 2019

As summarized in **Figure 13** and **Table 7**:

- *Critical Parking Periods.* The critical parking periods occur during the morning drop-off period (8:15 AM – 9:15 AM) and during the midday pick-up period (11:30 AM – 12:30 PM).

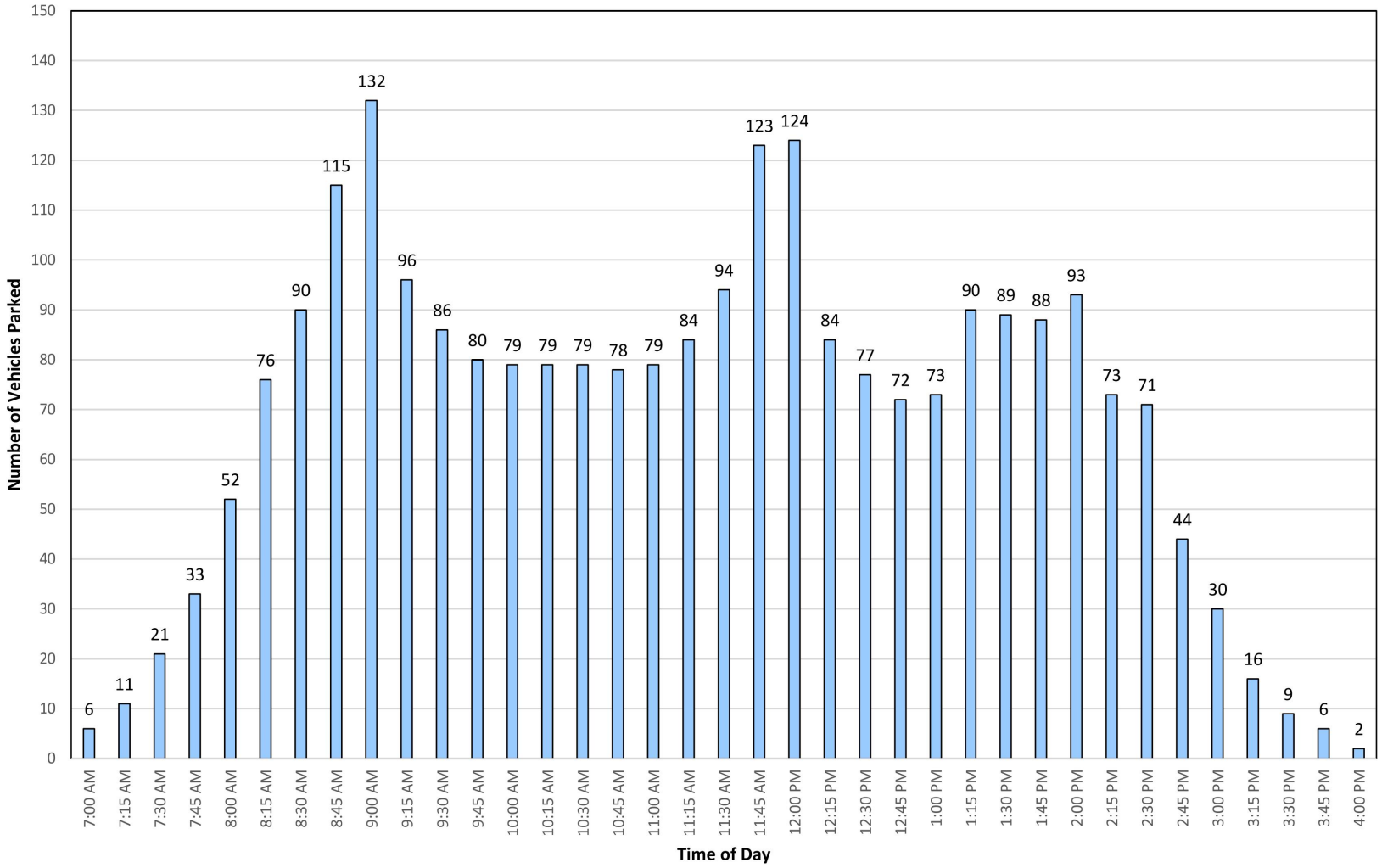


Figure 13

Existing Parking Demand
(150 Jackson Street - NECP)

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: March 2019
Dwg No. 1022 Monitoring.dwg

- *Morning Drop-Off Period.* During the critical morning drop-off period the peak parking demand was observed to be 132 parked vehicles (80 staff vehicles, 46 parent/guardian vehicles and 6 school vans).

- *Midday Pick-Up Period.* During the midday pick-up period the peak parking demand was observed to be 124 parked vehicles (80 staff vehicles, 40 parent/guardian vehicles and 4 vans).

- *Off Peak Parking.* Outside of the critical pick-up and drop-off periods there is a parking demand of approximately 80 staff vehicles.

Projected Peak Parking Demand

Projected peak parking demands for NECP at 687 Watertown Street was estimated based on observed NECP parking demands at 150 Jackson Street and projected parking demands associated with increased student enrollment and staffing levels. The NECP projected parking demand is presented in **Figure 14** in fifteen minute increments. **Table 8** provides an estimate of projected peak parking demands during the critical weekday morning arrival and midday dismissal periods.

TABLE 8
PROJECTED PEAK PARKING DEMAND

Period	Projected Peak Parking Demand[1]			
	Staff Auto	Student Auto	Van[2]	Total
Weekday Morning Drop-Off Period (8:15 AM – 9:15 AM)	100	60	6	166
Weekday Afternoon Pick-Up Period (11:30 AM – 12:30 PM)	100	49	4	153

[1]Based on existing NECP peak parking demand (Table 7) with projected increases provided by NECP staff.

As summarized in **Figure 14** and **Table 8**:

- *Critical Parking Periods.* The critical parking periods will remain during the morning drop-off period (8:15 AM – 9:15 AM) and during the midday pick-up period (11:30 AM – 12:30 PM).

- *Morning Drop-Off Period.* During the critical morning drop-off period the peak parking demand will increase to 166 parked vehicles (100 staff vehicles, 60 parent/guardian vehicles and 6 vans).

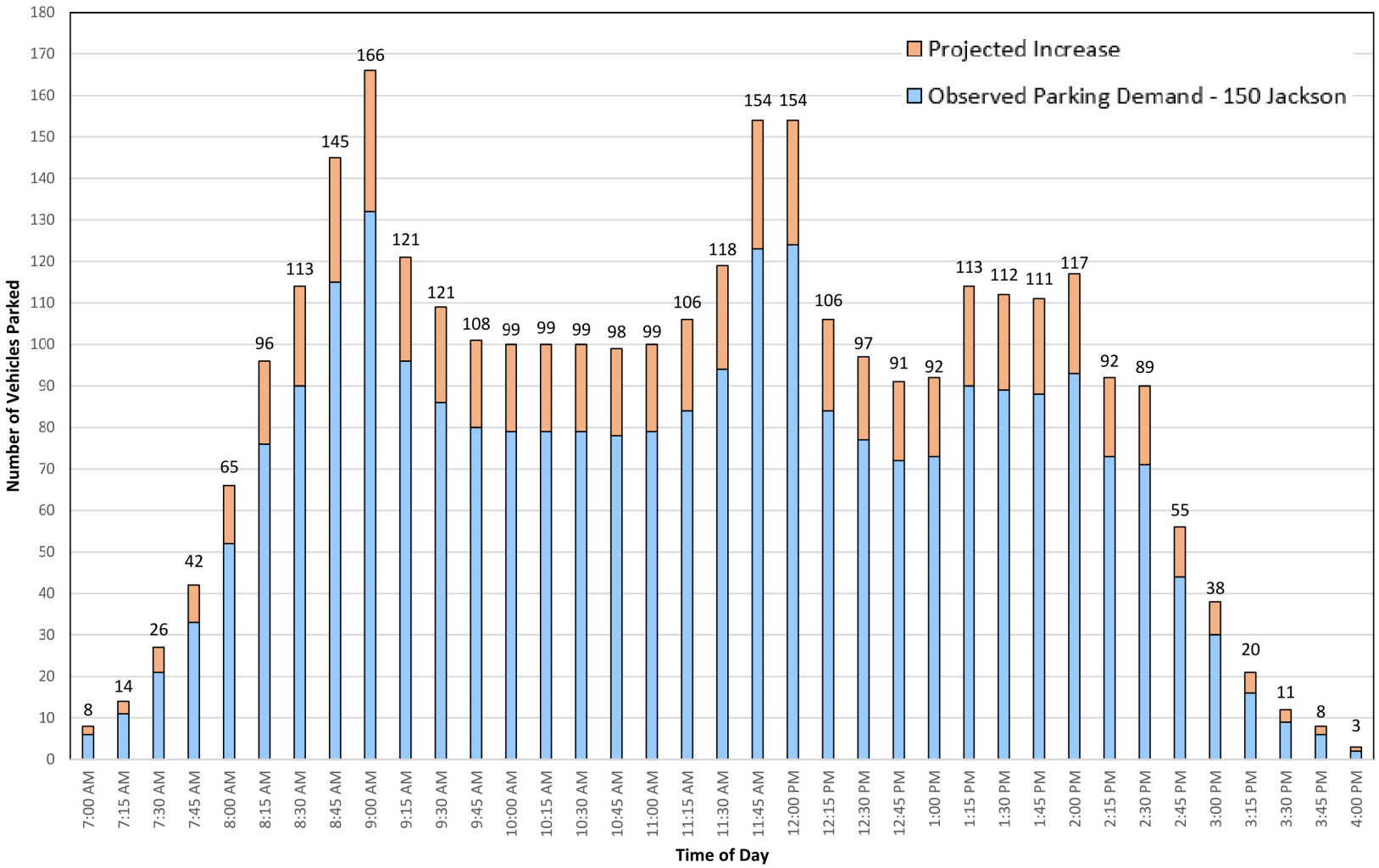


Figure 14

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Projected Parking Demand
(687 Watertown Street - NECP)

Date: March 2019
Dwg No. 1022 Monitoring.dwg

- *Midday Pick-Up Period.* During the midday pick-up period the peak parking demand will increase to 153 parked vehicles (100 staff vehicles, 49 parent/guardian vehicles and 4 vans).

- *School Vans*. Note that school vans are expected to queue in a designated aisle on-site and therefore do not necessarily require a marked parking space.

- *Off-Peak Parking.* NECP will generate a parking demand of approximately 100 staff vehicles outside the critical pick-up and drop-off periods.

Projected Parking Supply

NECP parking demand is expected to be accommodated through a combination of on- and off-street parking as shown in **Figure 15** and described below:

- *Faculty and Staff Parking.*
  - 30 on-site parking spaces.
  - 15 parking spaces along Watertown Street (5 along the northerly side and 10 along the southerly side).
  - 30 parking spaces along the westerly side of Albemarle Road.
  - 25 parking spaces as permitted on side streets within the surrounding area.

- *Parent/Guardian Pick-Up/Drop-Off.*
  - 60 parking spaces along the eastern side of Albemarle Road between the site and the Gath Memorial Pool.

- *Van Loading and Unloading.*
  - Van loading/unloading will occur on-site within a designated ailse.

- *Boys & Girls Club.*
  - Coordinate with the adjacent Boys & Girls Club to allow shared use of each other's parking facility as schedules permit.

Extended School Year (Summer) Parking Demand

NECP will generate a reduced parking demand during the Extended School Year (summer) program compared to the regular school year. Proposed summer enrollment is based on a historical summer student enrollment of approximately 60% of the regular school year student enrollment. Historical staffing levels represent approximately 80% of the regular school year staffing level. Van usage is expected to remain consistent with regular school year usage.

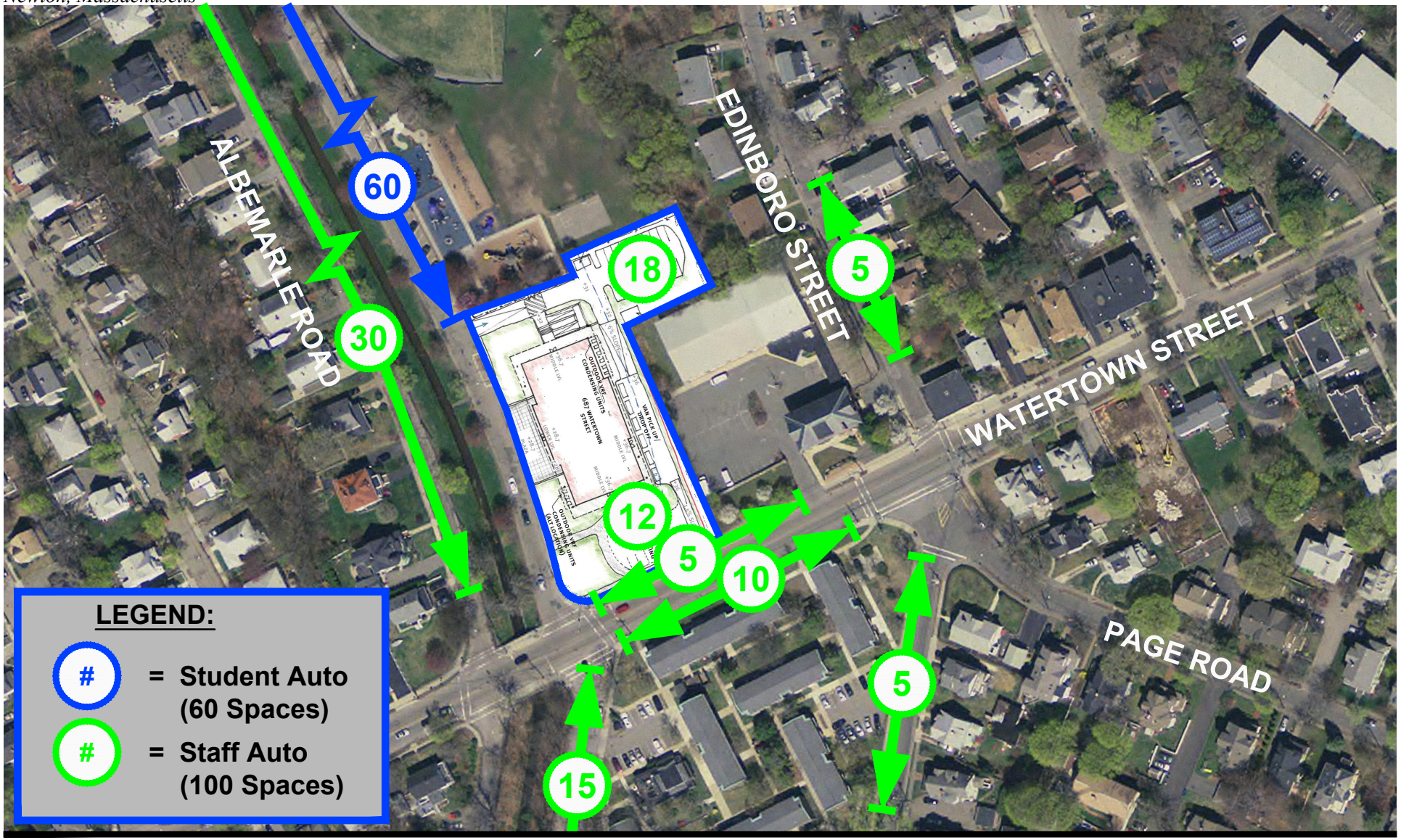


Figure 15

687 Watertown Street
Proposed Parking Areas
(Critical Morning Drop-Off Period)

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: March 2019
Dwg No. 1022 Population Map-Site Figures.dwg

The summer parking demand results are as follows:

- *Critical Parking Periods.* The critical parking periods for the Extended School Year program will include the morning drop-off period (8:15 AM – 9:15 AM) and the midday pick-up period (11:30 AM – 12:30 PM).

- *Morning Drop-Off Period.* During the critical morning drop-off period the peak parking demand will be 122 parked vehicles (80 staff vehicles, 36 parent/guardian vehicles and 6 vans).

- *Midday Pick-Up Period.* The midday pick-up period peak parking demand will be 114 parked vehicles (80 staff vehicles, 30 parent/guardian vehicles and 4 vans).

- *Off Peak Parking.* NECP will generate a parking demand of approximately 80 staff vehicles outside the critical pick-up and drop-off periods.

Albemarle Fields and Harry Gath Memorial Pool Parking Demand

During the summer months, on-street parking located along Albemarle Road will also be used for various recreational programs held at the Albemarle Fields and Harry Gath Memorial Pool as described below.

The Albemarle Fields recreation area located adjacent to 687 Watertown Street is approximately 14 acres and includes five baseball/softball fields, two tennis courts, a basketball court, a playground and open field space for soccer/lacrosse/etc. as well as the Harry Gath Memorial Pool complex. Approximately 173 angled parking spaces are provided along the easterly side of Albemarle Road between Watertown Street and Crafts Street. On-street parallel parking, though informal, is permitted on the westerly side of Albemarle Road.

Peak parking demand estimates for the fields and pool are based on the closest corresponding ITE land use (LUC 411 – Public Park) published in the ITE *Parking Generation*[1]. The peak parking demands for the fields are estimated at 5.08 spaces per acre resulting in approximately 71 spaces under typical peak usage of the recreational area.

The Newton Parks and Recreation Department runs multiple camps and summer programs at the Albemarle Fields and Harry Gath Memorial Pool facility ranging from 18 to 200 campers including Albemarle Acres, Counselor-in-Training and Thundercats Sports Camp. Additionally, the Harry Gath Memorial Pool runs swim lessons and other activities during the summer months. Programs generally run from 8:30 AM-3:30 PM and 9:00AM to 3:00 PM.

[1]*Parking Generation,* Fifth Edition; Institute of Transportation Engineers; Washington, DC; 2019.

The existing parking supply is expected to accommodate the peak parking requirements for the field and pool facilities as well as the proposed NECP pick-up/drop-off parking demands under typical summer operating conditions. MDM recommends that NECP work with the Newton Parks and Recreation Department to minimize conflict during the peak drop-off/pick-up periods and coordinate on any special events held at the facilities.

SITE ACCESS AND CIRCULATION

Site access and circulation recommendations should be incorporated into the preliminary site plan to facilitate safe and efficient pedestrian and vehicle operations at the site. MDM recommends that the NECP develop a traffic management plan (TMP) aimed at enhancing school pick-up/drop off operations, parking activity and site circulation including elements noted in this evaluation. Key aspects of the Site Access and Circulation Plan and TMP should include the following:

- *Parking and Pick-Up/Drop-Off Operations*
  - The parent pick-up/drop-off area should be actively monitored by staff to direct parents to open spaces along the designated Albemarle Road pick-up/drop-off area and to discourage vehicles from stopping in undesignated areas on-site and along Albemarle Road and Watertown Street.
  - Staff members should be available to direct students/parents to/from the school building entrances and the drop-off/pick-up areas as required.
  - Van pick-up/drop-off should take place within the dedicated van loading and unloading area.
  - Pedestrians crossing the Site Driveway and the adjacent Albemarle Road/Watertown Street intersection should be monitored by a crossing guard during student arrival and dismissal periods.
  - Deliveries and trash removal should take place outside of school arrival and dismissal periods.
- *Designated Parking Areas*
  - Designate short-term/visitor parking spaces adjacent to the school along Albemarle Road or within the on-site parking lot as required.

- 30 staff parking spaces are available on-site. It is recommended that the staff parking in the on-site parking lot arrive and depart outside of the peak periods in order to minimize conflicts during the peak drop-off/pick-up periods.

- Assign staff to surrounding on-street parking opportunities including both sides of Watertown Street, the westerly side of Albemarle Road, Walker Street and Edinboro Street.

- All parking spaces should be actively managed to avoid conflicts during peak drop-off/pick-up periods.

- Coordinate with the adjacent Boys & Girls Club to allow shared use of each other's parking facility as schedules permit.

□ *Transportation Demand Management Measures*

- Designate a Transportation Coordinator to oversee transportation issues, to provide up-to-date transit information to faculty, to direct staff responsible for managing student drop-off/pick-up operations and, if necessary, to adjust the school's transportation policies and procedures.

- Provide on-site accommodations for bicyclists (e.g., storage racks, etc.) to encourage bicycle use by staff.

CONCLUSIONS AND RECOMMENDATIONS

MDM finds that the following access and on-site circulation related improvements will enhance traffic operations and/or travel safety for NECP:

Site Access/Pedestrian Accommodations

□ *Albemarle Road and Watertown Street at Site Driveways.* MUTCD compliant signs and pavement markings are recommended at the driveway approach to Watertown Street. Signs and pavement markings should including a "STOP" sign (R1-1) and STOP line pavement markings. The driveway corner radii should be designed to accommodate the largest anticipated delivery vehicle, and emergency apparatus (i.e. fire trucks). The proposed site driveway located along Watertown Street should be marked and signed (R6-1) for one-way operation between the staff parking lot and Watertown Street.

- *Driveway Sight Lines.* Clear sight lines to/from driveways serving the site should be provided at all times. MDM recommends that any new plantings (shrubs, bushes) or physical landscape features (rock wall, etc.) to be located within the driveway sight lines, should also be maintained at a height of 2 feet or less above the adjacent existing roadway grade to ensure unobstructed lines of sight. Any on-street parking should be set-back from the driveway curb returns a minimum of 30 feet for sight line purposes.

- *Sidewalk Connections.* A sidewalk should be provided along the Albemarle Road southbound lane to provide appropriate walking surfaces for staff and other pedestrians. The sidewalk should connect to Watertown Street with consideration for a second pedestrian bridge provided over Cheese Cake Brook across from the site driveway. If feasible, the Albemarle Road sidewalk should be installed on the Cheese Cake Brook side of the roadway to minimize parking/pedestrian conflicts with residential driveways.

- *Boys & Girls Club Pedestrian Connection.* A pedestrian connection between the site and adjacent Boys & Girls Club should be considered to facilitate shared parking opportunities.

- *Sign and Pavement Markings*. Review applicability and maintenance of sign and pavement markings, including School Zones, parking restrictions, student drop-off/pick-up designations along Albemarle Road and Watertown Street, as well as "Don't Block the Box" pavement markings at the Albemarle Road/Crafts Street intersection.

Parking and Pick-Up/Drop-Off

- *On-Site Parking.* Staff parking within the on-site parking lot should arrive and depart outside of the peak periods in order to minimize conflict during the peak drop-off/pick-up periods.

- *On-Street Parking.* Formalized on-street parking and sidewalk connections along the southbound side of Albemarle Road.

- *Van Loading/Unloading.* The van loading area on-site should allow vans to be double stacked, if necessary.

- The NECP should coordinate with the Newton Parks and Recreation Department to minimize conflict during peak school drop-off/pick-up periods, summer camps and special events.

- *Signal Warrant Analysis.* Independent of the NECP project, MDM recommends that a signal warrant analysis be conducted at the Albemarle Road/Crafts Street intersection. The northbound and southbound approach to Crafts Street currently operates with long delays during the weekday morning peak hour.

In summary, the replacement of the existing Horace Mann Elementary School use with the NECP use does not result in any material impact to intersection operations within the study area. Peak parking demand for NECP are estimated to be 166 spaces based on observations conducted at the existing NECP facility at 150 Jackson Street with adjustment for projected student and staff increases. The preliminary parking plan utilizing the proposed on-site parking spaces as well as the on-street parking along Albemarle Road, Watertown Street and the surrounding area is expected to accommodate the peak parking demands for NECP under typical peak pick-up/drop-off operating conditions.

ATTACHMENTS

- Traffic Volume Data
- Seasonal/Yearly Data
- Public Transportation Information
- 150 Jackson Data – Trip Generation
- Trip Distribution
- Capacity Analysis
- Parking Data

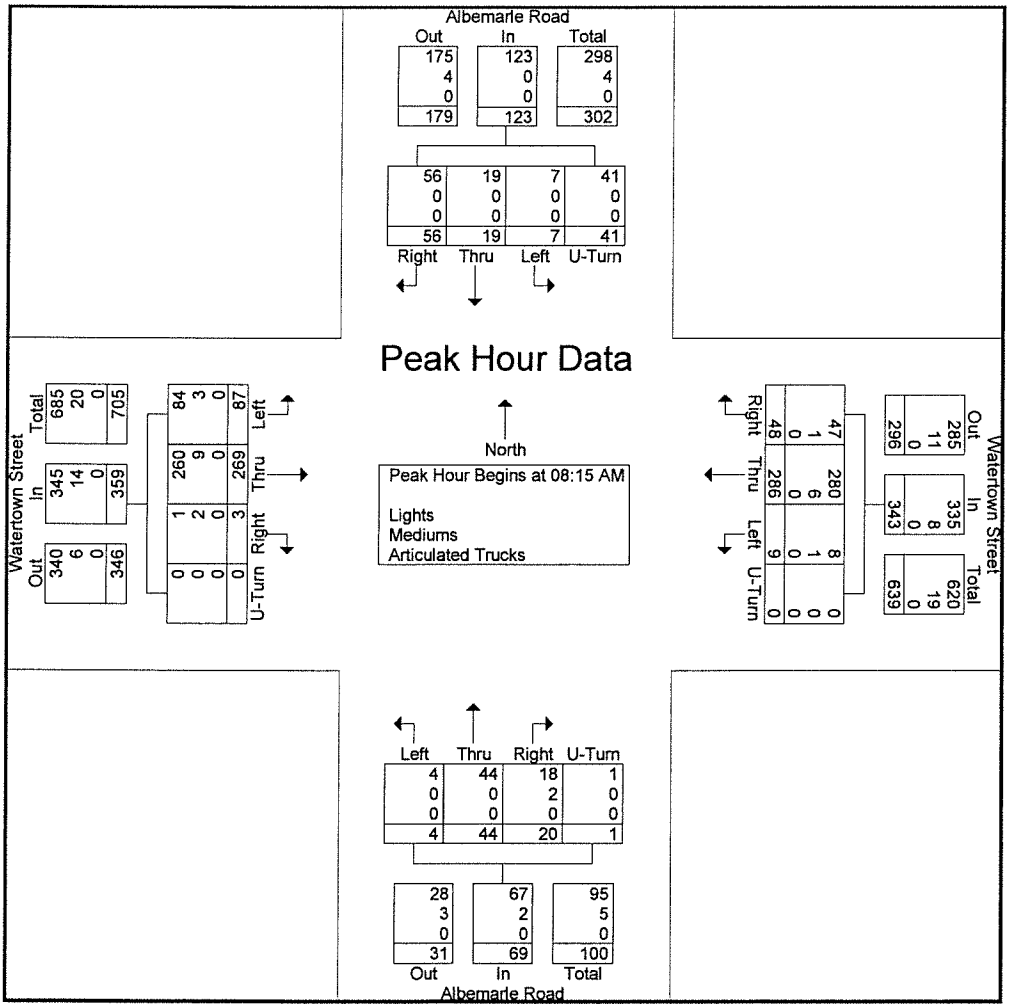
□ Traffic Volume Data

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Watertown_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 2

