TRAFFIC IMPACT STUDY

for the

GLEN ELLEN COUNTRY CLUB
SENIOR RESIDENTIAL REDEVELOPMENT

84 Orchard Street
Millis, Massachusetts

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INTRODUCTION

McMahon Associates has reviewed the potential traffic impacts associated with the proposed Glen Ellen Country Club redevelopment to be located on Orchard Street in Millis, Massachusetts. The purpose of this study is to evaluate existing and projected traffic operational and safety conditions in the vicinity of the site and identify if mitigating measures are necessary to offset potential project-related traffic impacts on the surrounding roadways.

The following assessment is based on a review of current traffic volumes and crash data collected for this study, and the anticipated traffic generating characteristics of the proposed redevelopment. This study examines existing and projected traffic operations (both with and without the proposed redevelopment) at key intersections in the vicinity of the project site. The study area was chosen based on a review of the surrounding roadway network. This study provides a detailed analysis of traffic operations during the weekday morning and weekday afternoon peak hours, when adjacent roadway volumes would be greatest.

Based on the analysis presented in this study, the projected traffic increases associated with the project-related traffic generated by the redevelopment are expected to have a minimal effect on the area roadways and intersections. This report documents these findings.

Project Description

The project site, shown in Figure 1, is located at 84 Orchard Street in Millis, Massachusetts. The existing site is bound by Orchard Street to the south, residential properties to the north and east, and undeveloped land to the west. The Glen Ellen Country Club site currently includes an 18-hole golf course, pro shop, club house, function facility, and recreational amenities. Access to the existing Glen Ellen Country Club is provided via two full access driveways on Orchard Street.

The proposed project calls for the redevelopment of the existing Glen Ellen Country Club to include 213 new attached carriage homes, 111 single family homes and associated amenities. The project is specifically intended to serve as senior adult housing. Access to the proposed Glen Ellen Country Club redevelopment is to be provided by two unsignalized full access driveways on Orchard Street. The Main Site Driveway (east) will be located opposite Grove Street and the West Site Driveway will be located approximately 2,500 feet to the west of the Main Site Driveway. Residents are expected to use the driveway most convenient to their residence when entering and exiting the site. Interior to the site, access to the homes and amenities are proposed to be provided via a series of internal roadways, including emergency access between the northern and southern portions of the project site.

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Figure 1
Site Location Map
Glen Ellen Country Club
Millis, Massachusetts

Study Methodology

This study evaluates existing and projected traffic operations at study area intersections for the weekday morning and weekday afternoon peak hour traffic conditions when adjacent roadway volumes would be greatest.

The study was conducted in three steps. The first step involved an inventory of existing traffic conditions in the vicinity of the site. As part of this inventory, traffic counts were collected at key intersections during the weekday morning and weekday afternoon peak periods. Crash data for the study area intersections was obtained from the Massachusetts Department of Transportation (MassDOT) to evaluate existing traffic safety within the study area.

The second step of the study builds upon data collected in the first phase and establishes the basis for evaluating the transportation impacts associated with the future conditions. In this step, the projected traffic demands of other future developments that could influence traffic volumes at the study area intersections were assessed. Existing 2016 traffic volumes were projected to the 2023 No Build (without project) condition and the 2023 Build (with project) condition.

The final step evaluated if measures were necessary to improve existing and future traffic operations and safety, minimize potential traffic impacts, and provide safe and efficient access to the project site.

Study Area Intersections

The area identified for detailed analysis in this study was determined based on a review of the surrounding roadway network serving the project site. The study area intersections include:

- Orchard Street at West Site Driveway
- Orchard Street at Grove Street/Main Site Driveway
- Orchard Street at Bullard Lane
- Orchard Street at Ridge Street
- Orchard Street/Middlesex Street at Exchange Street (Route 115)

EXISTING CONDITIONS

Effective evaluation of potential traffic impacts associated with the proposed redevelopment requires a thorough understanding of the existing traffic conditions on the roadways and intersections serving the project site. The assessment of existing conditions consists of an inventory of the roadway and intersection geometries and traffic control devices, collection of peak-period traffic volumes, and a review of recent crash history. A discussion of this information is presented below.

Roadway Network

The project site benefits from excellent access via the local and regional roadway systems. A brief description of the principal roadway serving the project site is presented below.

Orchard Street
Orchard Street generally extends in an east-west direction through the town of Millis with a posted speed limit of 30 miles per hour. To the west of its intersection with Middlesex Street/Exchange Street (Route 115), the roadway is classified as an urban collector under local jurisdiction. To the east of the intersection with Middlesex Street/Exchange Street (Route 115), Orchard Street becomes Route 115 and is classified as an urban minor arterial under local jurisdiction. Orchard Street is a two-lane, two-way roadway providing access to adjacent residential land uses. There are no sidewalks provided on either side of the roadway. The roadway is unsignalized at its intersections with both site driveways.

Middlesex Street/Exchange Street (Route 115)
Middlesex Street/Exchange Street (Route 115) generally extends in a north-south direction through the Town of Millis with a posted speed limit of 35 miles per hour. The roadway is classified as an urban minor arterial under local jurisdiction. To the north of its intersection with Orchard Street, the roadway is identified as Middlesex Street and to the south of Orchard Street, the roadway is identified as Exchange Street (Route 115). Middlesex Street/Exchange Street (Route 115) is a two-lane, two-way roadway with no sidewalks provided on either side of the roadway. The roadway is unsignalized at its intersection with Orchard Street and primarily provides access to residential land uses.

Ridge Street
Ridge Street generally extends in a north-south direction providing direct access to residential land uses. The roadway is classified as a local road under Town of Millis jurisdiction with a posted speed limit of 30 miles per hour. Ridge Street is a two-lane roadway with one lane of travel in each direction. No sidewalks are provided on either side of the roadway and the roadway is under stop control at its intersection with Orchard Street.

Bullard Lane
Bullard Lane is a local road under Town of Millis jurisdiction that generally extends in a north-south direction. Bullard Lane is a two-lane, two-way roadway providing access to residential land uses. There are no sidewalks provided on either side of the roadway and Bullard Lane is under stop control at its intersection with Orchard Street.

Grove Street
Grove Street generally extends in a north-south direction from Orchard Street in the north to Causeway Street in the south. The roadway provides access to residential land uses and is classified as a local road under Town of Millis jurisdiction. Grove Street is a two-lane, two-way roadway with no sidewalks provided on either side of the roadway. Grove Street is under stop control at its intersection with Orchard Street and the Main Site Driveway.

Existing Traffic Volumes

Existing Peak Hour Traffic Volumes
To assess peak hour traffic conditions, Manual Turning Movement (MTM) counts were conducted at the study area intersections during the weekday morning and weekday afternoon peak periods. Counts were conducted on Thursday, April 7, 2016 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The results of the MTM counts are tabulated by 15-minute periods and are provided in Appendix A of this report. The four highest consecutive 15-minute intervals during each of these count periods constitute the peak hours that are the basis of the traffic analysis provided in this report. Based on the traffic counts, the weekday morning peak hour occurs between 7:15 AM and 8:15 AM and the weekday afternoon peak hour occurs between 5:00 PM and 6:00 PM.

Automated Traffic Recorder
Automated traffic recorder (ATR) data was collected at two locations along Orchard Street for a seven day period from Wednesday, April 6, 2016 through Tuesday, April 12, 2016. The ATRs collected traffic volume data on Orchard Street to the east of Grove Street and to the west of the Glen Ellen Country Club West Site Drive. The results of the ATR counts are summarized in Table below and are provided in Appendix A of this report.

Table 1: Automated Traffic Recorder Data

Location	Average Daily Traffic Volume		
	Eastbound	Westbound	Total
Orchard Street East of Grove Street	476	506	982
Orchard Street West of West Site Drive	448	483	931

Along Orchard Street to the east of Grove Street, the overall average daily traffic volume was approximately 982 vehicles recorded for both directions with approximately 476 vehicles traveling eastbound and 506 vehicles traveling westbound. West of the West Site Drive, the overall average daily traffic volume on Orchard Street was recorded to be approximately 931 vehicles for both directions with approximately 448 vehicles traveling eastbound and approximately 483 vehicles traveling westbound.

Seasonal Variation

Continuous count data from a nearby count station on Interstate 495 in Franklin, MA was reviewed. Based on the seasonal trends of the data, traffic counts collected during the month of April are lower than the average daily traffic. Therefore, the existing peak hour traffic volumes were adjusted upward by approximately seven percent to represent an average month. The seasonal adjustment data from the continuous count station is shown in Appendix B of this report. The resulting peak hourly traffic flows for the 2016 Existing condition are depicted in Figure 2 and Figure 3 for the weekday morning and weekday afternoon peak hours, respectively.

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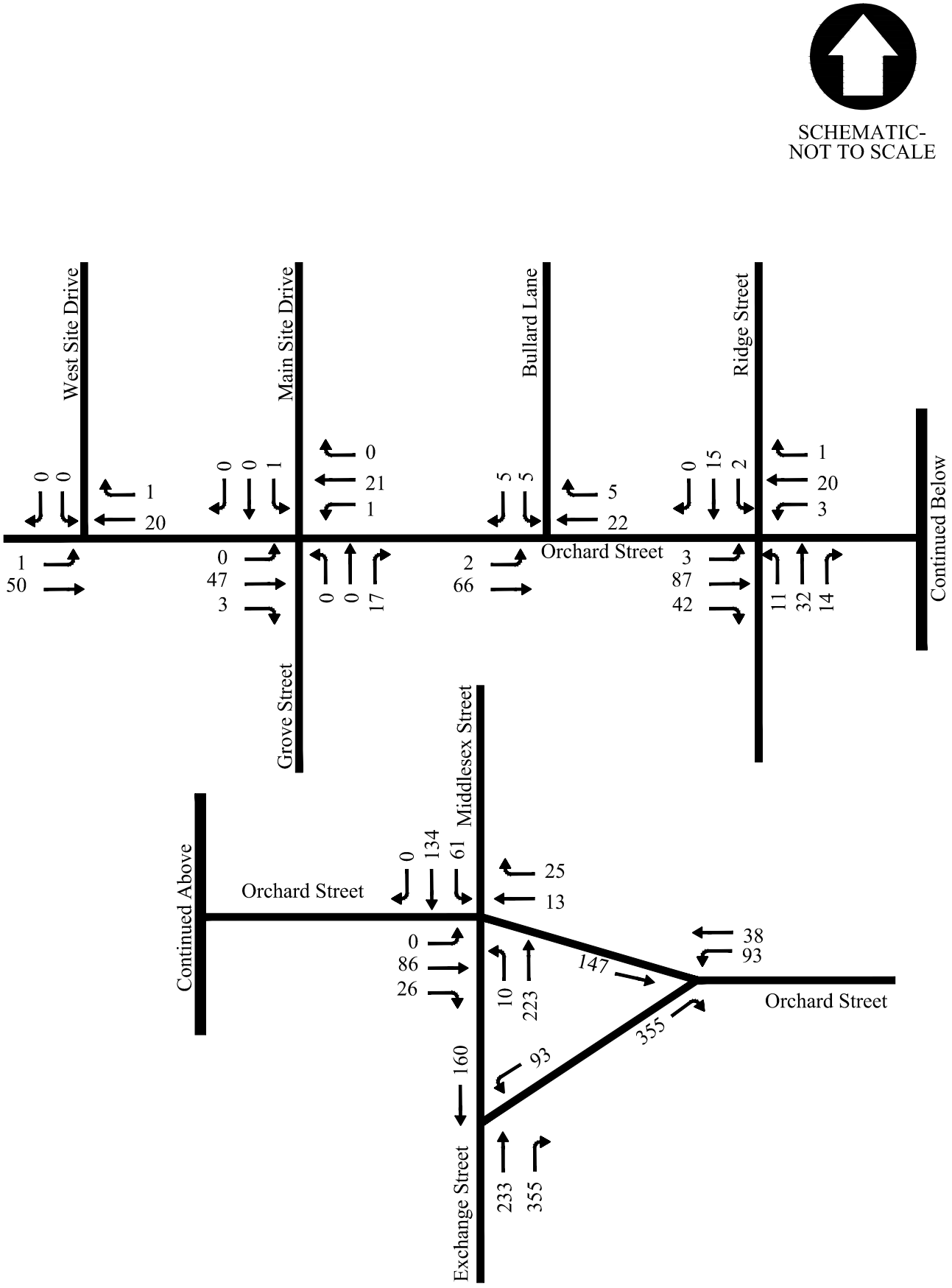

Figure 2
2016 Existing Weekday Morning
Peak Hour Traffic Volumes
Glen Ellen Country Club
Millis, Massachusetts

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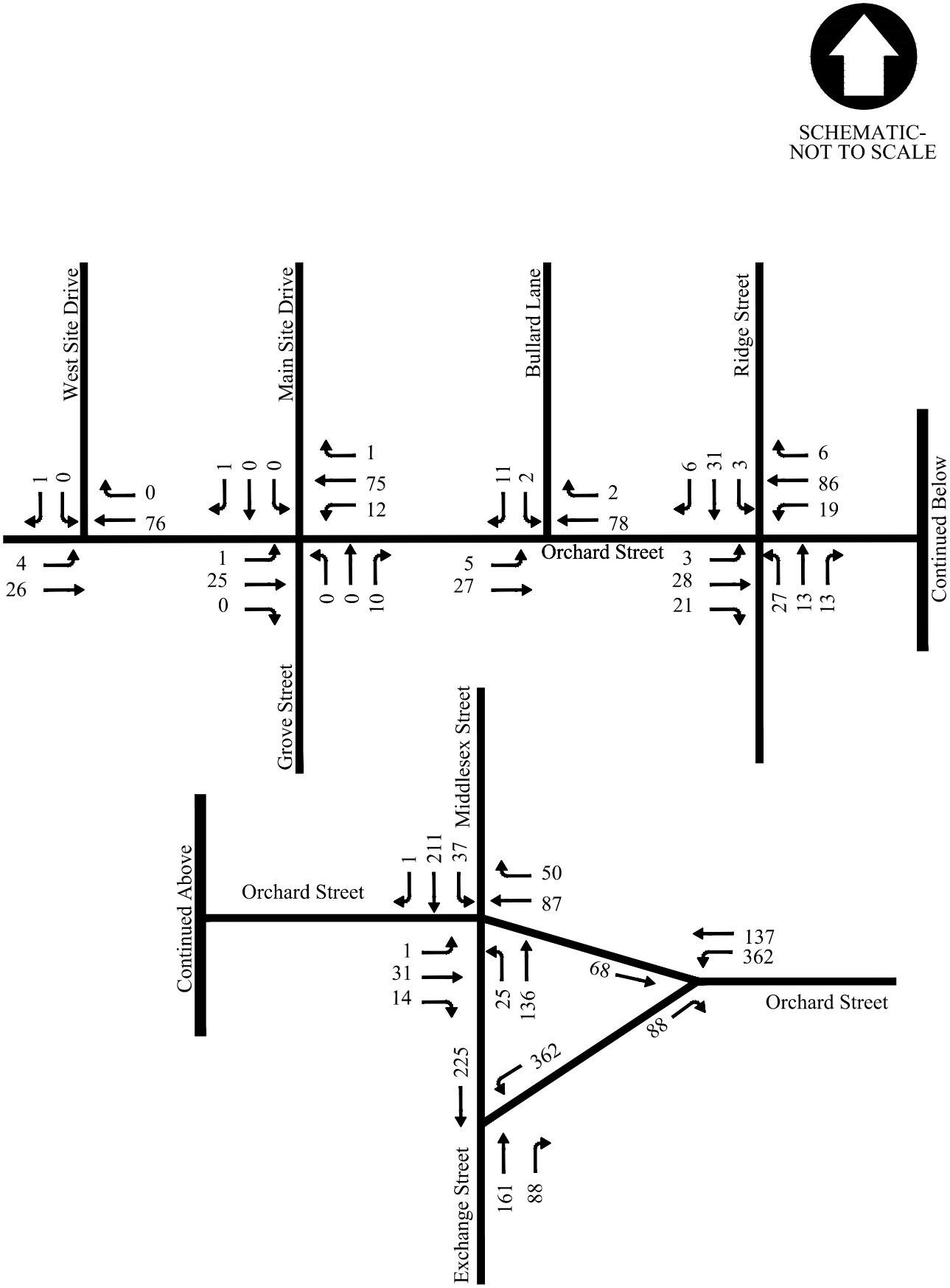

Figure 3
2016 Existing Weekday Afternoon
Peak Hour Traffic Volumes
Glen Ellen Country Club
Millis, Massachusetts

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Crash Summary

Crash data for the study area intersections was obtained from MassDOT for the most recent three-year period available. This data includes complete yearly crash summaries for 2011, 2012 and 2013. A summary of the crash data is presented in Appendix C.

The MassDOT Crash Rate Worksheet was used to determine whether the crash frequencies at the study area intersections were unusually high given the travel demands at each location. The MassDOT Crash Rate Worksheet calculates a crash rate expressed in crashes per million entering vehicles. The calculated rate was then compared to the average rate for unsignalized intersections statewide and within the particular MassDOT District. For unsignalized intersections, the statewide average crash rate is 0.58 crashes per million entering vehicles and the MassDOT District 3 crash rate is 0.65 crashes per million entering vehicles.

The intersection of Orchard Street at Middlesex Street/Exchange Street is shown to have experienced three crashes over the three year period from 2011 to 2013. The resulting crash rate of 0.28 crashes per million entering vehicles is well below both the statewide and District 3 averages. Of the reported crashes, two were angle collisions and one was a sideswipe collision. No fatal crashes were reported at this location. No crashes were reported through the MassDOT data at any of the other study area intersections.

FUTURE CONDITIONS

To determine future traffic demands on the study area roadways, the 2016 Existing traffic volumes were projected to the future-year 2023, by which time the proposed redevelopment is expected to be fully constructed and occupied. Independent of the proposed project, traffic volumes on the roadways in 2023 are assumed to include all existing traffic, as well as new traffic resulting from general growth in the study area and from other planned development projects. The potential background traffic growth unrelated to the proposed project was considered in the development of the 2023 No Build (without project) peak hour traffic volume networks. The anticipated traffic increases associated with the proposed redevelopment were then added to the 2023 No Build volumes to reflect the 2023 Build (with project) traffic condition. A more detailed description of the development of the 2023 No Build and 2023 Build traffic volume networks is presented below.

Future Roadway Improvements

Planned roadway improvement projects can affect area travel patterns and future traffic operations. To develop a clearer understanding of future area roadway operations, the Town Administrator was consulted. According to the Millis Town Administrator, there are no planned roadway improvement projects in the vicinity of the study area that would be expected to influence future traffic patterns.

Background Traffic Growth

Traffic growth is primarily a function of changes in motor vehicle use and expected land development in the region. To predict a rate at which traffic on the roadways in the vicinity of the site can be expected to grow during the seven-year forecast period (2016 to 2023), both planned area developments and historic traffic growth were examined.

<u>Site-Specific Growth</u>
Based on a conversation with the Millis Town Administrator, there are two site-specific developments to consider in the background growth for this study. The South End Farm development consists of an eleven-lot residential subdivision located on Orchard Street to the east of the intersection of Orchard Street and Middlesex Street/Exchange Street. New trip volumes expected to be generated by the proposed development, presented in the traffic impact assessment dated August 2004 by Earth Tech, Inc., were distributed through the study area roadways based on existing travel patterns and are documented in the traffic projection model in Appendix D.

The Millis Town Administrator also noted the proposed town project to install four athletic fields on Exchange Street to the south of Orchard Street. In order to determine the amount of traffic expected to be added through the study area, the athletic fields were analyzed using Land Use Code 488 (Soccer Complex). New trip volumes expected to be generated by the

proposed athletic fields were distributed through the study area roadways based on existing traffic patterns and are also documented in the traffic projection model in Appendix D.

Historic Traffic Growth

The Metropolitan Area Planning Council (MAPC) was contacted to determine the standard annual growth rate for the Town of Millis. MAPC recommended an annual growth rate of 0.75 percent per year based on the CTPS travel model. The 0.75 percent growth rate, compounded annually, was utilized to capture growth associated with general changes in population and other developments that are not known at this time and to forecast increases in traffic volumes on the study area roadways and intersections.

2023 No Build Traffic Volumes

The 2016 Existing peak hour traffic volumes were grown by 0.75 percent per year over the seven-year study horizon (2016 to 2023) to establish the 2023 future year base traffic volumes. The traffic volumes associated with the proposed South End Farms residential development and athletic fields project were then added to the 2023 base traffic volumes. The resulting 2023 No Build weekday morning and weekday afternoon peak hour traffic volume networks are illustrated in Figure 4 and Figure 5, respectively.