	Albemarle Road From North					Watertown Street From East					Albemarle Road From South					Watertown Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:15 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	10	2	2	**30**	**44**	**29**	**75**	**5**	0	**109**	**11**	**24**	1	**1**	**37**	**1**	62	**26**	0	89	**279**
08:30 AM	**21**	**9**	**4**	7	41	12	72	3	0	87	5	8	**3**	0	16	0	64	22	0	86	230
08:45 AM	16	8	1	4	29	6	75	1	0	82	3	10	0	0	13	1	**87**	19	0	**107**	231
09:00 AM	9	0	0	0	9	1	64	0	0	65	1	2	0	0	3	1	56	20	0	77	154
Total Volume	56	19	7	41	123	48	286	9	0	343	20	44	4	1	69	3	269	87	0	359	894
% App. Total	45.5	15.4	5.7	33.3		14	83.4	2.6	0		29	63.8	5.8	1.4		0.8	74.9	24.2	0		
PHF	.667	.528	.438	.342	.699	.414	.953	.450	.000	.787	.455	.458	.333	.250	.466	.750	.773	.837	.000	.839	.801
Lights	56	19	7	41	123	47	280	8	0	335	18	44	4	1	67	1	260	84	0	345	870
% Lights	100	100	100	100	100	97.9	97.9	88.9	0	97.7	90.0	100	100	100	97.1	33.3	96.7	96.6	0	96.1	97.3
Mediums	0	0	0	0	0	1	6	1	0	8	2	0	0	0	2	2	9	3	0	14	24
% Mediums	0	0	0	0	0	2.1	2.1	11.1	0	2.3	10.0	0	0	0	2.9	66.7	3.3	3.4	0	3.9	2.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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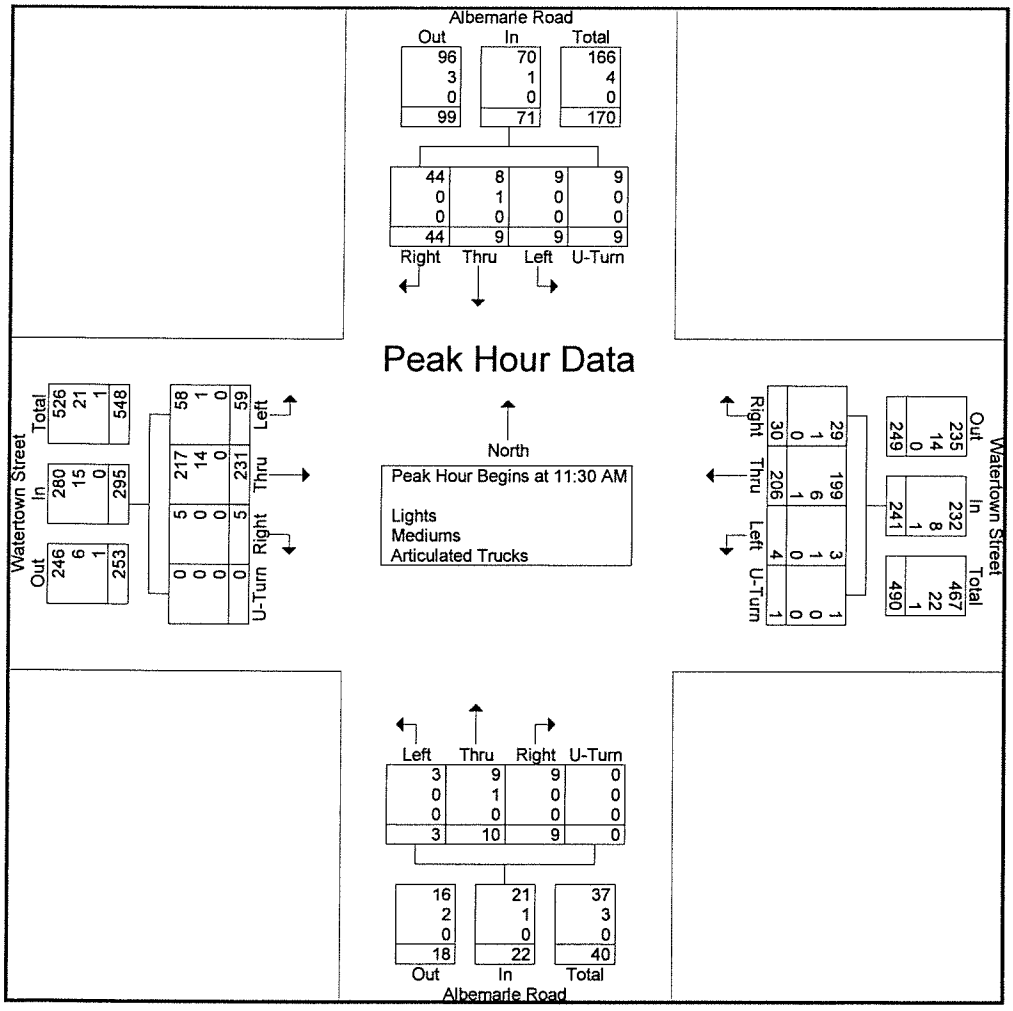
28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Watertown_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 3

	Albemarle Road From North					Watertown Street From East					Albemarle Road From South					Watertown Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	**14**	1	**5**	2	**22**	2	40	**1**	0	43	1	3	**1**	0	5	2	57	13	0	72	142
11:45 AM	8	**3**	1	0	12	**12**	51	1	**1**	65	2	1	1	0	4	**3**	55	16	0	74	155
12:00 PM	10	3	1	3	17	11	**61**	1	0	**73**	**5**	**4**	0	0	**9**	0	**61**	**17**	0	**78**	**177**
12:15 PM	12	2	2	**4**	20	5	54	1	0	60	1	2	1	0	4	0	58	13	0	71	155
Total Volume	44	9	9	9	71	30	206	4	1	241	9	10	3	0	22	5	231	59	0	295	629
% App. Total	62	12.7	12.7	12.7		12.4	85.5	1.7	0.4		40.9	45.5	13.6	0		1.7	78.3	20	0		
PHF	.786	.750	.450	.563	.807	.625	.844	1.00	.250	.825	.450	.625	.750	.000	.611	.417	.947	.868	.000	.946	.888
Lights	44	8	9	9	70	29	199	3	1	232	9	9	3	0	21	5	217	58	0	280	603
% Lights	100	88.9	100	100	98.6	96.7	96.6	75.0	100	96.3	100	90.0	100	0	95.5	100	93.9	98.3	0	94.9	95.9
Mediums	0	1	0	0	1	1	6	1	0	8	0	1	0	0	1	0	14	1	0	15	25
% Mediums	0	11.1	0	0	1.4	3.3	2.9	25.0	0	3.3	0	10.0	0	0	4.5	0	6.1	1.7	0	5.1	4.0
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Articulated Trucks	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0.2



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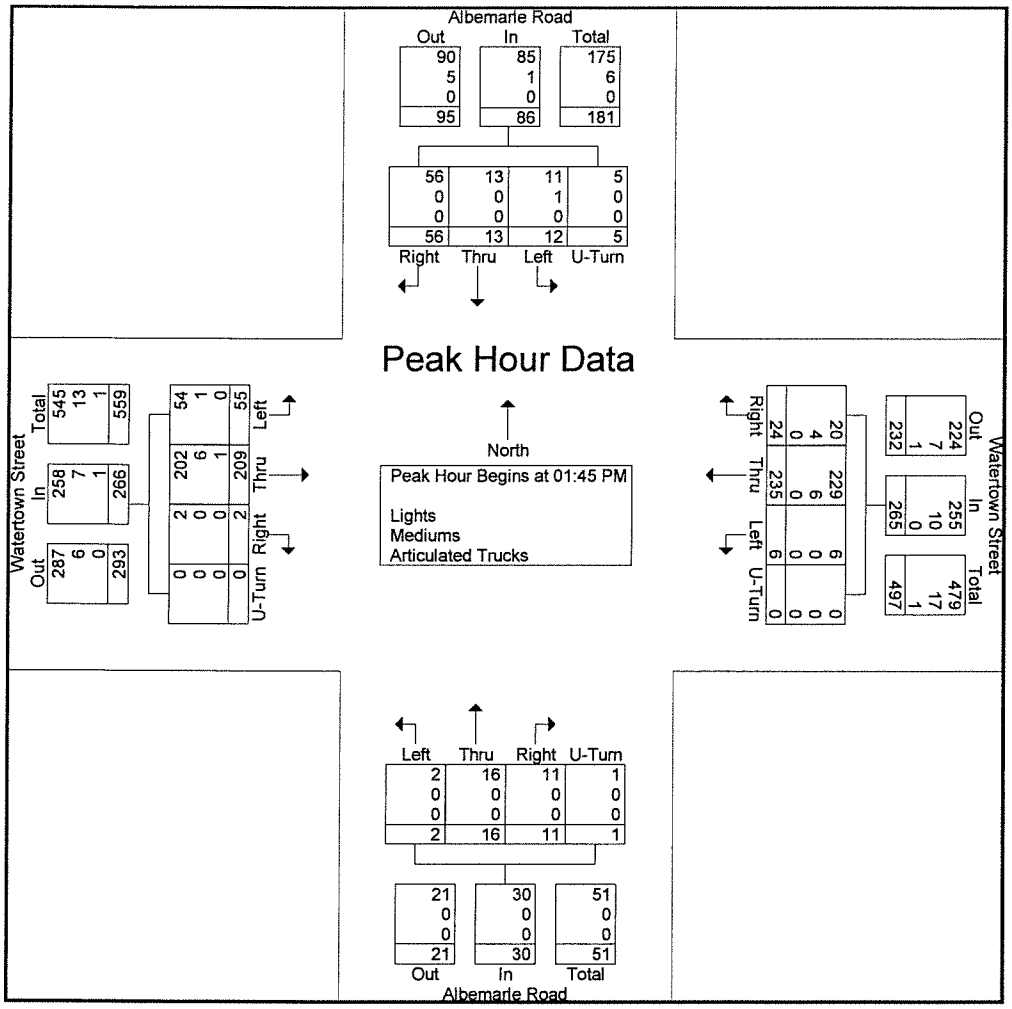
28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Watertown_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 4

	Albemarle Road From North					Watertown Street From East					Albemarle Road From South					Watertown Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 01:45 PM to 02:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	7	1	2	0	10	3	66	**2**	0	71	3	4	0	0	7	**1**	45	8	0	54	142
02:00 PM	17	3	1	0	21	4	**67**	1	0	**72**	**4**	3	**1**	0	8	0	49	**27**	0	**76**	177
02:15 PM	8	2	3	2	15	4	46	1	0	51	1	3	1	0	5	0	**63**	11	0	74	145
02:30 PM	**24**	**7**	**6**	**3**	**40**	**13**	56	2	0	71	3	**6**	0	**1**	**10**	1	52	9	0	62	**183**
Total Volume	56	13	12	5	86	24	235	6	0	265	11	16	2	1	30	2	209	55	0	266	647
% App. Total	65.1	15.1	14	5.8		9.1	88.7	2.3	0		36.7	53.3	6.7	3.3		0.8	78.6	20.7	0		
PHF	.583	.464	.500	.417	.538	.462	.877	.750	.000	.920	.688	.667	.500	.250	.750	.500	.829	.509	.000	.875	.884
Lights	56	13	11	5	85	20	229	6	0	255	11	16	2	1	30	2	202	54	0	258	628
% Lights	100	100	91.7	100	98.8	83.3	97.4	100	0	96.2	100	100	100	100	100	100	96.7	98.2	0	97.0	97.1
Mediums	0	0	1	0	1	4	6	0	0	10	0	0	0	0	0	0	6	1	0	7	18
% Mediums	0	0	8.3	0	1.2	16.7	2.6	0	0	3.8	0	0	0	0	0	0	2.9	1.8	0	2.6	2.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0.4	0.2



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Albemarle Road
E/W: Watertown Street
Newton, MA

File Name : 1022_Watertown_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

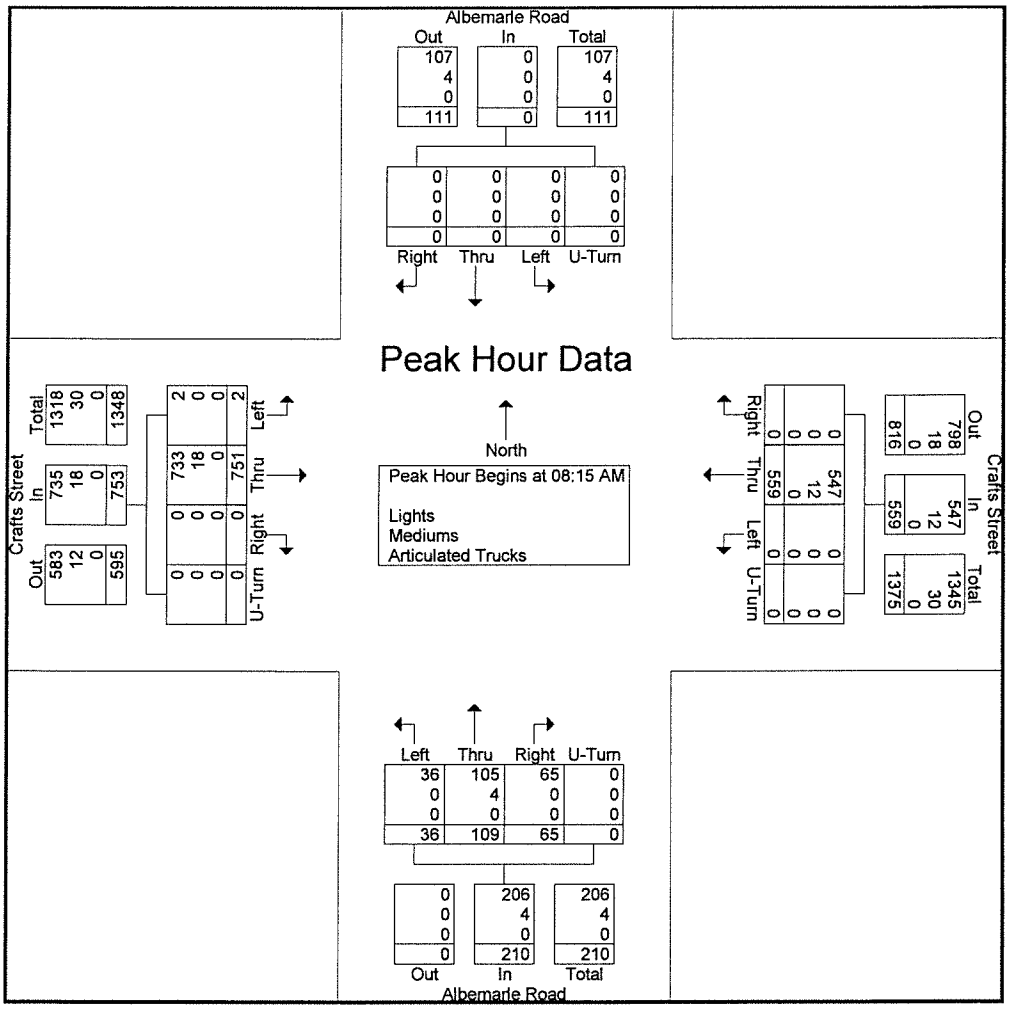
	Albemarle Road From North					Watertown Street From East					Albemarle Road From South					Watertown Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	7	1	2	1	11	2	35	1	0	38	1	2	0	0	3	0	71	10	0	81	133
07:15 AM	13	2	9	4	28	4	54	0	0	58	3	3	0	0	6	0	80	17	0	97	189
07:30 AM	18	4	16	8	46	17	81	0	0	98	4	10	0	0	14	2	74	26	0	102	260
07:45 AM	35	5	10	3	53	14	89	0	0	103	1	22	1	0	24	0	76	53	0	129	309
Total	73	12	37	16	138	37	259	1	0	297	9	37	1	0	47	2	301	106	0	409	891
08:00 AM	20	4	9	10	43	21	71	2	0	94	3	14	0	0	17	1	88	18	0	107	261
08:15 AM	10	2	2	30	44	29	75	5	0	109	11	24	1	1	37	1	62	26	0	89	279
08:30 AM	21	9	4	7	41	12	72	3	0	87	5	8	3	0	16	0	64	22	0	86	230
08:45 AM	16	8	1	4	29	6	75	1	0	82	3	10	0	0	13	1	87	19	0	107	231
Total	67	23	16	51	157	68	293	11	0	372	22	56	4	1	83	3	301	85	0	389	1001
09:00 AM	9	0	0	0	9	1	64	0	0	65	1	2	0	0	3	1	56	20	0	77	154
Total	9	0	0	0	9	1	64	0	0	65	1	2	0	0	3	1	56	20	0	77	154
11:30 AM	14	1	5	2	22	2	40	1	0	43	1	3	1	0	5	2	57	13	0	72	142
11:45 AM	8	3	1	0	12	12	51	1	1	65	2	1	1	0	4	3	55	16	0	74	155
Total	22	4	6	2	34	14	91	2	1	108	3	4	2	0	9	5	112	29	0	146	297
12:00 PM	10	3	1	3	17	11	61	1	0	73	5	4	0	0	9	0	61	17	0	78	177
12:15 PM	12	2	2	4	20	5	54	1	0	60	1	2	1	0	4	0	58	13	0	71	155
Total	22	5	3	7	37	16	115	2	0	133	6	6	1	0	13	0	119	30	0	149	332
01:00 PM	19	3	1	1	24	4	34	2	0	40	2	6	0	0	8	0	41	4	0	45	117
01:15 PM	7	2	5	1	15	1	58	2	0	61	2	2	1	0	5	0	44	13	0	57	138
01:30 PM	18	5	3	2	28	4	43	1	0	48	1	3	1	1	6	0	62	18	0	80	162
01:45 PM	7	1	2	0	10	3	66	2	0	71	3	4	0	0	7	1	45	8	0	54	142
Total	51	11	11	4	77	12	201	7	0	220	8	15	2	1	26	1	192	43	0	236	559
02:00 PM	17	3	1	0	21	4	67	1	0	72	4	3	1	0	8	0	49	27	0	76	177
02:15 PM	8	2	3	2	15	4	46	1	0	51	1	3	1	0	5	0	63	11	0	74	145
02:30 PM	24	7	6	3	40	13	56	2	0	71	3	6	0	1	10	1	52	9	0	62	183
02:45 PM	24	8	9	9	50	14	87	1	0	102	4	4	0	3	11	4	54	15	0	73	236
Total	73	20	19	14	126	35	256	5	0	296	12	16	2	4	34	5	218	62	0	285	741
03:00 PM	12	5	5	5	27	23	67	3	0	93	5	3	6	3	17	2	66	13	0	81	218
03:15 PM	21	3	3	1	28	6	86	3	0	95	2	2	3	0	7	3	81	13	0	97	227
03:30 PM	12	8	2	4	26	5	96	0	0	101	1	2	4	0	7	1	75	16	0	92	226
03:45 PM	17	4	4	4	29	10	109	0	0	119	6	2	2	0	10	4	83	17	0	104	262
Total	62	20	14	14	110	44	358	6	0	408	14	9	15	3	41	10	305	59	0	374	933
Grand Total	379	95	106	108	688	227	1637	34	1	1899	75	145	27	9	256	27	1604	434	0	2065	4908
Apprch %	55.1	13.8	15.4	15.7		12	86.2	1.8	0.1		29.3	56.6	10.5	3.5		1.3	77.7	21	0		
Total %	7.7	1.9	2.2	2.2	14	4.6	33.4	0.7	0	38.7	1.5	3	0.6	0.2	5.2	0.6	32.7	8.8	0	42.1	
Lights	373	93	105	106	677	215	1594	32	1	1842	73	142	26	9	250	24	1558	423	0	2005	4774
% Lights	98.4	97.9	99.1	98.1	98.4	94.7	97.4	94.1	100	97	97.3	97.9	96.3	100	97.7	88.9	97.1	97.5	0	97.1	97.3
Mediums	5	2	1	2	10	12	41	2	0	55	2	3	1	0	6	3	42	11	0	56	127
% Mediums	1.3	2.1	0.9	1.9	1.5	5.3	2.5	5.9	0	2.9	2.7	2.1	3.7	0	2.3	11.1	2.6	2.5	0	2.7	2.6
Articulated Trucks																					
% Articulated Trucks	0.3	0	0	0	0.1	0	0.1	0	0	0.1	0	0	0	0	0	0	0.2	0	0	0.2	0.1

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Crafts_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 2

	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:15 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	0	0	0	0	0	0	138	0	0	138	**32**	24	10	0	66	0	**196**	0	0	196	400
08:30 AM	0	0	0	0	0	0	147	0	0	147	21	**46**	**16**	0	**83**	0	196	**1**	0	**197**	**427**
08:45 AM	0	0	0	0	0	0	**149**	0	0	**149**	4	22	5	0	31	0	189	0	0	189	369
09:00 AM	0	0	0	0	0	0	125	0	0	125	8	17	5	0	30	0	170	1	0	171	326
Total Volume	0	0	0	0	0	0	559	0	0	559	65	109	36	0	210	0	751	2	0	753	1522
% App. Total	0	0	0	0		0	100	0	0		31	51.9	17.1	0		0	99.7	0.3	0		
PHF	.000	.000	.000	.000	.000	.000	.938	.000	.000	.938	.508	.592	.563	.000	.633	.000	.958	.500	.000	.956	.891
Lights	0	0	0	0	0	0	547	0	0	547	65	105	36	0	206	0	733	2	0	735	1488
% Lights	0	0	0	0	0	0	97.9	0	0	97.9	100	96.3	100	0	98.1	0	97.6	100	0	97.6	97.8
Mediums	0	0	0	0	0	0	12	0	0	12	0	4	0	0	4	0	18	0	0	18	34
% Mediums	0	0	0	0	0	0	2.1	0	0	2.1	0	3.7	0	0	1.9	0	2.4	0	0	2.4	2.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

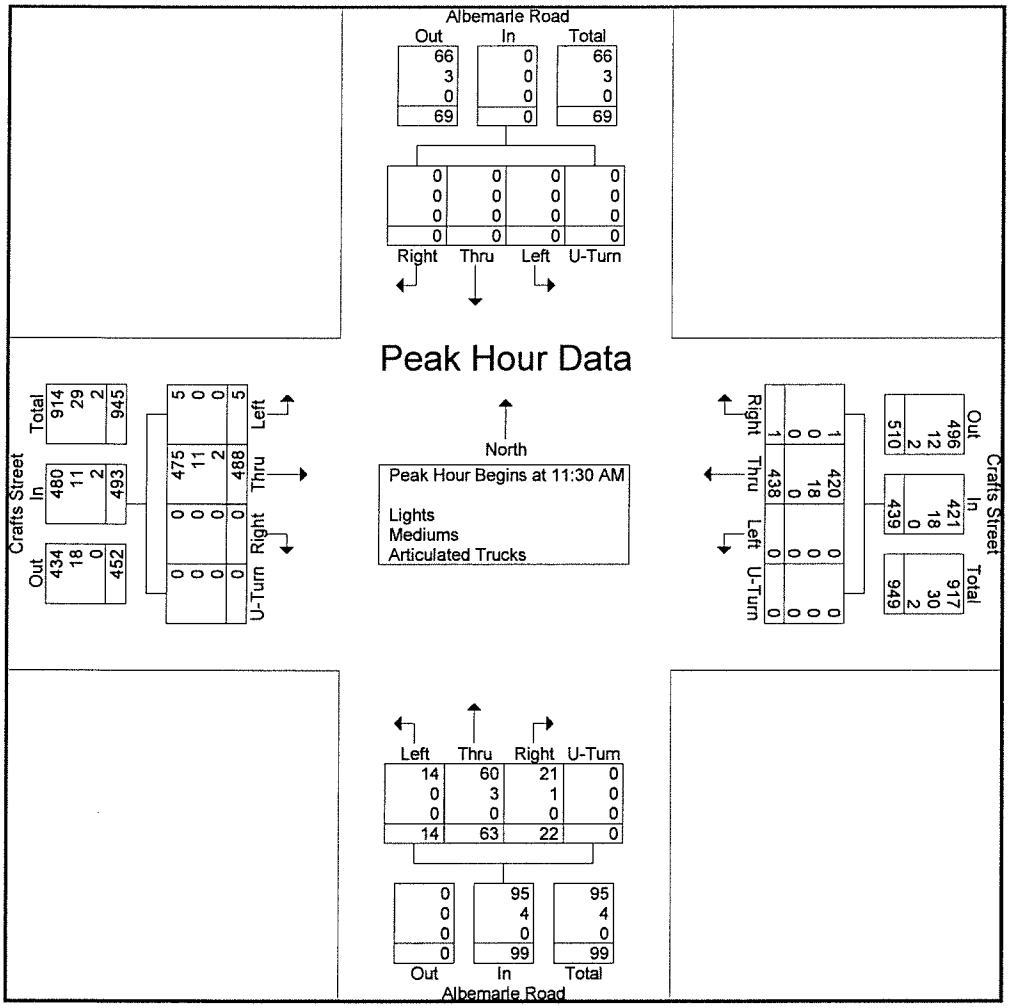


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Crafts_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 3

	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	0	0	0	0	0	102	0	0	102	**8**	14	1	0	23	0	116	1	0	117	242
11:45 AM	0	0	0	0	0	0	115	0	0	115	2	16	3	0	21	0	117	0	0	117	253
12:00 PM	0	0	0	0	0	0	**126**	0	0	**126**	7	**19**	**5**	0	**31**	0	**128**	**2**	0	**130**	**287**
12:15 PM	0	0	0	0	0	**1**	95	0	0	96	5	14	5	0	24	0	127	2	0	129	249
Total Volume	0	0	0	0	0	1	438	0	0	439	22	63	14	0	99	0	488	5	0	493	1031
% App. Total	0	0	0	0		0.2	99.8	0	0		22.2	63.6	14.1	0		0	99	1	0		
PHF	.000	.000	.000	.000	.000	.250	.869	.000	.000	.871	.688	.829	.700	.000	.798	.000	.953	.625	.000	.948	.898
Lights	0	0	0	0	0	1	420	0	0	421	21	60	14	0	95	0	475	5	0	480	996
% Lights	0	0	0	0	0	100	95.9	0	0	95.9	95.5	95.2	100	0	96.0	0	97.3	100	0	97.4	96.6
Mediums	0	0	0	0	0	0	18	0	0	18	1	3	0	0	4	0	11	0	0	11	33
% Mediums	0	0	0	0	0	0	4.1	0	0	4.1	4.5	4.8	0	0	4.0	0	2.3	0	0	2.2	3.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4	0.2

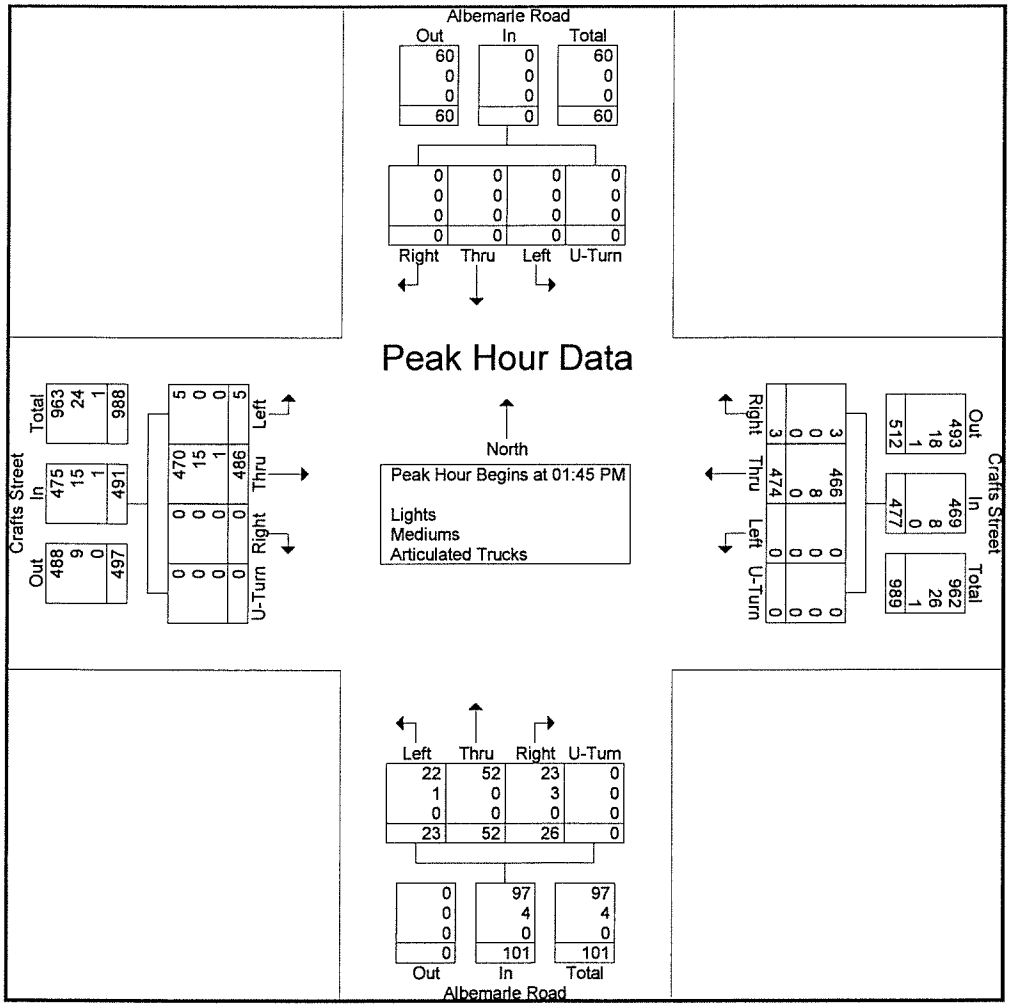


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Crafts_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 4