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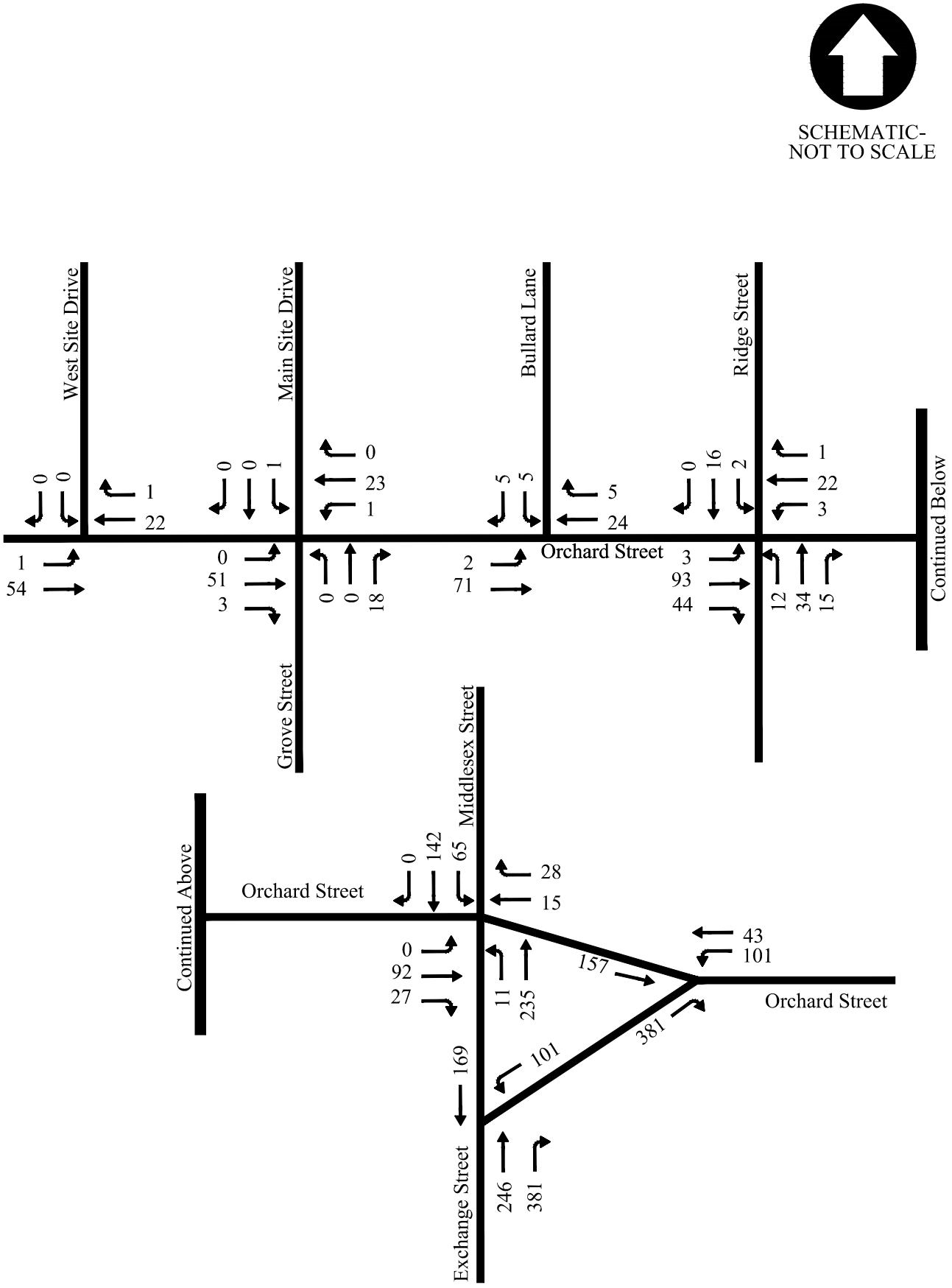

Figure 4
2023 No Build Weekday Morning
Peak Hour Traffic Volumes
Glen Ellen Country Club
Millis, Massachusetts

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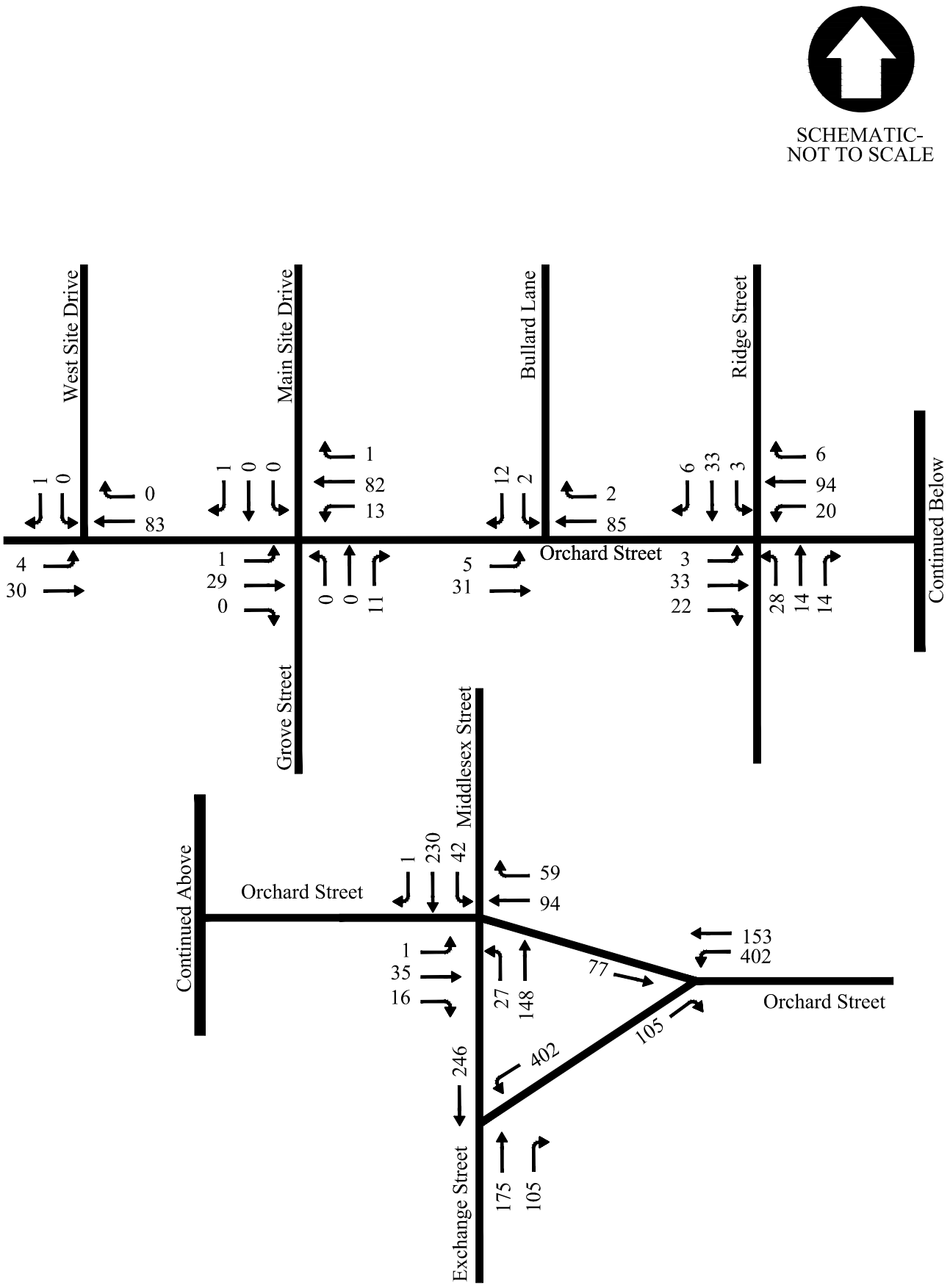

Figure 5
2023 No Build Weekday Afternoon
Peak Hour Traffic Volumes
Glen Ellen Country Club
Millis, Massachusetts

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Site-Generated Traffic

The Institute of Transportation Engineers (ITE) is a national research organization of transportation professionals. Their publication, *Trip Generation Manual, 9th Edition* provides traffic generation information for various land uses compiled from studies conducted by members nationwide. Vehicle trip estimates for the proposed Glen Ellen Country Club redevelopment project were developed based on data presented in this publication for Land Use Code 251 (Senior Adult Housing - Detached) and Land Use Code 252 (Senior Adult Housing – Attached). These references establish vehicle trip rates (in this case expressed in trips per unit) based on actual traffic counts conducted at similar existing facilities.

Additional vehicles expected to be generated by the proposed redevelopment were determined by comparing traffic volumes currently accessing the project site with traffic volumes expected to be generated by the redevelopment. Land Use Code 251 was used for the proposed 111 detached units and Land Use Code 252 was used for the proposed 213 attached units. Table 2 presents the comparison between the existing Glen Ellen Country Club site volumes and the projected future trip generation volumes of the Glen Ellen Country Club redevelopment.

Table 2: Total Project Trips

	Weekday AM Peak Hour			Weekday PM Peak Hour		
Description	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Existing Project Site Trips(1)	2	1	3	6	2	8
Total Project Trips(2)	32	60	92	59	43	102
- Additional Project Trips	30	59	89	53	41	94

(1) Based on Turning Movements Counts completed on April 7, 2016.

(2) Calculated using ITE Land Use Code 251 (Senior Adult Housing - Detached), based on 111 units and ITE Land Use Code 252 (Senior Adult Housing - Attached), based on 213 units.

As shown in Table 2, the proposed Glen Ellen Country redevelopment is estimated to result in an increase of approximately 89 new vehicle trips (30 entering vehicles and 59 exiting vehicles) during the weekday morning peak hour and an increase of approximately 94 new vehicles trips (53 entering vehicles and 41 exiting vehicles) during the weekday afternoon peak hour.

Based on the layout of the Glen Ellen Country Club redevelopment site plan, it is expected that the distribution of the additional project trips at the site driveways will be determined by the location of the proposed homes. The West Site Driveway is expected to be the primary point of access for the 63 attached residences in the northwestern corner of the site (Pod-3) and a proportion of the detached residences in the southern portion of the

site (Pod-1). The Main Site Driveway is expected to be the primary point of access for the 73 detached residences and 150 attached residences in the eastern portion of the site (Pod-2) and the remaining proportion of the residences in the southern area (Pod-1). Table 3 presents the expected number of new project trips associated with the West Site Driveway and Main Site Driveway based on the distribution of project residences.

Table 3: Project Driveway Trip Generation

	Weekday AM Peak Hour			Weekday PM Peak Hour		
Description	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Additional Project Trips(1)	30	59	89	53	41	94
-West Site Driveway Trips	4	10	14	10	7	17
-Main Site Driveway Trips	26	49	75	43	34	77

(1) From Table 2.

As shown in Table 3, the majority of project trips are expected to utilize the Main Site Driveway. The peak hour trip generation estimates that approximately 75 new vehicle trips (26 entering vehicles and 49 exiting vehicles) during the weekday morning peak hour and approximately 77 new vehicles trips (43 entering vehicles and 34 exiting vehicles) during the weekday afternoon peak hour would be expected to use the Main Site Driveway. It is estimated that there will be an increase of approximately 14 new vehicle trips (4 entering vehicles and 10 exiting vehicles) during the weekday morning peak hour and an increase of approximately 17 new vehicles trips (10 entering vehicles and 7 exiting vehicles) during the weekday afternoon peak hour at the West Site Driveway.

Current and Previous Glen Ellen Country Club Land Use

The trip generation information presented in Table 2 and Table 3 does not take into account the previous operations of the Glen Ellen Country Club. Prior to 2006, the Glen Ellen Country Club hosted over 150 events a year, including large company summer outings and weddings. The function space at the Country Club had the capacity to accommodate up to 1,500 people. Presently, the Glen Ellen Country Club hosts approximately 60 to 75 functions a year with guest sizes ranging from 50 people to 200 people. The function spaces are booked from March through December with the heaviest traffic volumes being generated from June through September. Most of the events hosted at the Country Club occur outside of the commuting hours; however, occasionally during a day event, traffic exits the site during the weekday afternoon peak period.

A representative from the Glen Ellen Country Club noted that a majority of the traffic that accesses the current site is daily golfers. It was discussed that site traffic generated during the weekday morning peak hour is light with slightly higher increases in volume during the

weekday afternoon peak hour due to the Country Club golf leagues. Golfer volumes are highest on the weekends; however, roadway traffic is spread throughout the day.

While the traffic generated by the proposed Glen Ellen Country Club Senior Residential Redevelopment could be compared to the traffic generated by the Country Club when larger events were being hosted and more golf activity was occurring, the analysis in this report does not consider the previous land use in an effort to present a more conservative assessment of the project impacts. The removal of the existing function facilities and golf course at the Glen Ellen Country Club is expected to reduce the amount of traffic on Orchard Street, especially when compared to the events and golf outings that were previously occurring.

Project Trip Distribution and Assignment

The additional traffic expected to be generated by the proposed redevelopment was distributed onto the study area roadways and intersections based on the existing travel patterns of the adjacent roadways and US 2010 Census Journey-to-Work data for the Town of Millis, provided in Appendix E of this report. New vehicle trips expected to access the project site were assigned to the site driveways based on residence location. The resulting arrival and departure patterns are presented in Figure 6.

2023 Future Build Peak Hour Traffic Volumes

To establish the 2023 Build peak hour traffic volumes, the project-related traffic was assigned to the surrounding roadway network based on the project distribution patterns shown in Figure 6. These project trips were then added to the 2023 No Build peak hour traffic volumes to reflect the 2023 Build peak hour traffic volumes. The resulting 2023 Build weekday morning and weekday afternoon peak hour traffic volumes are presented in Figure 7 and Figure 8, respectively.

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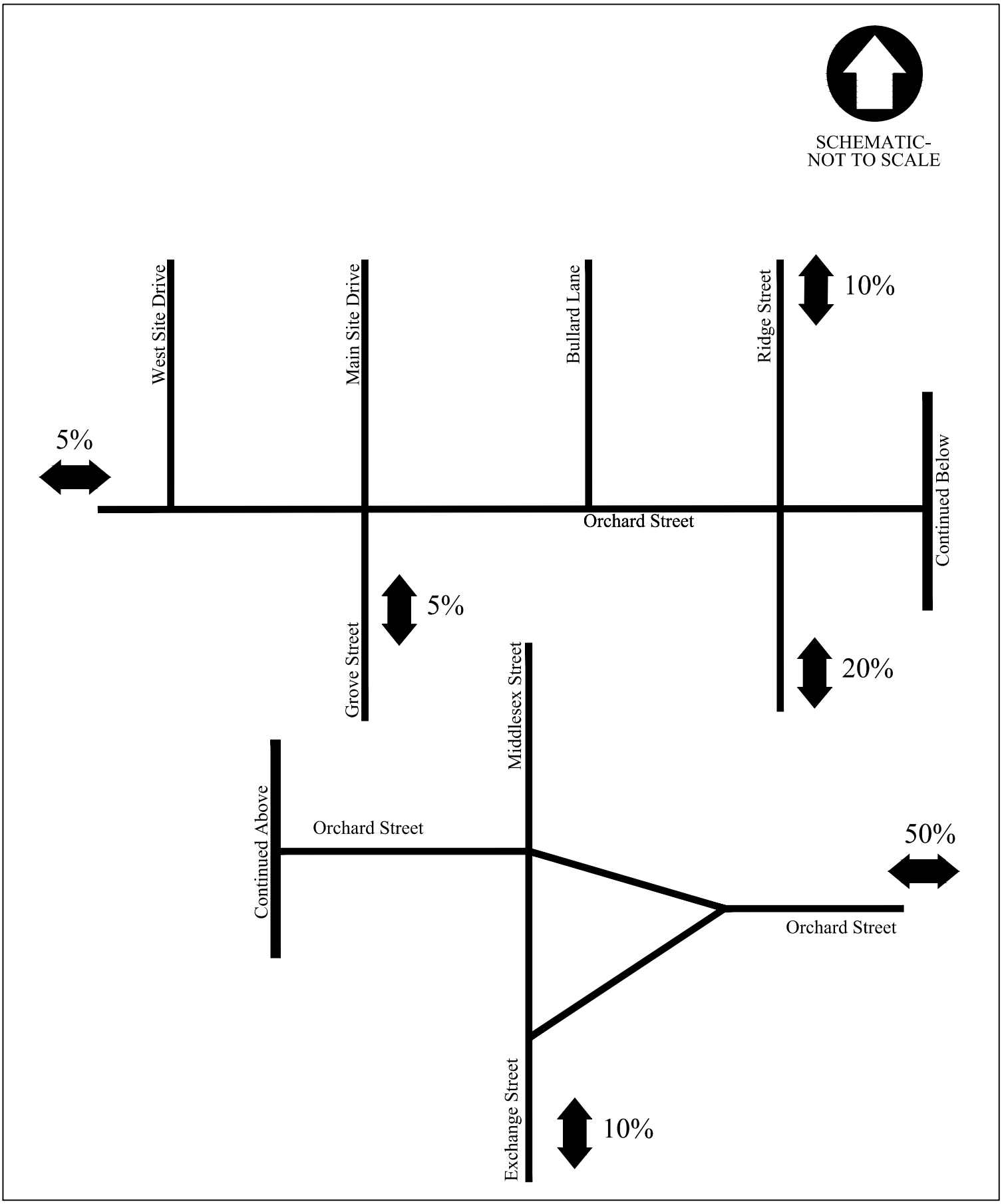

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Figure 6
Directions of Arrival and Departure
Glen Ellen Country Club
Millis, Massachusetts

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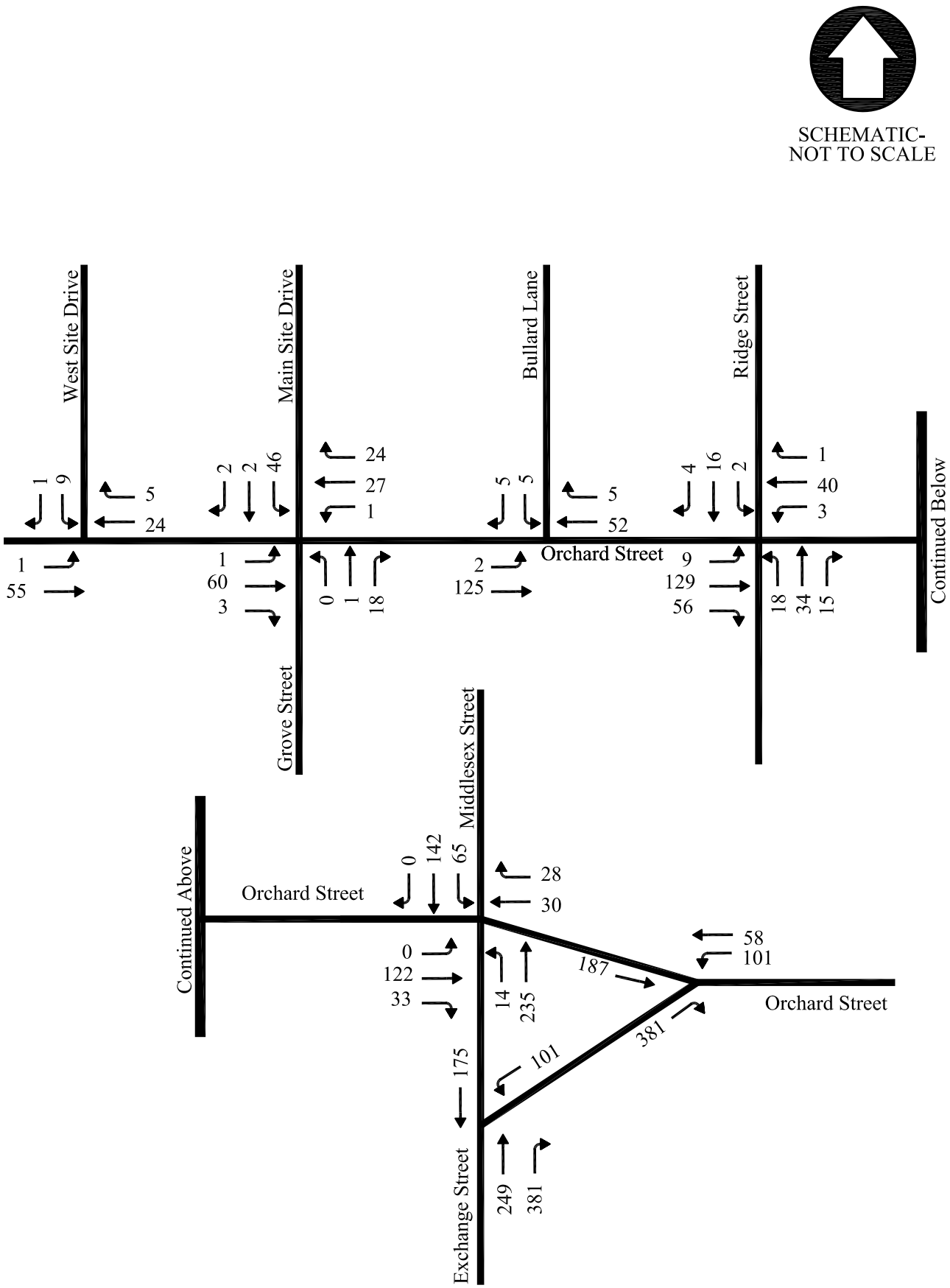

Figure 7
2023 Build Weekday Morning
Peak Hour Traffic Volumes
Glen Ellen Country Club
Millis, Massachusetts

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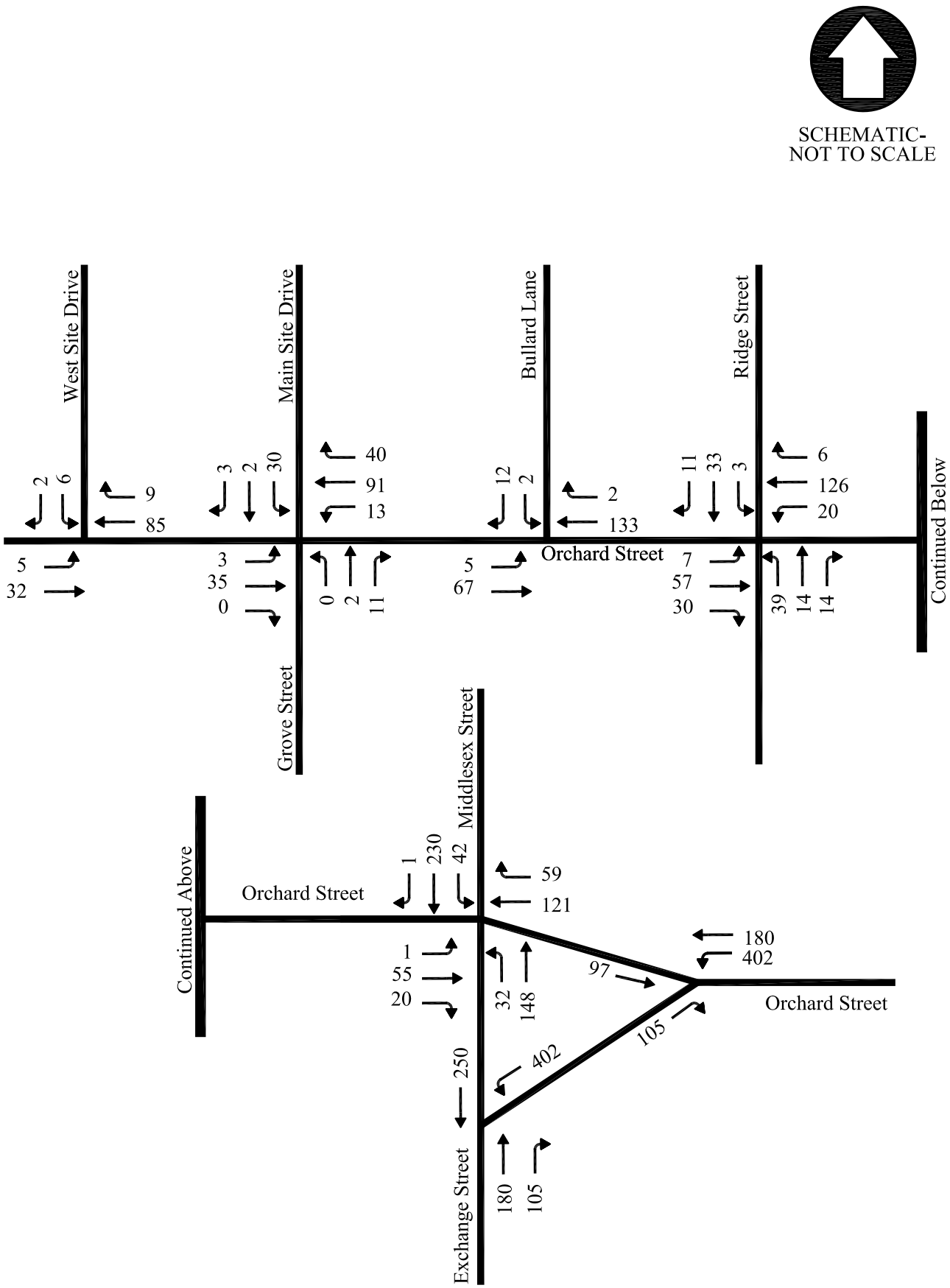

Figure 8
2023 Build Weekday Afternoon
Peak Hour Traffic Volumes
Glen Ellen Country Club
Millis, Massachusetts

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TRAFFIC OPERATIONS ANALYSIS

In previous sections of this report, the quantity of traffic on the study area roadways was described. The following section describes the quality of traffic flow at the study area intersections for the given travel demands. As a basis for this assessment, intersection capacity analyses were conducted using Synchro capacity analysis software for the study area intersections under the 2016 Existing, 2023 No Build, and 2023 Build peak hour traffic conditions. This analysis is based on procedures contained in the 2010 Highway Capacity Manual (HCM) which are summarized in Appendix F. A discussion of the evaluation criteria and a summary of the results of the capacity analyses are presented below.