	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 01:45 PM to 02:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	0	0	0	0	0	1	89	0	0	90	6	10	**9**	0	25	0	103	1	0	104	219
02:00 PM	0	0	0	0	0	0	125	0	0	125	4	**24**	4	0	**32**	0	104	1	0	105	262
02:15 PM	0	0	0	0	0	0	**148**	0	0	**148**	6	12	1	0	19	0	123	1	0	124	291
02:30 PM	0	0	0	0	0	**2**	112	0	0	114	**10**	6	9	0	25	0	**156**	**2**	0	**158**	**297**
Total Volume	0	0	0	0	0	3	474	0	0	477	26	52	23	0	101	0	486	5	0	491	1069
% App. Total	0	0	0	0		0.6	99.4	0	0		25.7	51.5	22.8	0		0	99	1	0		
PHF	.000	.000	.000	.000	.000	.375	.801	.000	.000	.806	.650	.542	.639	.000	.789	.000	.779	.625	.000	.777	.900
Lights	0	0	0	0	0	3	466	0	0	469	23	52	22	0	97	0	470	5	0	475	1041
% Lights	0	0	0	0	0	100	98.3	0	0	98.3	88.5	100	95.7	0	96.0	0	96.7	100	0	96.7	97.4
Mediums	0	0	0	0	0	0	8	0	0	8	3	0	1	0	4	0	15	0	0	15	27
% Mediums	0	0	0	0	0	0	1.7	0	0	1.7	11.5	0	4.3	0	4.0	0	3.1	0	0	3.1	2.5
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2	0.1



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Albemarle Road
E/W: Crafts Street
Newton, MA

File Name : 1022_Crafts_at_Albemarle_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

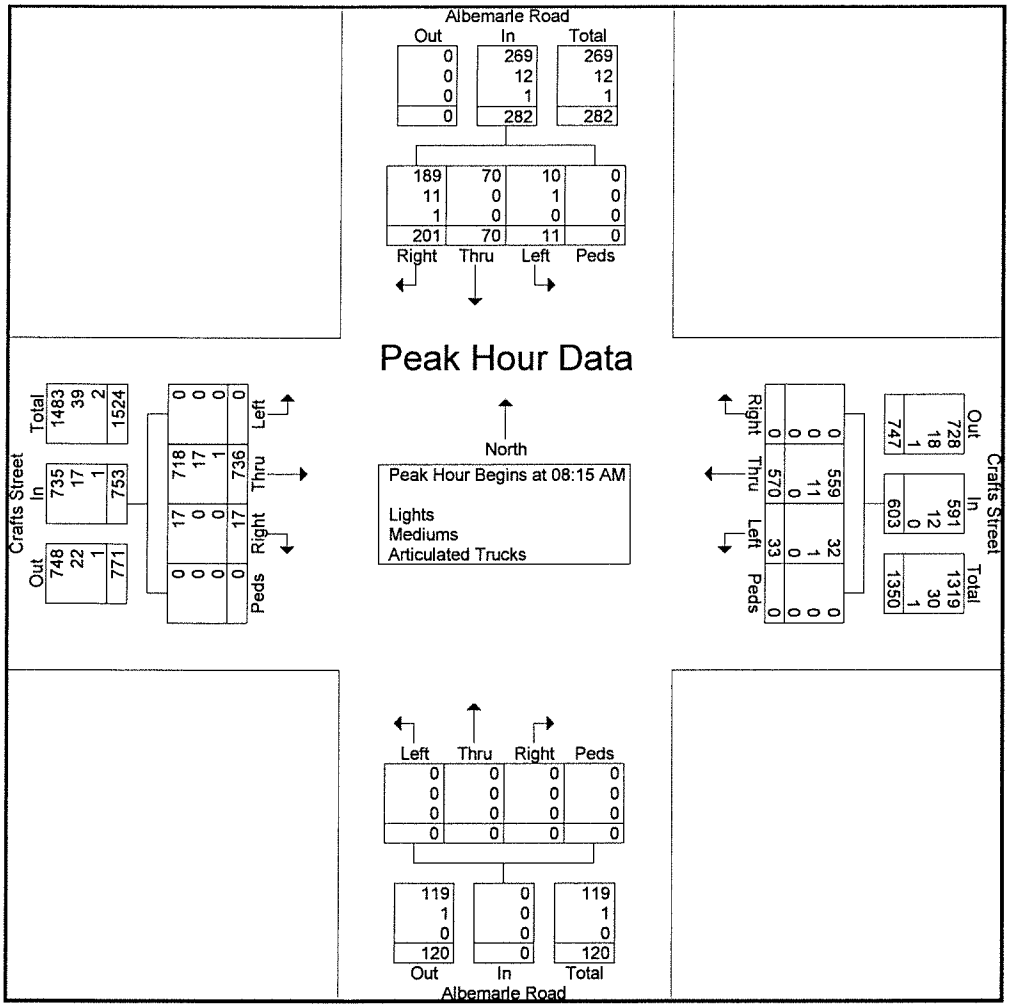
	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	105	0	0	105	3	9	2	0	14	0	203	0	0	203	322
07:15 AM	0	0	0	0	0	1	123	0	0	124	4	10	3	0	17	0	221	2	0	223	364
07:30 AM	0	0	0	0	0	0	133	0	0	133	8	12	9	0	29	0	219	1	0	220	382
07:45 AM	0	0	0	0	0	0	158	0	0	158	14	30	24	0	68	0	199	1	0	200	426
Total	0	0	0	0	0	1	519	0	0	520	29	61	38	0	128	0	842	4	0	846	1494
08:00 AM	0	0	0	0	0	0	149	0	0	149	16	17	9	0	42	0	178	2	0	180	371
08:15 AM	0	0	0	0	0	0	138	0	0	138	32	24	10	0	66	0	196	0	0	196	400
08:30 AM	0	0	0	0	0	0	147	0	0	147	21	46	16	0	83	0	196	1	0	197	427
08:45 AM	0	0	0	0	0	0	149	0	0	149	4	22	5	0	31	0	189	0	0	189	369
Total	0	0	0	0	0	0	583	0	0	583	73	109	40	0	222	0	759	3	0	762	1567
09:00 AM	0	0	0	0	0	0	125	0	0	125	8	17	5	0	30	0	170	1	0	171	326
Total	0	0	0	0	0	0	125	0	0	125	8	17	5	0	30	0	170	1	0	171	326
11:30 AM	0	0	0	0	0	0	102	0	0	102	8	14	1	0	23	0	116	1	0	117	242
11:45 AM	0	0	0	0	0	0	115	0	0	115	2	16	3	0	21	0	117	0	0	117	253
Total	0	0	0	0	0	0	217	0	0	217	10	30	4	0	44	0	233	1	0	234	495
12:00 PM	0	0	0	0	0	0	126	0	0	126	7	19	5	0	31	0	128	2	0	130	287
12:15 PM	0	0	0	0	0	1	95	0	0	96	5	14	5	0	24	0	127	2	0	129	249
Total	0	0	0	0	0	1	221	0	0	222	12	33	10	0	55	0	255	4	0	259	536
01:00 PM	0	0	0	0	0	0	109	0	0	109	9	11	5	0	25	1	106	0	0	107	241
01:15 PM	0	0	0	0	0	0	83	0	0	83	5	7	0	0	12	0	115	2	0	117	212
01:30 PM	0	0	0	0	0	1	108	0	0	109	3	18	7	0	28	0	91	1	0	92	229
01:45 PM	0	0	0	0	0	1	89	0	0	90	6	10	9	0	25	0	103	1	0	104	219
Total	0	0	0	0	0	2	389	0	0	391	23	46	21	0	90	1	415	4	0	420	901
02:00 PM	0	0	0	0	0	0	125	0	0	125	4	24	4	0	32	0	104	1	0	105	262
02:15 PM	0	0	0	0	0	0	148	0	0	148	6	12	1	0	19	0	123	1	0	124	291
02:30 PM	0	0	0	0	0	2	112	0	0	114	10	6	9	0	25	0	156	2	0	158	297
02:45 PM	0	0	0	0	0	0	148	0	0	148	16	15	16	0	47	0	156	0	0	156	351
Total	0	0	0	0	0	2	533	0	0	535	36	57	30	0	123	0	539	4	0	543	1201
03:00 PM	0	0	0	0	0	0	173	0	0	173	32	17	17	0	66	0	150	1	0	151	390
03:15 PM	0	0	0	0	0	0	164	0	0	164	20	21	10	0	51	0	161	1	0	162	377
03:30 PM	0	0	0	0	0	0	175	0	0	175	10	14	12	0	36	0	180	1	0	181	392
03:45 PM	0	0	0	0	0	0	183	0	0	183	10	14	6	0	30	0	188	1	0	189	402
Total	0	0	0	0	0	0	695	0	0	695	72	66	45	0	183	0	679	4	0	683	1561
Grand Total	0	0	0	0	0	6	3282	0	0	3288	263	419	193	0	875	1	3892	25	0	3918	8081
Apprch %	0	0	0	0		0.2	99.8	0	0		30.1	47.9	22.1	0		0	99.3	0.6	0		
Total %	0	0	0	0	0	0.1	40.6	0	0	40.7	3.3	5.2	2.4	0	10.8	0	48.2	0.3	0	48.5	
Lights	0	0	0	0	0	6	3186	0	0	3192	247	410	183	0	840	1	3803	24	0	3828	7860
% Lights	0	0	0	0	0	100	97.1	0	0	97.1	93.9	97.9	94.8	0	96	100	97.7	96	0	97.7	97.3
Mediums	0	0	0	0	0	0	93	0	0	93	16	9	10	0	35	0	84	1	0	85	213
% Mediums	0	0	0	0	0	0	2.8	0	0	2.8	6.1	2.1	5.2	0	4	0	2.2	4	0	2.2	2.6
Articulated Trucks																					
% Articulated Trucks	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0.1	0	0	0.1	0.1

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Crafts_at_Albemarle_2_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 2

	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:15 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	**59**	**28**	**3**	0	**90**	0	146	**14**	0	**160**	0	0	0	0	0	**6**	**198**	0	0	**204**	**454**
08:30 AM	46	16	2	0	64	0	142	12	0	154	0	0	0	0	0	5	191	0	0	196	414
08:45 AM	53	20	3	0	76	0	**155**	5	0	160	0	0	0	0	0	5	186	0	0	191	427
09:00 AM	43	6	3	0	52	0	127	2	0	129	0	0	0	0	0	1	161	0	0	162	343
Total Volume	201	70	11	0	282	0	570	33	0	603	0	0	0	0	0	17	736	0	0	753	1638
% App. Total	71.3	24.8	3.9	0		0	94.5	5.5	0		0	0	0	0		2.3	97.7	0	0		
PHF	.852	.625	.917	.000	.783	.000	.919	.589	.000	.942	.000	.000	.000	.000	.000	.708	.929	.000	.000	.923	.902
Lights	189	70	10	0	269	0	559	32	0	591	0	0	0	0	0	17	718	0	0	735	1595
% Lights	94.0	100	90.9	0	95.4	0	98.1	97.0	0	98.0	0	0	0	0	0	100	97.6	0	0	97.6	97.4
Mediums	11	0	1	0	12	0	11	1	0	12	0	0	0	0	0	0	17	0	0	17	41
% Mediums	5.5	0	9.1	0	4.3	0	1.9	3.0	0	2.0	0	0	0	0	0	0	2.3	0	0	2.3	2.5
Articulated Trucks	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
% Articulated Trucks	0.5	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.1

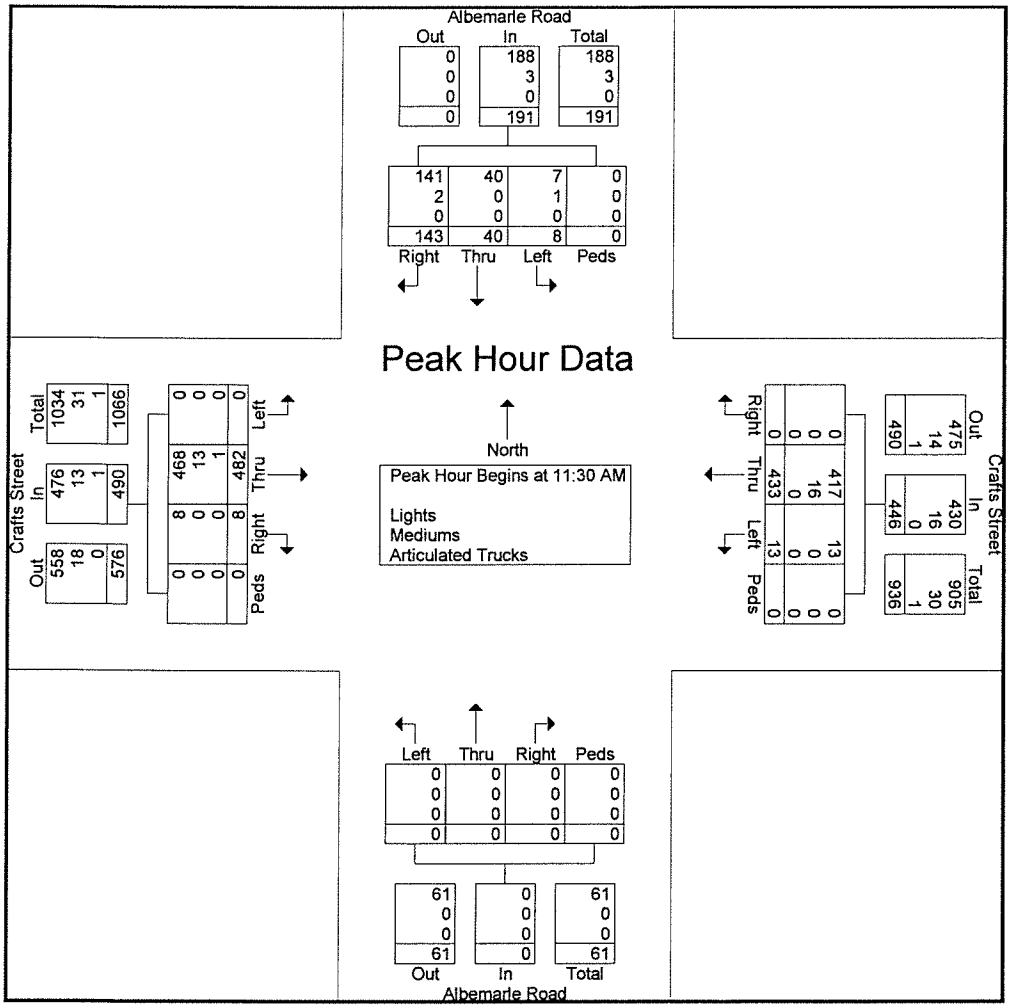


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Crafts_at_Albemarle_2_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 3

	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	42	**13**	0	0	**55**	0	95	2	0	97	0	0	0	0	0	**3**	113	0	0	116	268
11:45 AM	30	8	**4**	0	42	0	**120**	0	0	120	0	0	0	0	0	1	112	0	0	113	275
12:00 PM	**43**	9	1	0	53	0	119	**8**	0	**127**	0	0	0	0	0	3	128	0	0	**131**	**311**
12:15 PM	28	10	3	0	41	0	99	3	0	102	0	0	0	0	0	1	**129**	0	0	130	273
Total Volume	143	40	8	0	191	0	433	13	0	446	0	0	0	0	0	8	482	0	0	490	1127
% App. Total	74.9	20.9	4.2	0		0	97.1	2.9	0		0	0	0	0		1.6	98.4	0	0		
PHF	.831	.769	.500	.000	.868	.000	.902	.406	.000	.878	.000	.000	.000	.000	.000	.667	.934	.000	.000	.935	.906
Lights	141	40	7	0	188	0	417	13	0	430	0	0	0	0	0	8	468	0	0	476	1094
% Lights	98.6	100	87.5	0	98.4	0	96.3	100	0	96.4	0	0	0	0	0	100	97.1	0	0	97.1	97.1
Mediums	2	0	1	0	3	0	16	0	0	16	0	0	0	0	0	0	13	0	0	13	32
% Mediums	1.4	0	12.5	0	1.6	0	3.7	0	0	3.6	0	0	0	0	0	0	2.7	0	0	2.7	2.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2	0.1

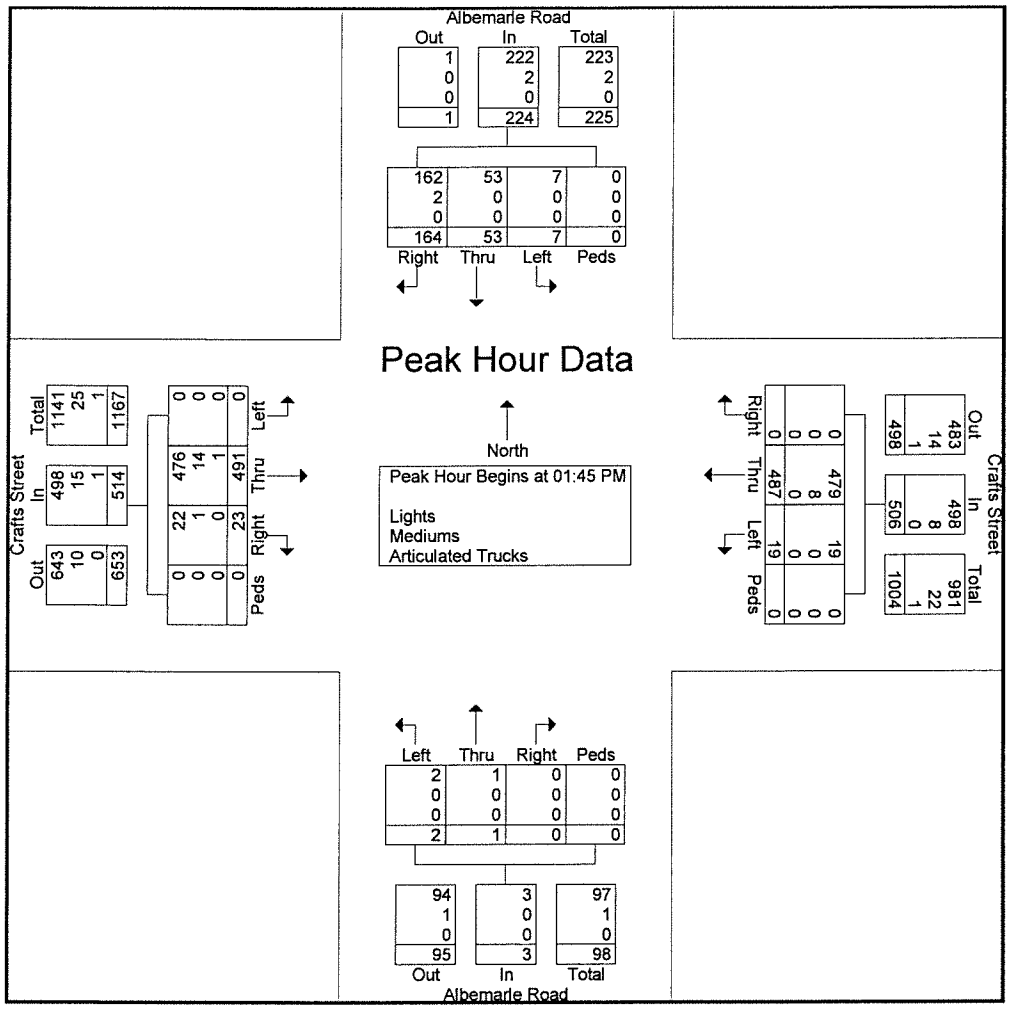


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Crafts_at_Albemarle_2_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 4

	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:45 PM to 02:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	29	7	2	0	38	0	107	3	0	110	0	0	0	0	0	3	101	0	0	104	252
02:00 PM	45	13	2	0	60	0	124	2	0	126	0	**1**	**1**	0	**2**	5	100	0	0	105	293
02:15 PM	**51**	13	0	0	**64**	0	**130**	**8**	0	**138**	0	0	1	0	1	5	127	0	0	132	335
02:30 PM	39	**20**	**3**	0	62	0	126	6	0	132	0	0	0	0	0	**10**	**163**	0	0	**173**	**367**
Total Volume	164	53	7	0	224	0	487	19	0	506	0	1	2	0	3	23	491	0	0	514	1247
% App. Total	73.2	23.7	3.1	0		0	96.2	3.8	0		0	33.3	66.7	0		4.5	95.5	0	0		
PHF	.804	.663	.583	.000	.875	.000	.937	.594	.000	.917	.000	.250	.500	.000	.375	.575	.753	.000	.000	.743	.849
Lights	162	53	7	0	222	0	479	19	0	498	0	1	2	0	3	22	476	0	0	498	1221
% Lights	98.8	100	100	0	99.1	0	98.4	100	0	98.4	0	100	100	0	100	95.7	96.9	0	0	96.9	97.9
Mediums	2	0	0	0	2	0	8	0	0	8	0	0	0	0	0	1	14	0	0	15	25
% Mediums	1.2	0	0	0	0.9	0	1.6	0	0	1.6	0	0	0	0	0	4.3	2.9	0	0	2.9	2.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2	0.1



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Albemarle Road
E/W: Crafts Street
Newton, MA

File Name : 1022_Crafts_at_Albemarle_2_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

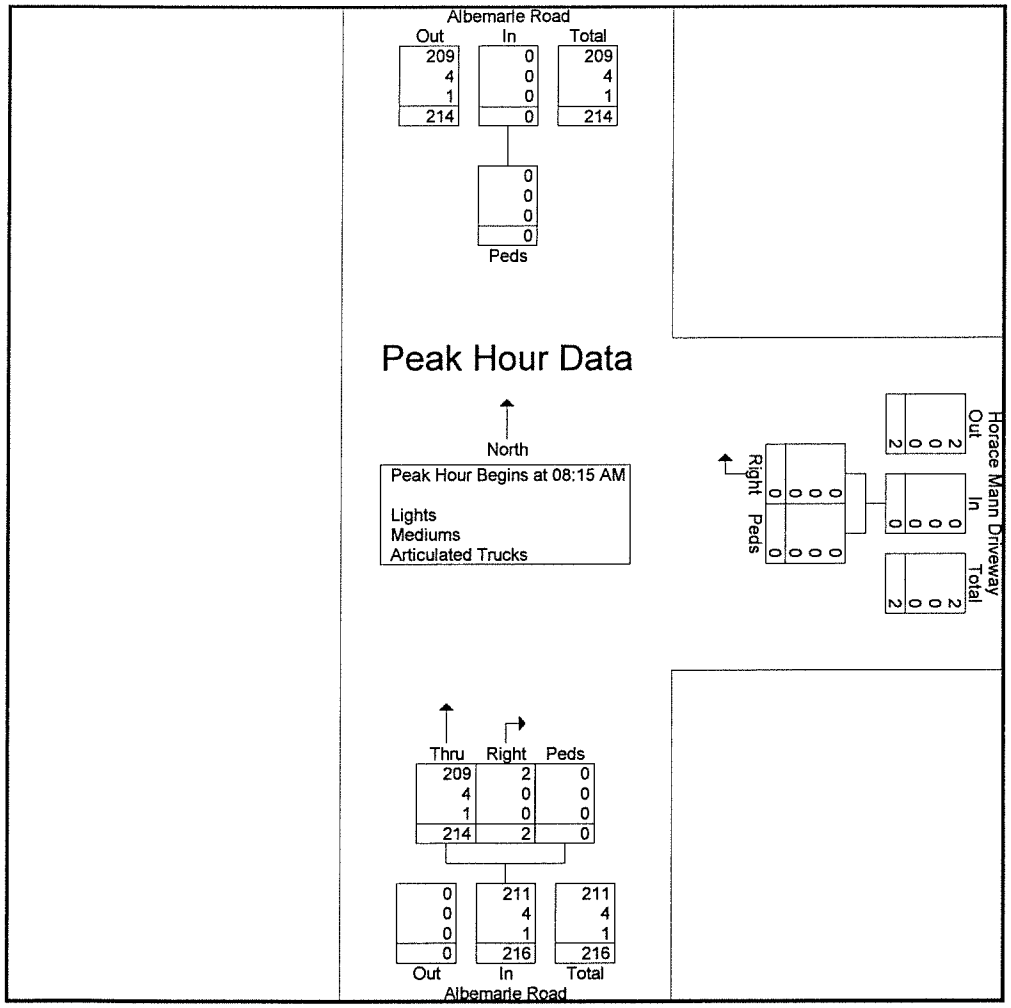
	Albemarle Road From North					Crafts Street From East					Albemarle Road From South					Crafts Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	49	8	0	0	57	0	100	1	0	101	0	0	0	0	0	0	199	0	0	199	357
07:15 AM	40	18	5	0	63	0	121	7	0	128	0	0	0	0	0	11	217	0	0	228	419
07:30 AM	58	19	4	0	81	0	145	8	0	153	0	0	0	0	0	12	217	0	0	229	463
07:45 AM	45	27	2	0	74	0	159	18	0	177	0	0	0	0	0	9	197	0	0	206	457
Total	192	72	11	0	275	0	525	34	0	559	0	0	0	0	0	32	830	0	0	862	1696
08:00 AM	62	26	2	0	90	0	142	16	0	158	0	0	0	0	0	2	168	0	0	170	418
08:15 AM	59	28	3	0	90	0	146	14	0	160	0	0	0	0	0	6	198	0	0	204	454
08:30 AM	46	16	2	0	64	0	142	12	0	154	0	0	0	0	0	5	191	0	0	196	414
08:45 AM	53	20	3	0	76	0	155	5	0	160	0	0	0	0	0	5	186	0	0	191	427
Total	220	90	10	0	320	0	585	47	0	632	0	0	0	0	0	18	743	0	0	761	1713
09:00 AM	43	6	3	0	52	0	127	2	0	129	0	0	0	0	0	1	161	0	0	162	343
Total	43	6	3	0	52	0	127	2	0	129	0	0	0	0	0	1	161	0	0	162	343
11:30 AM	42	13	0	0	55	0	95	2	0	97	0	0	0	0	0	3	113	0	0	116	268
11:45 AM	30	8	4	0	42	0	120	0	0	120	0	0	0	0	0	1	112	0	0	113	275
Total	72	21	4	0	97	0	215	2	0	217	0	0	0	0	0	4	225	0	0	229	543
12:00 PM	43	9	1	0	53	0	119	8	0	127	0	0	0	0	0	3	128	0	0	131	311
12:15 PM	28	10	3	0	41	0	99	3	0	102	0	0	0	0	0	1	129	0	0	130	273
Total	71	19	4	0	94	0	218	11	0	229	0	0	0	0	0	4	257	0	0	261	584
01:00 PM	37	9	1	0	47	0	106	7	0	113	0	0	1	0	1	4	109	0	0	113	274
01:15 PM	38	6	2	0	46	0	84	3	0	87	0	0	0	0	0	3	113	0	0	116	249
01:30 PM	44	18	1	0	63	0	107	3	0	110	0	0	0	0	0	4	87	0	0	91	264
01:45 PM	29	7	2	0	38	0	107	3	0	110	0	0	0	0	0	3	101	0	0	104	252
Total	148	40	6	0	194	0	404	16	0	420	0	0	1	0	1	14	410	0	0	424	1039
02:00 PM	45	13	2	0	60	0	124	2	0	126	0	1	1	0	2	5	100	0	0	105	293
02:15 PM	51	13	0	0	64	0	130	8	0	138	0	0	1	0	1	5	127	0	0	132	335
02:30 PM	39	20	3	0	62	0	126	6	0	132	0	0	0	0	0	10	163	0	0	173	367
02:45 PM	42	16	2	0	60	0	149	14	0	163	0	0	0	0	0	7	140	0	0	147	370
Total	177	62	7	0	246	0	529	30	0	559	0	1	2	0	3	27	530	0	0	557	1365
03:00 PM	46	12	3	0	61	1	180	7	0	188	0	0	0	0	0	4	154	0	0	158	407
03:15 PM	46	8	2	0	56	0	176	8	0	184	0	0	0	0	0	5	161	0	0	166	406
03:30 PM	69	17	0	0	86	0	183	6	0	189	0	0	0	0	0	3	173	0	0	176	451
03:45 PM	62	14	1	0	77	0	171	8	0	179	0	0	0	0	0	8	192	0	0	200	456
Total	223	51	6	0	280	1	710	29	0	740	0	0	0	0	0	20	680	0	0	700	1720
Grand Total	1146	361	51	0	1558	1	3313	171	0	3485	0	1	3	0	4	120	3836	0	0	3956	9003
Apprch %	73.6	23.2	3.3	0		0	95.1	4.9	0		0	25	75	0		3	97	0	0		
Total %	12.7	4	0.6	0	17.3	0	36.8	1.9	0	38.7	0	0	0	0	0	1.3	42.6	0	0	43.9	
Lights	1098	358	48	0	1504	1	3217	166	0	3384	0	1	3	0	4	116	3744	0	0	3860	8752
% Lights	95.8	99.2	94.1	0	96.5	100	97.1	97.1	0	97.1	0	100	100	0	100	96.7	97.6	0	0	97.6	97.2
Mediums	43	3	3	0	49	0	95	5	0	100	0	0	0	0	0	4	87	0	0	91	240
% Mediums	3.8	0.8	5.9	0	3.1	0	2.9	2.9	0	2.9	0	0	0	0	0	3.3	2.3	0	0	2.3	2.7
Articulated Trucks																					
% Articulated Trucks	0.4	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.1