Level-of-Service Criteria

Operating levels of service (LOS) are reported on a scale of A to F with A representing the best conditions (with little or no delay) and F representing the worst operating conditions (long delays).

Capacity Analysis Results

Intersection capacity analyses were conducted for the study area intersections to evaluate the 2016 Existing, 2023 No Build, and 2023 Build peak hour traffic conditions. Based on the traffic counts, the weekday morning peak hour of the adjacent street traffic is shown to occur between 7:15 AM and 8:15 AM and the weekday afternoon peak hour of the adjacent street traffic is shown to occur between 5:00 PM and 6:00 PM.

The detailed capacity analysis worksheets for the 2016 Existing, 2023 No Build, and 2023 Build conditions are presented in Appendix G, Appendix H, and Appendix I, respectively. The operations of the critical approach to each of the unsignalized study area intersections are presented in Table 4 below and detailed traffic operations for the intersections are summarized in Appendix J.

Table 4: Unsignalized Peak Hour Intersection Capacity Analysis Results

			2016 Existing			2023 No Build			2023 Build		
Intersection	**Movement**		**LOS(1)**	**Delay(2)**	**V/C(3)**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Orchard St at West Site Driveway	SB LR	AM	A	0.0	0.00	A	0.0	0.00	A	9.0	0.01
		PM	A	8.8	0.00	A	8.8	0.00	A	9.3	0.01
Orchard St at Grove St /Main Site Drive	SB LTR	AM	A	9.1	0.01	A	9.2	0.01	A	9.6	0.07
		PM	A	8.7	0.00	A	8.7	0.00	B	10.2	0.05
Orchard St at Bullard Ln	SB LR	AM	A	8.8	0.01	A	8.8	0.01	A	9.2	0.01
		PM	A	8.8	0.02	A	8.9	0.02	A	9.2	0.03
Orchard St at Ridge St	EB LTR	AM	A	7.9	0.18	A	8.0	0.19	A	8.7	0.27
		PM	A	7.4	0.08	A	7.5	0.09	A	8.0	0.16
Orchard St at Middlesex St	EB LTR	AM	C	15.7	0.28	C	16.8	0.31	C	19.0	0.41
		PM	B	14.6	0.15	C	15.8	0.18	C	17.8	0.27
Middlesex St at Exchange St	WB L	AM	C	16.2	0.28	C	17.5	0.32	C	17.8	0.32
		PM	E	37.2	0.81	F	>50.0	0.98	F	>50.0	0.99
Orchard St at Exchange St	EB T	AM	C	15.6	0.33	C	17.1	0.38	C	18.9	0.46
		PM	B	14.4	0.20	C	16.0	0.25	C	17.4	0.32

(1) Level-of-Service
(2) Average vehicle delay, in seconds
(3) Volume to capacity ratio

Orchard Street at West Site Driveway

As shown in Table 4, the critical southbound movement exiting the project site at the West Site Driveway is shown to currently operate at LOS A during the weekday morning and weekday afternoon peak hours. With the proposed project in place, the southbound approach is expected to continue to operate at LOS A during the weekday morning and weekday afternoon peak hours. As documented in the detailed capacity analysis summary presented in Appendix J, traffic operations along Orchard Street are not expected to be impacted by the proposed project and all of the approaches to the intersection are expected to operate well below capacity.

Orchard Street at Grove Street/Main Site Driveway

Capacity analysis indicates that the critical southbound movement exiting the project site at the Main Site Driveway currently operates at LOS A during the weekday morning and weekday afternoon peak hours. With the proposed project in place, the southbound approach is expected to operate at LOS A during the weekday morning peak hour and at LOS B during the weekday afternoon peak hour. The exiting movements from the project site are shown to incur less than two seconds of additional delay during each of the peak hours as a result of the project. As shown in the detailed level-of-service summary in Appendix J, the northbound

Grove Street approach is shown to operate at LOS A and under capacity during both the weekday morning and weekday afternoon peak hours. The Orchard Street approaches to the intersection are not anticipated to be impacted by the proposed project and are shown to operate well below capacity during the peak hours studied.

Orchard Street at Bullard Lane

The critical southbound Bullard Lane movement at the intersection of Orchard Street and Bullard Lane is shown to currently operate at LOS A during the weekday morning and weekday afternoon peak hours. With the proposed project in place, the southbound approach is expected to continue to operate at LOS A during the weekday morning and weekday afternoon peak hours. Operations along Orchard Street are not expected to be impacted by the proposed project and all of the approaches to the intersection are expected to operate well below capacity.

Orchard Street at Ridge Street

The capacity analysis indicates that the critical eastbound movement at the intersection of Orchard Street and Ridge Street is shown to currently operate at LOS A during the weekday morning and weekday afternoon peak hours. Under the 2023 Build conditions, the eastbound approach is expected to continue to operate at LOS A during the weekday morning and weekday afternoon peak hours. The movements at all intersection approaches are shown to operate at LOS A or better and well below capacity with the proposed project in place.

Orchard Street at Middlesex Street/Exchange Street

For the purposes of this analysis, the intersection of Orchard Street at Middlesex Street and Exchange Street was separated into three separate intersections. The critical eastbound movement of the northernmost intersection of Orchard Street at Middlesex Street is shown to currently operate at LOS C during the weekday morning peak hour and at LOS B during the weekday afternoon peak hour. Under the 2023 No Build condition and 2023 Build condition, the critical movement is expected to operate at LOS C during both the weekday morning and weekday afternoon peak hours.

The critical westbound movement of the south intersection of Middlesex Street at Exchange Street is shown to currently operate at LOS C during the weekday morning peak hour and LOS E during the weekday afternoon peak hour. Under the 2023 No Build condition, the critical westbound movement is shown to operate at LOS C during the weekday morning peak hour and at LOS F during the weekday afternoon peak hour as a result of growth in this area. With the addition of the proposed project trips to the study area intersection, the westbound movement is shown to continue to operate at LOS C during the weekday morning peak hour and LOS F during the weekday afternoon peak hour, experiencing only a minor increase in delay of less than five seconds during the peak hours studied.

The critical eastbound movement of the east intersection of Orchard Street at Exchange Street is shown to currently operate at LOS C during the weekday morning peak hour and LOS B during the weekday afternoon peak hour. Under the 2023 No Build condition and 2023 Build

condition, the critical movement is expected to operate at LOS C and under capacity during both the weekday morning and weekday afternoon peak hours.

Site Access/Circulation

Under the proposed plan, access to the project site will be provided via two unsignalized driveways on Orchard Street. Both site driveways will provide full access with one lane entering the site and one lane exiting the site. The Main Site Driveway, located opposite Grove Street, is expected to provide access to Pod-2 (73 detached residences and 150 attached residences) and a proportion of Pod-1 (38 detached residences). The West Site Driveway, located approximately 2,500 feet west of the Main Site Driveway, is expected to provide access Pod-3 (63 attached residences) and the remaining proportion of Pod-1 traffic. Interior to the site, access to the homes and amenities will be provided via a series of proposed internal roadways. Access between the northern and southern portions of the project site is proposed via a roadway to be used exclusively by emergency vehicles. The proposed driveway configuration is expected to allow residents and emergency vehicles to access the site in a safe and efficient manner.

CONCLUSION

The proposed Glen Ellen Country Club redevelopment is located at 84 Orchard Street in Millis, Massachusetts. The proposed project calls for the redevelopment of the existing Glen Ellen Country Club into senior housing that includes 213 new attached carriage homes, 111 single family homes and associated amenities. Access to the project site is to be provided by two unsignalized full access driveways on Orchard Street.

The proposed redevelopment is expected to result in an increase of approximately 89 vehicle trips (30 entering vehicles and 59 exiting vehicles) during the weekday morning peak hour and an increase of approximately 94 vehicles trips (53 entering vehicles and 41 exiting vehicles) during the weekday afternoon peak hour.

The capacity analysis indicates that the proposed Glen Ellen Country Club redevelopment will not have a significant impact on the traffic operations of the study area intersections. The exiting movements at both site driveways are expected to operate at LOS B or better and well under capacity during both the weekday morning and weekday afternoon peak hours under the 2023 Build conditions. With the proposed project in place, the level-of-service for all movements along Orchard Street and Middlesex Street/Exchange Street within the study area is shown to be maintained from the 2023 No Build conditions during both peak hours studied.

Based on the analysis results presented in this report, the proposed Glen Ellen Country Club redevelopment is expected to have a negligible impact on the operations of the study area roadways.

APPENDIX A

Traffic Count Data

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Orchard Street east of
Grove Street
City, State: Millis, MA
Client: McM/M. Starkey

04715Avolume
Site Code: Y-16212.11

Start	04-Apr-16		05-Apr-16		06-Apr-16		07-Apr-16		08-Apr-16		Weekday Average		09-Apr-16		10-Apr-16	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	0	3	1	2	3	0	1	2	2	4	3	7
01:00	*	*	*	*	0	1	0	1	1	0	0	1	3	3	2	4
02:00	*	*	*	*	0	0	0	0	0	0	0	0	1	2	1	0
03:00	*	*	*	*	1	0	1	0	1	0	1	0	1	0	0	0
04:00	*	*	*	*	1	0	0	0	3	0	1	0	0	0	0	0
05:00	*	*	*	*	11	3	7	5	7	5	8	4	3	1	2	0
06:00	*	*	*	*	46	13	48	15	41	13	45	14	8	5	5	4
07:00	*	*	*	*	**71**	22	**64**	20	**62**	27	**66**	23	15	9	5	8
08:00	*	*	*	*	53	28	45	**27**	46	25	48	**27**	27	30	17	28
09:00	*	*	*	*	24	**33**	23	19	18	26	22	26	26	30	15	32
10:00	*	*	*	*	20	20	14	16	19	27	18	21	31	30	28	33
11:00	*	*	*	*	14	28	18	22	21	**32**	18	27	**36**	**39**	**35**	**45**
12:00 PM	*	*	*	*	25	25	22	21	28	33	25	26	**41**	**40**	37	34
01:00	*	*	*	*	19	28	10	22	28	30	19	27	38	34	34	40
02:00	*	*	*	*	34	28	29	28	23	46	29	34	38	33	33	**51**
03:00	*	*	*	*	27	50	27	37	38	58	31	48	36	39	**55**	46
04:00	*	*	*	*	26	53	22	41	**52**	56	33	50	37	37	45	38
05:00	*	*	*	*	**35**	**75**	**33**	**82**	44	**94**	**37**	**84**	40	29	34	26
06:00	*	*	*	*	25	44	22	52	45	78	31	58	18	25	14	15
07:00	*	*	*	*	16	28	27	25	29	37	24	30	17	18	20	13
08:00	*	*	*	*	18	19	8	17	14	17	13	18	9	13	9	9
09:00	*	*	*	*	10	7	9	10	21	22	13	13	7	3	10	9
10:00	*	*	*	*	4	2	5	7	22	18	10	9	4	7	3	4
11:00	*	*	*	*	0	4	4	2	10	7	5	4	4	4	2	3
Total	0	0	0	0	480	514	439	471	576	651	498	546	442	435	409	449
Day	0		0		994		910		1227		1044		877		858	
AM Peak	-	-	-	-	07:00	09:00	07:00	08:00	07:00	11:00	07:00	08:00	11:00	11:00	11:00	11:00
Vol.	-	-	-	-	71	33	64	27	62	32	66	27	36	39	35	45
PM Peak	-	-	-	-	17:00	17:00	17:00	17:00	16:00	17:00	17:00	17:00	12:00	12:00	15:00	14:00
Vol.	-	-	-	-	35	75	33	82	52	94	37	84	41	40	55	51

Transportation Data Corporation
Mario Perone, mperone1@verizon.net
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Orchard Street east of
Grove Street
City, State: Millis, MA
Client: McM/M. Starkey

04715Avolume
Site Code: Y-16212.11

Start	11-Apr-16		12-Apr-16		13-Apr-16		14-Apr-16		15-Apr-16		Weekday Average		16-Apr-16		17-Apr-16	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	0	1	0	1	*	*	*	*	*	*	0	1	*	*	*	*
01:00	1	0	0	0	*	*	*	*	*	*	0	0	*	*	*	*
02:00	1	0	0	0	*	*	*	*	*	*	0	0	*	*	*	*
03:00	1	1	1	0	*	*	*	*	*	*	1	0	*	*	*	*
04:00	1	0	0	1	*	*	*	*	*	*	0	0	*	*	*	*
05:00	11	3	16	6	*	*	*	*	*	*	14	4	*	*	*	*
06:00	47	11	50	9	*	*	*	*	*	*	48	10	*	*	*	*
07:00	**73**	**27**	**64**	19	*	*	*	*	*	*	**68**	23	*	*	*	*
08:00	59	20	53	22	*	*	*	*	*	*	56	21	*	*	*	*
09:00	31	23	19	12	*	*	*	*	*	*	25	18	*	*	*	*
10:00	12	25	23	**29**	*	*	*	*	*	*	18	**27**	*	*	*	*
11:00	17	27	15	25	*	*	*	*	*	*	16	26	*	*	*	*
12:00 PM	26	14	18	19	*	*	*	*	*	*	22	16	*	*	*	*
01:00	24	32	19	18	*	*	*	*	*	*	22	25	*	*	*	*
02:00	29	35	**33**	39	*	*	*	*	*	*	31	37	*	*	*	*
03:00	36	47	22	48	*	*	*	*	*	*	29	48	*	*	*	*
04:00	**42**	53	31	51	*	*	*	*	*	*	**36**	52	*	*	*	*
05:00	39	**90**	31	**85**	*	*	*	*	*	*	35	**88**	*	*	*	*
06:00	24	50	28	44	*	*	*	*	*	*	26	47	*	*	*	*
07:00	12	34	24	31	*	*	*	*	*	*	18	32	*	*	*	*
08:00	11	17	14	10	*	*	*	*	*	*	12	14	*	*	*	*
09:00	8	10	8	16	*	*	*	*	*	*	8	13	*	*	*	*
10:00	1	3	6	5	*	*	*	*	*	*	4	4	*	*	*	*
11:00	0	5	2	5	*	*	*	*	*	*	1	5	*	*	*	*
Total	506	528	477	495	0	0	0	0	0	0	490	511	0	0	0	0
Day	1034		972		0		0		0		1001		0		0	
AM Peak	07:00	07:00	07:00	10:00	-	-	-	-	-	-	07:00	10:00	-	-	-	-
Vol.	73	27	64	29	-	-	-	-	-	-	68	27	-	-	-	-
PM Peak	16:00	17:00	14:00	17:00	-	-	-	-	-	-	16:00	17:00	-	-	-	-
Vol.	42	90	33	85	-	-	-	-	-	-	36	88	-	-	-	-

Comb. Total	1034	972	994	910	1227	2045	877	858

ADT ADT 982 AADT 982

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
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Orchard Street west of
Glen Ellen CC Westerly Driveway
City, State: Millis, MA
Client: McM/M. Starkey

04715Bvolume
Site Code: Y-16212.11

Start	04-Apr-16		05-Apr-16		06-Apr-16		07-Apr-16		08-Apr-16		Weekday Average		09-Apr-16		10-Apr-16	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	0	2	1	2	3	0	1	1	1	5	2	7
01:00	*	*	*	*	0	1	0	1	1	0	0	1	2	2	3	3
02:00	*	*	*	*	0	0	0	0	0	0	0	0	0	1	0	0
03:00	*	*	*	*	1	0	1	0	1	0	1	0	1	0	0	0
04:00	*	*	*	*	1	0	0	0	3	0	1	0	0	0	0	0
05:00	*	*	*	*	10	2	5	3	7	4	7	3	1	0	1	0
06:00	*	*	*	*	45	11	37	10	31	10	38	10	11	5	8	2
07:00	*	*	*	*	**63**	21	**50**	18	**51**	22	**55**	20	29	11	14	5
08:00	*	*	*	*	51	19	43	**25**	39	**26**	44	23	37	18	**33**	21
09:00	*	*	*	*	33	**28**	26	22	18	22	26	**24**	**45**	24	24	31
10:00	*	*	*	*	21	15	16	12	19	20	19	16	44	26	28	30
11:00	*	*	*	*	13	21	16	21	23	24	17	22	29	**35**	29	**38**
12:00 PM	*	*	*	*	15	23	19	23	26	28	20	25	**44**	**72**	32	32
01:00	*	*	*	*	17	27	10	17	24	23	17	22	38	37	24	36
02:00	*	*	*	*	29	29	32	30	28	40	30	33	25	39	25	46
03:00	*	*	*	*	22	50	23	31	40	53	28	45	30	34	42	**51**
04:00	*	*	*	*	26	44	20	40	32	58	26	47	31	32	**46**	40
05:00	*	*	*	*	**31**	**68**	30	**77**	38	80	33	**75**	35	35	36	34
06:00	*	*	*	*	16	37	**41**	41	**101**	**123**	**53**	67	21	23	25	13
07:00	*	*	*	*	9	25	18	29	46	55	24	36	35	20	21	18
08:00	*	*	*	*	15	14	7	26	15	16	12	19	11	14	9	44
09:00	*	*	*	*	9	8	4	7	11	15	8	10	7	4	10	10
10:00	*	*	*	*	3	2	6	6	2	5	4	4	2	24	4	4
11:00	*	*	*	*	1	4	3	2	5	7	3	4	3	21	1	2
Total	0	0	0	0	431	451	408	443	564	631	467	507	482	482	417	467
Day	0		0		882		851		1195		974		964		884	
AM Peak	-	-	-	-	07:00	09:00	07:00	08:00	07:00	08:00	07:00	09:00	09:00	11:00	08:00	11:00
Vol.	-	-	-	-	63	28	50	25	51	26	55	24	45	35	33	38
PM Peak	-	-	-	-	17:00	17:00	18:00	17:00	18:00	18:00	18:00	17:00	12:00	12:00	16:00	15:00
Vol.	-	-	-	-	31	68	41	77	101	123	53	75	44	72	46	51

Transportation Data Corporation
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Orchard Street west of
Glen Ellen CC Westerly Driveway
City, State: Millis, MA
Client: McM/M. Starkey

04715Bvolume
Site Code: Y-16212.11

Start	11-Apr-16		12-Apr-16		13-Apr-16		14-Apr-16		15-Apr-16		Weekday Average		16-Apr-16		17-Apr-16	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	0	1	0	0	*	*	*	*	*	*	0	0	*	*	*	*
01:00	1	0	0	0	*	*	*	*	*	*	0	0	*	*	*	*
02:00	1	0	1	0	*	*	*	*	*	*	1	0	*	*	*	*
03:00	2	1	0	0	*	*	*	*	*	*	1	0	*	*	*	*
04:00	1	0	0	1	*	*	*	*	*	*	0	0	*	*	*	*
05:00	8	2	11	4	*	*	*	*	*	*	10	3	*	*	*	*
06:00	42	10	43	7	*	*	*	*	*	*	42	8	*	*	*	*
07:00	**61**	20	**51**	19	*	*	*	*	*	*	**56**	20	*	*	*	*
08:00	49	12	49	17	*	*	*	*	*	*	49	14	*	*	*	*
09:00	32	20	19	12	*	*	*	*	*	*	26	16	*	*	*	*
10:00	12	**22**	18	**28**	*	*	*	*	*	*	15	**25**	*	*	*	*
11:00	18	21	11	19	*	*	*	*	*	*	14	20	*	*	*	*
12:00 PM	18	17	15	16	*	*	*	*	*	*	16	16	*	*	*	*
01:00	19	31	17	22	*	*	*	*	*	*	18	26	*	*	*	*
02:00	20	31	29	31	*	*	*	*	*	*	24	31	*	*	*	*
03:00	30	44	**30**	46	*	*	*	*	*	*	30	45	*	*	*	*
04:00	29	47	28	40	*	*	*	*	*	*	28	44	*	*	*	*
05:00	**36**	**77**	27	**79**	*	*	*	*	*	*	**32**	**78**	*	*	*	*
06:00	21	42	23	48	*	*	*	*	*	*	22	45	*	*	*	*
07:00	9	31	14	29	*	*	*	*	*	*	12	30	*	*	*	*
08:00	10	14	11	9	*	*	*	*	*	*	10	12	*	*	*	*
09:00	8	8	6	15	*	*	*	*	*	*	7	12	*	*	*	*
10:00	1	3	5	4	*	*	*	*	*	*	3	4	*	*	*	*
11:00	0	5	1	4	*	*	*	*	*	*	0	4	*	*	*	*
Total	428	459	409	450	0	0	0	0	0	0	416	453	0	0	0	0
Day	887		859		0		0		0		869		0		0	
AM Peak	07:00	10:00	07:00	10:00	-	-	-	-	-	-	07:00	10:00	-	-	-	-
Vol.	61	22	51	28	-	-	-	-	-	-	56	25	-	-	-	-
PM Peak	17:00	17:00	15:00	17:00	-	-	-	-	-	-	17:00	17:00	-	-	-	-
Vol.	36	77	30	79	-	-	-	-	-	-	32	78	-	-	-	-

Comb. Total	887	859	882	851	1195	1843	964	884

ADT ADT 932 AADT 932

Transportation Data Corporation

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N: GECC Westerly Drive
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715A
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	3	0	12	1	0	16
07:15 AM	0	0	0	0	5	0	10	0	0	15
07:30 AM	0	0	0	0	5	0	12	0	0	17
07:45 AM	0	0	0	0	4	0	13	0	0	17
Total	0	0	0	0	17	0	47	1	0	65
08:00 AM	0	0	0	1	5	0	12	1	0	19
08:15 AM	0	0	0	0	5	0	11	0	0	16
08:30 AM	0	0	0	0	7	0	11	0	0	18
08:45 AM	0	0	0	0	7	0	6	1	0	14
Total	0	0	0	1	24	0	40	2	0	67
Grand Total	0	0	0	1	41	0	87	3	0	132
Apprch %	0	0	0	2.4	97.6	0	96.7	3.3	0	
Total %	0	0	0	0.8	31.1	0	65.9	2.3	0	
Cars & Peds	0	0	0	1	38	0	84	3	0	126
% Cars & Peds	0	0	0	100	92.7	0	96.6	100	0	95.5
Trucks & Buses	0	0	0	0	3	0	3	0	0	6
% Trucks & Buses	0	0	0	0	7.3	0	3.4	0	0	4.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	4	0	4	**13**	0	0	**13**	17
08:00 AM	0	0	0	0	**1**	5	0	6	12	**1**	0	13	**19**
08:15 AM	0	0	0	0	0	5	0	5	11	0	0	11	16
08:30 AM	0	0	0	0	0	**7**	0	**7**	11	0	0	11	18
Total Volume	0	0	0	0	1	21	0	22	47	1	0	48	70
% App. Total	0	0	0		4.5	95.5	0		97.9	2.1	0		
PHF	.000	.000	.000	.000	.250	.750	.000	.786	.904	.250	.000	.923	.921
Cars & Peds	0	0	0	0	1	20	0	21	45	1	0	46	67
% Cars & Peds	0	0	0	0	100	95.2	0	95.5	95.7	100	0	95.8	95.7
Trucks & Buses	0	0	0	0	0	1	0	1	2	0	0	2	3
% Trucks & Buses	0	0	0	0	0	4.8	0	4.5	4.3	0	0	4.2	4.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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N: GECC Westerly Drive
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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715A
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	3	0	12	1	0	16
07:15 AM	0	0	0	0	5	0	9	0	0	14
07:30 AM	0	0	0	0	5	0	12	0	0	17
07:45 AM	0	0	0	0	4	0	13	0	0	17
Total	0	0	0	0	17	0	46	1	0	64
08:00 AM	0	0	0	1	4	0	11	1	0	17
08:15 AM	0	0	0	0	5	0	10	0	0	15
08:30 AM	0	0	0	0	7	0	11	0	0	18
08:45 AM	0	0	0	0	5	0	6	1	0	12
Total	0	0	0	1	21	0	38	2	0	62
Grand Total	0	0	0	1	38	0	84	3	0	126
Apprch %	0	0	0	2.6	97.4	0	96.6	3.4	0	
Total %	0	0	0	0.8	30.2	0	66.7	2.4	0	