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Albemarle_at_Site_Driveway_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 2

	Albemarle Road From North		Horace Mann Driveway From East			Albemarle Road From South				
Start Time	Peds	App. Total	Right	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:15 AM to 09:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15 AM										
08:15 AM	0	0	0	0	0	**1**	**100**	0	**101**	**101**
08:30 AM	0	0	0	0	0	1	51	0	52	52
08:45 AM	0	0	0	0	0	0	40	0	40	40
09:00 AM	0	0	0	0	0	0	23	0	23	23
Total Volume	0	0	0	0	0	2	214	0	216	216
% App. Total	0		0	0		0.9	99.1	0		
PHF	.000	.000	.000	.000	.000	.500	.535	.000	.535	.535
Lights	0	0	0	0	0	2	209	0	211	211
% Lights	0	0	0	0	0	100	97.7	0	97.7	97.7
Mediums	0	0	0	0	0	0	4	0	4	4
% Mediums	0	0	0	0	0	0	1.9	0	1.9	1.9
Articulated Trucks	0	0	0	0	0	0	1	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0.5	0	0.5	0.5

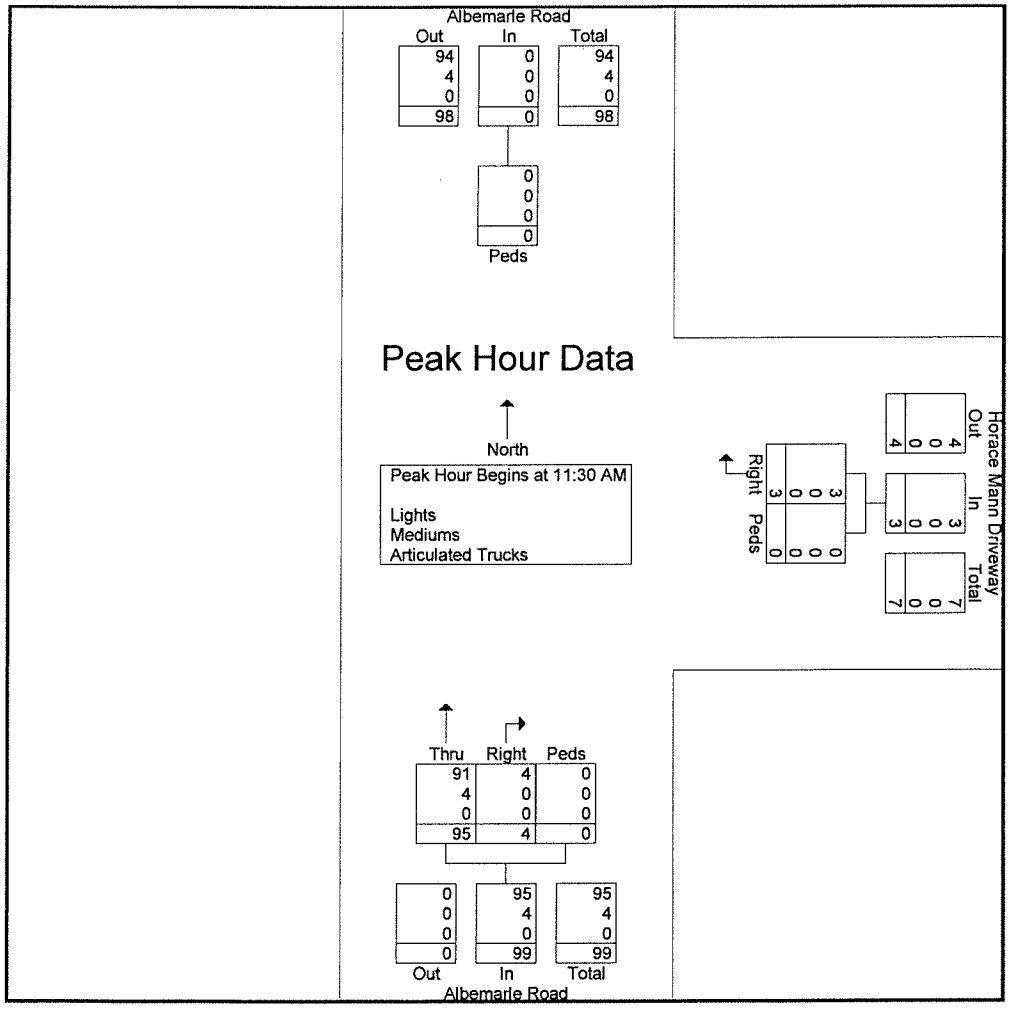


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Albemarle_at_Site_Driveway_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 3

	Albemarle Road From North		Horace Mann Driveway From East			Albemarle Road From South				
Start Time	Peds	App. Total	Right	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:30 AM										
11:30 AM	0	0	0	0	0	0	17	0	17	17
11:45 AM	0	0	0	0	0	**2**	25	0	27	27
12:00 PM	0	0	**2**	0	**2**	0	**28**	0	**28**	**30**
12:15 PM	0	0	1	0	1	2	25	0	27	28
Total Volume	0	0	3	0	3	4	95	0	99	102
% App. Total	0		100	0		4	96	0		
PHF	.000	.000	.375	.000	.375	.500	.848	.000	.884	.850
Lights	0	0	3	0	3	4	91	0	95	98
% Lights	0	0	100	0	100	100	95.8	0	96.0	96.1
Mediums	0	0	0	0	0	0	4	0	4	4
% Mediums	0	0	0	0	0	0	4.2	0	4.0	3.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0

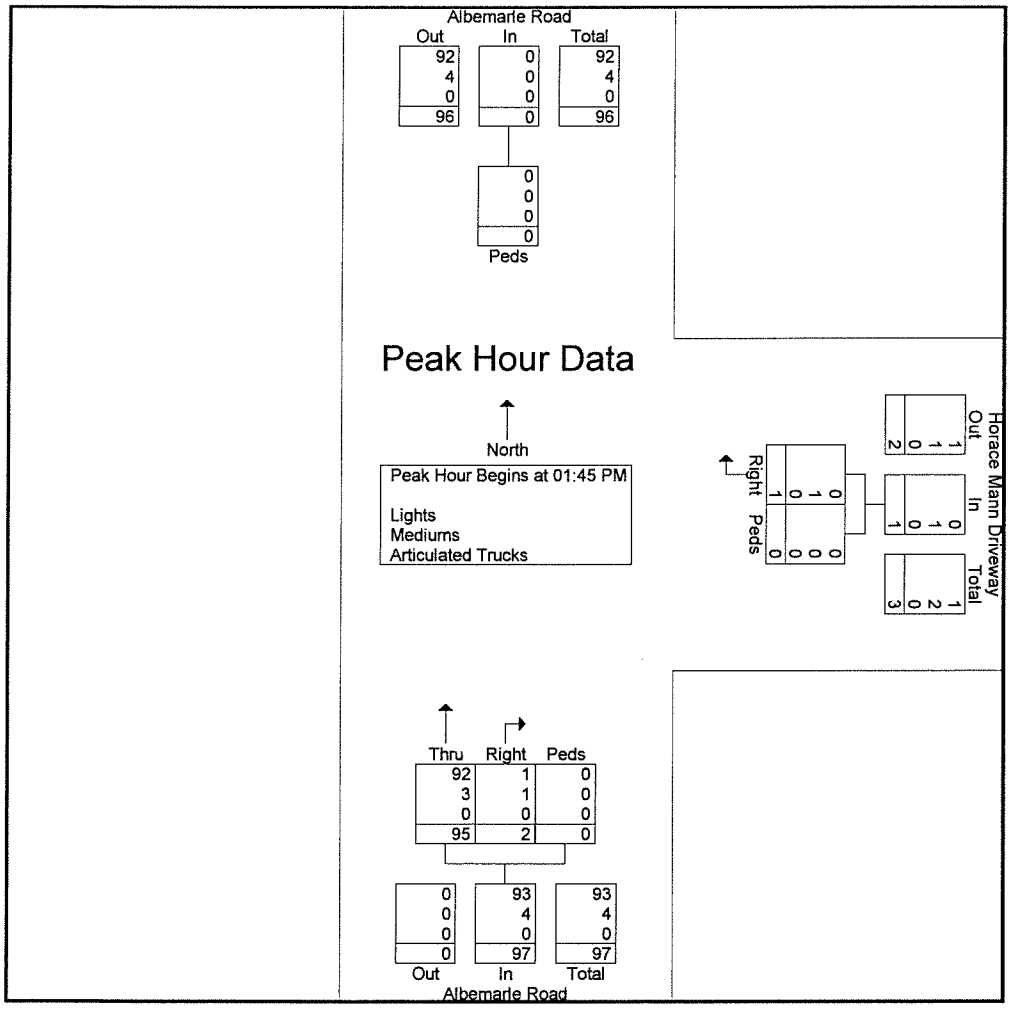


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Albemarle_at_Site_Driveway_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 4

	Albemarle Road From North		Horace Mann Driveway From East			Albemarle Road From South				
Start Time	Peds	App. Total	Right	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:45 PM to 02:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:45 PM										
01:45 PM	0	0	0	0	0	0	16	0	16	16
02:00 PM	0	0	0	0	0	**1**	**32**	0	**33**	**33**
02:15 PM	0	0	0	0	0	0	20	0	20	20
02:30 PM	0	0	**1**	0	**1**	1	27	0	28	29
Total Volume	0	0	1	0	1	2	95	0	97	98
% App. Total	0		100	0		2.1	97.9	0		
PHF	.000	.000	.250	.000	.250	.500	.742	.000	.735	.742
Lights	0	0	0	0	0	1	92	0	93	93
% Lights	0	0	0	0	0	50.0	96.8	0	95.9	94.9
Mediums	0	0	1	0	1	1	3	0	4	5
% Mediums	0	0	100	0	100	50.0	3.2	0	4.1	5.1
Articulated Trucks	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

NB: Albemarle Road
WB: Horace Mann Driveway
Newton, MA

File Name : 1022_Albemarle_at_Site_Driveway_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

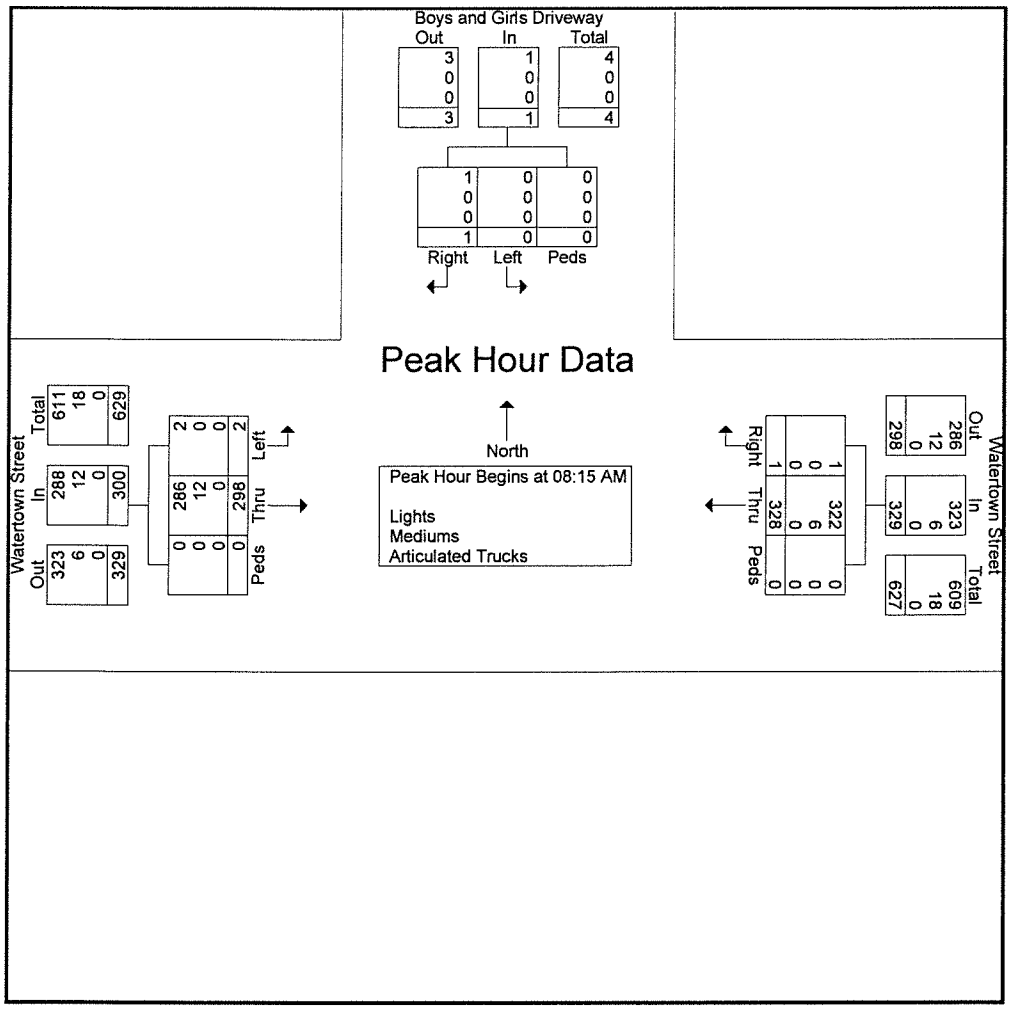
	Albemarle Road From North		Horace Mann Driveway From East			Albemarle Road From South				
Start Time	Peds	App. Total	Right	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	14	0	16	16
07:15 AM	0	0	0	0	0	3	25	0	28	28
07:30 AM	0	0	0	0	0	5	59	0	64	64
07:45 AM	0	0	0	0	0	4	83	0	87	87
Total	0	0	0	0	0	14	181	0	195	195
08:00 AM	0	0	0	0	0	3	61	0	64	64
08:15 AM	0	0	0	0	0	1	100	0	101	101
08:30 AM	0	0	0	0	0	1	51	0	52	52
08:45 AM	0	0	0	0	0	0	40	0	40	40
Total	0	0	0	0	0	5	252	0	257	257
09:00 AM	0	0	0	0	0	0	23	0	23	23
Total	0	0	0	0	0	0	23	0	23	23
11:30 AM	0	0	0	0	0	0	17	0	17	17
11:45 AM	0	0	0	0	0	2	25	0	27	27
Total	0	0	0	0	0	2	42	0	44	44
12:00 PM	0	0	2	0	2	0	28	0	28	30
12:15 PM	0	0	1	0	1	2	25	0	27	28
Total	0	0	3	0	3	2	53	0	55	58
01:00 PM	0	0	0	0	0	0	16	0	16	16
01:15 PM	0	0	0	0	0	0	17	0	17	17
01:30 PM	0	0	0	0	0	0	27	0	27	27
01:45 PM	0	0	0	0	0	0	16	0	16	16
Total	0	0	0	0	0	0	76	0	76	76
02:00 PM	0	0	0	0	0	1	32	0	33	33
02:15 PM	0	0	0	0	0	0	20	0	20	20
02:30 PM	0	0	1	0	1	1	27	0	28	29
02:45 PM	0	0	0	0	0	0	34	0	34	34
Total	0	0	1	0	1	2	113	0	115	116
03:00 PM	0	0	2	0	2	0	52	0	52	54
03:15 PM	0	0	5	0	5	0	24	0	24	29
03:30 PM	0	0	4	0	4	0	25	0	25	29
03:45 PM	0	0	0	0	0	0	36	0	36	36
Total	0	0	11	0	11	0	137	0	137	148
Grand Total	0	0	15	0	15	25	877	0	902	917
Apprch %	0		100	0		2.8	97.2	0		
Total %	0	0	1.6	0	1.6	2.7	95.6	0	98.4	
Lights	0	0	14	0	14	24	848	0	872	886
% Lights	0	0	93.3	0	93.3	96	96.7	0	96.7	96.6
Mediums	0	0	1	0	1	1	28	0	29	30
% Mediums	0	0	6.7	0	6.7	4	3.2	0	3.2	3.3
Articulated Trucks	0	0	0	0	0	0	1	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0.1	0	0.1	0.1

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Boys_and_Girls_Club_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 2

	Boys and Girls Driveway From North				Watertown Street From East				Watertown Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:15 AM to 09:00 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:15 AM													
08:15 AM	**1**	0	0	**1**	0	**106**	0	**106**	70	**1**	0	71	**178**
08:30 AM	0	0	0	0	0	75	0	75	80	0	0	80	155
08:45 AM	0	0	0	0	0	76	0	76	**93**	0	0	**93**	169
09:00 AM	0	0	0	0	**1**	71	0	72	55	1	0	56	128
Total Volume	1	0	0	1	1	328	0	329	298	2	0	300	630
% App. Total	100	0	0		0.3	99.7	0		99.3	0.7	0		
PHF	.250	.000	.000	.250	.250	.774	.000	.776	.801	.500	.000	.806	.885
Lights	1	0	0	1	1	322	0	323	286	2	0	288	612
% Lights	100	0	0	100	100	98.2	0	98.2	96.0	100	0	96.0	97.1
Mediums	0	0	0	0	0	6	0	6	12	0	0	12	18
% Mediums	0	0	0	0	0	1.8	0	1.8	4.0	0	0	4.0	2.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

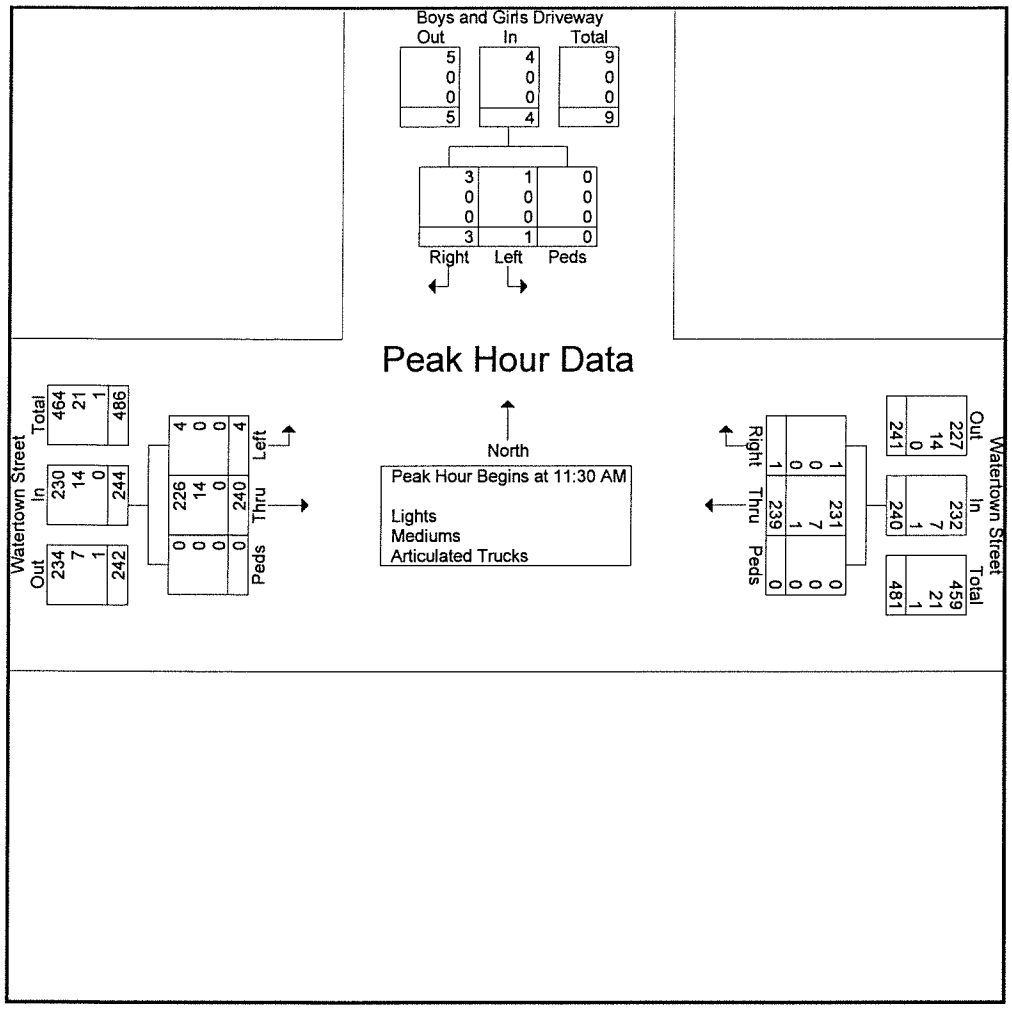


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Boys_and_Girls_Club_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 3

	Boys and Girls Driveway From North				Watertown Street From East				Watertown Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:30 AM													
11:30 AM	0	0	0	0	0	46	0	46	61	**2**	0	63	109
11:45 AM	**3**	0	0	**3**	0	59	0	59	54	0	0	54	116
12:00 PM	0	**1**	0	1	0	**74**	0	**74**	**67**	1	0	**68**	**143**
12:15 PM	0	0	0	0	**1**	60	0	61	58	1	0	59	120
Total Volume	3	1	0	4	1	239	0	240	240	4	0	244	488
% App. Total	75	25	0		0.4	99.6	0		98.4	1.6	0		
PHF	.250	.250	.000	.333	.250	.807	.000	.811	.896	.500	.000	.897	.853
Lights	3	1	0	4	1	231	0	232	226	4	0	230	466
% Lights	100	100	0	100	100	96.7	0	96.7	94.2	100	0	94.3	95.5
Mediums	0	0	0	0	0	7	0	7	14	0	0	14	21
% Mediums	0	0	0	0	0	2.9	0	2.9	5.8	0	0	5.7	4.3
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
% Articulated Trucks	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0.2

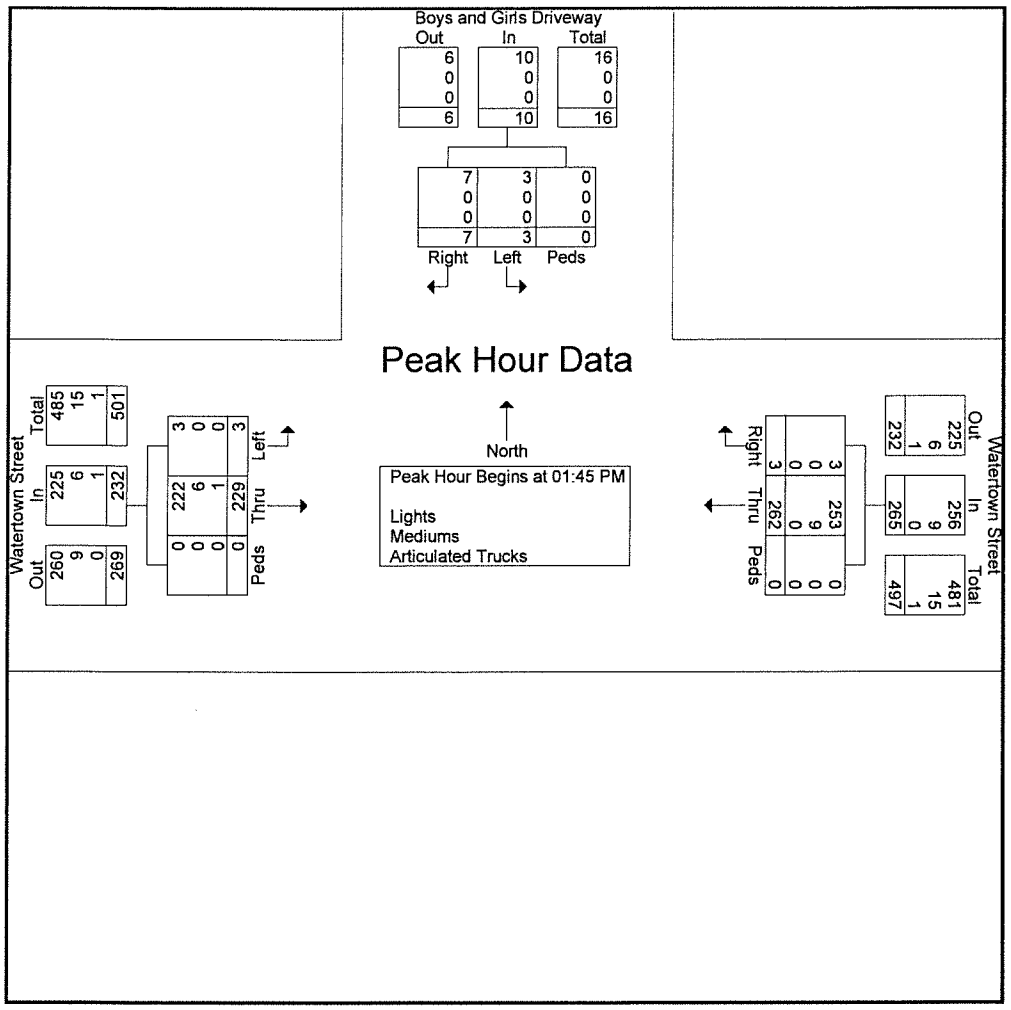


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Boys_and_Girls_Club_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 4

	Boys and Girls Driveway From North				Watertown Street From East				Watertown Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:45 PM to 02:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 01:45 PM													
01:45 PM	0	0	0	0	**1**	69	0	70	49	**1**	0	50	120
02:00 PM	1	0	0	1	0	70	0	70	55	0	0	55	126
02:15 PM	1	0	0	1	1	48	0	49	**66**	1	0	**67**	117
02:30 PM	**5**	**3**	0	**8**	1	**75**	0	**76**	59	1	0	60	**144**
Total Volume	7	3	0	10	3	262	0	265	229	3	0	232	507
% App. Total	70	30	0		1.1	98.9	0		98.7	1.3	0		
PHF	.350	.250	.000	.313	.750	.873	.000	.872	.867	.750	.000	.866	.880
Lights	7	3	0	10	3	253	0	256	222	3	0	225	491
% Lights	100	100	0	100	100	96.6	0	96.6	96.9	100	0	97.0	96.8
Mediums	0	0	0	0	0	9	0	9	6	0	0	6	15
% Mediums	0	0	0	0	0	3.4	0	3.4	2.6	0	0	2.6	3.0
Articulated Trucks	0	0	0	0	0	0	0	0	1	0	0	1	1
% Articulated Trucks	0	0	0	0	0	0	0	0	0.4	0	0	0.4	0.2



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

SB: Boys and Girls Club
E/W: Watertown Street
Newton, MA

File Name : 1022_Boys_and_Girls_Club_02-07-2019
Site Code : 1022
Start Date : 2/7/2019
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Boys and Girls Driveway From North				Watertown Street From East				Watertown Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	39	0	39	76	0	0	76	115
07:15 AM	0	0	0	0	0	63	0	63	96	0	0	96	159
07:30 AM	0	0	0	0	1	101	0	102	91	0	0	91	193
07:45 AM	0	1	0	1	1	109	0	110	101	0	0	101	212
Total	0	1	0	1	2	312	0	314	364	0	0	364	679
08:00 AM	1	0	0	1	0	97	0	97	104	1	0	105	203
08:15 AM	1	0	0	1	0	106	0	106	70	1	0	71	178
08:30 AM	0	0	0	0	0	75	0	75	80	0	0	80	155
08:45 AM	0	0	0	0	0	76	0	76	93	0	0	93	169
Total	2	0	0	2	0	354	0	354	347	2	0	349	705
09:00 AM	0	0	0	0	1	71	0	72	55	1	0	56	128
Total	0	0	0	0	1	71	0	72	55	1	0	56	128
11:30 AM	0	0	0	0	0	46	0	46	61	2	0	63	109
11:45 AM	3	0	0	3	0	59	0	59	54	0	0	54	116
Total	3	0	0	3	0	105	0	105	115	2	0	117	225
12:00 PM	0	1	0	1	0	74	0	74	67	1	0	68	143
12:15 PM	0	0	0	0	1	60	0	61	58	1	0	59	120
Total	0	1	0	1	1	134	0	135	125	2	0	127	263
01:00 PM	0	0	0	0	3	42	0	45	45	2	0	47	92
01:15 PM	2	1	0	3	6	57	0	63	51	2	0	53	119
01:30 PM	1	1	0	2	1	53	0	54	57	4	0	61	117
01:45 PM	0	0	0	0	1	69	0	70	49	1	0	50	120
Total	3	2	0	5	11	221	0	232	202	9	0	211	448
02:00 PM	1	0	0	1	0	70	0	70	55	0	0	55	126
02:15 PM	1	0	0	1	1	48	0	49	66	1	0	67	117
02:30 PM	5	3	0	8	1	75	0	76	59	1	0	60	144
02:45 PM	2	2	0	4	6	105	0	111	65	3	0	68	183
Total	9	5	0	14	8	298	0	306	245	5	0	250	570
03:00 PM	6	7	0	13	8	75	0	83	61	10	0	71	167
03:15 PM	10	5	0	15	8	84	0	92	84	6	0	90	197
03:30 PM	5	3	0	8	4	109	0	113	77	3	0	80	201
03:45 PM	5	5	0	10	13	106	0	119	84	3	0	87	216
Total	26	20	0	46	33	374	0	407	306	22	0	328	781
Grand Total	43	29	0	72	56	1869	0	1925	1759	43	0	1802	3799
Apprch %	59.7	40.3	0		2.9	97.1	0		97.6	2.4	0		
Total %	1.1	0.8	0	1.9	1.5	49.2	0	50.7	46.3	1.1	0	47.4	
Lights	42	29	0	71	56	1817	0	1873	1709	42	0	1751	3695
% Lights	97.7	100	0	98.6	100	97.2	0	97.3	97.2	97.7	0	97.2	97.3
Mediums	1	0	0	1	0	51	0	51	45	1	0	46	98
% Mediums	2.3	0	0	1.4	0	2.7	0	2.6	2.6	2.3	0	2.6	2.6
Articulated Trucks	0	0	0	0	0	1	0	1	5	0	0	5	6
% Articulated Trucks	0	0	0	0	0	0.1	0	0.1	0.3	0	0	0.3	0.2

□ Seasonal/Yearly Data

SECTION I - CONTINUOUS COUNTING STATION MONTHLY AVERAGE DAILY TRAFFIC

STATION 691 - QUINCY - RTE.I-93 - NORTH OF RTE.28

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
09	173,000	175,000	177,697	194,334	196,834	199,477	196,208	194,125	190,885	186,291	176,509	174,000	186,197
	-2%	0%	4%	-1%	-1%	0%	-1%	-1%	1%	1%	3%	4%	0.5%
11	166,541	175,019	190,696	192,155	193,034	197,594	193,303	191,197	193,140	188,694	187,378	187,895	188,054
	-2%	6%	0%	0%	1%	-1%	-1%	3%	-1%	-2%	0%	-3%	-0.1%
12	164,007	185,226	190,193	192,337	194,846	195,145	191,419	196,457	190,548	185,609	186,469	181,669	187,827
	9%	-1%	-5%	-3%	-1%	0%	0%	1%	0%	2%	-1%	-3%	-0.1%
13	179,468	182,613	180,861	187,402	193,159	194,612	192,130	197,467	191,411	*190,128*	185,233	176,163	187,554
	-8%	-7%	3%	3%	1%	2%	1%	0%	1%	1%	0%	5%	0.2%
14	165,955	170,581	187,003	193,263	194,348	198,176	193,591	197,456	193,827	*192,895*	185,667	185,147	188,159
	3%	-7%	-8%	-10%	-8%	-13%	-3%	3%	3%	2%	4%	4%	-1.4%
15	171,029	159,322	171,290	174,319	178,128	172,060	187,071	202,569	198,773	*197,111*	192,381	192,770	183,069
	4%	9%	8%	7%	7%	3%	5%	1%	1%	1%	1%	1%	3.8%
17	185,127	189,054	199,012	199,259	202,004	181,236	205,446	207,586	200,920	*199,524*	198,080	194,984	196,853
Seasonal Adjustment Factor	1.09	1.07	1.02	0.99	0.98	0.99	0.97	0.95	0.97	0.98	1.01	1.02	
(to average month)												**Growth**	**0.47%**

STATION 703 - ABINGTON - RTE.123 - AT THE BROCKTON C.L.

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
09	12,251	13,199	13,301	13,860	13,231	13,817	13,354	*13,212*	14,037	13,712	13,161	13,327	13,372
	0%	0%	2%	1%	5%	1%	0%	1%	-1%	0%	2%	-1%	0.8%
10	12,196	13,134	13,560	14,051	13,835	13,900	13,353	13,338	13,928	13,733	13,414	*13,225*	13,472
	-5%	-4%	-1%	-4%	-3%	-2%	-3%	-2%	-1%	-2%	0%	1%	-2.0%
11	11,629	12,651	13,451	13,518	13,476	13,655	12,907	*13,088*	13,778	13,495	13,434	13,377	13,205
	5%	4%	0%	-1%	0%	-1%	-6%	0%	-2%	1%	0%	-2%	-0.3%
12	12,181	13,151	13,410	13,379	13,452	13,479	12,127	*13,103*	13,441	13,679	13,452	13,136	13,166
	1%	-6%	-4%	2%	0%	-1%	7%	0%	0%	0%	-2%	0%	-0.3%
13	12,347	12,336	12,870	13,591	13,426	13,372	12,964	*13,064*	13,462	13,726	13,217	13,081	13,121
	-4%	3%	3%	-2%	-1%	1%	-2%	-1%	-1%	-3%	-3%	2%	-0.5%
14	11,894	12,651	13,252	13,385	13,345	13,524	12,759	*12,893*	13,376	13,379	12,882	13,315	13,055
	1%	-5%	-5%	-2%	0%	-1%	1%	0%	-1%	-1%	0%	-2%	-1.3%
15	11,974	11,975	12,649	13,151	13,378	13,433	12,829	12,941	13,230	*13,222*	12,868	12,985	12,886
	1%	3%	3%	-1%	-2%	1%	-1%	0%	-1%	-1%	-1%	0%	0.1%
16	12,035	12,304	13,075	13,076	13,171	13,574	12,742	12,986	13,061	*13,140*	12,743	12,940	12,904
Seasonal Adjustment Factor	1.09	1.04	1.00	0.97	0.98	0.97	1.02	1.01	0.97	0.97	1.00	1.00	
(to average month)												**Growth**	**-0.50%**

STATION 4165 - I-95/ ROUTE 128 SOUTH OF I-90

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12	130,033	133,659	138,451	142,034	158,583	148,787	138,599	*144,999*	141,340	146,271	140,898	128,666	141,027
	1%	-6%	0%	3%	-7%	1%	10%	3%	6%	5%	2%	1%	1.4%
13	131,812	125,662	138,122	145,780	147,000	149,925	151,813	149,393	150,507	153,009	143,498	130,116	143,053
	-5%	1%	3%	3%	3%	3%	-5%	0%	1%	-1%	-1%	6%	0.6%
14	125,340	127,134	142,024	150,125	151,576	153,916	144,679	149,503	151,538	152,148	141,875	137,826	143,974
	6%	1%	2%	0%	1%	1%	1%	1%	0%	1%	2%	0%	1.2%
16	139,436	130,154	148,054	149,295	153,957	156,496	147,414	151,081	152,186	154,663	146,935	137,768	147,287
	-3%	0%	-12%	-3%	0%	0%	0%	-1%	1%	1%	1%	7%	-0.8%
17	134,884	130,641	129,731	144,492	153,434	156,333	147,884	149,113	154,281	155,618	149,129	147,141	146,057
Seasonal Adjustment Factor	1.09	1.12	1.04	0.99	0.94	0.94	0.99	0.97	0.96	0.95	1.00	1.06	
(to average month)												**Growth**	**0.60%**

STATION 6255 - WEYMOUTH - RTE.3 - NORTH OF RTE.18

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
09	120,200	123,983	124,807	134,354	135,239	143,114	143,685	144,937	140,079	137,288	138,708	136,428	135,235
	4%	3%	6%	-1%	0%	-1%	-1%	-2%	-3%	-3%	-1%	-7%	-0.6%
10	125,304	127,637	132,301	133,124	135,880	141,633	141,706	142,327	135,767	133,473	137,526	127,100	134,482
	-3%	-1%	-1%	-6%	0%	0%	-1%	0%	-1%	-2%	-3%	-1%	-1.5%
12	118,936	125,494	129,712	116,911	136,235	140,277	139,048	142,140	132,674	128,923	129,593	125,409	130,446
	4%	-7%	-4%	13%	0%	-1%	1%	0%	1%	4%	-1%	-1%	0.3%
13	123,783	116,501	124,813	131,533	136,712	138,977	140,057	141,851	133,978	134,144	128,712	124,607	131,306
	-8%	2%	2%	0%	-1%	0%	5%	4%	2%	-1%	11%	4%	0.9%
14	113,701	118439	127037	131150	135,571	139,606	147,748	147,593	136,789	132,227	143,498	130,116	133,623
	3%	1%	1%	1%	1%	1%	-2%	-2%	0%	1%	-5%	0%	-0.2%
16	120,926	121003	128951	132915	138,071	142,406	140,685	142,991	135,630	134,163	129,976	128,837	133,046
	3%	3%	0%	1%	0%	0%	-1%	-1%	-1%	-1%	1%	0%	0.1%
17	124,154	124154	129045	134625	137,743	142,253	139,660	141,524	134,110	133,079	131,317	128,775	133,370
Seasonal Adjustment Factor	1.10	1.09	1.04	1.02	0.98	0.94	0.94	0.93	0.98	1.00	0.99	1.03	
(to average month)												**Growth**	**-0.16%**

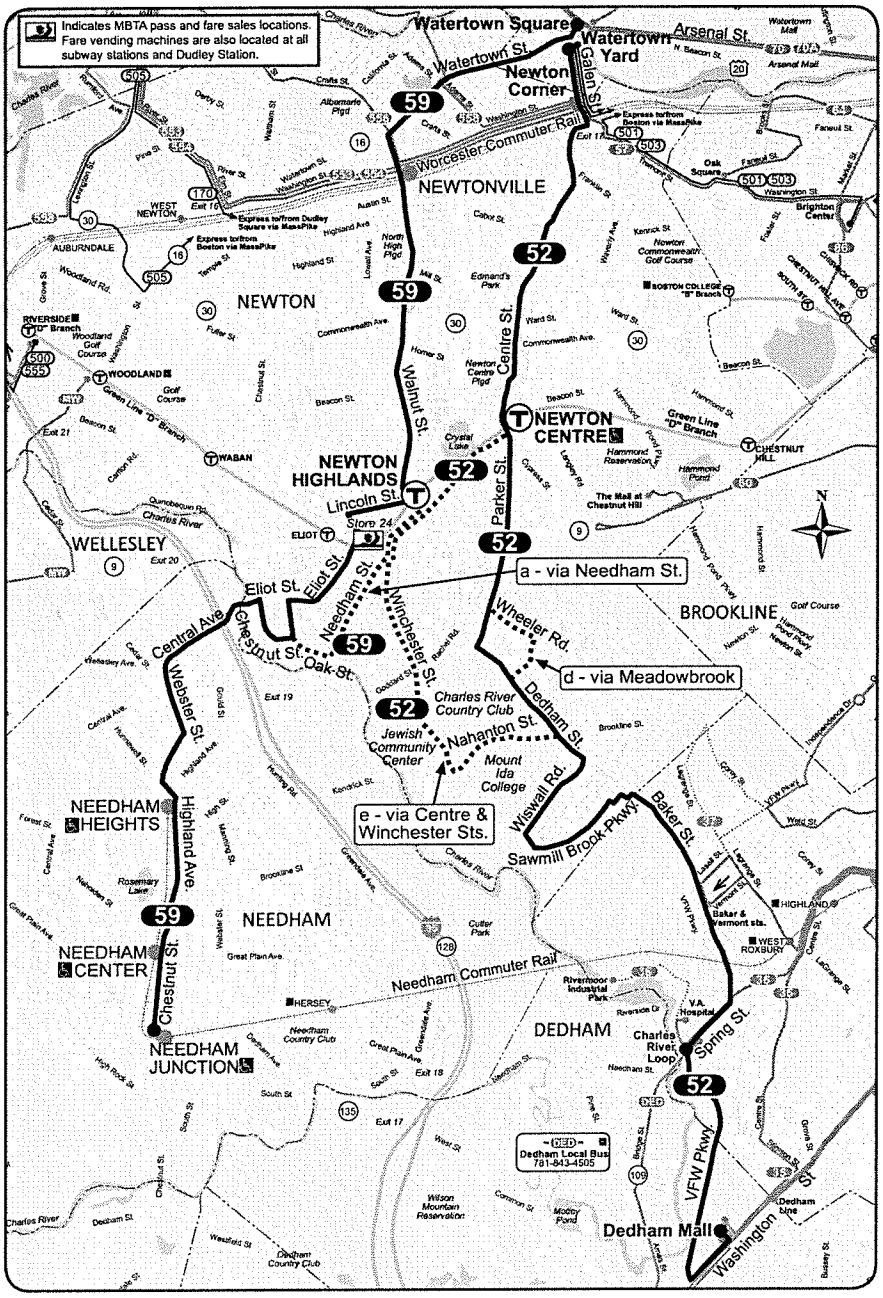
Average	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Seasonal Adjustment Factor	*1.09*	*1.08*	*1.02*	*0.99*	*0.97*	*0.96*	*0.98*	*0.96*	*0.97*	*0.98*	*1.00*	*1.03*
(to average month)												

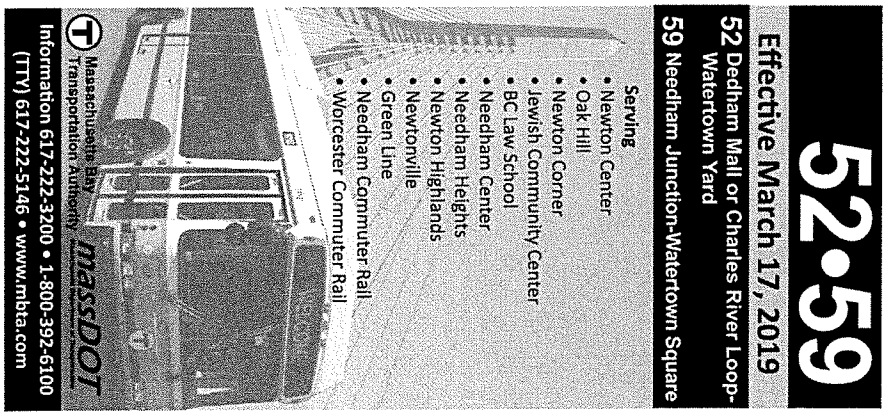
ITALICS = ESTIMATED DATA

MADT

□ Public Transportation Information

Route 52 Dedham Mall or Charles River Loop - Watertown Yard
Route 59 Needham Junction - Watertown Square





52•59

Effective March 17, 2019

52 Dedham Mall or Charles River Loop-Watertown Yard

59 Needham Junction-Watertown Square

Serving

- Newton Center
- Oak Hill
- Newton Corner
- Jewish Community Center
- BC Law School
- Needham Center
- Needham Heights
- Newton Highlands
- Newtonville
- Green Line
- Needham Commuter Rail
- Worcester Commuter Rail

Massachusetts Bay Transportation Authority

massDOT

Information 617-222-3200 • 1-800-392-6100

(TTY) 617-222-5146 • www.mbta.com

52 Weekday

Inbound				Outbound			
Leave Dedham Mall	Lv/Arrive Charles River	Arrive Newton Center	Arrive Watertown Yard	Leave Watertown Yard	Arrive Newton Center	Arrive Charles River	Arrive Dedham Mall
.....	6:15A	6:33A	6:43A	d 7:00A	7:10A	7:31A	.....
.....	6:45	7:03	7:13	d 7:25	7:37	7:59	.....
.....	7:15	7:34	7:48	d 8:05	8:19	8:42	8:46A
.....	d 7:45	8:07	8:19	e 8:30	8:44	9:08	.....
.....	d 8:15	8:37	8:49	9:00	9:09	9:26	9:32
9:00A	9:13	9:27	9:35	9:45	9:54	10:10	10:16
e10:30	10:36	10:56	11:06	e11:15	11:24	11:45	11:49
12:00N	**12:11P**	**12:30P**	**12:39P**	**12:45P**	**12:53P**	**1:08P**	**1:14P**
d 1:30P	**1:34**	**1:53**	**2:10**	**e 2:15**	**2:24**	**2:46**	**2:50**
d 2:20	**2:24**	**2:48**	**3:03**	**ds 2:47**	**3:00**	**3:23**	.....
d 3:05	**3:09**	**3:28**	**3:43**	**e 3:10**	**3:22**	**3:43**	**3:51**
e 3:50	**3:54**	**4:16**	**4:29**	**3:50**	**4:01**	**4:21**	**4:29**
4:25	**4:32**	**4:48**	**5:02**	**e 4:35**	**4:47**	**5:08**	**5:16**
e 4:45	**4:49**	**5:12**	**5:25**	**5:10**	**5:25**	**5:47**	**5:52**
5:30	**5:39**	**5:55**	**6:09**	**e 5:45**	**5:57**	**6:18**	**6:26**
e 6:10	**6:14**	**6:37**	**6:50**	**6:20**	**6:32**	**6:52**	**6:59**
e 6:45	**6:49**	**7:12**	**7:22**	**6:55**	**7:05**	**7:23**	.....
				7:30	**7:39**	**7:57**	.....

d - Via Meadowbrook & Wheeler Roads
e - Via Centre & Winchester Streets
s - Does NOT run during school vacation

No Route 52 service on Saturday or Sunday

Route 52
Dedham Mall or Charles River Loop-Watertown Yard

59 Weekday

Inbound			Outbound		
Leave Needham Junction	Arrive Newton Highlands	Arrive Watertown Square	Leave Watertown Square	Arrive Newton Highlands	Arrive Needham Junction
6:20A	6:38A	6:52A	a 6:05A	6:19A	6:38A
a 6:55	7:14	7:31	6:35	6:48	7:07
7:30	7:53	8:17	a 7:10	7:30	7:53
8:05	8:28	8:43	a 7:45	8:08	8:31
a 8:40	9:01	9:21	8:20	8:40	9:03
9:15	9:35	9:51	a 8:55	9:11	9:33
a 9:50	10:10	10:25	a 9:30	9:46	10:08
10:35	10:54	11:10	10:05	10:21	10:42
a 11:20	11:40	11:55	a 10:35	10:51	11:13
			11:20	11:36	11:57
12:05P	**12:25P**	**12:42P**			
a 12:50	**1:10**	**1:25**	**a 12:05P**	**12:21P**	**12:43P**
1:35	**1:55**	**2:13**	**12:50**	**1:06**	**1:27**
a 2:25	**2:45**	**3:04**	**a 1:35**	**1:51**	**2:13**
3:10	**3:33**	**3:50**	**2:20**	**2:38**	**3:01**
a 3:45	**4:05**	**4:24**	**2:55**	**3:14**	**3:37**
4:20	**4:43**	**5:00**	**a 3:30**	**3:49**	**4:12**
a 4:55	**5:18**	**5:38**	**4:00**	**4:19**	**4:45**
a 5:30	**5:54**	**6:14**	**a 4:40**	**4:59**	**5:20**
6:10	**6:30**	**6:46**	**5:10**	**5:34**	**5:59**
6:40	**7:00**	**7:14**	**5:45**	**6:07**	**6:33**
a 7:15	**7:34**	**7:48**	**a 6:20**	**6:39**	**7:00**
7:50	**8:07**	**8:21**	**7:00**	**7:15**	**7:35**

a - Via Needham Street

Route 59
Needham Junction-Watertown Square

59 Saturday

Inbound			Outbound		
Leave Needham Junction	Arrive Newton Highlands	Arrive Watertown Square	Leave Watertown Square	Arrive Newton Highlands	Arrive Needham Junction
7:05A	7:25A	7:40A	6:20A	6:31A	6:48A
8:35	8:55	9:10	7:50	8:04	8:21
10:05	10:25	10:40	9:20	9:37	9:55
11:35	11:55	**12:14P**	10:50	11:07	11:25
1:05P	**1:25P**	**1:42P**	**12:20P**	**12:37P**	**1:00P**
2:35	**2:54**	**3:10**	**1:50**	**2:07**	**2:27**
4:05	**4:23**	**4:39**	**3:20**	**3:37**	**3:57**
5:35	**5:53**	**6:09**	**4:50**	**5:05**	**5:24**
7:05	**7:22**	**7:35**	**6:20**	**6:35**	**6:54**

59 Sunday

Inbound			Outbound		
Leave Needham Junction	Arrive Newton Highlands	Arrive Watertown Square	Leave Watertown Square.	Arrive Newton Highlands	Arrive Needham Junction
7:50A	8:08A	8:20A	7:05A	7:16A	7:32A
9:20	9:38	9:50	8:35	8:48	9:07
10:50	11:08	11:22	10:05	10:18	10:37
			11:35	11:49	**12:08P**
12:20P	**12:39P**	**12:54P**			
1:50	**2:06**	**2:21**	**1:05P**	**1:19P**	**1:38P**
3:20	**3:39**	**3:56**	**2:35**	**2:49**	**3:08**
4:50	**5:08**	**5:24**	**4:05**	**4:19**	**4:39**
6:20	**6:36**	**6:51**	**5:35**	**5:49**	**6:09**

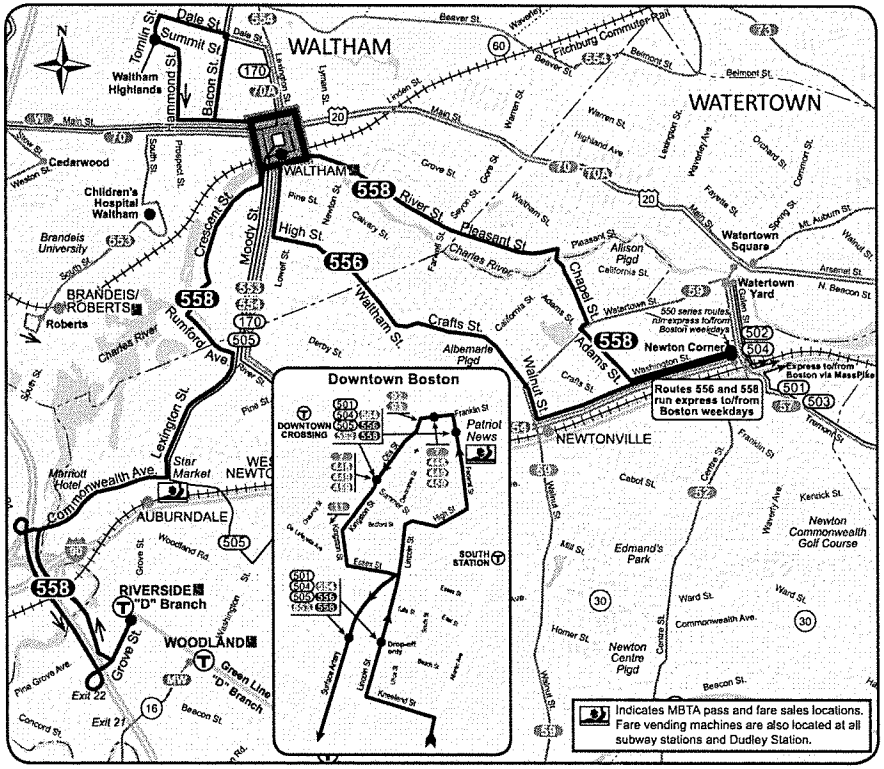
All buses are accessible to persons with disabilities

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.70	$1.70	$2.25	$2.25
CharlieTicket	$2.00	$2.00	$2.75	$4.75
Cash-on-Board	$2.00	$4.00	$2.75	$4.75
Student/Youth*	$0.85	$0.85	$1.10	$1.10
Senior/TAP**	$0.85	$0.85	$1.10	$1.10

VALID PASSES: LinkPass ($84.50/mo.); Local Bus ($55/mo.); *Student/Youth LinkPass ($30.00/mo.); **Senior/TAP LinkPass ($30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.
* Requires Student CharlieCard or Youth CharlieCard. Student CharlieCards are available to students through participating middle schools and high schools. Youth CharlieCards are available through community partners in the Boston metro area. Visit www.mbta.com/youthpass for details.
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Spring 2019 Holidays
4/15/19: see Weekday 5/27/19: see Sunday

Route 556 Waltham Highlands - Downtown Boston
Route 558 Riverside - Downtown Boston



556•558

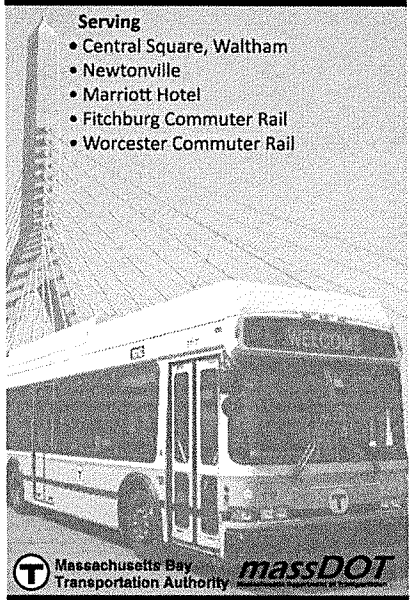
Effective March 17, 2019

556 Waltham Highlands-
Downtown Boston

558 Riverside-Downtown Boston

Serving

- Central Square, Waltham
- Newtonville
- Marriott Hotel
- Fitchburg Commuter Rail
- Worcester Commuter Rail



Massachusetts Bay Transportation Authority

massDOT

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

556 & 558

Weekday

Inbound					Outbound				
Leave Riverside	Leave Waltham Highlands	Arrive Central Sq. Waltham	Arrive Newton Corner	Arrive Downtown Boston	Leave Downtown Boston	Depart Newton Corner	Arrive Central Sq. Waltham	Arrive Waltham Highlands	Arrive Riverside
.....	6:15A	6:19A	6:35A	.....	.....	6:45A	6:59A	7:04A	.....
6:25A	.....	.....	6:55	.....	.....	7:00	.....	.....	7:30A
.....	6:40	6:46	7:07	7:31A	7:05A	7:20	.....	.....	7:55
.....	7:10	7:16	7:38	8:07	7:25	7:42	8:04	8:10	.....
7:35	.....	.....	8:10	8:43	8:10	8:25	.....	.....	9:00
.....	7:45	7:51	8:14	8:43	8:25	8:42	9:02	9:08	.....
8:00	.....	.....	8:35	9:04	.....	9:45	10:01	10:06	.....
.....	8:15	8:21	8:44	9:13	.....	10:45	11:01	11:08	.....
9:05	.....	.....	9:35	9:53	.....	11:45	12:02P	12:09P	.....
.....	9:15	9:19	9:38	.....					
.....	10:15	10:19	10:38	.....	12:15P	12:29P	.....	.....	1:03P
.....	11:15	11:19	11:38	.....	.....	12:45	1:02P	1:09P	.....
					.....	1:45	2:02	2:08	.....
.....	12:15P	12:19P	12:38P	.....	.....	1:50	.....	.....	2:20
.....	1:15	1:19	1:40	.....	.....	2:45	3:05	3:12	.....
1:15P	.....	.....	1:45	.....	.....	3:00	.....	.....	3:31
.....	2:15	2:19	2:40	.....	.....	3:45	4:05	4:12	.....
2:25	.....	.....	2:55	.....	.....	4:10	.....	.....	4:44
.....	3:15	3:19	3:41	.....	4:25	4:45	5:13	5:20	.....
3:35	.....	.....	4:07	.....	4:50	5:05	.....	.....	5:48
.....	4:15	4:19	4:42	5:01P	4:55	5:24	5:53	6:00	.....
4:48	.....	.....	5:23	5:48	5:14	5:41	.....	.....	6:23
.....	5:22	5:27	5:52	6:10	5:25	5:56	6:23	6:29	.....
6:00	.....	.....	6:30	6:46	6:00	6:24	.....	.....	7:06
.....	6:32	6:36	6:54	7:08	6:25	6:44	7:11	7:17	.....
7:12	.....	.....	7:35	7:51					
.....	7:20	7:24	7:41	7:55					

Route 558 indicated by shaded areas

Route 556
Waltham Highlands-Downtown Boston

Route 558
Riverside-Downtown Boston

No service on weekends

All buses are accessible to persons with disabilities

Fare	Local Bus	Inner Express	Inner Express + Local Bus	Inner Express + Subway
CharlieCard	$1.70	$4.00	$4.00	$4.00
CharlieTicket	$2.00	$5.00	$7.00	$7.75
Cash-on-Board	$2.00	$5.00	$7.00	$7.75
Student/Youth*	$0.85	$2.50	$2.50	$2.50
Senior/TAP**	$0.85	$2.50	$2.50	$2.50

VALID PASSES: Inner Express Bus ($128/mo.), Outer Express Bus ($168/mo.) commuter rail zone 1 or higher on express and 1A and higher on local , and boat passes.

FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

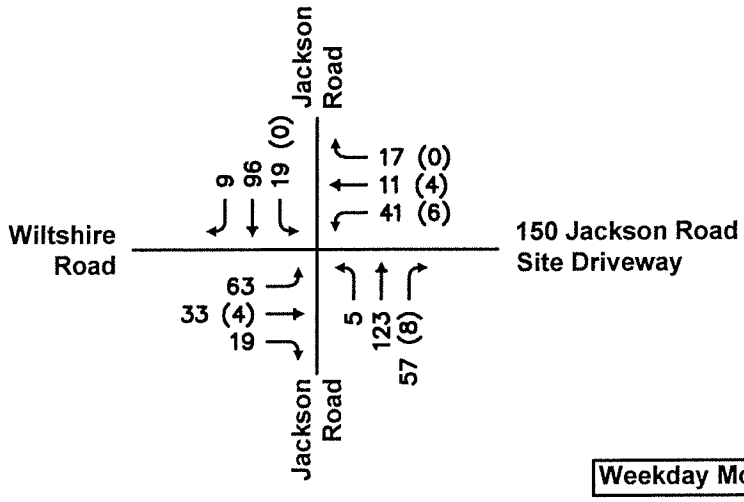
* Requires Student CharlieCard or Youth CharlieCard. Student CharlieCards are available to students through participating middle schools and high schools. Youth CharlieCards are available through community partners in the Boston metro area. Visit www.mbta.com/youthpass for details.

** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

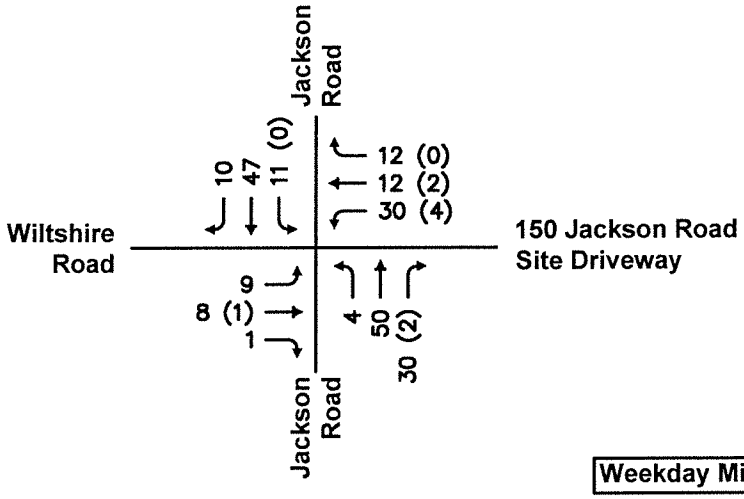
Local bus fare applies if your trip does not include Masspike

Spring 2019 Holidays
4/15/19: see Weekday 5/27/19: see Sunday

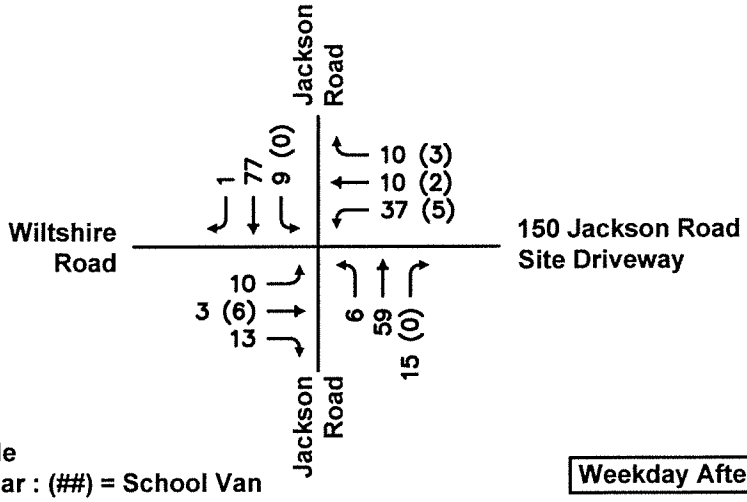
□ 150 Jackson Data - Trip Generation



Weekday Morning Peak Hour



Weekday Midday Peak Hour



Weekday Afternoon Peak Hour

North

Scale: Not to Scale

NOTES:
NEGL. = Negligible
= Passenger Car : (##) = School Van

Attachments

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

2019 Baseline Conditions

Peak Hour Traffic Volumes

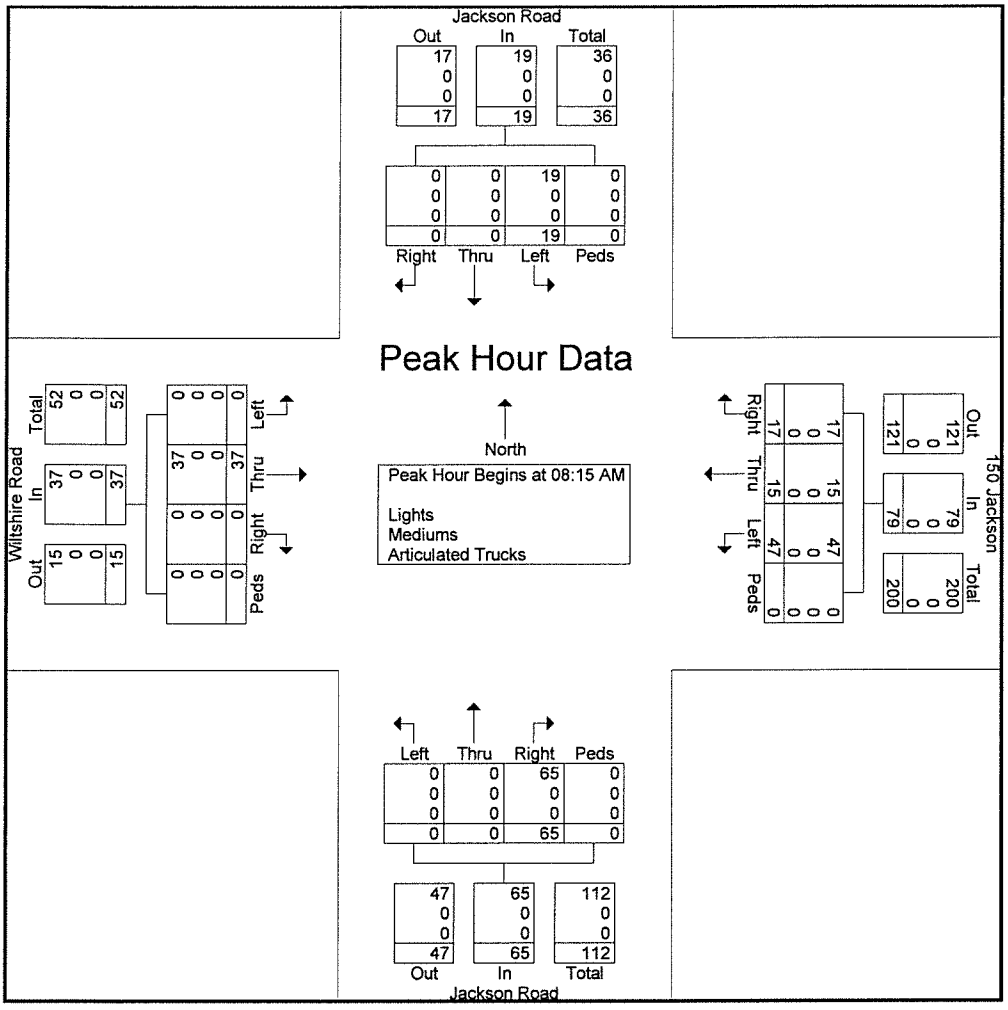
Date: February 2019
Dwg No. 1022 Monitoring - Newton.dwg

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Jackson_Road_at_Site_Drive (Just Site Activity)
Site Code : 1022
Start Date : 1/31/2019
Page No : 3

	Jackson Road From North					150 Jackson From East					Jackson Road From South					Wiltshire Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	0	0	3	0	3	1	0	1	0	2	13	0	0	0	13	0	10	0	0	10	28
08:30 AM	0	0	**6**	0	**6**	4	2	7	0	13	16	0	0	0	16	0	5	0	0	5	40
08:45 AM	0	0	6	0	6	2	1	8	0	11	**20**	0	0	0	**20**	0	**11**	0	0	**11**	48
09:00 AM	0	0	4	0	4	**10**	**12**	**31**	0	**53**	16	0	0	0	16	0	11	0	0	11	**84**
Total Volume	0	0	19	0	19	17	15	47	0	79	65	0	0	0	65	0	37	0	0	37	200
% App. Total	0	0	100	0		21.5	19	59.5	0		100	0	0	0		0	100	0	0		
PHF	.000	.000	.792	.000	.792	.425	.313	.379	.000	.373	.813	.000	.000	.000	.813	.000	.841	.000	.000	.841	.595
Lights	0	0	19	0	19	17	15	47	0	79	65	0	0	0	65	0	37	0	0	37	200
% Lights	0	0	100	0	100	100	100	100	0	100	100	0	0	0	100	0	100	0	0	100	100
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Mediums																					
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

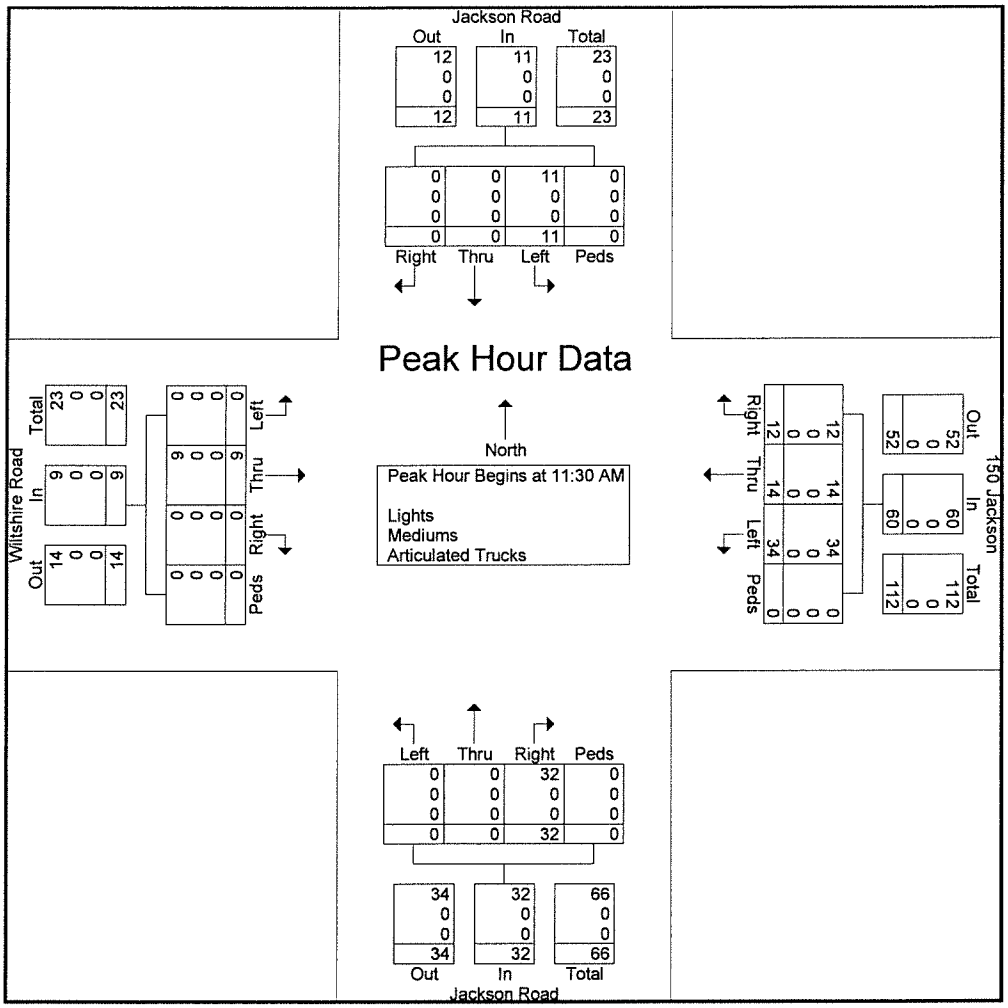


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Jackson_Road_at_Site_Drive (Just Site Activity)
Site Code : 1022
Start Date : 1/31/2019
Page No : 4

	Jackson Road From North					150 Jackson From East					Jackson Road From South					Wiltshire Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	0	1	0	1	1	0	2	0	3	10	0	0	0	10	0	2	0	0	2	16
11:45 AM	0	0	**9**	0	**9**	1	0	5	0	6	**19**	0	0	0	**19**	0	**7**	0	0	**7**	41
12:00 PM	0	0	1	0	1	**8**	**11**	**23**	0	**42**	1	0	0	0	1	0	0	0	0	0	**44**
12:15 PM	0	0	0	0	0	2	3	4	0	9	2	0	0	0	2	0	0	0	0	0	11
Total Volume	0	0	11	0	11	12	14	34	0	60	32	0	0	0	32	0	9	0	0	9	112
% App. Total	0	0	100	0		20	23.3	56.7	0		100	0	0	0		0	100	0	0		
PHF	.000	.000	.306	.000	.306	.375	.318	.370	.000	.357	.421	.000	.000	.000	.421	.000	.321	.000	.000	.321	.636
Lights	0	0	11	0	11	12	14	34	0	60	32	0	0	0	32	0	9	0	0	9	112
% Lights	0	0	100	0	100	100	100	100	0	100	100	0	0	0	100	0	100	0	0	100	100
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Mediums																					
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

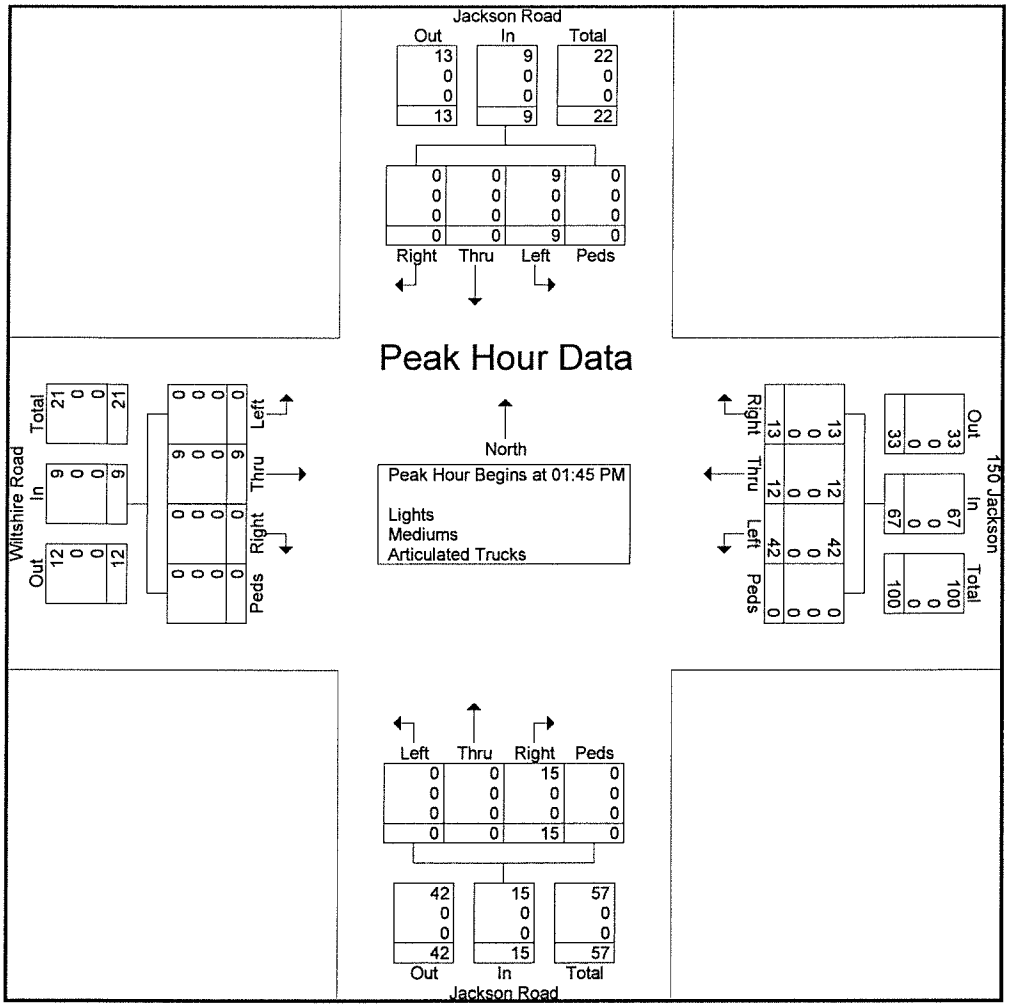


MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

File Name : 1022_Jackson_Road_at_Site_Drive (Just Site Activity)
Site Code : 1022
Start Date : 1/31/2019
Page No : 5

	Jackson Road From North					150 Jackson From East					Jackson Road From South					Wiltshire Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:45 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	0	0	**5**	0	**5**	0	1	4	0	5	**10**	0	0	0	**10**	0	**3**	0	0	**3**	23
02:00 PM	0	0	2	0	2	3	3	**20**	0	26	3	0	0	0	3	0	2	0	0	2	**33**
02:15 PM	0	0	2	0	2	3	1	4	0	8	2	0	0	0	2	0	3	0	0	3	15
02:30 PM	0	0	0	0	0	**7**	**7**	14	0	**28**	0	0	0	0	0	0	1	0	0	1	29
Total Volume	0	0	9	0	9	13	12	42	0	67	15	0	0	0	15	0	9	0	0	9	100
% App. Total	0	0	100	0		19.4	17.9	62.7	0		100	0	0	0		0	100	0	0		
PHF	.000	.000	.450	.000	.450	.464	.429	.525	.000	.598	.375	.000	.000	.000	.375	.000	.750	.000	.000	.750	.758
Lights	0	0	9	0	9	13	12	42	0	67	15	0	0	0	15	0	9	0	0	9	100
% Lights	0	0	100	0	100	100	100	100	0	100	100	0	0	0	100	0	100	0	0	100	100
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Mediums																					
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Jackson Road
E/W: 150 Jackson/Wiltshire Road
Newton, MA

File Name : 1022_Jackson_Road_at_Site_Drive (Just Site Activity)
Site Code : 1022
Start Date : 1/31/2019
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Jackson Road From North					150 Jackson From East					Jackson Road From South					Wiltshire Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	1	0	1	0	0	0	0	0	4	0	0	0	4	0	1	0	0	1	6
07:15 AM	0	0	1	0	1	0	0	1	0	1	2	0	0	0	2	0	3	0	0	3	7
07:30 AM	0	0	6	0	6	1	0	0	0	1	4	0	0	0	4	0	1	0	0	1	12
07:45 AM	0	0	5	0	5	1	0	4	0	5	10	0	0	0	10	0	2	0	0	2	22
Total	0	0	13	0	13	2	0	5	0	7	20	0	0	0	20	0	7	0	0	7	47
08:00 AM	0	0	4	0	4	0	0	2	0	2	12	0	0	0	12	0	5	0	0	5	23
08:15 AM	0	0	3	0	3	1	0	1	0	2	13	0	0	0	13	0	10	0	0	10	28
08:30 AM	0	0	6	0	6	4	2	7	0	13	16	0	0	0	16	0	5	0	0	5	40
08:45 AM	0	0	6	0	6	2	1	8	0	11	20	0	0	0	20	0	11	0	0	11	48
Total	0	0	19	0	19	7	3	18	0	28	61	0	0	0	61	0	31	0	0	31	139
09:00 AM	0	0	4	0	4	10	12	31	0	53	16	0	0	0	16	0	11	0	0	11	84
09:15 AM	0	0	1	0	1	3	3	12	0	18	5	0	0	0	5	0	2	0	0	2	26
09:30 AM	0	0	1	0	1	2	1	6	0	9	1	0	0	0	1	0	1	0	0	1	12
09:45 AM	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	3
Total	0	0	6	0	6	15	17	50	0	82	23	0	0	0	23	0	14	0	0	14	125
10:00 AM	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	1	0	0	1	4
10:15 AM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	4
10:30 AM	0	0	1	0	1	2	4	0	0	6	1	0	0	0	1	0	1	0	0	1	9
10:45 AM	0	0	1	0	1	1	1	2	0	4	2	0	0	0	2	0	2	0	0	2	9
Total	0	0	3	0	3	3	8	3	0	14	4	0	0	0	4	0	5	0	0	5	26
11:00 AM	0	0	1	0	1	1	0	1	0	2	3	0	0	0	3	0	1	0	0	1	7
11:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	3	0	0	3	5
11:30 AM	0	0	1	0	1	1	0	2	0	3	10	0	0	0	10	0	2	0	0	2	16
11:45 AM	0	0	9	0	9	1	0	5	0	6	19	0	0	0	19	0	7	0	0	7	41
Total	0	0	11	0	11	3	0	8	0	11	34	0	0	0	34	0	13	0	0	13	69
12:00 PM	0	0	1	0	1	8	11	23	0	42	1	0	0	0	1	0	0	0	0	0	44
12:15 PM	0	0	0	0	0	2	3	4	0	9	2	0	0	0	2	0	0	0	0	0	11
12:30 PM	0	0	1	0	1	2	1	8	0	11	1	0	0	0	1	0	1	0	0	1	14
12:45 PM	0	0	0	0	0	0	1	1	0	2	3	0	0	0	3	0	2	0	0	2	7
Total	0	0	2	0	2	12	16	36	0	64	7	0	0	0	7	0	3	0	0	3	76
01:00 PM	0	0	0	0	0	0	1	2	0	3	4	0	0	0	4	0	0	0	0	0	7
01:15 PM	0	0	5	0	5	0	1	1	0	2	11	0	0	0	11	0	2	0	0	2	20
01:30 PM	0	0	0	0	0	3	4	8	0	15	2	0	0	0	2	0	2	0	0	2	19
01:45 PM	0	0	5	0	5	0	1	4	0	5	10	0	0	0	10	0	3	0	0	3	23
Total	0	0	10	0	10	3	7	15	0	25	27	0	0	0	27	0	7	0	0	7	69
02:00 PM	0	0	2	0	2	3	3	20	0	26	3	0	0	0	3	0	2	0	0	2	33
02:15 PM	0	0	2	0	2	3	1	4	0	8	2	0	0	0	2	0	3	0	0	3	15
02:30 PM	0	0	0	0	0	7	7	14	0	28	0	0	0	0	0	0	1	0	0	1	29
02:45 PM	0	0	0	0	0	3	3	10	0	16	2	0	0	0	2	0	1	0	0	1	19
Total	0	0	4	0	4	16	14	48	0	78	7	0	0	0	7	0	7	0	0	7	96
03:00 PM	0	0	1	0	1	3	2	11	0	16	0	0	0	0	0	0	0	0	0	0	17
03:15 PM	0	0	0	0	0	4	0	3	0	7	1	0	0	0	1	0	0	0	0	0	8
03:30 PM	0	0	1	0	1	1	1	3	0	5	0	0	0	0	0	0	0	0	0	0	6
03:45 PM	0	0	0	0	0	1	1	4	0	6	2	0	0	0	2	0	0	0	0	0	8
Total	0	0	2	0	2	9	4	21	0	34	3	0	0	0	3	0	0	0	0	0	39
Grand Total	0	0	70	0	70	70	69	204	0	343	186	0	0	0	186	0	87	0	0	87	686
Apprch %	0	0	100	0		20.4	20.1	59.5	0		100	0	0	0		0	100	0	0		
Total %	0	0	10.2	0	10.2	10.2	10.1	29.7	0	50	27.1	0	0	0	27.1	0	12.7	0	0	12.7	
Lights	0	0	70	0	70	70	69	202	0	341	184	0	0	0	184	0	87	0	0	87	682
% Lights	0	0	100	0	100	100	100	99	0	99.4	98.9	0	0	0	98.9	0	100	0	0	100	99.4
Mediums	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	4
% Mediums																					
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Trip Distribution