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	4	0	4	**13**	0	0	**13**	17
08:00 AM	0	0	0	0	**1**	4	0	5	11	**1**	0	12	17
08:15 AM	0	0	0	0	0	5	0	5	10	0	0	10	15
08:30 AM	0	0	0	0	0	**7**	0	**7**	11	0	0	11	**18**
Total Volume	0	0	0	0	1	20	0	21	45	1	0	46	67
% App. Total	0	0	0		4.8	95.2	0		97.8	2.2	0		
PHF	.000	.000	.000	.000	.250	.714	.000	.750	.865	.250	.000	.885	.931

Transportation Data Corporation
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N: GECC Westerly Drive
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715A
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Trucks & Buses

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	1	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1
08:00 AM	0	0	0	0	1	0	1	0	0	2
08:15 AM	0	0	0	0	0	0	1	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	2	0	0	0	0	2
Total	0	0	0	0	3	0	2	0	0	5
Grand Total	0	0	0	0	3	0	3	0	0	6
Apprch %	0	0	0	0	100	0	100	0	0	
Total %	0	0	0	0	50	0	50	0	0	

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	0	0	0	0	1	0	1	**1**	0	0	**1**	**2**
08:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	2
Total Volume	0	0	0	0	0	3	0	3	2	0	0	2	5
% App. Total	0	0	0		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.500	.000	.000	.500	.625

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Client: McM/M. Starkey

File Name : 04715A
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Bikes by Direction

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Client: McM/M. Starkey

File Name : 04715A
Site Code : Y1621211
Start Date : 4/7/2016
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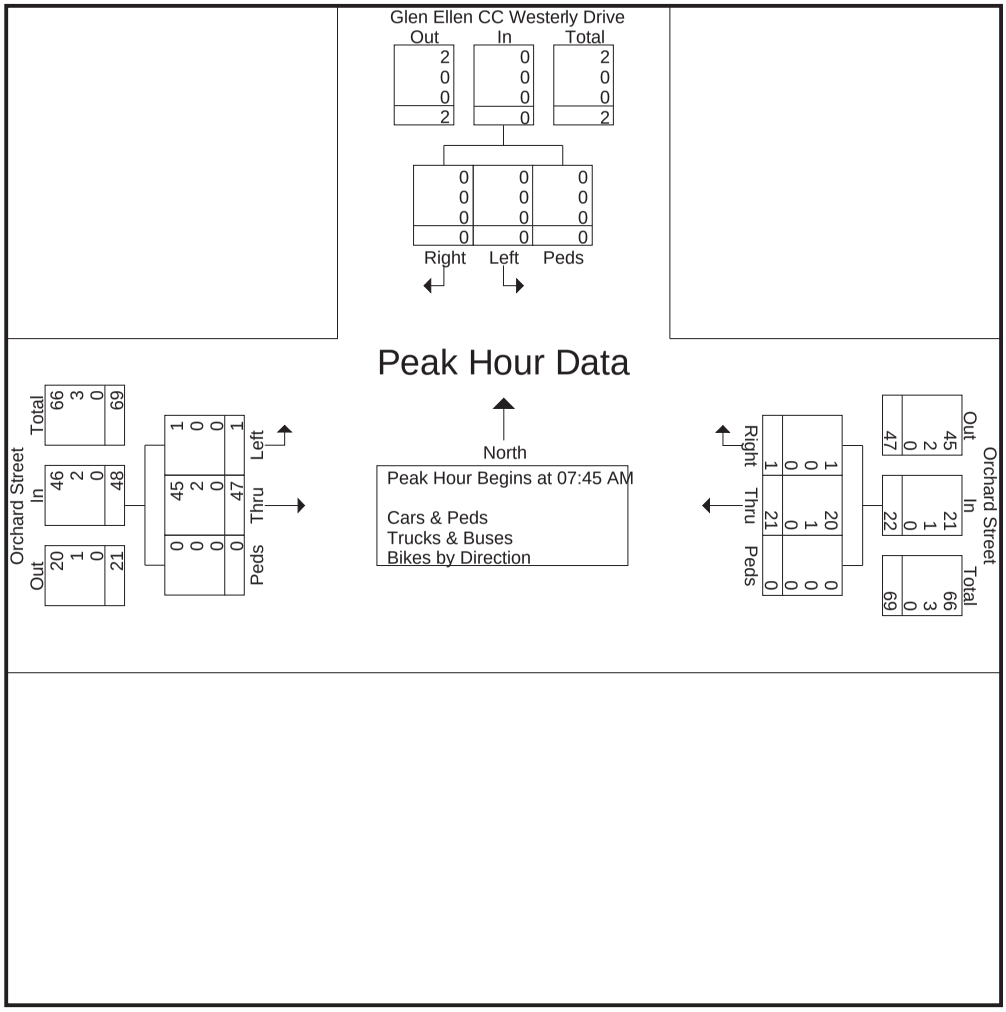
	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	4	0	4	**13**	0	0	**13**	17
08:00 AM	0	0	0	0	**1**	5	0	6	12	**1**	0	13	**19**
08:15 AM	0	0	0	0	0	5	0	5	11	0	0	11	16
08:30 AM	0	0	0	0	0	**7**	0	**7**	11	0	0	11	18
Total Volume	0	0	0	0	1	21	0	22	47	1	0	48	70
% App. Total	0	0	0		4.5	95.5	0		97.9	2.1	0		
PHF	.000	.000	.000	.000	.250	.750	.000	.786	.904	.250	.000	.923	.921
Cars & Peds	0	0	0	0	1	20	0	21	45	1	0	46	67
% Cars & Peds	0	0	0	0	100	95.2	0	95.5	95.7	100	0	95.8	95.7
Trucks & Buses	0	0	0	0	0	1	0	1	2	0	0	2	3
% Trucks & Buses	0	0	0	0	0	4.8	0	4.5	4.3	0	0	4.2	4.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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Client: McM/M. Starkey

File Name : 04715AA
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	2	0	0	0	11	0	4	0	0	17
04:15 PM	0	0	0	0	10	0	6	1	0	17
04:30 PM	0	0	0	0	2	0	3	0	0	5
04:45 PM	0	0	0	0	7	0	4	0	0	11
Total	2	0	0	0	30	0	17	1	0	50
05:00 PM	0	0	0	0	16	0	2	1	0	19
05:15 PM	1	0	0	0	13	0	9	1	0	24
05:30 PM	0	0	0	0	23	0	5	2	0	30
05:45 PM	0	0	0	0	19	0	8	0	0	27
Total	1	0	0	0	71	0	24	4	0	100
Grand Total	3	0	0	0	101	0	41	5	0	150
Apprch %	100	0	0	0	100	0	89.1	10.9	0	
Total %	2	0	0	0	67.3	0	27.3	3.3	0	
Cars & Peds	3	0	0	0	101	0	41	5	0	150
% Cars & Peds	100	0	0	0	100	0	100	100	0	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	0	16	0	16	2	1	0	3	19
05:15 PM	**1**	0	0	**1**	0	13	0	13	**9**	1	0	**10**	24
05:30 PM	0	0	0	0	0	**23**	0	**23**	5	**2**	0	7	**30**
05:45 PM	0	0	0	0	0	19	0	19	8	0	0	8	27
Total Volume	1	0	0	1	0	71	0	71	24	4	0	28	100
% App. Total	100	0	0		0	100	0		85.7	14.3	0		
PHF	.250	.000	.000	.250	.000	.772	.000	.772	.667	.500	.000	.700	.833
Cars & Peds	1	0	0	1	0	71	0	71	24	4	0	28	100
% Cars & Peds	100	0	0	100	0	100	0	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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Client: McM/M. Starkey

File Name : 04715AA
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Cars & Peds

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	2	0	0	0	11	0	4	0	0	17
04:15 PM	0	0	0	0	10	0	6	1	0	17
04:30 PM	0	0	0	0	2	0	3	0	0	5
04:45 PM	0	0	0	0	7	0	4	0	0	11
Total	2	0	0	0	30	0	17	1	0	50
05:00 PM	0	0	0	0	16	0	2	1	0	19
05:15 PM	1	0	0	0	13	0	9	1	0	24
05:30 PM	0	0	0	0	23	0	5	2	0	30
05:45 PM	0	0	0	0	19	0	8	0	0	27
Total	1	0	0	0	71	0	24	4	0	100
Grand Total	3	0	0	0	101	0	41	5	0	150
Apprch %	100	0	0	0	100	0	89.1	10.9	0	
Total %	2	0	0	0	67.3	0	27.3	3.3	0	

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	0	16	0	16	2	1	0	3	19
05:15 PM	**1**	0	0	**1**	0	13	0	13	**9**	1	0	**10**	24
05:30 PM	0	0	0	0	0	**23**	0	**23**	5	**2**	0	7	**30**
05:45 PM	0	0	0	0	0	19	0	19	8	0	0	8	27
Total Volume	1	0	0	1	0	71	0	71	24	4	0	28	100
% App. Total	100	0	0		0	100	0		85.7	14.3	0		
PHF	.250	.000	.000	.250	.000	.772	.000	.772	.667	.500	.000	.700	.833

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E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715AA
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Trucks & Buses

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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N: GECC Westerly Drive
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715AA
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Bikes by Direction

	Glen Ellen CC Westerly Drive From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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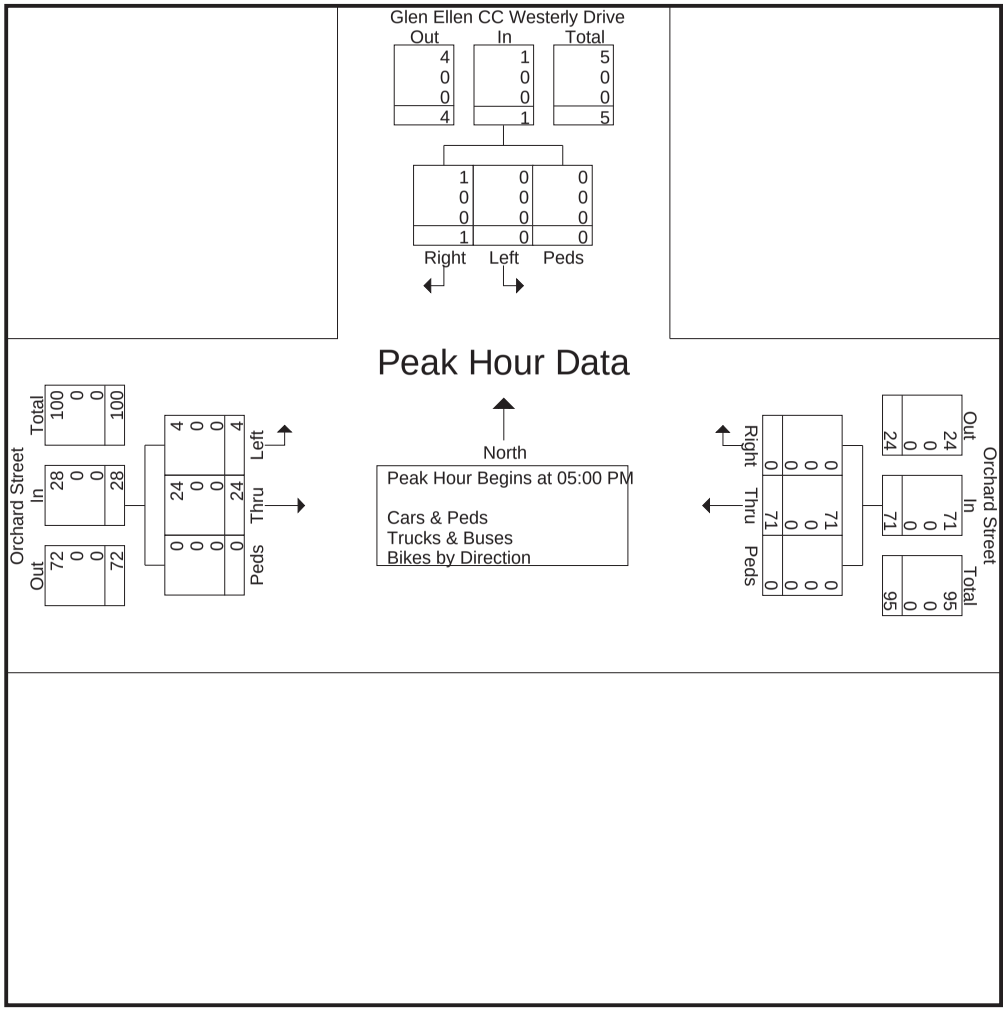
	Glen Ellen CC Westerly Drive From North				Orchard Street From East				Orchard Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	0	16	0	16	2	1	0	3	19
05:15 PM	**1**	0	0	**1**	0	13	0	13	**9**	1	0	**10**	24
05:30 PM	0	0	0	0	0	**23**	0	**23**	5	**2**	0	7	**30**
05:45 PM	0	0	0	0	0	19	0	19	8	0	0	8	27
Total Volume	1	0	0	1	0	71	0	71	24	4	0	28	100
% App. Total	100	0	0		0	100	0		85.7	14.3	0		
PHF	.250	.000	.000	.250	.000	.772	.000	.772	.667	.500	.000	.700	.833
Cars & Peds	1	0	0	1	0	71	0	71	24	4	0	28	100
% Cars & Peds	100	0	0	100	0	100	0	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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N/S: GECC Drive/Grove Street
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715B
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	3	2	0	7	0	0	0	0	12	0	0	24
07:15 AM	0	0	0	0	0	5	0	0	5	0	0	0	1	9	0	0	20
07:30 AM	0	0	1	0	0	5	1	0	2	0	0	0	0	12	0	0	21
07:45 AM	0	0	0	0	0	4	0	0	5	0	0	0	0	13	0	0	22
Total	0	0	1	0	0	17	3	0	19	0	0	0	1	46	0	0	87
08:00 AM	0	0	0	0	0	6	0	0	4	0	0	2	2	10	0	0	24
08:15 AM	0	0	0	0	0	5	1	0	0	0	0	0	0	11	0	2	19
08:30 AM	0	0	0	0	0	7	2	0	1	0	0	0	0	11	0	0	21
08:45 AM	1	0	0	0	1	6	0	0	1	0	0	0	0	6	0	0	15
Total	1	0	0	0	1	24	3	0	6	0	0	2	2	38	0	2	79
Grand Total	1	0	1	0	1	41	6	0	25	0	0	2	3	84	0	2	166
Apprch %	50	0	50	0	2.1	85.4	12.5	0	92.6	0	0	7.4	3.4	94.4	0	2.2	
Total %	0.6	0	0.6	0	0.6	24.7	3.6	0	15.1	0	0	1.2	1.8	50.6	0	1.2	
Cars & Peds	0	0	1	0	0	39	6	0	24	0	0	2	1	83	0	2	158
% Cars & Peds	0	0	100	0	0	95.1	100	0	96	0	0	100	33.3	98.8	0	100	95.2
Trucks & Buses	1	0	0	0	1	2	0	0	1	0	0	0	2	1	0	0	8
% Trucks & Buses	100	0	0	0	100	4.9	0	0	4	0	0	0	66.7	1.2	0	0	4.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	3	**2**	0	5	**7**	0	0	0	**7**	0	12	0	0	12	**24**
07:15 AM	0	0	0	0	0	0	**5**	0	0	5	5	0	0	0	5	**1**	9	0	0	10	20
07:30 AM	0	0	**1**	0	**1**	0	5	1	0	**6**	2	0	0	0	2	0	12	0	0	12	21
07:45 AM	0	0	0	0	0	0	4	0	0	4	5	0	0	0	5	0	**13**	0	0	**13**	22
Total Volume	0	0	1	0	1	0	17	3	0	20	19	0	0	0	19	1	46	0	0	47	87
% App. Total	0	0	100	0		0	85	15	0		100	0	0	0		2.1	97.9	0	0		
PHF	.000	.000	.250	.000	.250	.000	.850	.375	.000	.833	.679	.000	.000	.000	.679	.250	.885	.000	.000	.904	.906
Cars & Peds	0	0	1	0	1	0	17	3	0	20	18	0	0	0	18	0	46	0	0	46	85
% Cars & Peds	0	0	100	0	100	0	100	100	0	100	94.7	0	0	0	94.7	0	100	0	0	97.9	97.7
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	5.3	0	0	0	5.3	100	0	0	0	2.1	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715B
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	3	2	0	6	0	0	0	0	12	0	0	23
07:15 AM	0	0	0	0	0	5	0	0	5	0	0	0	0	9	0	0	19
07:30 AM	0	0	1	0	0	5	1	0	2	0	0	0	0	12	0	0	21
07:45 AM	0	0	0	0	0	4	0	0	5	0	0	0	0	13	0	0	22
Total	0	0	1	0	0	17	3	0	18	0	0	0	0	46	0	0	85
08:00 AM	0	0	0	0	0	5	0	0	4	0	0	2	1	10	0	0	22
08:15 AM	0	0	0	0	0	5	1	0	0	0	0	0	0	10	0	2	18
08:30 AM	0	0	0	0	0	7	2	0	1	0	0	0	0	11	0	0	21
08:45 AM	0	0	0	0	0	5	0	0	1	0	0	0	0	6	0	0	12
Total	0	0	0	0	0	22	3	0	6	0	0	2	1	37	0	2	73
Grand Total	0	0	1	0	0	39	6	0	24	0	0	2	1	83	0	2	158
Apprch %	0	0	100	0	0	86.7	13.3	0	92.3	0	0	7.7	1.2	96.5	0	2.3	
Total %	0	0	0.6	0	0	24.7	3.8	0	15.2	0	0	1.3	0.6	52.5	0	1.3	

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	3	**2**	0	5	**6**	0	0	0	**6**	0	12	0	0	12	**23**
07:15 AM	0	0	0	0	0	0	**5**	0	0	5	5	0	0	0	5	0	9	0	0	9	19
07:30 AM	0	0	**1**	0	**1**	0	5	1	0	**6**	2	0	0	0	2	0	12	0	0	12	21
07:45 AM	0	0	0	0	0	0	4	0	0	4	5	0	0	0	5	0	**13**	0	0	**13**	22
Total Volume	0	0	1	0	1	0	17	3	0	20	18	0	0	0	18	0	46	0	0	46	85
% App. Total	0	0	100	0		0	85	15	0		100	0	0	0		0	100	0	0		
PHF	.000	.000	.250	.000	.250	.000	.850	.375	.000	.833	.750	.000	.000	.000	.750	.000	.885	.000	.000	.885	.924

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Site Code : Y1621211
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Groups Printed- Trucks & Buses

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
08:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3
Total	1	0	0	0	1	2	0	0	0	0	0	0	1	1	0	0	6
Grand Total	1	0	0	0	1	2	0	0	1	0	0	0	2	1	0	0	8
Apprch %	100	0	0	0	33.3	66.7	0	0	100	0	0	0	66.7	33.3	0	0	
Total %	12.5	0	0	0	12.5	25	0	0	12.5	0	0	0	25	12.5	0	0	

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	**1**	0	0	1	0	0	0	0	0	**1**	0	0	0	**1**	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	**1**	0	0	0	**1**	**1**	1	0	0	**2**	0	0	0	0	0	0	0	0	0	0	**3**
Total Volume	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	1	1	0	0	2	6
% App. Total	100	0	0	0		33.3	66.7	0	0		0	0	0	0		50	50	0	0		
PHF	.250	.000	.000	.000	.250	.250	.500	.000	.000	.375	.000	.000	.000	.000	.000	.250	.250	.000	.000	.500	.500

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File Name : 04715B
Site Code : Y1621211
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Groups Printed- Bikes by Direction