Zip	Town	Direction From 687 Watertown
01501	Auburn	W
01545	Shrewsbury	W
01701	Framingham	W
01701	Framingham	W
01742	Concord	W
01747	Hopedale	W
01747	Hopedale	W
01752	Marlborough	W
01757	Milford	W
01760	Natick	W
01760	Natick	W
01776	Sudbury	W
01803	Burlington	N
01821	Billerica	N
01880	Wakefield	W
01906	Saugus	E
02026	Dedham	W
02026	Dedham	W
02048	Mansfield	W
02054	Millis	W
02056	Norfolk	W
02072	Stoughton	W
02081	Walpole	W
02081	Walpole	W
02116	Boston	E
02125	Dorchester	E
02131	Roslindale	E
02132	West Roxbury	E
02134	Allston	E
02135	Boston	E
02135	Boston	E
02135	Boston	E
02136	Hyde Park	E
02145	Winter Hill	E
02169	Quincy	W
02215	Boston	E
02446	Brookline	E
02446	Brookline	E
02451	Waltham	N
02452	North Waltham	N
02452	North Waltham	N
02453	Waltham	W
02453	Waltham	W
02453	Waltham	W
02453	Waltham	W
02453	Waltham	N
02453	Waltham	N
02458	Newton	E
02458	Newton	E
02458	Newton	E
02458	Newton	E
02460	Newton	E
02460	Newton	E
02460	Newton	E
02460	Newton	E
02465	Newton	W
02465	Newton	W
02465	Newton	W
02465	Newton	W
02465	Newton	E
02465	Newton	E
02466	Auburndale	W
02466	Auburndale	W
02466	Auburndale	W
02466	Auburndale	W
02467	Chestnut Hill	E
02467	Chestnut Hill	E
02467	Chestnut Hill	E
02467	Chestnut Hill	E
02467	Chestnut Hill	E
02467	Chestnut Hill	E
02472	Watertown	N
02472	Watertown	E
02472	Watertown	E
02472	Watertown	E
02476	Arlington	E
02478	Belmont	E
02478	Belmont	N
02481	Wellesley	W
02481	Wellesley	W
02492	Needham	W
02492	Needham	W
02492	Needham	W
02494	Needham	W
03801	Newington, NH	W

	East on Watertown	West on Watertown	North on Ablemarle	South on Albemarle	Total
687 Watertown	35	41	9	0	85
Percentages	41%	48%	11%	0%	100%
	Use 40%	**Use 50%**	**Use 10%**	**Use 0%**	

Attachments

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Newton Population Areas

Date: February 2019
Dwg No. 1022 Population Map.dwg

Town Population Clusters

Direction From 687 Watertown	North	West	East	
	1239	782	775	
		726	1182	
		802	855	
		1416	1569	
		923	1067	
		1274	842	
		1216	900	
		2640	872	
		1837	1158	
		1323	795	
		790	999	
		2262	931	
		1153	1116	
		1038	1237	
		849	2088	
		938	2810	
		1681	725	
		946	1625	
		1356	1027	
		1192	783	
		1466	1212	
		1519	721	
		1087	1074	
			1412	
			2677	
			1937	
			1769	
			2012	
			1479	
			663	
			945	
			1783	
			2041	
			1415	
			1554	
			2063	
			1713	
			1043	
			1330	**Total**
			2492	85146
Total	1239	29216	54691	
Percentage of Total	1.46%	34.31%	64.23%	
	Use 5%	**Use 35%**	**Use 60%**	

□ Capacity Analysis

LEVEL OF SERVICE METHODOLOGY

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the 2010 Highway Capacity Manual (HCM). The resulting analysis presents a level-of-service (LOS) designation for individual intersection movements and (for signalized intersections) for the entire intersection. The LOS is a letter designation that provides a qualitative measure of operating conditions based on several factors including roadway geometry, speeds, ambient traffic volumes, traffic controls, and driver characteristics. Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of LOS, depending on the time of day, day of week, or period of year. A range of six levels of service are defined on the basis of average delay, ranging from LOS A (the least delay) to LOS F (delays greater than 50 seconds for unsignalized movements, and greater than 80 seconds for signalized movements).

Signalized Intersection Performance Measures

The six LOS designations for signalized intersections may be described as follows:

- *LOS A* describes operations with low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than LOS A.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

The LOS for signalized intersections are calculated using the operational analysis methodology of the 2010 *Highway Capacity Manual.*[1] This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. LOS designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. **Table A1** summarizes the relationship between LOS and control delay. The tabulated control delay criterion may be applied in assigning LOS designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table A1
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS[1]

Control (Signal) Delay per Vehicle (seconds per vehicle)	Level of Service	
	v/c ≤ 1	v/c > 1
≤10.0	A	F
10.1 to 20.0	B	F
20.1 to 35.0	C	F
35.1 to 55.0	D	F
55.1 to 80.0	E	F
>80.0	F	F

[1]Source: *Highway Capacity Manual 2010,* Transportation Research Board; Washington, DC; 2010.

[1]*Highway Capacity Manual* 2010; Transportation Research Board; Washington, DC; 2010.

Unsignalized Intersection Performance Measures

The six LOS designations for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The LOS designations of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual.*[2] LOS is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for LOS at unsignalized intersections are also given in the *Highway Capacity Manual 2010*. **Table A2** summarizes the relationship between LOS and average control delay.

Table A2
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[1]

Average Control Delay (seconds per vehicle)	Level of Service	
	v/c ≤ 1	v/c > 1
≤ 10.0	A	F
10.1 to 15.0	B	F
15.1 to 25.0	C	F
25.1 to 35.0	D	F
35.1 to 50.0	E	F
>50.0	F	F

[1]Source: *Highway Capacity Manual 2010,* Transportation Research Board; Washington, DC; 2010.

[2] ibid

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	94	290	3	10	308	52	1	4	47	22	44	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0		25		0		70
Storage Lanes	1		0	1		0		1		0		1
Taper Length (ft)	25			25				25				25
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		0.998			0.978				0.952			
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1752	1829	0	1626	1822	0	0	1805	1752	0	0	1805
Flt Permitted	0.451			0.519				0.950				0.950
Satd. Flow (perm)	832	1829	0	888	1822	0	0	1805	1752	0	0	1805
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)		1			8				17			
Link Speed (mph)		30			30				30			
Link Distance (ft)		500			350				500			
Travel Time (s)		11.4			8.0				11.4			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	3%	3%	66%	11%	2%	2%	0%	0%	0%	10%	0%	0%
Adj. Flow (vph)	118	362	4	12	385	65	1	5	59	28	55	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	366	0	12	450	0	0	6	87	0	0	65
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				50			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2		1	2		1	1	2		1	1
Detector Template	Left	Thru		Left	Thru		Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100		20	100		20	20	100		20	20
Trailing Detector (ft)	0	0		0	0		0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6		20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA		Perm	NA		Split	Split	NA		Split	Split
Protected Phases		1			1		4	4	4		3	3
Permitted Phases	1			1								

Lane Group	SBT	SBR	ø2
Lane Configurations			
Volume (vph)	20	60	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	
Frt	0.887		
Flt Protected			
Satd. Flow (prot)	1685	0	
Flt Permitted			
Satd. Flow (perm)	1685	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	75		
Link Speed (mph)	30		
Link Distance (ft)	350		
Travel Time (s)	8.0		
Peak Hour Factor	0.80	0.80	
Heavy Vehicles (%)	0%	0%	
Adj. Flow (vph)	25	75	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	100	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	50		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	3		2
Permitted Phases			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	1	1		1	1		4	4	4		3	3
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		13.0	13.0
Total Split (s)	44.0	44.0		44.0	44.0		17.0	17.0	17.0		20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		15.5%	15.5%	15.5%		18.2%	18.2%
Maximum Green (s)	38.0	38.0		38.0	38.0		11.0	11.0	11.0		15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0			5.0
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag	Lag		Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None		None	None
Act Effct Green (s)	42.4	42.4		42.4	42.4			9.0	9.0			8.8
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.13	0.13			0.13
v/c Ratio	0.23	0.32		0.02	0.40			0.03	0.36			0.28
Control Delay	11.9	11.0		9.5	11.7			28.4	29.1			33.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Delay	11.9	11.0		9.5	11.7			28.4	29.1			33.0
LOS	B	B		A	B			C	C			C
Approach Delay		11.2			11.7				29.1			
Approach LOS		B			B				C			
90th %ile Green (s)	38.0	38.0		38.0	38.0		11.0	11.0	11.0		10.5	10.5
90th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Max	Max	Max		Gap	Gap
70th %ile Green (s)	38.0	38.0		38.0	38.0		9.5	9.5	9.5		9.0	9.0
70th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Gap	Gap	Gap		Gap	Gap
50th %ile Green (s)	38.0	38.0		38.0	38.0		8.3	8.3	8.3		8.0	8.0
50th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Gap	Gap	Gap		Min	Min
30th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		8.0	8.0
30th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Min	Min
10th %ile Green (s)	45.6	45.6		45.6	45.6		0.0	0.0	0.0		0.0	0.0
10th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip	Skip		Skip	Skip
Queue Length 50th (ft)	26	87		2	111			2	29			27
Queue Length 95th (ft)	57	141		10	175			11	61			56
Internal Link Dist (ft)		420			270				420			
Turn Bay Length (ft)	100			50				25				70
Base Capacity (vph)	513	1128		547	1126			294	299			401
Starvation Cap Reductn	0	0		0	0			0	0			0
Spillback Cap Reductn	0	0		0	0			0	0			0
Storage Cap Reductn	0	0		0	0			0	0			0
Reduced v/c Ratio	0.23	0.32		0.02	0.40			0.02	0.29			0.16

Intersection Summary

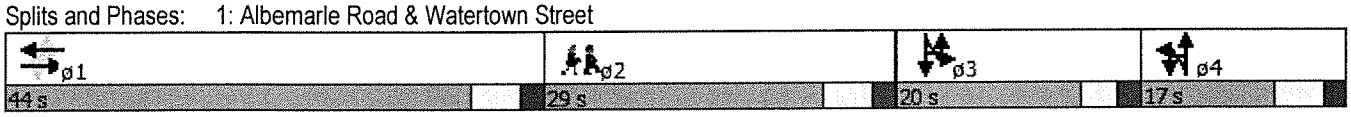
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 68.8
Natural Cycle: 90

Lane Group	SBT	SBR	ø2
Detector Phase	3		
Switch Phase			
Minimum Initial (s)	8.0		9.0
Minimum Split (s)	13.0		29.0
Total Split (s)	20.0		29.0
Total Split (%)	18.2%		26%
Maximum Green (s)	15.0		23.0
Yellow Time (s)	3.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	5.0		
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0		3.0
Recall Mode	None		None
Act Effct Green (s)	8.8		
Actuated g/C Ratio	0.13		
v/c Ratio	0.36		
Control Delay	15.8		
Queue Delay	0.0		
Total Delay	15.8		
LOS	B		
Approach Delay	22.6		
Approach LOS	C		
90th %ile Green (s)	10.5		0.0
90th %ile Term Code	Gap		Skip
70th %ile Green (s)	9.0		0.0
70th %ile Term Code	Gap		Skip
50th %ile Green (s)	8.0		0.0
50th %ile Term Code	Min		Skip
30th %ile Green (s)	8.0		0.0
30th %ile Term Code	Min		Skip
10th %ile Green (s)	0.0		0.0
10th %ile Term Code	Skip		Skip
Queue Length 50th (ft)	10		
Queue Length 95th (ft)	42		
Internal Link Dist (ft)	270		
Turn Bay Length (ft)			
Base Capacity (vph)	433		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.23		

Intersection Summary

Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 14.3
Intersection LOS: B
Intersection Capacity Utilization 51.4%
ICU Level of Service A
Analysis Period (min) 15
90th %ile Actuated Cycle: 76.5
70th %ile Actuated Cycle: 73.5
50th %ile Actuated Cycle: 71.3
30th %ile Actuated Cycle: 71
10th %ile Actuated Cycle: 51.6

Splits and Phases: 1: Albemarle Road & Watertown Street



Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	321	353	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	4	2	0	0	0
Mvmt Flow	2	361	397	1	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	398	0	-	0	762	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1172	-	-	-	376	657
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1172	-	-	-	375	657
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	706	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1172	-	-	-	657
HCM Lane V/C Ratio	0.002	-	-	-	0.002
HCM Control Delay (s)	8.1	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	230	2	0	132
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, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	0	0	426	4	0	244

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	672	428	0	0	430	0
Stage 1	428	-	-	-	-	-
Stage 2	244	-	-	-	-	-
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	424	631	-	-	1140	-
Stage 1	662	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	424	631	-	-	1140	-
Mov Cap-2 Maneuver	584	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	801	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1140	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection

Int Delay, s/veh 440.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	793	18	36	602	0	39	117	70	12	75	216
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	3	2	0	0	4	0	9	0	6
Mvmt Flow	2	881	20	40	669	0	43	130	78	13	83	240

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	669	0	0	901	0	0	1807	1645	891	1748	1655	669
Stage 1	-	-	-	-	-	-	896	896	-	749	749	-
Stage 2	-	-	-	-	-	-	911	749	-	999	906	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.54	6.2	7.19	6.5	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.19	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.19	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4.036	3.3	3.581	4	3.354
Pot Cap-1 Maneuver	931	-	-	750	-	-	62	~ 98	344	65	99	451
Stage 1	-	-	-	-	-	-	338	356	-	393	422	-
Stage 2	-	-	-	-	-	-	331	416	-	285	358	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	931	-	-	750	-	-	~ 6	~ 92	344	-	93	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 6	~ 92	-	-	93	-
Stage 1	-	-	-	-	-	-	337	355	-	391	399	-
Stage 2	-	-	-	-	-	-	116	394	-	139	357	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	$ 3858.6	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	28	931	-	-	750	-	-	-
HCM Lane V/C Ratio	8.968	0.002	-	-	0.053	-	-	-
HCM Control Delay (s)	$ 3858.6	8.9	0	-	10.1	-	-	-
HCM Lane LOS	F	A	A	-	B	-	-	-
HCM 95th %tile Q(veh)	30.9	0	-	-	0.2	-	-	-

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	64	249	5	5	222	32	3	11	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	25		0		70	
Storage Lanes	1		0	1		0	1		0		1	
Taper Length (ft)	25			25			25				25	
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		0.997			0.981			0.928				0.876
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1770	1789	0	1504	1810	0	1805	1676	0	0	1805	1636
Flt Permitted	0.585			0.584			0.950				0.950	
Satd. Flow (perm)	1090	1789	0	925	1810	0	1805	1676	0	0	1805	1636
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		1			7			11				53
Link Speed (mph)		30			30			30				30
Link Distance (ft)		500			350			500				350
Travel Time (s)		11.4			8.0			11.4				8.0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	6%	0%	20%	3%	3%	0%	10%	0%	0%	0%	10%
Adj. Flow (vph)	72	280	6	6	249	36	3	12	11	11	11	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	286	0	6	285	0	3	23	0	0	22	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Left
Median Width(ft)		12			12			50				50
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	9	15	
Number of Detectors	1	2		1	2		1	2		1	1	2
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	100		20	100		20	100		20	20	100
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	Split	NA
Protected Phases		1			1		4	4		3	3	3
Permitted Phases	1			1								

Lane Group	SBR	ø2
Lane Configurations		
Volume (vph)	47	
Ideal Flow (vphpl)	1900	
Storage Length (ft)	0	
Storage Lanes	0	
Taper Length (ft)		
Lane Util. Factor	1.00	
Frt		
Flt Protected		
Satd. Flow (prot)	0	
Flt Permitted		
Satd. Flow (perm)	0	
Right Turn on Red	Yes	
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor	0.89	
Heavy Vehicles (%)	0%	
Adj. Flow (vph)	53	
Shared Lane Traffic (%)		
Lane Group Flow (vph)	0	
Enter Blocked Intersection	No	
Lane Alignment	Right	
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor	1.00	
Turning Speed (mph)	9	
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases		2
Permitted Phases		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Detector Phase	1	1		1	1		4	4		3	3	3
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	16.0	16.0		16.0	16.0		14.0	14.0		13.0	13.0	13.0
Total Split (s)	44.0	44.0		44.0	44.0		17.0	17.0		20.0	20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		15.5%	15.5%		18.2%	18.2%	18.2%
Maximum Green (s)	38.0	38.0		38.0	38.0		11.0	11.0		15.0	15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			5.0	5.0
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None		None	None	None
Act Effct Green (s)	45.7	45.7		45.7	45.7		8.2	8.2			8.3	8.3
Actuated g/C Ratio	0.75	0.75		0.75	0.75		0.13	0.13			0.14	0.14
v/c Ratio	0.09	0.21		0.01	0.21		0.01	0.10			0.09	0.24
Control Delay	7.1	6.8		7.4	6.6		27.7	21.6			28.1	14.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	7.1	6.8		7.4	6.6		27.7	21.6			28.1	14.1
LOS	A	A		A	A		C	C			C	B
Approach Delay		6.8			6.6			22.3				17.7
Approach LOS		A			A			C				B
90th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0		8.5	8.5	8.5
90th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min		Gap	Gap	Gap
70th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0		8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min		Min	Min	Min
50th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0		8.0	8.0	8.0
50th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip		Min	Min	Min
30th %ile Green (s)	41.5	41.5		41.5	41.5		0.0	0.0		0.0	0.0	0.0
30th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip		Skip	Skip	Skip
10th %ile Green (s)	53.0	53.0		53.0	53.0		0.0	0.0		0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip		Skip	Skip	Skip
Queue Length 50th (ft)	7	31		1	30		1	4			7	3
Queue Length 95th (ft)	34	108		6	105		8	24			28	36
Internal Link Dist (ft)		420			270			420				270
Turn Bay Length (ft)	100			50			25				70	
Base Capacity (vph)	814	1336		690	1353		332	317			452	450
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.09	0.21		0.01	0.21		0.01	0.07			0.05	0.14

Intersection Summary

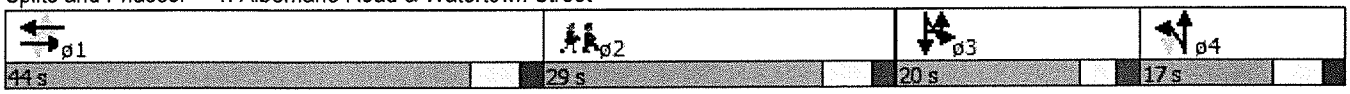
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 61.2
Natural Cycle: 75

Lane Group	SBR	ø2
Detector Phase		
Switch Phase		
Minimum Initial (s)		9.0
Minimum Split (s)		29.0
Total Split (s)		29.0
Total Split (%)		26%
Maximum Green (s)		23.0
Yellow Time (s)		4.0
All-Red Time (s)		2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		Yes
Vehicle Extension (s)		3.0
Recall Mode		None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)		0.0
90th %ile Term Code		Skip
70th %ile Green (s)		0.0
70th %ile Term Code		Skip
50th %ile Green (s)		0.0
50th %ile Term Code		Skip
30th %ile Green (s)		0.0
30th %ile Term Code		Skip
10th %ile Green (s)		0.0
10th %ile Term Code		Skip
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

Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.24
Intersection Signal Delay: 8.5
Intersection LOS: A
Intersection Capacity Utilization 43.9%
ICU Level of Service A
Analysis Period (min) 15
90th %ile Actuated Cycle: 71.5
70th %ile Actuated Cycle: 71
50th %ile Actuated Cycle: 57
30th %ile Actuated Cycle: 47.5
10th %ile Actuated Cycle: 59

Splits and Phases: 1: Albemarle Road & Watertown Street



Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	4	258	257	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	6	3	0	0	0
Mvmt Flow	5	304	302	1	1	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	616	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	313	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1268	-	-	-	457	741
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	746	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1268	-	-	-	455	741
Mov Cap-2 Maneuver	-	-	-	-	455	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	742	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1268	-	-	-	640
HCM Lane V/C Ratio	0.004	-	-	-	0.007
HCM Control Delay (s)	7.9	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	3	102	4	0	77
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, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	0	4	0	0	1
Mvmt Flow	0	6	189	7	0	143

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	336	193	0	0	196	0
Stage 1	193	-	-	-	-	-
Stage 2	143	-	-	-	-	-
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	663	854	-	-	1389	-
Stage 1	845	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	663	854	-	-	1389	-
Mov Cap-2 Maneuver	756	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	889	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	854	1389	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	-	-	9.2	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	519	9	14	472	1	15	68	24	9	43	154
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	0	0	4	0	0	5	5	12	0	1
Mvmt Flow	6	577	10	16	524	1	17	76	27	10	48	171

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	526	0	0	587	0	0	1259	1150	582	1200	1154	525
Stage 1	-	-	-	-	-	-	593	593	-	556	556	-
Stage 2	-	-	-	-	-	-	666	557	-	644	598	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.25	7.22	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-	6.22	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-	6.22	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.345	3.608	4	3.309
Pot Cap-1 Maneuver	1051	-	-	998	-	-	149	196	507	155	199	554
Stage 1	-	-	-	-	-	-	496	489	-	498	516	-
Stage 2	-	-	-	-	-	-	452	507	-	445	494	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1051	-	-	998	-	-	82	191	507	100	194	554
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	191	-	100	194	-
Stage 1	-	-	-	-	-	-	492	485	-	494	508	-
Stage 2	-	-	-	-	-	-	278	499	-	353	490	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	55.2	33
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	1051	-	-	998	-	-	349
HCM Lane V/C Ratio	0.65	0.005	-	-	0.016	-	-	0.656
HCM Control Delay (s)	55.2	8.4	0	-	8.7	-	-	33
HCM Lane LOS	F	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	3.8	0	-	-	0	-	-	4.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	59	225	2	6	253	26	1	2	17	12	5	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0		25		0		70
Storage Lanes	1		0	1		0		1		0		1
Taper Length (ft)	25			25				25				25
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		0.999			0.986				0.936			
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1770	1843	0	1805	1796	0	0	1805	1778	0	0	1707
Flt Permitted	0.568			0.600				0.950				0.950
Satd. Flow (perm)	1058	1843	0	1140	1796	0	0	1805	1778	0	0	1707
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)					5				14			
Link Speed (mph)		30			30				30			
Link Distance (ft)		500			350				500			
Travel Time (s)		11.4			8.0				11.4			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	3%	0%	0%	3%	17%	0%	0%	0%	0%	0%	8%
Adj. Flow (vph)	67	256	2	7	288	30	1	2	19	14	6	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	258	0	7	318	0	0	3	33	0	0	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				50			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2		1	2		1	1	2		1	1
Detector Template	Left	Thru		Left	Thru		Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100		20	100		20	20	100		20	20
Trailing Detector (ft)	0	0		0	0		0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6		20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA		Perm	NA		Split	Split	NA		Split	Split
Protected Phases		1			1		4	4	4		3	3
Permitted Phases	1			1								

Lane Group	SBT	SBR	ø2
Lane Configurations			
Volume (vph)	14	60	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	
Frt	0.879		
Flt Protected			
Satd. Flow (prot)	1670	0	
Flt Permitted			
Satd. Flow (perm)	1670	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	68		
Link Speed (mph)	30		
Link Distance (ft)	350		
Travel Time (s)	8.0		
Peak Hour Factor	0.88	0.88	
Heavy Vehicles (%)	0%	0%	
Adj. Flow (vph)	16	68	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	84	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	50		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	3		2
Permitted Phases			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	1	1		1	1		4	4	4		3	3
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		13.0	13.0
Total Split (s)	44.0	44.0		44.0	44.0		17.0	17.0	17.0		20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		15.5%	15.5%	15.5%		18.2%	18.2%
Maximum Green (s)	38.0	38.0		38.0	38.0		11.0	11.0	11.0		15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0			5.0
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag	Lag		Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None		None	None
Act Effct Green (s)	42.9	42.9		42.9	42.9			8.1	8.1			8.3
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.13	0.13			0.13
v/c Ratio	0.09	0.21		0.01	0.26			0.01	0.14			0.09
Control Delay	7.5	7.3		7.5	7.5			28.0	21.4			28.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Delay	7.5	7.3		7.5	7.5			28.0	21.4			28.1
LOS	A	A		A	A			C	C			C
Approach Delay		7.3			7.5				21.9			
Approach LOS		A			A				C			
90th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		9.1	9.1
90th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Gap	Gap
70th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		8.0	8.0
70th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Min	Min
50th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0	0.0		8.0	8.0
50th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip	Skip		Min	Min
30th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0	0.0		8.0	8.0
30th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip	Skip		Min	Min
10th %ile Green (s)	53.0	53.0		53.0	53.0		0.0	0.0	0.0		0.0	0.0
10th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip	Skip		Skip	Skip
Queue Length 50th (ft)	6	27		1	34			1	6			6
Queue Length 95th (ft)	32	97		7	120			8	31			27
Internal Link Dist (ft)		420			270				420			
Turn Bay Length (ft)	100			50				25				70
Base Capacity (vph)	718	1251		774	1221			317	324			409
Starvation Cap Reductn	0	0		0	0			0	0			0
Spillback Cap Reductn	0	0		0	0			0	0			0
Storage Cap Reductn	0	0		0	0			0	0			0
Reduced v/c Ratio	0.09	0.21		0.01	0.26			0.01	0.10			0.05

Intersection Summary

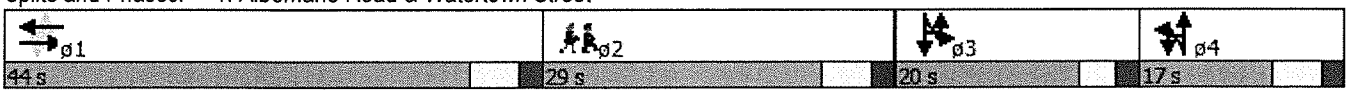
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 63.2
Natural Cycle: 75

Lane Group	SBT	SBR	ø2
Detector Phase	3		
Switch Phase			
Minimum Initial (s)	8.0		9.0
Minimum Split (s)	13.0		29.0
Total Split (s)	20.0		29.0
Total Split (%)	18.2%		26%
Maximum Green (s)	15.0		23.0
Yellow Time (s)	3.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	5.0		
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0		3.0
Recall Mode	None		None
Act Effct Green (s)	8.3		
Actuated g/C Ratio	0.13		
v/c Ratio	0.30		
Control Delay	14.1		
Queue Delay	0.0		
Total Delay	14.1		
LOS	B		
Approach Delay	16.9		
Approach LOS	B		
90th %ile Green (s)	9.1		0.0
90th %ile Term Code	Gap		Skip
70th %ile Green (s)	8.0		0.0
70th %ile Term Code	Min		Skip
50th %ile Green (s)	8.0		0.0
50th %ile Term Code	Min		Skip
30th %ile Green (s)	8.0		0.0
30th %ile Term Code	Min		Skip
10th %ile Green (s)	0.0		0.0
10th %ile Term Code	Skip		Skip
Queue Length 50th (ft)	5		
Queue Length 95th (ft)	42		
Internal Link Dist (ft)	270		
Turn Bay Length (ft)			
Base Capacity (vph)	452		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.19		

Intersection Summary

Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.30
Intersection Signal Delay: 9.3
Intersection LOS: A
Intersection Capacity Utilization 45.1%
ICU Level of Service A
Analysis Period (min) 15
90th %ile Actuated Cycle: 72.1
70th %ile Actuated Cycle: 71
50th %ile Actuated Cycle: 57
30th %ile Actuated Cycle: 57
10th %ile Actuated Cycle: 59