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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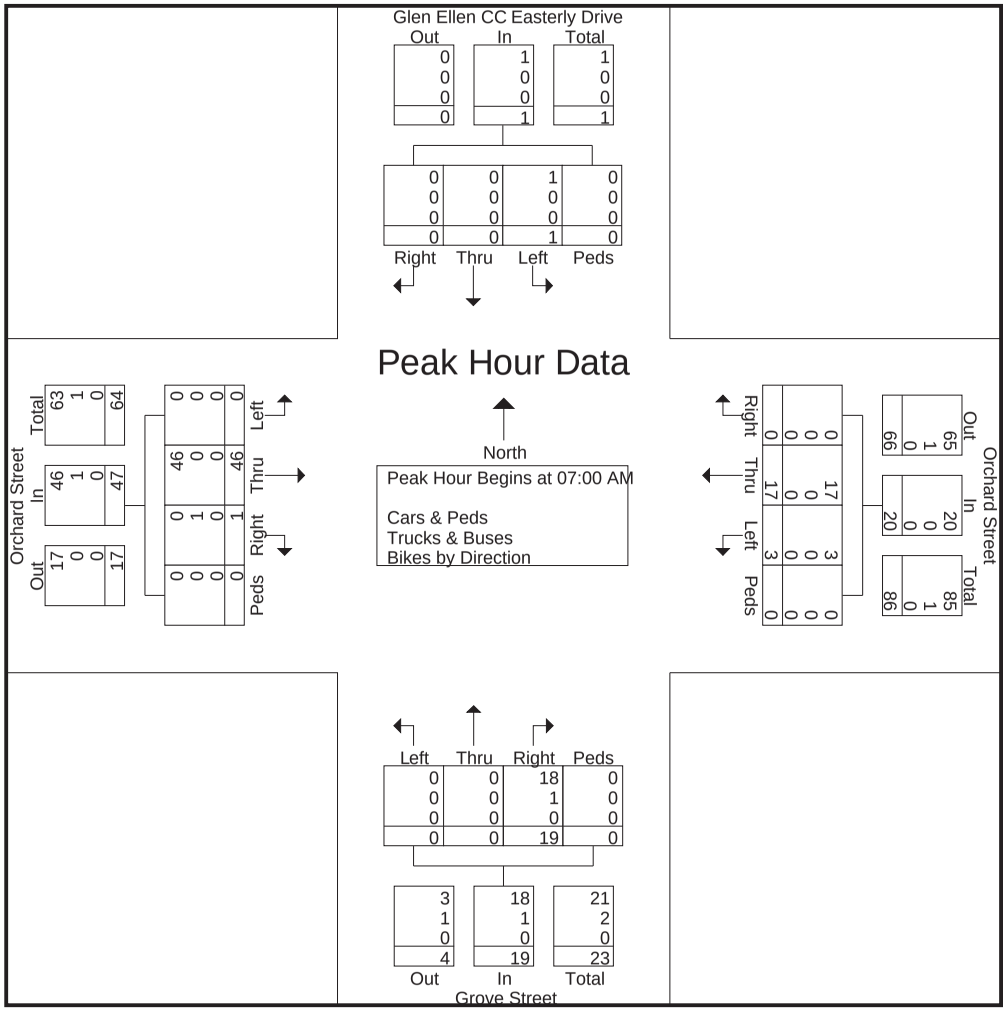
	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	3	**2**	0	5	**7**	0	0	0	**7**	0	12	0	0	12	**24**
07:15 AM	0	0	0	0	0	0	**5**	0	0	5	5	0	0	0	5	**1**	9	0	0	10	20
07:30 AM	0	0	**1**	0	**1**	0	5	1	0	**6**	2	0	0	0	2	0	12	0	0	12	21
07:45 AM	0	0	0	0	0	0	4	0	0	4	5	0	0	0	5	0	**13**	0	0	**13**	22
Total Volume	0	0	1	0	1	0	17	3	0	20	19	0	0	0	19	1	46	0	0	47	87
% App. Total	0	0	100	0		0	85	15	0		100	0	0	0		2.1	97.9	0	0		
PHF	.000	.000	.250	.000	.250	.000	.850	.375	.000	.833	.679	.000	.000	.000	.679	.250	.885	.000	.000	.904	.906
Cars & Peds	0	0	1	0	1	0	17	3	0	20	18	0	0	0	18	0	46	0	0	46	85
% Cars & Peds	0	0	100	0	100	0	100	100	0	100	94.7	0	0	0	94.7	0	100	0	0	97.9	97.7
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	5.3	0	0	0	5.3	100	0	0	0	2.1	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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File Name : 04715BB
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	1	11	0	0	1	0	0	0	0	4	0	0	17
04:15 PM	1	0	0	0	0	10	0	0	1	0	0	0	1	4	1	0	18
04:30 PM	0	0	0	0	0	11	0	0	1	0	0	0	0	3	0	0	15
04:45 PM	0	1	0	0	1	9	3	0	2	0	0	0	0	4	0	0	20
Total	1	1	0	0	2	41	3	0	5	0	0	0	1	15	1	0	70
05:00 PM	0	0	0	0	0	16	5	0	3	0	0	0	0	2	0	0	26
05:15 PM	0	0	0	0	0	13	3	0	1	0	0	0	0	9	0	0	26
05:30 PM	1	0	0	0	0	22	0	0	3	0	0	0	0	5	0	0	31
05:45 PM	0	0	0	0	1	19	3	0	2	0	0	0	0	7	1	0	33
Total	1	0	0	0	1	70	11	0	9	0	0	0	0	23	1	0	116
Grand Total	2	1	0	0	3	111	14	0	14	0	0	0	1	38	2	0	186
Apprch %	66.7	33.3	0	0	2.3	86.7	10.9	0	100	0	0	0	2.4	92.7	4.9	0	
Total %	1.1	0.5	0	0	1.6	59.7	7.5	0	7.5	0	0	0	0.5	20.4	1.1	0	
Cars & Peds	2	1	0	0	3	111	14	0	14	0	0	0	1	38	2	0	186
% Cars & Peds	100	100	0	0	100	100	100	0	100	0	0	0	100	100	100	0	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	16	**5**	0	21	**3**	0	0	0	**3**	0	2	0	0	2	26
05:15 PM	0	0	0	0	0	0	13	3	0	16	1	0	0	0	1	0	**9**	0	0	**9**	26
05:30 PM	**1**	0	0	0	**1**	0	**22**	0	0	22	3	0	0	0	3	0	5	0	0	5	31
05:45 PM	0	0	0	0	0	**1**	19	3	0	**23**	2	0	0	0	2	0	7	**1**	0	8	**33**
Total Volume	1	0	0	0	1	1	70	11	0	82	9	0	0	0	9	0	23	1	0	24	116
% App. Total	100	0	0	0		1.2	85.4	13.4	0		100	0	0	0		0	95.8	4.2	0		
PHF	.250	.000	.000	.000	.250	.250	.795	.550	.000	.891	.750	.000	.000	.000	.750	.000	.639	.250	.000	.667	.879
Cars & Peds	1	0	0	0	1	1	70	11	0	82	9	0	0	0	9	0	23	1	0	24	116
% Cars & Peds	100	0	0	0	100	100	100	100	0	100	100	0	0	0	100	0	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

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N/S: GECC Drive/Grove Street
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715BB
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	1	11	0	0	1	0	0	0	0	4	0	0	17
04:15 PM	1	0	0	0	0	10	0	0	1	0	0	0	1	4	1	0	18
04:30 PM	0	0	0	0	0	11	0	0	1	0	0	0	0	3	0	0	15
04:45 PM	0	1	0	0	1	9	3	0	2	0	0	0	0	4	0	0	20
Total	1	1	0	0	2	41	3	0	5	0	0	0	1	15	1	0	70
05:00 PM	0	0	0	0	0	16	5	0	3	0	0	0	0	2	0	0	26
05:15 PM	0	0	0	0	0	13	3	0	1	0	0	0	0	9	0	0	26
05:30 PM	1	0	0	0	0	22	0	0	3	0	0	0	0	5	0	0	31
05:45 PM	0	0	0	0	1	19	3	0	2	0	0	0	0	7	1	0	33
Total	1	0	0	0	1	70	11	0	9	0	0	0	0	23	1	0	116
Grand Total	2	1	0	0	3	111	14	0	14	0	0	0	1	38	2	0	186
Apprch %	66.7	33.3	0	0	2.3	86.7	10.9	0	100	0	0	0	2.4	92.7	4.9	0	
Total %	1.1	0.5	0	0	1.6	59.7	7.5	0	7.5	0	0	0	0.5	20.4	1.1	0	

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	16	**5**	0	21	**3**	0	0	0	**3**	0	2	0	0	2	26
05:15 PM	0	0	0	0	0	0	13	3	0	16	1	0	0	0	1	0	**9**	0	0	**9**	26
05:30 PM	**1**	0	0	0	**1**	0	**22**	0	0	22	3	0	0	0	3	0	5	0	0	5	31
05:45 PM	0	0	0	0	0	**1**	19	3	0	**23**	2	0	0	0	2	0	7	**1**	0	8	**33**
Total Volume	1	0	0	0	1	1	70	11	0	82	9	0	0	0	9	0	23	1	0	24	116
% App. Total	100	0	0	0		1.2	85.4	13.4	0		100	0	0	0		0	95.8	4.2	0		
PHF	.250	.000	.000	.000	.250	.250	.795	.550	.000	.891	.750	.000	.000	.000	.750	.000	.639	.250	.000	.667	.879

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Client: McM/M. Starkey

File Name : 04715BB
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Trucks & Buses

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 04715BB
Site Code : Y1621211
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Groups Printed- Bikes by Direction

	Glen Ellen CC Easterly Drive From North				Orchard Street From East				Grove Street From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Client: McM/M. Starkey

File Name : 04715BB
Site Code : Y1621211
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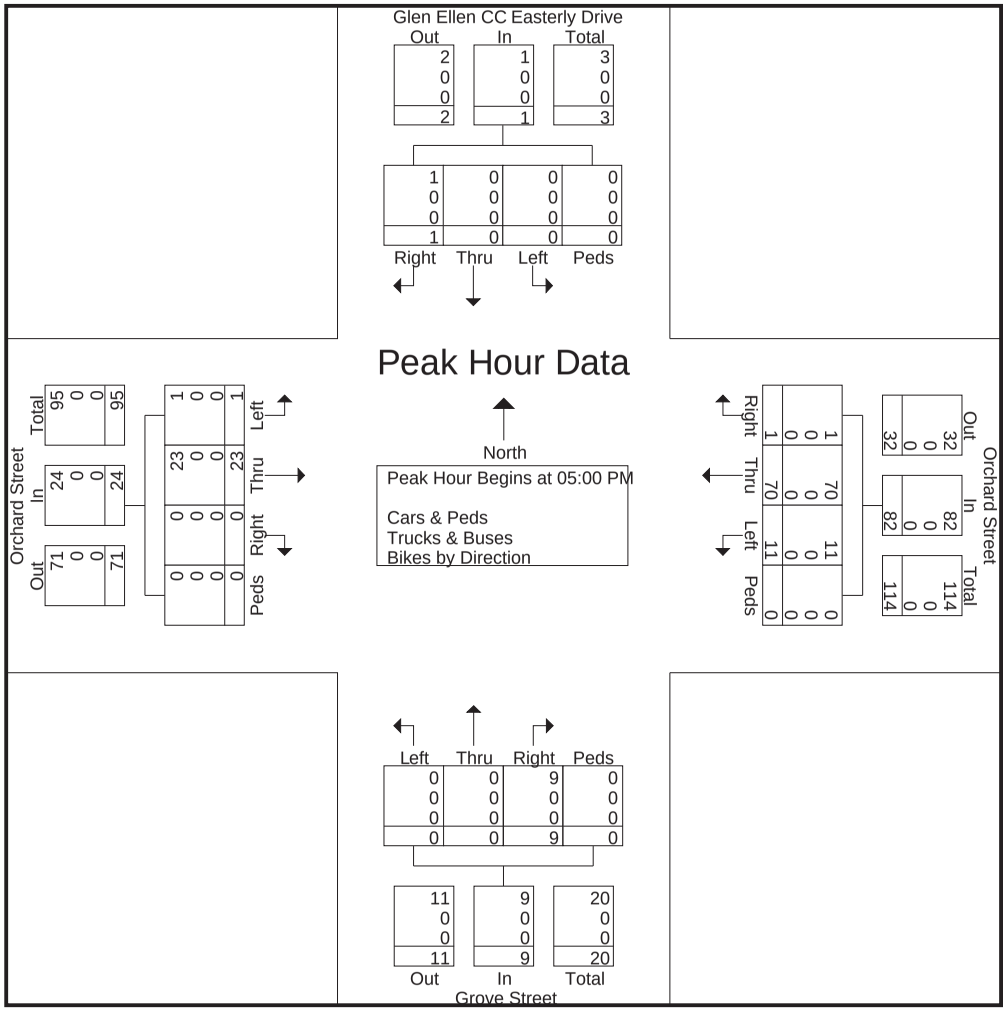
	Glen Ellen CC Easterly Drive From North					Orchard Street From East					Grove Street From South					Orchard Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	16	**5**	0	21	**3**	0	0	0	**3**	0	2	0	0	2	26
05:15 PM	0	0	0	0	0	0	13	3	0	16	1	0	0	0	1	0	**9**	0	0	**9**	26
05:30 PM	**1**	0	0	0	**1**	0	**22**	0	0	22	3	0	0	0	3	0	5	0	0	5	31
05:45 PM	0	0	0	0	0	**1**	19	3	0	**23**	2	0	0	0	2	0	7	**1**	0	8	**33**
Total Volume	1	0	0	0	1	1	70	11	0	82	9	0	0	0	9	0	23	1	0	24	116
% App. Total	100	0	0	0		1.2	85.4	13.4	0		100	0	0	0		0	95.8	4.2	0		
PHF	.250	.000	.000	.000	.250	.250	.795	.550	.000	.891	.750	.000	.000	.000	.750	.000	.639	.250	.000	.667	.879
Cars & Peds	1	0	0	0	1	1	70	11	0	82	9	0	0	0	9	0	23	1	0	24	116
% Cars & Peds	100	0	0	0	100	100	100	100	0	100	100	0	0	0	100	0	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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N: Bullard Lane
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715C
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	1	2	3	0	3	0	17	0	0	26
07:15 AM	2	1	0	2	4	0	16	0	0	25
07:30 AM	1	2	2	1	7	0	13	2	0	28
07:45 AM	1	1	1	1	5	0	16	0	0	25
Total	5	6	6	4	19	0	62	2	0	104
08:00 AM	1	1	4	1	5	0	17	0	0	29
08:15 AM	0	0	0	1	5	0	12	0	0	18
08:30 AM	2	0	3	1	6	0	13	1	0	26
08:45 AM	1	0	0	1	6	0	6	0	0	14
Total	4	1	7	4	22	0	48	1	0	87
Grand Total	9	7	13	8	41	0	110	3	0	191
Apprch %	31	24.1	44.8	16.3	83.7	0	97.3	2.7	0	
Total %	4.7	3.7	6.8	4.2	21.5	0	57.6	1.6	0	
Cars & Peds	9	7	13	8	38	0	108	3	0	186
% Cars & Peds	100	100	100	100	92.7	0	98.2	100	0	97.4
Trucks & Buses	0	0	0	0	3	0	2	0	0	5
% Trucks & Buses	0	0	0	0	7.3	0	1.8	0	0	2.6
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Bullard Lane From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**2**	1	0	3	**2**	4	0	6	16	0	0	16	25
07:30 AM	1	**2**	2	5	1	**7**	0	**8**	13	**2**	0	15	28
07:45 AM	1	1	1	3	1	5	0	6	16	0	0	16	25
08:00 AM	1	1	**4**	**6**	1	5	0	6	**17**	0	0	**17**	**29**
Total Volume	5	5	7	17	5	21	0	26	62	2	0	64	107
% App. Total	29.4	29.4	41.2		19.2	80.8	0		96.9	3.1	0		
PHF	.625	.625	.438	.708	.625	.750	.000	.813	.912	.250	.000	.941	.922
Cars & Peds	5	5	7	17	5	19	0	24	62	2	0	64	105
% Cars & Peds	100	100	100	100	100	90.5	0	92.3	100	100	0	100	98.1
Trucks & Buses	0	0	0	0	0	2	0	2	0	0	0	0	2
% Trucks & Buses	0	0	0	0	0	9.5	0	7.7	0	0	0	0	1.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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N: Bullard Lane
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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715C
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	1	2	3	0	3	0	16	0	0	25
07:15 AM	2	1	0	2	3	0	16	0	0	24
07:30 AM	1	2	2	1	7	0	13	2	0	28
07:45 AM	1	1	1	1	4	0	16	0	0	24
Total	5	6	6	4	17	0	61	2	0	101
08:00 AM	1	1	4	1	5	0	17	0	0	29
08:15 AM	0	0	0	1	5	0	11	0	0	17
08:30 AM	2	0	3	1	6	0	13	1	0	26
08:45 AM	1	0	0	1	5	0	6	0	0	13
Total	4	1	7	4	21	0	47	1	0	85
Grand Total	9	7	13	8	38	0	108	3	0	186
Apprch %	31	24.1	44.8	17.4	82.6	0	97.3	2.7	0	
Total %	4.8	3.8	7	4.3	20.4	0	58.1	1.6	0	

	Bullard Lane From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**2**	1	0	3	**2**	3	0	5	16	0	0	16	24
07:30 AM	1	**2**	2	5	1	**7**	0	**8**	13	**2**	0	15	28
07:45 AM	1	1	1	3	1	4	0	5	16	0	0	16	24
08:00 AM	1	1	**4**	**6**	1	5	0	6	**17**	0	0	**17**	**29**
Total Volume	5	5	7	17	5	19	0	24	62	2	0	64	105
% App. Total	29.4	29.4	41.2		20.8	79.2	0		96.9	3.1	0		
PHF	.625	.625	.438	.708	.625	.679	.000	.750	.912	.250	.000	.941	.905

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File Name : 04715C
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Trucks & Buses

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	1	0	0	1
07:15 AM	0	0	0	0	1	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	1	0	0	0	0	1
Total	0	0	0	0	2	0	1	0	0	3
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	1	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	1	0	0	0	0	1
Total	0	0	0	0	1	0	1	0	0	2
Grand Total	0	0	0	0	3	0	2	0	0	5
Apprch %	0	0	0	0	100	0	100	0	0	
Total %	0	0	0	0	60	0	40	0	0	

	Bullard Lane From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	**1**	0	0	**1**	**1**
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	2	0	2	1	0	0	1	3
% App. Total	0	0	0		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.250	.000	.000	.250	.750

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File Name : 04715C
Site Code : Y1621211
Start Date : 4/7/2016
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Groups Printed- Bikes by Direction

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Bullard Lane From North				Orchard Street From East				Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Client: McM/M. Starkey

File Name : 04715C
Site Code : Y1621211
Start Date : 4/7/2016
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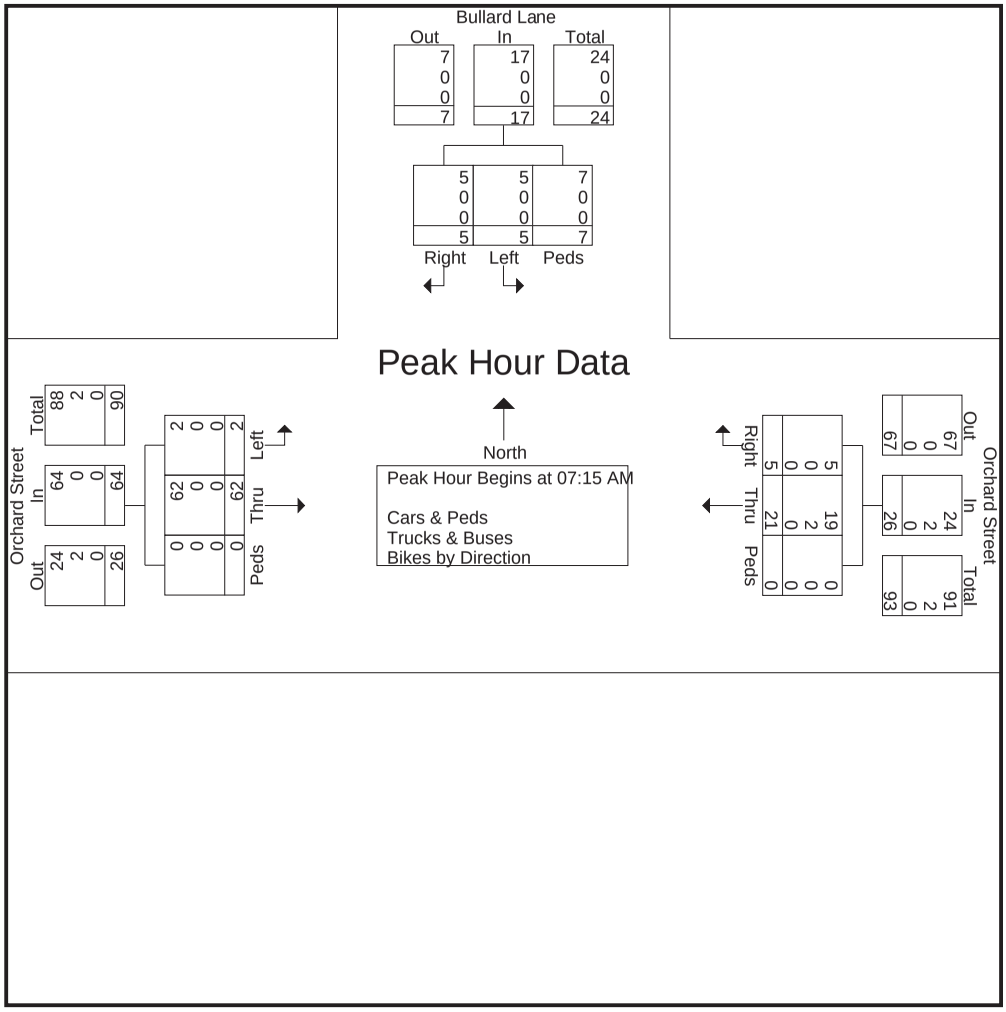
	Bullard Lane From North				Orchard Street From East				Orchard Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**2**	1	0	3	**2**	4	0	6	16	0	0	16	25
07:30 AM	1	**2**	2	5	1	**7**	0	**8**	13	**2**	0	15	28
07:45 AM	1	1	1	3	1	5	0	6	16	0	0	16	25
08:00 AM	1	1	**4**	**6**	1	5	0	6	**17**	0	0	**17**	**29**
Total Volume	5	5	7	17	5	21	0	26	62	2	0	64	107
% App. Total	29.4	29.4	41.2		19.2	80.8	0		96.9	3.1	0		
PHF	.625	.625	.438	.708	.625	.750	.000	.813	.912	.250	.000	.941	.922
Cars & Peds	5	5	7	17	5	19	0	24	62	2	0	64	105
% Cars & Peds	100	100	100	100	100	90.5	0	92.3	100	100	0	100	98.1
Trucks & Buses	0	0	0	0	0	2	0	2	0	0	0	0	2
% Trucks & Buses	0	0	0	0	0	9.5	0	7.7	0	0	0	0	1.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715CC
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	2	11	0	4	1	0	18
04:15 PM	2	2	0	1	9	0	2	2	0	18
04:30 PM	0	1	0	1	12	0	3	2	0	19
04:45 PM	1	1	0	0	11	0	7	1	0	21
Total	3	4	0	4	43	0	16	6	0	76
05:00 PM	2	0	0	0	20	0	3	2	0	27
05:15 PM	1	1	0	0	17	0	8	1	0	28
05:30 PM	3	0	0	1	18	0	5	2	0	29
05:45 PM	4	1	0	1	18	0	9	0	0	33
Total	10	2	0	2	73	0	25	5	0	117
Grand Total	13	6	0	6	116	0	41	11	0	193
Apprch %	68.4	31.6	0	4.9	95.1	0	78.8	21.2	0	
Total %	6.7	3.1	0	3.1	60.1	0	21.2	5.7	0	
Cars & Peds	13	6	0	6	116	0	41	11	0	193
% Cars & Peds	100	100	0	100	100	0	100	100	0	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Bullard Lane From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	2	0	0	2	0	**20**	0	**20**	3	**2**	0	5	27
05:15 PM	1	**1**	0	2	0	17	0	17	8	1	0	**9**	28
05:30 PM	3	0	0	3	**1**	18	0	19	5	2	0	7	29
05:45 PM	**4**	1	0	**5**	1	18	0	19	**9**	0	0	9	**33**
Total Volume	10	2	0	12	2	73	0	75	25	5	0	30	117
% App. Total	83.3	16.7	0		2.7	97.3	0		83.3	16.7	0		
PHF	.625	.500	.000	.600	.500	.913	.000	.938	.694	.625	.000	.833	.886
Cars & Peds	10	2	0	12	2	73	0	75	25	5	0	30	117
% Cars & Peds	100	100	0	100	100	100	0	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715CC
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	2	11	0	4	1	0	18
04:15 PM	2	2	0	1	9	0	2	2	0	18
04:30 PM	0	1	0	1	12	0	3	2	0	19
04:45 PM	1	1	0	0	11	0	7	1	0	21
Total	3	4	0	4	43	0	16	6	0	76
05:00 PM	2	0	0	0	20	0	3	2	0	27
05:15 PM	1	1	0	0	17	0	8	1	0	28
05:30 PM	3	0	0	1	18	0	5	2	0	29
05:45 PM	4	1	0	1	18	0	9	0	0	33
Total	10	2	0	2	73	0	25	5	0	117
Grand Total	13	6	0	6	116	0	41	11	0	193
Apprch %	68.4	31.6	0	4.9	95.1	0	78.8	21.2	0	
Total %	6.7	3.1	0	3.1	60.1	0	21.2	5.7	0	

	Bullard Lane From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	2	0	0	2	0	**20**	0	**20**	3	**2**	0	5	27
05:15 PM	1	**1**	0	2	0	17	0	17	8	1	0	**9**	28
05:30 PM	3	0	0	3	**1**	18	0	19	5	2	0	7	29
05:45 PM	**4**	1	0	**5**	1	18	0	19	**9**	0	0	9	**33**
Total Volume	10	2	0	12	2	73	0	75	25	5	0	30	117
% App. Total	83.3	16.7	0		2.7	97.3	0		83.3	16.7	0		
PHF	.625	.500	.000	.600	.500	.913	.000	.938	.694	.625	.000	.833	.886

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Client: McM/M. Starkey

File Name : 04715CC
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Trucks & Buses

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Bullard Lane From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Client: McM/M. Starkey

File Name : 04715CC
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Bikes by Direction

	Bullard Lane From North			Orchard Street From East			Orchard Street From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Bullard Lane From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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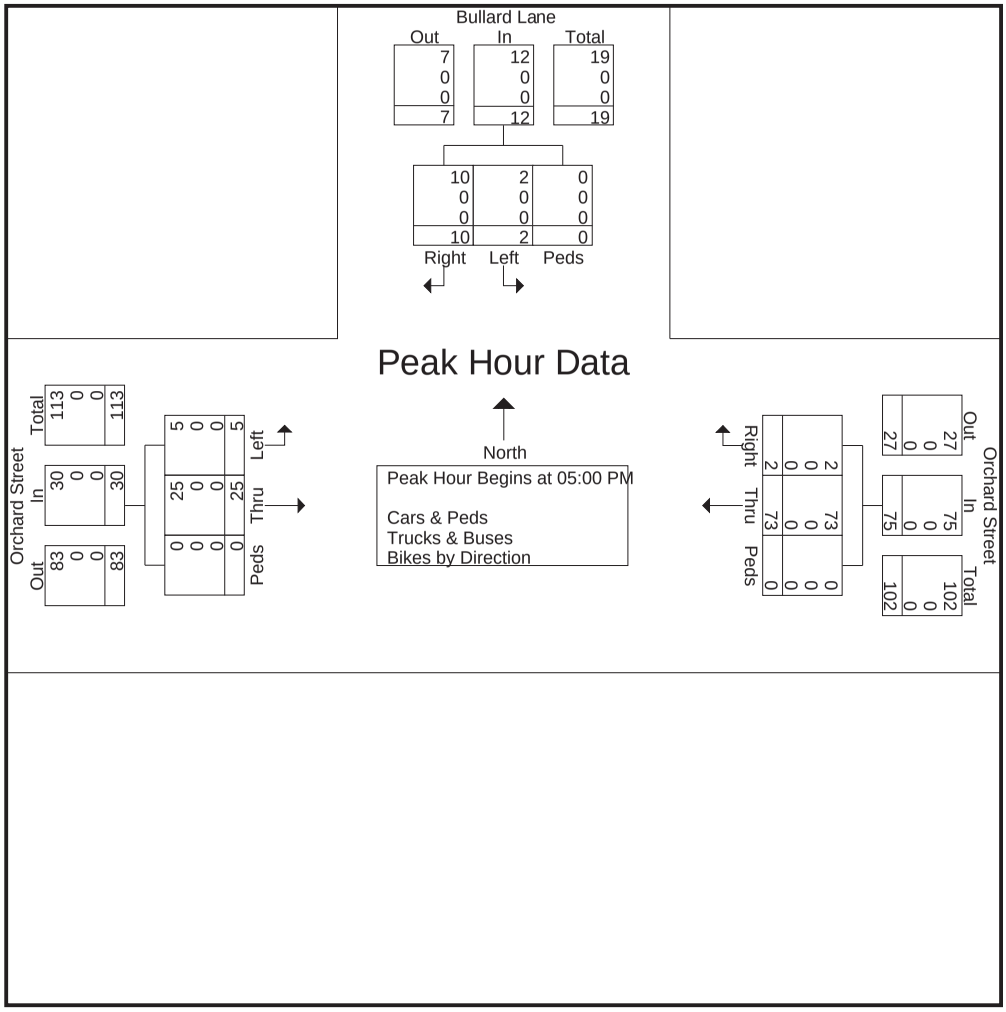
Client: McM/M. Starkey

File Name : 04715CC
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

	Bullard Lane From North				Orchard Street From East				Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	2	0	0	2	0	**20**	0	**20**	3	**2**	0	5	27
05:15 PM	1	**1**	0	2	0	17	0	17	8	1	0	**9**	28
05:30 PM	3	0	0	3	**1**	18	0	19	5	2	0	7	29
05:45 PM	**4**	1	0	**5**	1	18	0	19	**9**	0	0	9	**33**
Total Volume	10	2	0	12	2	73	0	75	25	5	0	30	117
% App. Total	83.3	16.7	0		2.7	97.3	0		83.3	16.7	0		
PHF	.625	.500	.000	.600	.500	.913	.000	.938	.694	.625	.000	.833	.886
Cars & Peds	10	2	0	12	2	73	0	75	25	5	0	30	117
% Cars & Peds	100	100	0	100	100	100	0	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715D
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	1	0	0	0	0	0	0	5	8	2	0	7	22	0	0	45
07:15 AM	0	0	0	0	1	3	0	0	3	8	2	0	12	24	1	0	54
07:30 AM	0	5	0	0	0	5	2	0	7	12	1	1	12	19	2	0	66
07:45 AM	0	3	0	1	0	3	0	0	1	2	4	0	10	20	0	0	44
Total	0	9	0	1	1	11	2	0	16	30	9	1	41	85	3	0	209
08:00 AM	0	6	2	0	0	8	1	0	2	8	3	0	5	18	0	0	53
08:15 AM	0	0	0	0	1	1	1	0	4	5	3	0	6	15	1	0	37
08:30 AM	0	2	0	0	0	4	1	0	5	4	6	0	3	18	0	0	43
08:45 AM	0	2	2	0	0	5	2	0	0	2	5	1	4	7	0	0	30
Total	0	10	4	0	1	18	5	0	11	19	17	1	18	58	1	0	163
Grand Total	0	19	4	1	2	29	7	0	27	49	26	2	59	143	4	0	372
Apprch %	0	79.2	16.7	4.2	5.3	76.3	18.4	0	26	47.1	25	1.9	28.6	69.4	1.9	0	
Total %	0	5.1	1.1	0.3	0.5	7.8	1.9	0	7.3	13.2	7	0.5	15.9	38.4	1.1	0	
Cars & Peds	0	19	3	1	2	28	7	0	27	48	24	2	57	142	4	0	364
% Cars & Peds	0	100	75	100	100	96.6	100	0	100	98	92.3	100	96.6	99.3	100	0	97.8
Trucks & Buses	0	0	1	0	0	1	0	0	0	1	2	0	1	1	0	0	7
% Trucks & Buses	0	0	25	0	0	3.4	0	0	0	2	7.7	0	1.7	0.7	0	0	1.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	1.7	0	0	0	0.3

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	**1**	3	0	0	4	3	8	2	0	13	**12**	**24**	1	0	**37**	54
07:30 AM	0	5	0	0	5	0	5	**2**	0	7	**7**	**12**	1	**1**	**21**	12	19	**2**	0	33	**66**
07:45 AM	0	3	0	**1**	4	0	3	0	0	3	1	2	**4**	0	7	10	20	0	0	30	44
08:00 AM	0	**6**	**2**	0	**8**	0	**8**	1	0	**9**	2	8	3	0	13	5	18	0	0	23	53
Total Volume	0	14	2	1	17	1	19	3	0	23	13	30	10	1	54	39	81	3	0	123	217
% App. Total	0	82.4	11.8	5.9		4.3	82.6	13	0		24.1	55.6	18.5	1.9		31.7	65.9	2.4	0		
PHF	.000	.583	.250	.250	.531	.250	.594	.375	.000	.639	.464	.625	.625	.250	.643	.813	.844	.375	.000	.831	.822
Cars & Peds	0	14	1	1	16	1	18	3	0	22	13	29	9	1	52	38	81	3	0	122	212
% Cars & Peds	0	100	50.0	100	94.1	100	94.7	100	0	95.7	100	96.7	90.0	100	96.3	97.4	100	100	0	99.2	97.7
Trucks & Buses	0	0	1	0	1	0	1	0	0	1	0	1	1	0	2	1	0	0	0	1	5
% Trucks & Buses	0	0	50.0	0	5.9	0	5.3	0	0	4.3	0	3.3	10.0	0	3.7	2.6	0	0	0	0.8	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715D
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	1	0	0	0	0	0	0	5	8	2	0	7	22	0	0	45
07:15 AM	0	0	0	0	1	2	0	0	3	7	2	0	11	24	1	0	51
07:30 AM	0	5	0	0	0	5	2	0	7	12	1	1	12	19	2	0	66
07:45 AM	0	3	0	1	0	3	0	0	1	2	3	0	10	20	0	0	43
Total	0	9	0	1	1	10	2	0	16	29	8	1	40	85	3	0	205
08:00 AM	0	6	1	0	0	8	1	0	2	8	3	0	5	18	0	0	52
08:15 AM	0	0	0	0	1	1	1	0	4	5	3	0	5	15	1	0	36
08:30 AM	0	2	0	0	0	4	1	0	5	4	6	0	3	17	0	0	42
08:45 AM	0	2	2	0	0	5	2	0	0	2	4	1	4	7	0	0	29
Total	0	10	3	0	1	18	5	0	11	19	16	1	17	57	1	0	159
Grand Total	0	19	3	1	2	28	7	0	27	48	24	2	57	142	4	0	364
Apprch %	0	82.6	13	4.3	5.4	75.7	18.9	0	26.7	47.5	23.8	2	28.1	70	2	0	
Total %	0	5.2	0.8	0.3	0.5	7.7	1.9	0	7.4	13.2	6.6	0.5	15.7	39	1.1	0	

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	**1**	2	0	0	3	3	7	2	0	12	11	**24**	1	0	**36**	51
07:30 AM	0	5	0	0	5	0	5	**2**	0	7	**7**	**12**	1	**1**	**21**	**12**	19	**2**	0	33	**66**
07:45 AM	0	3	0	**1**	4	0	3	0	0	3	1	2	**3**	0	6	10	20	0	0	30	43
08:00 AM	0	**6**	**1**	0	**7**	0	**8**	1	0	**9**	2	8	3	0	13	5	18	0	0	23	52
Total Volume	0	14	1	1	16	1	18	3	0	22	13	29	9	1	52	38	81	3	0	122	212
% App. Total	0	87.5	6.2	6.2		4.5	81.8	13.6	0		25	55.8	17.3	1.9		31.1	66.4	2.5	0		
PHF	.000	.583	.250	.250	.571	.250	.563	.375	.000	.611	.464	.604	.750	.250	.619	.792	.844	.375	.000	.847	.803

Transportation Data Corporation

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N/S: Ridge Road
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715D
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Trucks & Buses

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	4
08:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	3
Grand Total	0	0	1	0	0	1	0	0	0	1	2	0	1	1	0	0	7
Apprch %	0	0	100	0	0	100	0	0	0	33.3	66.7	0	50	50	0	0	
Total %	0	0	14.3	0	0	14.3	0	0	0	14.3	28.6	0	14.3	14.3	0	0	

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	0	**1**	0	0	**1**	0	**1**	0	0	**1**	**1**	0	0	0	**1**	**3**
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	1	0	0	0	0	0	1
08:00 AM	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	0	1	0	1	0	0	1	0	1	1	0	2	1	0	0	0	1	5
% App. Total	0	0	100	0		0	100	0	0		0	50	50	0		100	0	0	0		
PHF	.000	.000	.250	.000	.250	.000	.250	.000	.000	.250	.000	.250	.250	.000	.500	.250	.000	.000	.000	.250	.417

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Client: McM/M. Starkey

File Name : 04715D
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Bikes by Direction

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**1**	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.250

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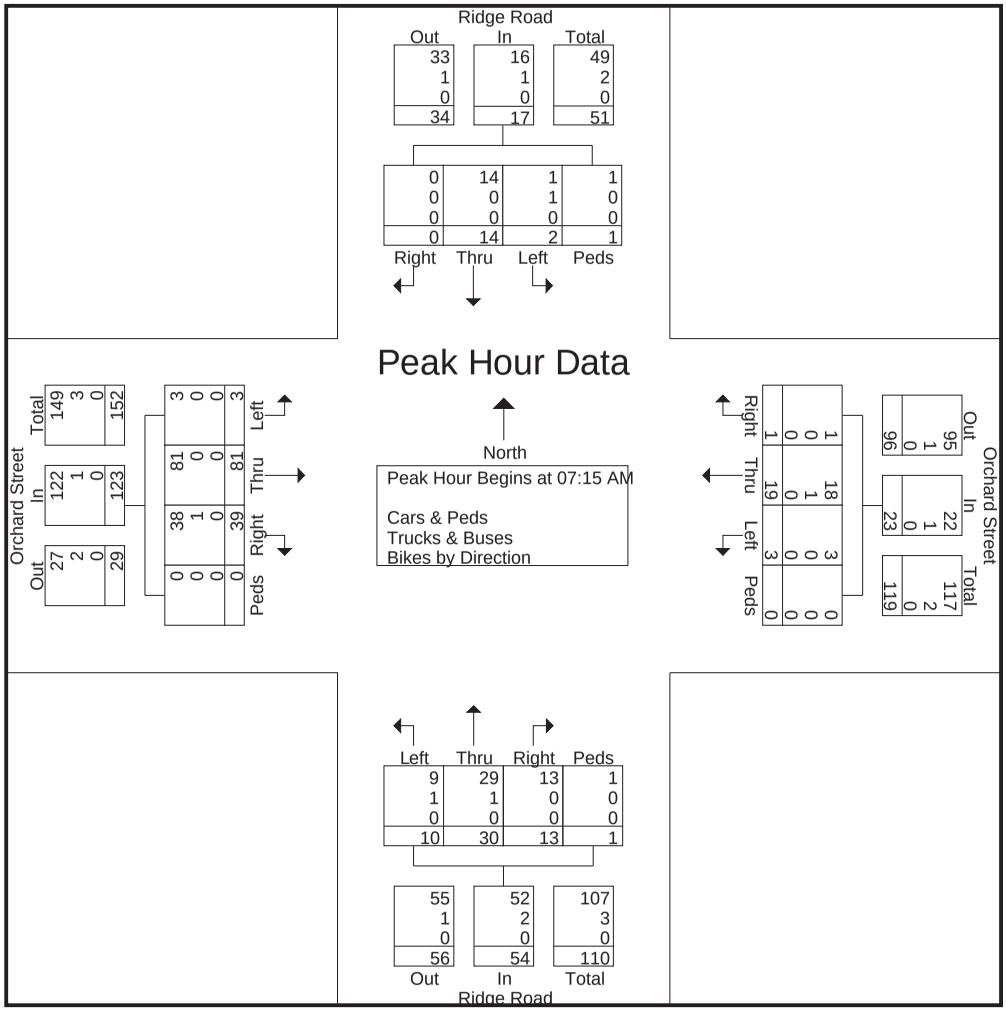
File Name : 04715D
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	**1**	3	0	0	4	3	8	2	0	13	**12**	**24**	1	0	**37**	54
07:30 AM	0	5	0	0	5	0	5	**2**	0	7	**7**	**12**	1	**1**	**21**	12	19	**2**	0	33	**66**
07:45 AM	0	3	0	**1**	4	0	3	0	0	3	1	2	**4**	0	7	10	20	0	0	30	44
08:00 AM	0	**6**	**2**	0	**8**	0	**8**	1	0	**9**	2	8	3	0	13	5	18	0	0	23	53
Total Volume	0	14	2	1	17	1	19	3	0	23	13	30	10	1	54	39	81	3	0	123	217
% App. Total	0	82.4	11.8	5.9		4.3	82.6	13	0		24.1	55.6	18.5	1.9		31.7	65.9	2.4	0		
PHF	.000	.583	.250	.250	.531	.250	.594	.375	.000	.639	.464	.625	.625	.250	.643	.813	.844	.375	.000	.831	.822
Cars & Peds	0	14	1	1	16	1	18	3	0	22	13	29	9	1	52	38	81	3	0	122	212
% Cars & Peds	0	100	50.0	100	94.1	100	94.7	100	0	95.7	100	96.7	90.0	100	96.3	97.4	100	100	0	99.2	97.7
Trucks & Buses	0	0	1	0	1	0	1	0	0	1	0	1	1	0	2	1	0	0	0	1	5
% Trucks & Buses	0	0	50.0	0	5.9	0	5.3	0	0	4.3	0	3.3	10.0	0	3.7	2.6	0	0	0	0.8	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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File Name : 04715DD
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	4	0	0	1	17	6	0	1	1	12	0	2	5	0	0	49
04:15 PM	2	2	0	0	1	10	4	0	2	3	9	0	9	2	0	0	44
04:30 PM	2	4	0	0	0	15	2	0	0	3	4	0	5	1	1	0	37
04:45 PM	0	5	0	0	0	12	5	0	1	2	6	0	6	11	0	0	48
Total	4	15	0	0	2	54	17	0	4	9	31	0	22	19	1	0	178
05:00 PM	2	11	1	0	1	21	6	0	3	2	5	0	5	2	1	0	60
05:15 PM	1	8	0	0	0	17	4	0	3	1	8	0	5	9	1	0	57
05:30 PM	2	2	1	0	4	22	3	0	2	5	7	0	5	4	0	0	57
05:45 PM	1	8	1	0	1	20	5	0	4	4	5	0	5	11	1	0	66
Total	6	29	3	0	6	80	18	0	12	12	25	0	20	26	3	0	240
Grand Total	10	44	3	0	8	134	35	0	16	21	56	0	42	45	4	0	418
Apprch %	17.5	77.2	5.3	0	4.5	75.7	19.8	0	17.2	22.6	60.2	0	46.2	49.5	4.4	0	
Total %	2.4	10.5	0.7	0	1.9	32.1	8.4	0	3.8	5	13.4	0	10	10.8	1	0	
Cars & Peds	10	43	3	0	8	134	35	0	16	21	56	0	42	45	4	0	417
% Cars & Peds	100	97.7	100	0	100	100	100	0	100	100	100	0	100	100	100	0	99.8
Trucks & Buses	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Trucks & Buses	0	2.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**2**	**11**	**1**	0	**14**	1	21	**6**	0	28	3	2	5	0	10	**5**	2	**1**	0	8	60
05:15 PM	1	8	0	0	9	0	17	4	0	21	3	1	**8**	0	12	5	9	1	0	15	57
05:30 PM	2	2	1	0	5	**4**	**22**	3	0	**29**	2	**5**	7	0	**14**	5	4	0	0	9	57
05:45 PM	1	8	1	0	10	1	20	5	0	26	**4**	4	5	0	13	5	**11**	1	0	**17**	**66**
Total Volume	6	29	3	0	38	6	80	18	0	104	12	12	25	0	49	20	26	3	0	49	240
% App. Total	15.8	76.3	7.9	0		5.8	76.9	17.3	0		24.5	24.5	51	0		40.8	53.1	6.1	0		
PHF	.750	.659	.750	.000	.679	.375	.909	.750	.000	.897	.750	.600	.781	.000	.875	1.00	.591	.750	.000	.721	.909
Cars & Peds	6	29	3	0	38	6	80	18	0	104	12	12	25	0	49	20	26	3	0	49	240
% Cars & Peds	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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File Name : 04715DD
Site Code : Y1621211
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Page No : 1

Groups Printed- Cars & Peds

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	4	0	0	1	17	6	0	1	1	12	0	2	5	0	0	49
04:15 PM	2	2	0	0	1	10	4	0	2	3	9	0	9	2	0	0	44
04:30 PM	2	3	0	0	0	15	2	0	0	3	4	0	5	1	1	0	36
04:45 PM	0	5	0	0	0	12	5	0	1	2	6	0	6	11	0	0	48
Total	4	14	0	0	2	54	17	0	4	9	31	0	22	19	1	0	177
05:00 PM	2	11	1	0	1	21	6	0	3	2	5	0	5	2	1	0	60
05:15 PM	1	8	0	0	0	17	4	0	3	1	8	0	5	9	1	0	57
05:30 PM	2	2	1	0	4	22	3	0	2	5	7	0	5	4	0	0	57
05:45 PM	1	8	1	0	1	20	5	0	4	4	5	0	5	11	1	0	66
Total	6	29	3	0	6	80	18	0	12	12	25	0	20	26	3	0	240
Grand Total	10	43	3	0	8	134	35	0	16	21	56	0	42	45	4	0	417
Apprch %	17.9	76.8	5.4	0	4.5	75.7	19.8	0	17.2	22.6	60.2	0	46.2	49.5	4.4	0	
Total %	2.4	10.3	0.7	0	1.9	32.1	8.4	0	3.8	5	13.4	0	10.1	10.8	1	0	

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**2**	**11**	**1**	0	**14**	1	21	**6**	0	28	3	2	5	0	10	**5**	2	**1**	0	8	60
05:15 PM	1	8	0	0	9	0	17	4	0	21	3	1	**8**	0	12	5	9	1	0	15	57
05:30 PM	2	2	1	0	5	**4**	**22**	3	0	**29**	2	**5**	7	0	**14**	5	4	0	0	9	57
05:45 PM	1	8	1	0	10	1	20	5	0	26	**4**	4	5	0	13	5	**11**	1	0	**17**	**66**
Total Volume	6	29	3	0	38	6	80	18	0	104	12	12	25	0	49	20	26	3	0	49	240
% App. Total	15.8	76.3	7.9	0		5.8	76.9	17.3	0		24.5	24.5	51	0		40.8	53.1	6.1	0		
PHF	.750	.659	.750	.000	.679	.375	.909	.750	.000	.897	.750	.600	.781	.000	.875	1.00	.591	.750	.000	.721	.909

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File Name : 04715DD
Site Code : Y1621211
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Page No : 1

Groups Printed- Trucks & Buses

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

Transportation Data Corporation

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N/S: Ridge Road
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715DD
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Bikes by Direction

	Ridge Road From North				Orchard Street From East				Ridge Road From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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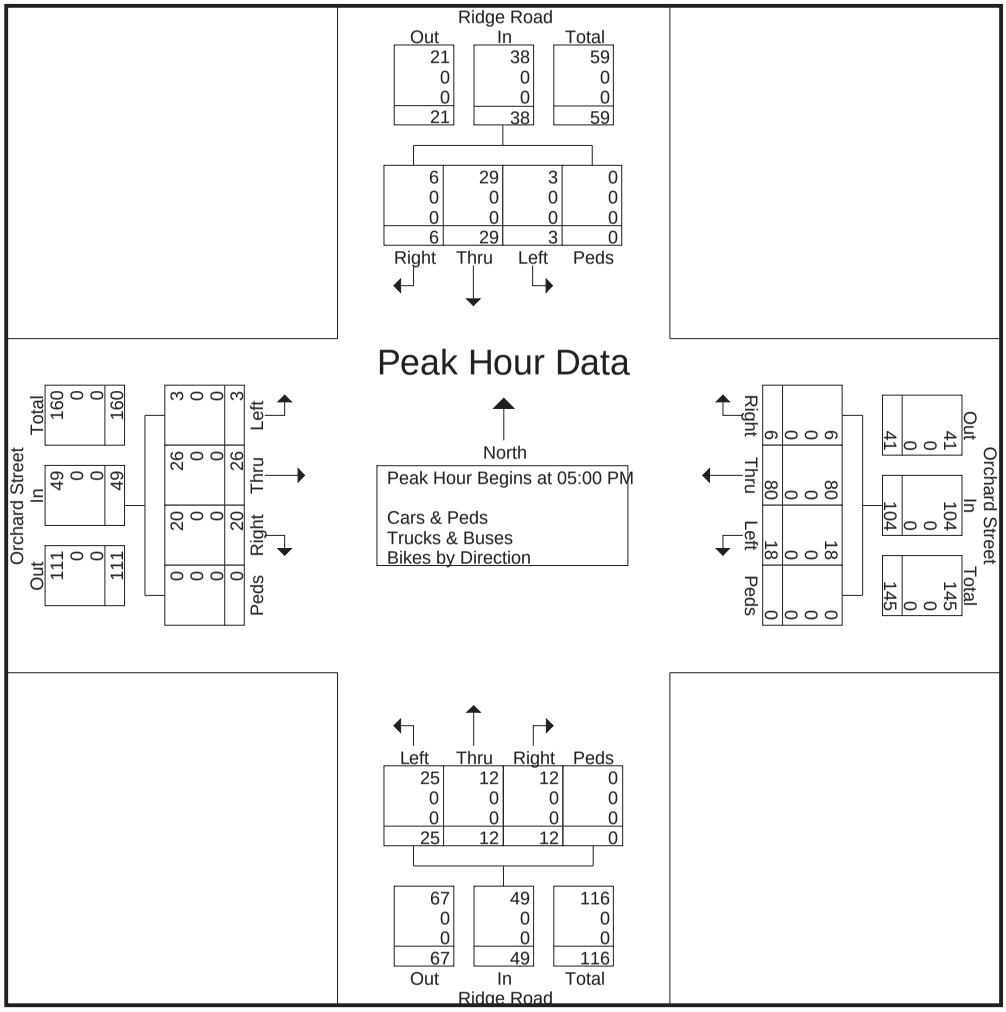
N/S: Ridge Road
E/W: Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715DD
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