Splits and Phases: 1: Albemarle Road & Watertown Street



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	247	282	3	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	3	3	0	0	0
Mvmt Flow	3	281	320	3	3	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	324	0	-	0	610	322
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1247	-	-	-	461	724
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1247	-	-	-	460	724
Mov Cap-2 Maneuver	-	-	-	-	460	-
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	764	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1247	-	-	-	618
HCM Lane V/C Ratio	0.003	-	-	-	0.018
HCM Control Delay (s)	7.9	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	1	102	2	0	92
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, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	0	0	4	0	0	1
Mvmt Flow	0	1	142	3	0	128

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	271	143	0	0	144	0
Stage 1	143	-	-	-	-	-
Stage 2	128	-	-	-	-	-
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	723	910	-	-	1451	-
Stage 1	889	-	-	-	-	-
Stage 2	903	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	723	910	-	-	1451	-
Mov Cap-2 Maneuver	795	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	903	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	910	1451	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	-	-	9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	22.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	523	25	20	511	3	25	56	28	8	57	177
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	4	0	2	0	4	0	12	0	0	1
Mvmt Flow	6	594	28	23	581	3	28	64	32	9	65	201

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	623	0	0	1381	1250	609	1296	1262	582
Stage 1	-	-	-	-	-	-	620	620	-	628	628	-
Stage 2	-	-	-	-	-	-	761	630	-	668	634	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.32	7.1	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.408	3.5	4	3.309
Pot Cap-1 Maneuver	1001	-	-	968	-	-	120	174	477	140	171	515
Stage 1	-	-	-	-	-	-	472	483	-	474	479	-
Stage 2	-	-	-	-	-	-	395	478	-	451	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1001	-	-	968	-	-	50	168	477	90	165	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	168	-	90	165	-
Stage 1	-	-	-	-	-	-	468	479	-	470	468	-
Stage 2	-	-	-	-	-	-	202	467	-	362	472	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	154.1	63.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	122	1001	-	-	968	-	-	311
HCM Lane V/C Ratio	1.015	0.006	-	-	0.023	-	-	0.884
HCM Control Delay (s)	154.1	8.6	0	-	8.8	-	-	63.2
HCM Lane LOS	F	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	6.9	0	-	-	0.1	-	-	8.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	105	290	3	10	311	100	1	4	35	22	39	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0		25		0		70
Storage Lanes	1		0	1		0		1		0		1
Taper Length (ft)	25			25				25				25
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		0.999			0.964				0.942			
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1752	1832	0	1626	1796	0	0	1805	1723	0	0	1805
Flt Permitted	0.460			0.564				0.703				0.374
Satd. Flow (perm)	849	1832	0	965	1796	0	0	1336	1723	0	0	711
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)		1			16				23			
Link Speed (mph)		30			30				30			
Link Distance (ft)		500			200				500			
Travel Time (s)		11.4			4.5				11.4			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	66%	11%	2%	2%	0%	0%	0%	10%	0%	0%
Adj. Flow (vph)	108	299	3	10	321	103	1	4	36	23	40	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	302	0	10	424	0	0	5	59	0	0	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				50			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2		1	2		1	1	2		1	1
Detector Template	Left	Thru		Left	Thru		Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100		20	100		20	20	100		20	20
Trailing Detector (ft)	0	0		0	0		0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6		20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA		Perm	NA		Perm	Split	NA		Perm	Split
Protected Phases		1			1			4	4			3
Permitted Phases	1			1			4				3	

Lane Group	SBT	SBR	ø2
Lane Configurations			
Volume (vph)	20	60	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	
Frt	0.888		
Flt Protected			
Satd. Flow (prot)	1687	0	
Flt Permitted			
Satd. Flow (perm)	1687	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	62		
Link Speed (mph)	30		
Link Distance (ft)	350		
Travel Time (s)	8.0		
Peak Hour Factor	0.97	0.97	
Heavy Vehicles (%)	0%	0%	
Adj. Flow (vph)	21	62	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	83	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	50		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	3		2
Permitted Phases			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	1	1		1	1		4	4	4		3	3
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		13.0	13.0
Total Split (s)	44.0	44.0		44.0	44.0		17.0	17.0	17.0		20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		15.5%	15.5%	15.5%		18.2%	18.2%
Maximum Green (s)	38.0	38.0		38.0	38.0		11.0	11.0	11.0		15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0			5.0
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag	Lag		Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None		None	None
Act Effct Green (s)	43.7	43.7		43.7	43.7			8.4	8.4			12.7
Actuated g/C Ratio	0.59	0.59		0.59	0.59			0.11	0.11			0.17
v/c Ratio	0.21	0.28		0.02	0.40			0.03	0.27			0.40
Control Delay	13.4	12.2		10.9	13.2			31.8	25.6			38.6
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Delay	13.4	12.2		10.9	13.2			31.8	25.6			38.6
LOS	B	B		B	B			C	C			D
Approach Delay		12.6			13.1				26.1			
Approach LOS		B			B				C			
90th %ile Green (s)	38.0	38.0		38.0	38.0		9.6	9.6	9.6		15.0	15.0
90th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Gap	Gap	Gap		Max	Max
70th %ile Green (s)	38.0	38.0		38.0	38.0		8.1	8.1	8.1		15.0	15.0
70th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Gap	Gap	Gap		Max	Max
50th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		14.7	14.7
50th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Gap	Gap
30th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		11.4	11.4
30th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Gap	Gap
10th %ile Green (s)	53.0	53.0		53.0	53.0		0.0	0.0	0.0		0.0	0.0
10th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip	Skip		Skip	Skip
Queue Length 50th (ft)	29	84		2	124			2	16			20
Queue Length 95th (ft)	65	145		11	209			12	51			55
Internal Link Dist (ft)		420			120				420			
Turn Bay Length (ft)	100			50				25				70
Base Capacity (vph)	503	1086		571	1071			201	279			146
Starvation Cap Reductn	0	0		0	0			0	0			0
Spillback Cap Reductn	0	0		0	0			0	0			0
Storage Cap Reductn	0	0		0	0			0	0			0
Reduced v/c Ratio	0.21	0.28		0.02	0.40			0.02	0.21			0.33

Intersection Summary

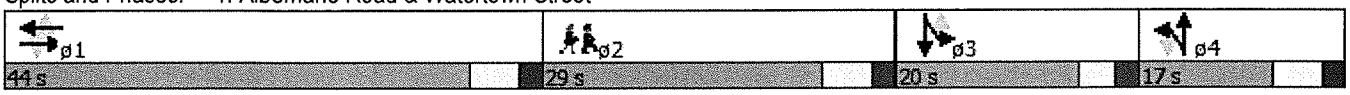
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 73.8
Natural Cycle: 80

Lane Group	SBT	SBR	ø2
Detector Phase	3		
Switch Phase			
Minimum Initial (s)	8.0		9.0
Minimum Split (s)	13.0		29.0
Total Split (s)	20.0		29.0
Total Split (%)	18.2%		26%
Maximum Green (s)	15.0		23.0
Yellow Time (s)	3.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	5.0		
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0		3.0
Recall Mode	None		None
Act Effct Green (s)	12.7		
Actuated g/C Ratio	0.17		
v/c Ratio	0.24		
Control Delay	13.2		
Queue Delay	0.0		
Total Delay	13.2		
LOS	B		
Approach Delay	22.5		
Approach LOS	C		
90th %ile Green (s)	15.0		0.0
90th %ile Term Code	Max		Skip
70th %ile Green (s)	15.0		0.0
70th %ile Term Code	Max		Skip
50th %ile Green (s)	14.7		0.0
50th %ile Term Code	Gap		Skip
30th %ile Green (s)	11.4		0.0
30th %ile Term Code	Gap		Skip
10th %ile Green (s)	0.0		0.0
10th %ile Term Code	Skip		Skip
Queue Length 50th (ft)	8		
Queue Length 95th (ft)	45		
Internal Link Dist (ft)	270		
Turn Bay Length (ft)			
Base Capacity (vph)	396		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.21		

Intersection Summary

Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 14.9
Intersection LOS: B
Intersection Capacity Utilization 54.2%
ICU Level of Service A
Analysis Period (min) 15
90th %ile Actuated Cycle: 79.6
70th %ile Actuated Cycle: 78.1
50th %ile Actuated Cycle: 77.7
30th %ile Actuated Cycle: 74.4
10th %ile Actuated Cycle: 59

Splits and Phases: 1: Albemarle Road & Watertown Street



Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	327	400	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	4	2	0	0	0
Mvmt Flow	2	367	449	1	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	451	0	-	0	822	450
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	372	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1120	-	-	-	346	613
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1120	-	-	-	345	613
Mov Cap-2 Maneuver	-	-	-	-	345	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	701	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1120	-	-	-	613
HCM Lane V/C Ratio	0.002	-	-	-	0.002
HCM Control Delay (s)	8.2	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 324.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	793	38	47	602	0	60	94	105	12	67	216
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	3	2	0	0	4	0	9	0	6
Mvmt Flow	2	844	40	50	640	0	64	100	112	13	71	230

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	640	0	0	884	0	0	1759	1608	864	1714	1628	640
Stage 1	-	-	-	-	-	-	868	868	-	740	740	-
Stage 2	-	-	-	-	-	-	891	740	-	974	888	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.54	6.2	7.19	6.5	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.19	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.19	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4.036	3.3	3.581	4	3.354
Pot Cap-1 Maneuver	954	-	-	761	-	-	67	104	357	68	103	468
Stage 1	-	-	-	-	-	-	350	367	-	398	426	-
Stage 2	-	-	-	-	-	-	340	420	-	294	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	761	-	-	~ 13	~ 97	357	-	96	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 13	~ 97	-	-	96	-
Stage 1	-	-	-	-	-	-	349	366	-	396	398	-
Stage 2	-	-	-	-	-	-	133	392	-	146	364	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	$ 2548.4	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	44	954	-	-	761	-	-	-
HCM Lane V/C Ratio	6.262	0.002	-	-	0.066	-	-	-
HCM Control Delay (s)	$ 2548.4	8.8	0	-	10.1	-	-	-
HCM Lane LOS	F	A	A	-	B	-	-	-
HCM 95th %tile Q(veh)	32.2	0	-	-	0.2	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	323	401	0	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	351	436	0	7	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	436	0	-	0	787	436
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	351	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1124	-	-	-	360	620
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1124	-	-	-	360	620
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1124	-	-	-	433
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Control Delay (s)	0	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	82	249	5	5	226	69	3	11	10	14	11	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	25		0		70	
Storage Lanes	1		0	1		0	1		0		1	
Taper Length (ft)	25			25			25				25	
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		0.997			0.965			0.928				0.875
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1770	1789	0	1504	1780	0	1805	1676	0	0	1805	1635
Flt Permitted	0.560			0.584			0.950				0.950	
Satd. Flow (perm)	1043	1789	0	925	1780	0	1805	1676	0	0	1805	1635
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		1			15			11				55
Link Speed (mph)		30			30			30				30
Link Distance (ft)		500			200			500				350
Travel Time (s)		11.4			4.5			11.4				8.0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	6%	0%	20%	3%	3%	0%	10%	0%	0%	0%	10%
Adj. Flow (vph)	92	280	6	6	254	78	3	12	11	16	12	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	286	0	6	332	0	3	23	0	0	28	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Left
Median Width(ft)		12			12			50				50
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	9	15	
Number of Detectors	1	2		1	2		1	2		1	1	2
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	100		20	100		20	100		20	20	100
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	Split	NA
Protected Phases		1			1		4	4		3	3	3
Permitted Phases	1			1								

Lane Group	SBR	ø2
Lane Configurations		
Volume (vph)	49	
Ideal Flow (vphpl)	1900	
Storage Length (ft)	0	
Storage Lanes	0	
Taper Length (ft)		
Lane Util. Factor	1.00	
Frt		
Flt Protected		
Satd. Flow (prot)	0	
Flt Permitted		
Satd. Flow (perm)	0	
Right Turn on Red	Yes	
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor	0.89	
Heavy Vehicles (%)	0%	
Adj. Flow (vph)	55	
Shared Lane Traffic (%)		
Lane Group Flow (vph)	0	
Enter Blocked Intersection	No	
Lane Alignment	Right	
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor	1.00	
Turning Speed (mph)	9	
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases		2
Permitted Phases		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Detector Phase	1	1		1	1		4	4		3	3	3
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	8.0
Minimum Split (s)	16.0	16.0		16.0	16.0		14.0	14.0		13.0	13.0	13.0
Total Split (s)	44.0	44.0		44.0	44.0		17.0	17.0		20.0	20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		15.5%	15.5%		18.2%	18.2%	18.2%
Maximum Green (s)	38.0	38.0		38.0	38.0		11.0	11.0		15.0	15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			5.0	5.0
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None		None	None	None
Act Effct Green (s)	42.9	42.9		42.9	42.9		8.1	8.1			8.2	8.2
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.13	0.13			0.13	0.13
v/c Ratio	0.13	0.24		0.01	0.27		0.01	0.10			0.12	0.25
Control Delay	7.7	7.4		7.4	7.4		27.7	21.4			28.2	14.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	7.7	7.4		7.4	7.4		27.7	21.4			28.2	14.0
LOS	A	A		A	A		C	C			C	B
Approach Delay		7.5			7.4			22.1				18.3
Approach LOS		A			A			C				B
90th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0		8.6	8.6	8.6
90th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min		Gap	Gap	Gap
70th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0		8.0	8.0	8.0
70th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min		Min	Min	Min
50th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0		8.0	8.0	8.0
50th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip		Min	Min	Min
30th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0		8.0	8.0	8.0
30th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip		Min	Min	Min
10th %ile Green (s)	53.0	53.0		53.0	53.0		0.0	0.0		0.0	0.0	0.0
10th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip		Skip	Skip	Skip
Queue Length 50th (ft)	9	31		1	35		1	4			9	3
Queue Length 95th (ft)	42	108		6	123		8	25			33	37
Internal Link Dist (ft)		420			120			420				270
Turn Bay Length (ft)	100			50			25				70	
Base Capacity (vph)	709	1216		628	1214		318	304			433	434
Starvation Cap Reductn	0	0		0	0		0	0			0	0
Spillback Cap Reductn	0	0		0	0		0	0			0	0
Storage Cap Reductn	0	0		0	0		0	0			0	0
Reduced v/c Ratio	0.13	0.24		0.01	0.27		0.01	0.08			0.06	0.15

Intersection Summary

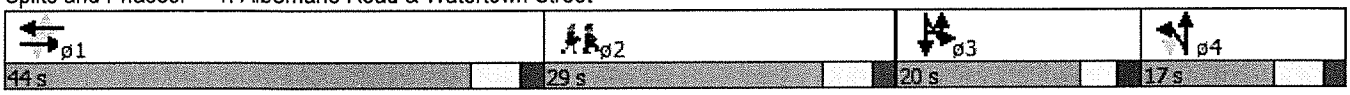
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 63.1
Natural Cycle: 75

Lane Group	SBR	ø2
Detector Phase		
Switch Phase		
Minimum Initial (s)		9.0
Minimum Split (s)		29.0
Total Split (s)		29.0
Total Split (%)		26%
Maximum Green (s)		23.0
Yellow Time (s)		4.0
All-Red Time (s)		2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		Yes
Vehicle Extension (s)		3.0
Recall Mode		None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)		0.0
90th %ile Term Code		Skip
70th %ile Green (s)		0.0
70th %ile Term Code		Skip
50th %ile Green (s)		0.0
50th %ile Term Code		Skip
30th %ile Green (s)		0.0
30th %ile Term Code		Skip
10th %ile Green (s)		0.0
10th %ile Term Code		Skip
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

Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.27
Intersection Signal Delay: 9.1
Intersection LOS: A
Intersection Capacity Utilization 46.6%
ICU Level of Service A
Analysis Period (min) 15
90th %ile Actuated Cycle: 71.6
70th %ile Actuated Cycle: 71
50th %ile Actuated Cycle: 57
30th %ile Actuated Cycle: 57
10th %ile Actuated Cycle: 59

Splits and Phases: 1: Albemarle Road & Watertown Street



Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	4	265	294	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	6	3	0	0	0
Mvmt Flow	5	312	346	1	1	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	347	0	-	0	667	346
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	321	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1223	-	-	-	427	702
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1223	-	-	-	425	702
Mov Cap-2 Maneuver	-	-	-	-	425	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1223	-	-	-	604
HCM Lane V/C Ratio	0.004	-	-	-	0.008
HCM Control Delay (s)	8	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 21.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	519	9	14	472	1	36	72	59	9	46	154
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	0	0	4	0	0	5	5	12	0	1
Mvmt Flow	6	577	10	16	524	1	40	80	66	10	51	171

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	526	0	0	587	0	0	1260	1150	582	1222	1154	525
Stage 1	-	-	-	-	-	-	593	593	-	556	556	-
Stage 2	-	-	-	-	-	-	667	557	-	666	598	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.55	6.25	7.22	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-	6.22	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-	6.22	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.045	3.345	3.608	4	3.309
Pot Cap-1 Maneuver	1051	-	-	998	-	-	149	196	507	149	199	554
Stage 1	-	-	-	-	-	-	496	489	-	498	516	-
Stage 2	-	-	-	-	-	-	451	507	-	433	494	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1051	-	-	998	-	-	81	191	507	86	194	554
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	191	-	86	194	-
Stage 1	-	-	-	-	-	-	492	485	-	494	508	-
Stage 2	-	-	-	-	-	-	276	499	-	312	490	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	132.6	36.3
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	1051	-	-	998	-	-	337
HCM Lane V/C Ratio	1.042	0.005	-	-	0.016	-	-	0.689
HCM Control Delay (s)	132.6	8.4	0	-	8.7	-	-	36.3
HCM Lane LOS	F	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	8.8	0	-	-	0	-	-	4.9

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	263	297	0	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	286	323	0	7	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	323	0	-	0	609	323
Stage 1	-	-	-	-	323	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1237	-	-	-	458	718
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1237	-	-	-	458	718
Mov Cap-2 Maneuver	-	-	-	-	458	-
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	763	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1237	-	-	-	536
HCM Lane V/C Ratio	-	-	-	-	0.02
HCM Control Delay (s)	0	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	74	225	2	6	261	54	1	2	17	12	8	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0		25		0		70
Storage Lanes	1		0	1		0		1		0		1
Taper Length (ft)	25			25				25				25
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		0.999			0.974				0.936			
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1770	1843	0	1805	1756	0	0	1805	1778	0	0	1712
Flt Permitted	0.540			0.600				0.950				0.950
Satd. Flow (perm)	1006	1843	0	1140	1756	0	0	1805	1778	0	0	1712
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)					10				14			
Link Speed (mph)		30			30				30			
Link Distance (ft)		500			190				500			
Travel Time (s)		11.4			4.3				11.4			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	3%	0%	0%	3%	17%	0%	0%	0%	0%	0%	8%
Adj. Flow (vph)	84	256	2	7	297	61	1	2	19	14	9	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	258	0	7	358	0	0	3	33	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				50			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2		1	2		1	1	2		1	1
Detector Template	Left	Thru		Left	Thru		Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100		20	100		20	20	100		20	20
Trailing Detector (ft)	0	0		0	0		0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6		20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA		Perm	NA		Split	Split	NA		Split	Split
Protected Phases		1			1		4	4	4		3	3
Permitted Phases	1			1								

Lane Group	SBT	SBR	ø2
Lane Configurations			
Volume (vph)	14	66	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	1.00	1.00	
Frt	0.876		
Flt Protected			
Satd. Flow (prot)	1664	0	
Flt Permitted			
Satd. Flow (perm)	1664	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	75		
Link Speed (mph)	30		
Link Distance (ft)	350		
Travel Time (s)	8.0		
Peak Hour Factor	0.88	0.88	
Heavy Vehicles (%)	0%	0%	
Adj. Flow (vph)	16	75	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	91	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	50		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	3		2
Permitted Phases			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	1	1		1	1		4	4	4		3	3
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	16.0	16.0		16.0	16.0		14.0	14.0	14.0		13.0	13.0
Total Split (s)	44.0	44.0		44.0	44.0		17.0	17.0	17.0		20.0	20.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%		15.5%	15.5%	15.5%		18.2%	18.2%
Maximum Green (s)	38.0	38.0		38.0	38.0		11.0	11.0	11.0		15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0			5.0
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag	Lag		Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None		None	None
Act Effct Green (s)	43.0	43.0		43.0	43.0			8.1	8.1			8.3
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.13	0.13			0.13
v/c Ratio	0.12	0.21		0.01	0.30			0.01	0.14			0.12
Control Delay	7.8	7.3		7.5	7.8			28.0	21.4			28.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0			0.0
Total Delay	7.8	7.3		7.5	7.8			28.0	21.4			28.3
LOS	A	A		A	A			C	C			C
Approach Delay		7.4			7.8				22.0			
Approach LOS		A			A				C			
90th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		9.3	9.3
90th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Gap	Gap
70th %ile Green (s)	38.0	38.0		38.0	38.0		8.0	8.0	8.0		8.0	8.0
70th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Min	Min	Min		Min	Min
50th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0	0.0		8.0	8.0
50th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip	Skip		Min	Min
30th %ile Green (s)	38.0	38.0		38.0	38.0		0.0	0.0	0.0		8.0	8.0
30th %ile Term Code	MaxR	MaxR		MaxR	MaxR		Skip	Skip	Skip		Min	Min
10th %ile Green (s)	53.0	53.0		53.0	53.0		0.0	0.0	0.0		0.0	0.0
10th %ile Term Code	Dwell	Dwell		Dwell	Dwell		Skip	Skip	Skip		Skip	Skip
Queue Length 50th (ft)	8	27		1	39			1	6			9
Queue Length 95th (ft)	39	98		7	138			8	31			32
Internal Link Dist (ft)		420			110				420			
Turn Bay Length (ft)	100			50				25				70
Base Capacity (vph)	682	1251		774	1195			317	324			410
Starvation Cap Reductn	0	0		0	0			0	0			0
Spillback Cap Reductn	0	0		0	0			0	0			0
Storage Cap Reductn	0	0		0	0			0	0			0
Reduced v/c Ratio	0.12	0.21		0.01	0.30			0.01	0.10			0.07

Intersection Summary

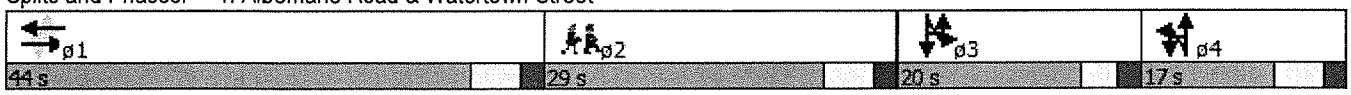
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 63.3
Natural Cycle: 80

Lane Group	SBT	SBR	ø2
Detector Phase	3		
Switch Phase			
Minimum Initial (s)	8.0		9.0
Minimum Split (s)	13.0		29.0
Total Split (s)	20.0		29.0
Total Split (%)	18.2%		26%
Maximum Green (s)	15.0		23.0
Yellow Time (s)	3.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	5.0		
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0		3.0
Recall Mode	None		None
Act Effct Green (s)	8.3		
Actuated g/C Ratio	0.13		
v/c Ratio	0.32		
Control Delay	13.8		
Queue Delay	0.0		
Total Delay	13.8		
LOS	B		
Approach Delay	17.2		
Approach LOS	B		
90th %ile Green (s)	9.3		0.0
90th %ile Term Code	Gap		Skip
70th %ile Green (s)	8.0		0.0
70th %ile Term Code	Min		Skip
50th %ile Green (s)	8.0		0.0
50th %ile Term Code	Min		Skip
30th %ile Green (s)	8.0		0.0
30th %ile Term Code	Min		Skip
10th %ile Green (s)	0.0		0.0
10th %ile Term Code	Skip		Skip
Queue Length 50th (ft)	5		
Queue Length 95th (ft)	44		
Internal Link Dist (ft)	270		
Turn Bay Length (ft)			
Base Capacity (vph)	456		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.20		

Intersection Summary

Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.32
Intersection Signal Delay: 9.5
Intersection LOS: A
Intersection Capacity Utilization 47.6%
ICU Level of Service A
Analysis Period (min) 15
90th %ile Actuated Cycle: 72.3
70th %ile Actuated Cycle: 71
50th %ile Actuated Cycle: 57
30th %ile Actuated Cycle: 57
10th %ile Actuated Cycle: 59

Splits and Phases: 1: Albemarle Road & Watertown Street



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	262	308	3	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	3	3	0	0	0
Mvmt Flow	3	298	350	3	3	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	353	0	-	0	657	352
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1217	-	-	-	433	696
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1217	-	-	-	432	696
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	750	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1217	-	-	-	588
HCM Lane V/C Ratio	0.003	-	-	-	0.019
HCM Control Delay (s)	8	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	50

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	523	25	20	511	3	43	62	59	8	59	177
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	4	0	2	0	4	0	12	0	0	1
Mvmt Flow	6	594	28	23	581	3	49	70	67	9	67	201

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	623	0	0	1382	1250	609	1317	1262	582
Stage 1	-	-	-	-	-	-	620	620	-	628	628	-
Stage 2	-	-	-	-	-	-	762	630	-	689	634	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.14	6.5	6.32	7.1	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.536	4	3.408	3.5	4	3.309
Pot Cap-1 Maneuver	1001	-	-	968	-	-	120	174	477	136	171	515
Stage 1	-	-	-	-	-	-	472	483	-	474	479	-
Stage 2	-	-	-	-	-	-	394	478	-	439	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1001	-	-	968	-	-	49	168	477	77	165	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	49	168	-	77	165	-
Stage 1	-	-	-	-	-	-	468	479	-	470	468	-
Stage 2	-	-	-	-	-	-	201	467	-	319	472	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	$ 350.3	70.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	120	1001	-	-	968	-	-	303
HCM Lane V/C Ratio	1.553	0.006	-	-	0.023	-	-	0.915
HCM Control Delay (s)	$ 350.3	8.6	0	-	8.8	-	-	70.3
HCM Lane LOS	F	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	13.5	0	-	-	0.1	-	-	8.7

Notes

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	254	315	0	11	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	276	342	0	12	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	342	0	-	0	618	342
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	276	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1217	-	-	-	453	701
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1217	-	-	-	453	701
Mov Cap-2 Maneuver	-	-	-	-	453	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1217	-	-	-	545
HCM Lane V/C Ratio	-	-	-	-	0.042
HCM Control Delay (s)	0	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

- [ ] Parking Data

Study Name 1022 - 150 Jackson Road Parking Count
Start Date 1/31/2019
Start Time 7:00 AM
Site Code 1022

Channel	Direction	Direction		
Direction	Entering	Exiting		MAX per Hour
	Thursday, January 31, 2019		Cars Parked at the end of the period	
7:00 AM	6	0	7	34
7:15 AM	6	1	12	
7:30 AM	11	1	22	
7:45 AM	17	5	34	
8:00 AM	21	2	53	117
8:15 AM	26	2	77	
8:30 AM	27	13	91	
8:45 AM	37	11	117	
9:00 AM	31	53	95	95
9:15 AM	8	18	85	
9:30 AM	3	9	79	
9:45 AM	1	2	78	
10:00 AM	2	2	78	78
10:15 AM	2	2	78	
10:30 AM	3	6	75	
10:45 AM	5	4	76	
11:00 AM	5	2	79	123
11:15 AM	5	0	84	
11:30 AM	13	3	94	
11:45 AM	35	6	123	
12:00 PM	2	42	83	83
12:15 PM	2	9	76	
12:30 PM	3	11	68	
12:45 PM	5	2	71	
1:00 PM	4	3	72	90
1:15 PM	18	2	88	
1:30 PM	4	15	77	
1:45 PM	18	5	90	
2:00 PM	7	26	71	71
2:15 PM	7	8	70	
2:30 PM	1	28	43	
2:45 PM	3	16	30	
3:00 PM	1	16	15	15
3:15 PM	1	7	9	
3:30 PM	1	5	5	
3:45 PM	2	6	1	