	Ridge Road From North					Orchard Street From East					Ridge Road From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**2**	**11**	**1**	0	**14**	1	21	**6**	0	28	3	2	5	0	10	**5**	2	**1**	0	8	60
05:15 PM	1	8	0	0	9	0	17	4	0	21	3	1	**8**	0	12	5	9	1	0	15	57
05:30 PM	2	2	1	0	5	**4**	**22**	3	0	**29**	2	**5**	7	0	**14**	5	4	0	0	9	57
05:45 PM	1	8	1	0	10	1	20	5	0	26	**4**	4	5	0	13	5	**11**	1	0	**17**	**66**
Total Volume	6	29	3	0	38	6	80	18	0	104	12	12	25	0	49	20	26	3	0	49	240
% App. Total	15.8	76.3	7.9	0		5.8	76.9	17.3	0		24.5	24.5	51	0		40.8	53.1	6.1	0		
PHF	.750	.659	.750	.000	.679	.375	.909	.750	.000	.897	.750	.600	.781	.000	.875	1.00	.591	.750	.000	.721	.909
Cars & Peds	6	29	3	0	38	6	80	18	0	104	12	12	25	0	49	20	26	3	0	49	240
% Cars & Peds	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	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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N/S: Middlesex Street/Exchange Street
E/W: Orchard (Route 115)/Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715E
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	23	24	0	5	0	15	0	87	39	0	0	8	21	0	0	222
07:15 AM	0	24	23	0	2	2	17	0	83	46	1	0	8	22	0	0	228
07:30 AM	0	40	13	0	12	5	23	0	82	61	2	0	3	26	0	0	267
07:45 AM	0	27	13	0	4	2	23	0	95	57	1	0	5	17	0	0	244
Total	0	114	73	0	23	9	78	0	347	203	4	0	24	86	0	0	961
08:00 AM	0	34	8	0	5	3	24	0	72	44	5	0	8	15	0	0	218
08:15 AM	0	24	14	0	5	0	20	0	86	42	2	0	4	14	0	0	211
08:30 AM	0	29	7	0	3	3	16	0	90	38	3	0	3	20	1	0	213
08:45 AM	0	26	12	0	2	2	25	0	57	30	4	0	2	7	1	0	168
Total	0	113	41	0	15	8	85	0	305	154	14	0	17	56	2	0	810
Grand Total	0	227	114	0	38	17	163	0	652	357	18	0	41	142	2	0	1771
Apprch %	0	66.6	33.4	0	17.4	7.8	74.8	0	63.5	34.8	1.8	0	22.2	76.8	1.1	0	
Total %	0	12.8	6.4	0	2.1	1	9.2	0	36.8	20.2	1	0	2.3	8	0.1	0	
Cars & Peds	0	225	114	0	36	16	160	0	643	348	18	0	39	142	2	0	1743
% Cars & Peds	0	99.1	100	0	94.7	94.1	98.2	0	98.6	97.5	100	0	95.1	100	100	0	98.4
Trucks & Buses	0	2	0	0	2	1	3	0	9	8	0	0	2	0	0	0	27
% Trucks & Buses	0	0.9	0	0	5.3	5.9	1.8	0	1.4	2.2	0	0	4.9	0	0	0	1.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.1

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	23	**24**	0	47	5	0	15	0	20	87	39	0	0	126	**8**	21	0	0	29	222
07:15 AM	0	24	23	0	47	2	2	17	0	21	83	46	1	0	130	8	22	0	0	**30**	228
07:30 AM	0	**40**	13	0	**53**	**12**	**5**	**23**	0	**40**	82	**61**	**2**	0	145	3	**26**	0	0	29	**267**
07:45 AM	0	27	13	0	40	4	2	23	0	29	**95**	57	1	0	**153**	5	17	0	0	22	244
Total Volume	0	114	73	0	187	23	9	78	0	110	347	203	4	0	554	24	86	0	0	110	961
% App. Total	0	61	39	0		20.9	8.2	70.9	0		62.6	36.6	0.7	0		21.8	78.2	0	0		
PHF	.000	.713	.760	.000	.882	.479	.450	.848	.000	.688	.913	.832	.500	.000	.905	.750	.827	.000	.000	.917	.900
Cars & Peds	0	113	73	0	186	21	8	76	0	105	341	199	4	0	544	24	86	0	0	110	945
% Cars & Peds	0	99.1	100	0	99.5	91.3	88.9	97.4	0	95.5	98.3	98.0	100	0	98.2	100	100	0	0	100	98.3
Trucks & Buses	0	1	0	0	1	2	1	2	0	5	6	3	0	0	9	0	0	0	0	0	15
% Trucks & Buses	0	0.9	0	0	0.5	8.7	11.1	2.6	0	4.5	1.7	1.5	0	0	1.6	0	0	0	0	0	1.6
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0.2	0	0	0	0	0	0.1

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N/S: Middlesex Street/Exchange Street
E/W: Orchard (Route 115)/Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715E
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	23	24	0	5	0	13	0	86	37	0	0	8	21	0	0	217
07:15 AM	0	23	23	0	2	1	17	0	83	45	1	0	8	22	0	0	225
07:30 AM	0	40	13	0	11	5	23	0	80	61	2	0	3	26	0	0	264
07:45 AM	0	27	13	0	3	2	23	0	92	56	1	0	5	17	0	0	239
Total	0	113	73	0	21	8	76	0	341	199	4	0	24	86	0	0	945
08:00 AM	0	33	8	0	5	3	24	0	71	43	5	0	7	15	0	0	214
08:15 AM	0	24	14	0	5	0	19	0	85	40	2	0	4	14	0	0	207
08:30 AM	0	29	7	0	3	3	16	0	90	37	3	0	2	20	1	0	211
08:45 AM	0	26	12	0	2	2	25	0	56	29	4	0	2	7	1	0	166
Total	0	112	41	0	15	8	84	0	302	149	14	0	15	56	2	0	798
Grand Total	0	225	114	0	36	16	160	0	643	348	18	0	39	142	2	0	1743
Apprch %	0	66.4	33.6	0	17	7.5	75.5	0	63.7	34.5	1.8	0	21.3	77.6	1.1	0	
Total %	0	12.9	6.5	0	2.1	0.9	9.2	0	36.9	20	1	0	2.2	8.1	0.1	0	

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	23	**24**	0	47	5	0	13	0	18	86	37	0	0	123	**8**	21	0	0	29	217
07:15 AM	0	23	23	0	46	2	1	17	0	20	83	45	1	0	129	8	22	0	0	**30**	225
07:30 AM	0	**40**	13	0	**53**	**11**	**5**	**23**	0	**39**	80	**61**	**2**	0	143	3	**26**	0	0	29	**264**
07:45 AM	0	27	13	0	40	3	2	23	0	28	**92**	56	1	0	**149**	5	17	0	0	22	239
Total Volume	0	113	73	0	186	21	8	76	0	105	341	199	4	0	544	24	86	0	0	110	945
% App. Total	0	60.8	39.2	0		20	7.6	72.4	0		62.7	36.6	0.7	0		21.8	78.2	0	0		
PHF	.000	.706	.760	.000	.877	.477	.400	.826	.000	.673	.927	.816	.500	.000	.913	.750	.827	.000	.000	.917	.895

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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715E
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Trucks & Buses

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0	5
07:15 AM	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3
07:30 AM	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	3
07:45 AM	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	4
Total	0	1	0	0	2	1	2	0	6	3	0	0	0	0	0	0	15
08:00 AM	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	4
08:15 AM	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Total	0	1	0	0	0	0	1	0	3	5	0	0	2	0	0	0	12
Grand Total	0	2	0	0	2	1	3	0	9	8	0	0	2	0	0	0	27
Apprch %	0	100	0	0	33.3	16.7	50	0	52.9	47.1	0	0	100	0	0	0	
Total %	0	7.4	0	0	7.4	3.7	11.1	0	33.3	29.6	0	0	7.4	0	0	0	

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	**2**	0	**2**	1	**2**	0	0	**3**	0	0	0	0	0	**5**
07:15 AM	0	**1**	0	0	**1**	0	**1**	0	0	1	0	1	0	0	1	0	0	0	0	0	3
07:30 AM	0	0	0	0	0	**1**	0	0	0	1	2	0	0	0	2	0	0	0	0	0	3
07:45 AM	0	0	0	0	0	1	0	0	0	1	**3**	0	0	0	3	0	0	0	0	0	4
Total Volume	0	1	0	0	1	2	1	2	0	5	6	3	0	0	9	0	0	0	0	0	15
% App. Total	0	100	0	0		40	20	40	0		66.7	33.3	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.500	.250	.250	.000	.625	.500	.375	.000	.000	.750	.000	.000	.000	.000	.000	.750

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File Name : 04715E
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Bikes by Direction

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% App. Total	0	0	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.250

Transportation Data Corporation

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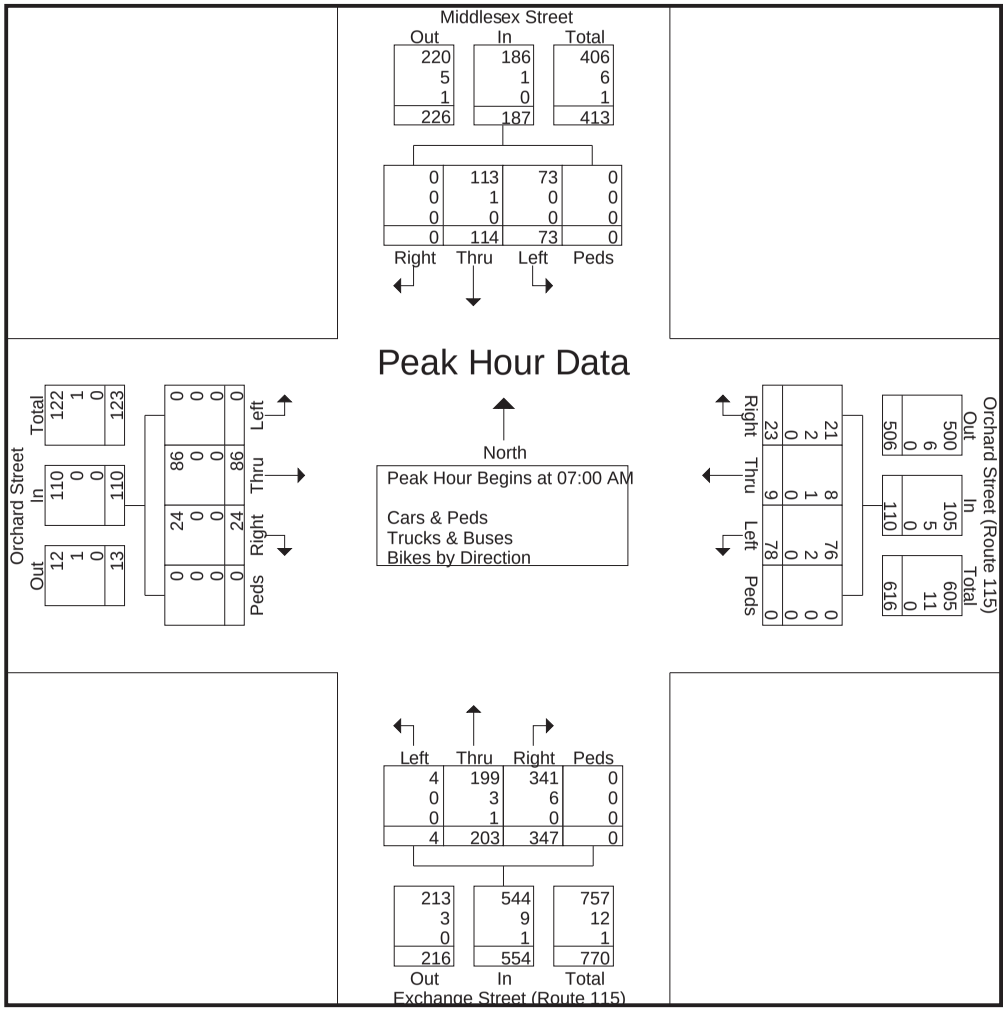
N/S: Middlesex Street/Exchange Street
E/W: Orchard (Route 115)/Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715E
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	23	**24**	0	47	5	0	15	0	20	87	39	0	0	126	**8**	21	0	0	29	222
07:15 AM	0	24	23	0	47	2	2	17	0	21	83	46	1	0	130	8	22	0	0	**30**	228
07:30 AM	0	**40**	13	0	**53**	**12**	**5**	**23**	0	**40**	82	**61**	**2**	0	145	3	**26**	0	0	29	**267**
07:45 AM	0	27	13	0	40	4	2	23	0	29	**95**	57	1	0	**153**	5	17	0	0	22	244
Total Volume	0	114	73	0	187	23	9	78	0	110	347	203	4	0	554	24	86	0	0	110	961
% App. Total	0	61	39	0		20.9	8.2	70.9	0		62.6	36.6	0.7	0		21.8	78.2	0	0		
PHF	.000	.713	.760	.000	.882	.479	.450	.848	.000	.688	.913	.832	.500	.000	.905	.750	.827	.000	.000	.917	.900
Cars & Peds	0	113	73	0	186	21	8	76	0	105	341	199	4	0	544	24	86	0	0	110	945
% Cars & Peds	0	99.1	100	0	99.5	91.3	88.9	97.4	0	95.5	98.3	98.0	100	0	98.2	100	100	0	0	100	98.3
Trucks & Buses	0	1	0	0	1	2	1	2	0	5	6	3	0	0	9	0	0	0	0	0	15
% Trucks & Buses	0	0.9	0	0	0.5	8.7	11.1	2.6	0	4.5	1.7	1.5	0	0	1.6	0	0	0	0	0	1.6
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0.2	0	0	0	0	0	0.1



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N/S: Middlesex Street/Exchange Street
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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715EE
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	40	9	0	15	15	76	0	25	33	7	0	3	1	0	0	224
04:15 PM	0	47	8	0	13	16	59	0	17	30	2	0	3	3	1	0	199
04:30 PM	0	51	4	0	14	12	72	0	15	31	5	0	2	0	0	0	206
04:45 PM	0	49	5	0	17	13	93	0	16	28	5	0	5	5	0	0	236
Total	0	187	26	0	59	56	300	0	73	122	19	0	13	9	1	0	865
05:00 PM	1	39	4	0	15	22	68	0	27	40	5	0	3	5	0	0	229
05:15 PM	0	69	12	0	3	19	106	0	22	28	4	0	5	7	1	0	276
05:30 PM	0	49	11	0	16	18	77	0	21	41	9	0	2	5	0	0	249
05:45 PM	0	40	8	0	13	22	87	0	12	18	5	0	3	12	0	0	220
Total	1	197	35	0	47	81	338	0	82	127	23	0	13	29	1	0	974
Grand Total	1	384	61	0	106	137	638	0	155	249	42	0	26	38	2	0	1839
Apprch %	0.2	86.1	13.7	0	12	15.6	72.4	0	34.8	55.8	9.4	0	39.4	57.6	3	0	
Total %	0.1	20.9	3.3	0	5.8	7.4	34.7	0	8.4	13.5	2.3	0	1.4	2.1	0.1	0	
Cars & Peds	1	381	59	0	106	137	636	0	155	249	42	0	26	38	2	0	1832
% Cars & Peds	100	99.2	96.7	0	100	100	99.7	0	100	100	100	0	100	100	100	0	99.6
Trucks & Buses	0	3	2	0	0	0	2	0	0	0	0	0	0	0	0	0	7
% Trucks & Buses	0	0.8	3.3	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0.4
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	49	5	0	54	**17**	13	93	0	123	16	28	5	0	49	**5**	5	0	0	10	236
05:00 PM	**1**	39	4	0	44	15	**22**	68	0	105	**27**	40	5	0	**72**	3	5	0	0	8	229
05:15 PM	0	**69**	**12**	0	**81**	3	19	**106**	0	**128**	22	28	4	0	54	5	**7**	**1**	0	**13**	**276**
05:30 PM	0	49	11	0	60	16	18	77	0	111	21	**41**	**9**	0	71	2	5	0	0	7	249
Total Volume	1	206	32	0	239	51	72	344	0	467	86	137	23	0	246	15	22	1	0	38	990
% App. Total	0.4	86.2	13.4	0		10.9	15.4	73.7	0		35	55.7	9.3	0		39.5	57.9	2.6	0		
PHF	.250	.746	.667	.000	.738	.750	.818	.811	.000	.912	.796	.835	.639	.000	.854	.750	.786	.250	.000	.731	.897
Cars & Peds	1	206	31	0	238	51	72	343	0	466	86	137	23	0	246	15	22	1	0	38	988
% Cars & Peds	100	100	96.9	0	99.6	100	100	99.7	0	99.8	100	100	100	0	100	100	100	100	0	100	99.8
Trucks & Buses	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
% Trucks & Buses	0	0	3.1	0	0.4	0	0	0.3	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

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N/S: Middlesex Street/Exchange Street
E/W: Orchard (Route 115)/Orchard Street
City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715EE
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Cars & Peds

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	39	8	0	15	15	76	0	25	33	7	0	3	1	0	0	222
04:15 PM	0	46	8	0	13	16	58	0	17	30	2	0	3	3	1	0	197
04:30 PM	0	51	4	0	14	12	72	0	15	31	5	0	2	0	0	0	206
04:45 PM	0	49	5	0	17	13	93	0	16	28	5	0	5	5	0	0	236
Total	0	185	25	0	59	56	299	0	73	122	19	0	13	9	1	0	861
05:00 PM	1	39	3	0	15	22	67	0	27	40	5	0	3	5	0	0	227
05:15 PM	0	69	12	0	3	19	106	0	22	28	4	0	5	7	1	0	276
05:30 PM	0	49	11	0	16	18	77	0	21	41	9	0	2	5	0	0	249
05:45 PM	0	39	8	0	13	22	87	0	12	18	5	0	3	12	0	0	219
Total	1	196	34	0	47	81	337	0	82	127	23	0	13	29	1	0	971
Grand Total	1	381	59	0	106	137	636	0	155	249	42	0	26	38	2	0	1832
Apprch %	0.2	86.4	13.4	0	12.1	15.6	72.4	0	34.8	55.8	9.4	0	39.4	57.6	3	0	
Total %	0.1	20.8	3.2	0	5.8	7.5	34.7	0	8.5	13.6	2.3	0	1.4	2.1	0.1	0	

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	49	5	0	54	**17**	13	93	0	123	16	28	5	0	49	**5**	5	0	0	10	236
05:00 PM	**1**	39	3	0	43	15	**22**	67	0	104	**27**	40	5	0	**72**	3	5	0	0	8	227
05:15 PM	0	**69**	**12**	0	**81**	3	19	**106**	0	**128**	22	28	4	0	54	5	**7**	**1**	0	**13**	**276**
05:30 PM	0	49	11	0	60	16	18	77	0	111	21	**41**	**9**	0	71	2	5	0	0	7	249
Total Volume	1	206	31	0	238	51	72	343	0	466	86	137	23	0	246	15	22	1	0	38	988
% App. Total	0.4	86.6	13	0		10.9	15.5	73.6	0		35	55.7	9.3	0		39.5	57.9	2.6	0		
PHF	.250	.746	.646	.000	.735	.750	.818	.809	.000	.910	.796	.835	.639	.000	.854	.750	.786	.250	.000	.731	.895

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City, State: Millis, MA
Client: McM/M. Starkey

File Name : 04715EE
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Trucks & Buses

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:15 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	4
05:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3
Grand Total	0	3	2	0	0	0	2	0	0	0	0	0	0	0	0	0	7
Apprch %	0	60	40	0	0	0	100	0	0	0	0	0	0	0	0	0	
Total %	0	42.9	28.6	0	0	0	28.6	0	0	0	0	0	0	0	0	0	

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	**1**	**1**	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
04:15 PM	0	1	0	0	1	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	1	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4
% App. Total	0	66.7	33.3	0		0	0	100	0		0	0	0	0		0	0	0	0		
PHF	.000	.500	.250	.000	.375	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500

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File Name : 04715EE
Site Code : Y1621211
Start Date : 4/7/2016
Page No : 1

Groups Printed- Bikes by Direction

	Middlesex Street From North				Orchard Street (Route 115) From East				Exchange Street (Route 115) From South				Orchard Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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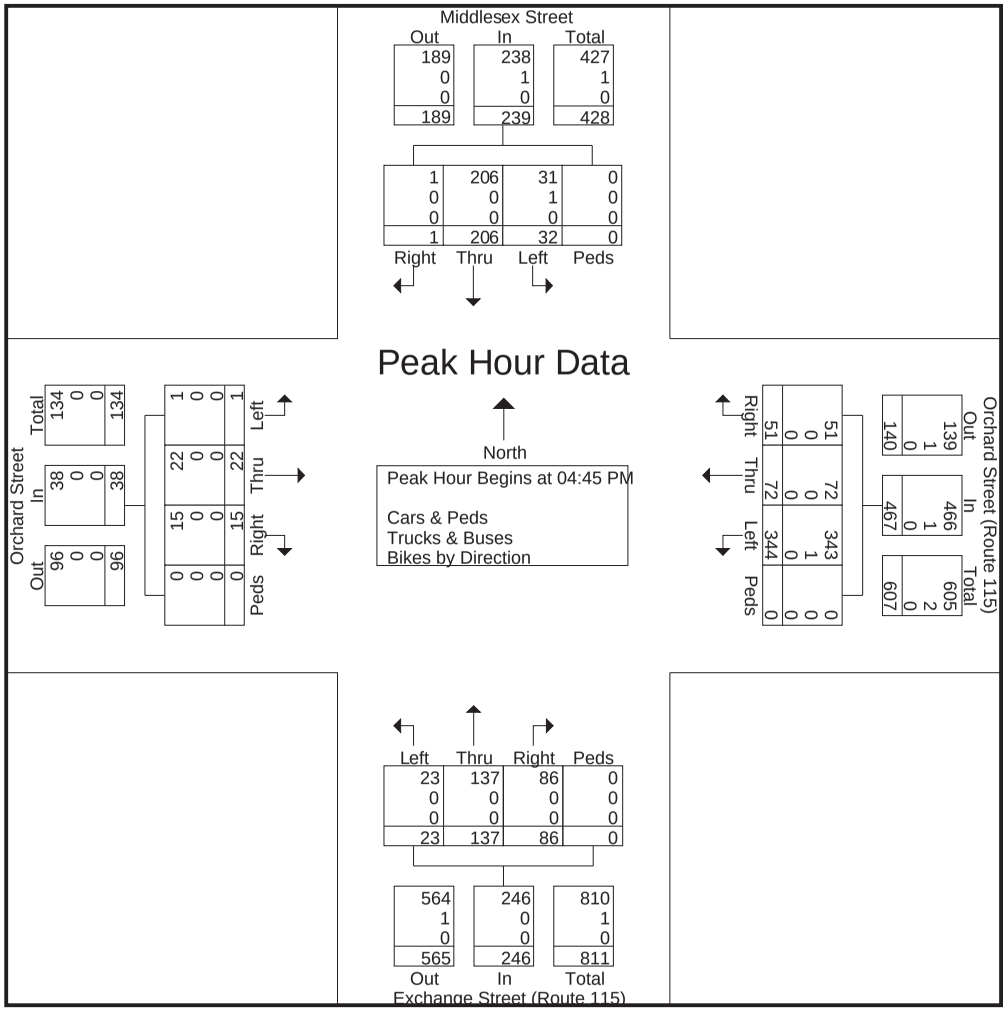
	Middlesex Street From North					Orchard Street (Route 115) From East					Exchange Street (Route 115) From South					Orchard Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	49	5	0	54	**17**	13	93	0	123	16	28	5	0	49	**5**	5	0	0	10	236
05:00 PM	**1**	39	4	0	44	15	**22**	68	0	105	**27**	40	5	0	**72**	3	5	0	0	8	229
05:15 PM	0	**69**	**12**	0	**81**	3	19	**106**	0	**128**	22	28	4	0	54	5	**7**	**1**	0	**13**	**276**
05:30 PM	0	49	11	0	60	16	18	77	0	111	21	**41**	**9**	0	71	2	5	0	0	7	249
Total Volume	1	206	32	0	239	51	72	344	0	467	86	137	23	0	246	15	22	1	0	38	990
% App. Total	0.4	86.2	13.4	0		10.9	15.4	73.7	0		35	55.7	9.3	0		39.5	57.9	2.6	0		
PHF	.250	.746	.667	.000	.738	.750	.818	.811	.000	.912	.796	.835	.639	.000	.854	.750	.786	.250	.000	.731	.897
Cars & Peds	1	206	31	0	238	51	72	343	0	466	86	137	23	0	246	15	22	1	0	38	988
% Cars & Peds	100	100	96.9	0	99.6	100	100	99.7	0	99.8	100	100	100	0	100	100	100	100	0	100	99.8
Trucks & Buses	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
% Trucks & Buses	0	0	3.1	0	0.4	0	0	0.3	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



APPENDIX B

Seasonal Adjustment Data

Seasonal Adjustment

Local ID: 6126 Interstate 495, Franklin, MA

Year	AADT	APR ADT	% ADT
2015	88,584	81,249	-9%
2014	83,722	78,777	-6%
2013	77,245	73,565	-5%
Average	83,184	77,864	-7%

APPENDIX C

MassDOT Crash Data

Crash Summary

	Orchard Street at West Site Drive	Orchard Street at Grove Street/Main Site Drive	Orchard Street at Bullard Lane	Orchard Street at Ridge Street	Orchard Street/Middlesex Street at Exchange Street
Year					
2011	0	0	0	0	0
2012	0	0	0	0	2
2013	0	0	0	0	1
Total	0	0	0	0	3
Type					
Angle	0	0	0	0	2
Rear-end	0	0	0	0	0
Sideswipe	0	0	0	0	1
Head-on	0	0	0	0	0
Other	0	0	0	0	0
Total	0	0	0	0	3
Severity					
Property Damage	0	0	0	0	0
Personal Injury	0	0	0	0	2
Fatality	0	0	0	0	0
Unknown	0	0	0	0	1
Total	0	0	0	0	3
Weather					
Clear	0	0	0	0	2
Cloudy	0	0	0	0	1
Rain	0	0	0	0	0
Snow	0	0	0	0	0
Ice	0	0	0	0	0
Sleet	0	0	0	0	0
Fog	0	0	0	0	0
Unknown	0	0	0	0	0
Total	0	0	0	0	3
Time					
7:00 AM to 9:00 AM	0	0	0	0	1
9:00 AM to 4:00 PM	0	0	0	0	1
4:00 PM to 6:00 PM	0	0	0	0	0
6:00 PM to 7:00 AM	0	0	0	0	1
Total	0	0	0	0	3
Crash Rate	0.00	0.00	0.00	0.00	0.28
District 3 Average	0.65	0.65	0.65	0.65	0.65
State Average	0.58	0.58	0.58	0.58	0.58

Source: MassDOT

APPENDIX D

Traffic Projection Model

TRAFFIC PROJECTION MODEL

Glen Ellen Country Club
Weekday Morning Peak Hour
Millis, MA

Intersection	Dir.	Turn	2016 Counted Volumes	Seasonal Adjustment 0.07	2016 Average Volumes	Balancing Volumes	2016 Existing Balanced Volumes	Background Growth Trips (%/year) 0.75%	Additional Project Trips Southend Farm	Additional Project Trips Athletic Fields	2023 No-Build Volumes	West Site Driveway PERCENT ENTER	West Site Driveway Trips ENTER	West Site Driveway PERCENT EXIT	West Site Driveway Trips EXIT	Main Site Driveway PERCENT ENTER	Main Site Driveway Trips ENTER	Main Site Driveway PERCENT EXIT	Main Site Driveway Trips EXIT	Project Trips TOTAL	2023 Build Volumes
Orchard St at West Site Driveway	EB	L	1		1		1				1	10%	0		0		0		0	0	1
		T	47	3	50		50	3	1		54		0		0	5%	1		0	1	55
	WB	T	19	1	20		20	1	1		22		0		0		0	5%	2	2	24
		R	1		1		1				1	90%	4		0		0		0	4	5
	SB	L	0		0		0				0		0	90%	9		0		0	9	9
		R	0		0		0				0		0	10%	1		0		0	1	1
Orchard St at	EB	L	0		0		0				0		0		0	5%	1		0	1	1
Grove St/Main Site Driveway		T	44	3	47		47	3	1		51		0	90%	9		0		0	9	60
		R	3	0	3		3	0			3		0		0		0		0	0	3
	WB	L	1	0	1		1	0			1		0		0		0		0	0	1
		T	20	1	21		21	1	1		23	90%	4		0		0		0	4	27
		R	0		0		0				0		0		0	90%	24		0	24	24
	NB	L	0	0	0		0	0			0		0		0		0		0	0	0
		T	0		0		0				0		0		0	5%	1		0	1	1
		R	16	1	17		17	1			18		0		0		0		0	0	18
	SB	L	1		1		1				1		0		0		0	90%	45	45	46
		T	0		0		0				0		0		0		0	5%	2	2	2
		R	0		0		0				0		0		0		0	5%	2	2	2
Orchard St at Bullard Ln	EB	L	2	0	2		2	0			2		0		0		0		0	0	2
		T	62	4	66		66	4	1		71		0	90%	9		0	90%	45	54	125
	WB	T	21	1	22		22	1	1		24	90%	4		0	90%	24		0	28	52
		R	5	0	5		5	0			5		0		0		0		0	0	5
	SB	L	5	0	5		5	0			5		0		0		0		0	0	5
		R	5	0	5		5	0			5		0		0		0		0	0	5
Orchard St at Ridge St	EB	L	3	0	3		3	0			3		0	10%	1		0	10%	5	6	9
		T	81	6	87		87	5	1		93		0	60%	6		0	60%	30	36	129
		R	39	3	42		42	2			44		0	20%	2		0	20%	10	12	56
	WB	L	3	0	3		3	0			3		0		0		0		0	0	3
		T	19	1	20		20	1	1		22	60%	2		0	60%	16		0	18	40
		R	1	0	1		1	0			1		0		0		0		0	0	1
	NB	L	10	1	11		11	1			12	20%	1		0	20%	5		0	6	18
		T	30	2	32		32	2			34		0		0		0		0	0	34
		R	13	1	14		14	1			15		0		0		0		0	0	15
	SB	L	2	0	2		2	0			2		0		0		0		0	0	2
		T	14	1	15		15	1			16		0		0		0		0	0	16
		R	0	0	0		0	0			0	10%	1		0	10%	3		0	4	4
Orchard St at Middlesex St	EB	L	0	0	0		0	0			0		0		0		0		0	0	0
		T	80	6	86		86	5	1		92		0	50%	5		0	50%	25	30	122
		R	24	2	26		26	1			27		0	10%	1		0	10%	5	6	33
	WB	T	12	1	13		13	1	1		15	50%	2		0	50%	13		0	15	30
		R	23	2	25		25	1	2		28		0		0		0		0	0	28
	NB	L	9	1	10		10	1			11	10%	0		0	10%	3		0	3	14
		T	208	15	223		223	12			235		0		0		0		0	0	235
	SB	L	57	4	61		61	3	1		65		0		0		0		0	0	65
		T	125	9	134		134	7		1	142		0		0		0		0	0	142
		R	0	0	0		0	0			0		0		0		0		0	0	0
Middlesex St at Exchange St	WB	L	87	6	93		93	5	3		101		0		0		0		0	0	101
	NB	LT		0	0	233	233	13			246	10%	0		0	10%	3		0	3	249
		R	332	23	355		355	19	6	1	381		0		0		0		0	0	381
	SB	T		0	0	160	160	8		1	169		0	10%	1		0	10%	5	6	175
Orchard St at Exchange St	EB	T		0	0	147	147	8	2		157		0	50%	5		0	50%	25	30	187
	WB	L	87	6	93		93	5	3		101		0		0		0		0	0	101
		TR		0	0	38	38	2	3		43	50%	2		0	50%	13		0	15	58
	NB	R	332	23	355		355	19	6	1	381		0		0		0		0	0	381

Peak Hour: 7:15 - 8:15 AM

TRAFFIC PROJECTION MODEL

Glen Ellen Country Club
Weekday Afternoon Peak Hour
Millis, MA

Intersection	Dir.	Turn	2016 Counted Volumes	Seasonal Adjustment 0.07	2016 Average Volumes	Balancing Volumes	2016 Existing Balanced Volumes	Background Growth Trips (%/year) 0.75%	Additional Project Trips Southend Farm	Additional Project Trips Athletic Fields	2023 No-Build Volumes	West Site Driveway PERCENT ENTER	West Site Driveway Trips ENTER	West Site Driveway PERCENT EXIT	West Site Driveway Trips EXIT	Main Site Driveway PERCENT ENTER	Main Site Driveway Trips ENTER	Main Site Driveway PERCENT EXIT	Main Site Driveway Trips EXIT	Project Trips TOTAL	2023 Build Volumes
Orchard St at West Site Driveway	EB	L	4		4		4				4	10%	1		0		0		0	1	5
		T	24	2	26		26	1	2	1	30		0		0	5%	2		0	2	32
	WB	T	71	5	76		76	4	2	1	83		0		0		0	5%	2	2	85
		R	0		0		0				0	90%	9		0		0		0	9	9
	SB	L	0		0		0				0		0	90%	6		0		0	6	6
		R	1		1		1				1		0	10%	1		0		0	1	2
Orchard St at	EB	L	1		1		1				1		0		0	5%	2		0	2	3
Grove St/Main Site Driveway		T	23	2	25		25	1	2	1	29		0	90%	6		0		0	6	35
		R	0	0	0		0	0			0		0		0		0		0	0	0
	WB	L	11	1	12		12	1			13		0		0		0		0	0	13
		T	70	5	75		75	4	2	1	82	90%	9		0		0		0	9	91
		R	1		1		1				1		0		0	90%	39		0	39	40
	NB	L	0	0	0		0	0			0		0		0		0		0	0	0
		T	0		0		0				0		0		0	5%	2		0	2	2
		R	9	1	10		10	1			11		0		0		0		0	0	11
	SB	L	0		0		0				0		0		0		0	90%	30	30	30
		T	0		0		0				0		0		0		0	5%	2	2	2
		R	1		1		1				1		0		0		0	5%	2	2	3
Orchard St at Bullard Ln	EB	L	5	0	5		5	0			5		0		0		0		0	0	5
		T	25	2	27		27	1	2	1	31		0	90%	6		0	90%	30	36	67
	WB	T	73	5	78		78	4	2	1	85	90%	9		0	90%	39		0	48	133
		R	2	0	2		2	0			2		0		0		0		0	0	2
	SB	L	2	0	2		2	0			2		0		0		0		0	0	2
		R	10	1	11		11	1			12		0		0		0		0	0	12
Orchard St at Ridge St	EB	L	3	0	3		3	0			3		0	10%	1		0	10%	3	4	7
		T	26	2	28		28	2	2	1	33		0	60%	4		0	60%	20	24	57
		R	20	1	21		21	1			22		0	20%	1		0	20%	7	8	30
	WB	L	18	1	19		19	1			20		0		0		0		0	0	20
		T	80	6	86		86	5	2	1	94	60%	6		0	60%	26		0	32	126
		R	6	0	6		6	0			6		0		0		0		0	0	6
	NB	L	25	2	27		27	1			28	20%	2		0	20%	9		0	11	39
		T	12	1	13		13	1			14		0		0		0		0	0	14
		R	12	1	13		13	1			14		0		0		0		0	0	14
	SB	L	3	0	3		3	0			3		0		0		0		0	0	3
		T	29	2	31		31	2			33		0		0		0		0	0	33
		R	6	0	6		6	0			6	10%	1		0	10%	4		0	5	11
Orchard St at Middlesex St	EB	L	1	0	1		1	0			1		0		0		0		0	0	1
		T	29	2	31		31	2	2		35		0	50%	3		0	50%	17	20	55
		R	13	1	14		14	1		1	16		0	10%	1		0	10%	3	4	20
	WB	T	81	6	87		87	5	2		94	50%	5		0	50%	22		0	27	121
		R	47	3	50		50	3	6		59		0		0		0		0	0	59
	NB	L	23	2	25		25	1		1	27	10%	1		0	10%	4		0	5	32
		T	127	9	136		136	7		5	148		0		0		0		0	0	148
	SB	L	35	2	37		37	2	3		42		0		0		0		0	0	42
		T	197	14	211		211	11		8	230		0		0		0		0	0	230
		R	1	0	1		1	0			1		0		0		0		0	0	1
Middlesex St at Exchange St	WB	L	338	24	362		362	19	6	15	402		0		0		0		0	0	402
	NB	LT		0	0	161	161	8		6	175	10%	1		0	10%	4		0	5	180
		R	82	6	88		88	5	6	6	105		0		0		0		0	0	105
	SB	T		0	0	225	225	12		9	246		0	10%	1		0	10%	3	4	250
Orchard St at Exchange St	EB	T		0	0	68	68	4	5		77		0	50%	3		0	50%	17	20	97
	WB	L	338	24	362		362	19	6	15	402		0		0		0		0	0	402
		TR		0	0	137	137	8	8		153	50%	5		0	50%	22		0	27	180
	NB	R	82	6	88		88	5	6	6	105		0		0		0		0	0	105

Peak Hour: 5:00 - 6:00 PM

APPENDIX E

Journey to Work Data

U. S. Census 2010 Journey to Work Data
Glen Ellen Country Club
Millis, Massachusetts

	Place of Residence	County of Work	Town/City of Work	Number of Workers	Percent	Assigned Route(s)		
1	Millis town Norfolk Co. MA	Norfolk County	Millis town	642	19.9%	Middlesex Street South	Ridge Street South	
2	Millis town Norfolk Co. MA	Suffolk County	Boston city	408	12.7%	Orchard Street East		
3	Millis town Norfolk Co. MA	Middlesex County	Natick town	251	7.8%	Orchard Street East		
4	Millis town Norfolk Co. MA	Middlesex County	Newton city	250	7.8%	Orchard Street East		
5	Millis town Norfolk Co. MA	Middlesex County	Framingham town	239	7.4%	Ridge Street North		
6	Millis town Norfolk Co. MA	Norfolk County	Medfield town	129	4.0%	Orchard Street East	Ridge Street South	
7	Millis town Norfolk Co. MA	Norfolk County	Wellesley town	98	3.0%	Orchard Street East		
8	Millis town Norfolk Co. MA	Norfolk County	Medway town	94	2.9%	Grove Street		
9	Millis town Norfolk Co. MA	Norfolk County	Needham town	92	2.9%	Orchard Street East		
10	Millis town Norfolk Co. MA	Middlesex County	Waltham city	89	2.8%	Orchard Street East		
11	Millis town Norfolk Co. MA	Middlesex County	Cambridge city	88	2.7%	Orchard Street East		
12	Millis town Norfolk Co. MA	Norfolk County	Walpole town	86	2.7%	Orchard Street East	Middlesex Street South	Ridge Street South
13	Millis town Norfolk Co. MA	Norfolk County	Canton town	84	2.6%	Orchard Street East	Ridge Street South	
14	Millis town Norfolk Co. MA	Norfolk County	Norwood town	84	2.6%	Orchard Street East	Ridge Street South	
15	Millis town Norfolk Co. MA	Norfolk County	Norfolk town	77	2.4%	Middlesex Street South	Ridge Street South	
16	Millis town Norfolk Co. MA	Middlesex County	Weston town	71	2.2%	Orchard Street East		
17	Millis town Norfolk Co. MA	Norfolk County	Franklin Town city	66	2.0%	Grove Street		
18	Millis town Norfolk Co. MA	Norfolk County	Stoughton town	66	2.0%	Orchard Street East	Ridge Street South	
19	Millis town Norfolk Co. MA	Middlesex County	Holliston town	60	1.9%	Orchard Street West		
20	Millis town Norfolk Co. MA	Norfolk County	Dover town	53	1.6%	Orchard Street East		
21	Millis town Norfolk Co. MA	Norfolk County	Westwood town	53	1.6%	Orchard Street East	Ridge Street South	
22	Millis town Norfolk Co. MA	Norfolk County	Weymouth Town city	47	1.5%	Orchard Street East	Ridge Street South	
23	Millis town Norfolk Co. MA	Middlesex County	Marlborough city	40	1.2%	Orchard Street West		
24	Millis town Norfolk Co. MA	Norfolk County	Dedham town	28	0.9%	Orchard Street East	Ridge Street South	
25	Millis town Norfolk Co. MA	Worcester County	Milford town	28	0.9%	Orchard Street West		
			Total	3,223	100.0%			

Trip Distribution - Residential Trips		**Assumptions**
Orchard Street West	4.0%	5%
Grove Street	4.9%	5%
Orchard Street East	51.9%	50%
Middlesex Street South	7.4%	10%
Ridge Street North	12.1%	10%
Ridge Street South	19.7%	20%
		100%

APPENDIX F

Highway Capacity Manual Methodologies

CAPACITY/LEVEL-OF-SERVICE ANALYSES METHODOLOGY

The detailed capacity/level-of-service analysis contained in this traffic impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual*.(1) By definition, capacity represents "the maximum rate of flow that can reasonably be expected to pass a point on a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions." The level of functioning of an intersection or a uniform section of a lane or roadway can be expressed in terms of levels of service. Level of service (LOS) is defined as "a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers". Such measures include "speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety."

At unsignalized intersections, a methodology for evaluating the relative functioning of intersections controlled by stop or yield signs has been developed, and is based on several assumptions, including:

- Major street flows are not affected by the minor (stop-sign controlled) street movements.
- Left turns from the major street to the minor street are influenced only by opposing major street through flow.
- Minor street left turns are impeded by all major street traffic plus opposing minor street traffic.
- Minor street through traffic is impeded by all major street traffic.
- Minor street right turns are impeded only by the major street traffic coming from the left.

The concept of stop-controlled or yield-controlled intersection analysis is based on the estimate of average total delay on minor streets. The methodology of analysis relies on three elements: the size and distribution of gaps in the major traffic stream, the usefulness of these gaps to the minor stream drivers, and the relative priority of the various traffic streams at the intersection. The results of the analysis provide an estimate of average total delay for the various critical movements at the unsignalized intersections. Correlation between average total delay and the respective levels of service are provided for unsignalized intersections as follows:

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(1) *Transportation Research Board, Highway Capacity Manual 2010, published by the Transportation Research Board, Washington, DC, 2010.*

Unsignalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	> 50

At signalized intersections, an additional element must be considered: time allocation. Level of service is based on the average control delay per vehicle for various movements within the intersection. Volume/capacity relationships also affect the operations of signalized intersections. Thus, both volume/capacity and delay must be considered to evaluate the overall operation of a signalized intersection. Correlation between average delay per vehicle and the respective levels of service are provided for signalized intersections as follows:

Signalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	≤ 10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	> 80

APPENDIX G

2016 Existing Capacity/Level-of-Service Analysis

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	47	3	1	21	0	0	0	17	1	0	0
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	88	88	88	80	80	80	25	25	25
Heavy Vehicles, %	0	0	67	0	5	0	0	0	0	0	0	0
Mvmt Flow	0	52	3	1	24	0	0	0	21	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	24	0	0	56	0	0	80	80	56	91	82	26
Stage 1	-	-	-	-	-	-	54	54	-	26	26	-
Stage 2	-	-	-	-	-	-	26	26	-	65	56	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1604	-	-	1562	-	-	913	814	1016	898	812	1056
Stage 1	-	-	-	-	-	-	963	854	-	997	878	-
Stage 2	-	-	-	-	-	-	997	878	-	951	852	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1601	-	-	1559	-	-	911	813	1014	877	811	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	911	813	-	877	811	-
Stage 1	-	-	-	-	-	-	963	854	-	997	877	-
Stage 2	-	-	-	-	-	-	994	877	-	930	852	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	8.6	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1014	1601	-	-	1559	-	-	877
HCM Lane V/C Ratio	0.021	-	-	-	0.001	-	-	0.005
HCM Control Delay (s)	8.6	0	-	-	7.3	0	-	9.1
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	66	22	5	5	5
Conflicting Peds, #/hr	7	0	0	7	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	94	94	81	81	83	83
Heavy Vehicles, %	0	0	10	0	0	0
Mvmt Flow	2	70	27	6	6	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	33	0	-	0	104	37
Stage 1	-	-	-	-	30	-
Stage 2	-	-	-	-	74	-
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	1592	-	-	-	899	1041
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	954	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1583	-	-	-	898	1035
Mov Cap-2 Maneuver	-	-	-	-	898	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	953	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1583	-	-	-	962
HCM Lane V/C Ratio	0.001	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	86	26	0	13	25	10	223	0	61	134	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	76	76	76	90	90	90	86	86	86
Heavy Vehicles, %	0	0	4	0	8	9	0	1	2	0	2	0
Mvmt Flow	0	99	30	0	17	33	11	248	0	71	156	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	593	568	156	632	568	248	156	0	0	248	0	0
Stage 1	298	298	-	270	270	-	-	-	-	-	-	-
Stage 2	295	270	-	362	298	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.58	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4.072	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	420	435	884	396	424	774	1436	-	-	1330	-	-
Stage 1	715	671	-	740	675	-	-	-	-	-	-	-
Stage 2	718	690	-	661	656	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	369	406	884	296	396	774	1436	-	-	1330	-	-
Mov Cap-2 Maneuver	369	406	-	296	396	-	-	-	-	-	-	-
Stage 1	709	632	-	733	669	-	-	-	-	-	-	-
Stage 2	664	684	-	508	618	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	11.8	0.3	2.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1436	-	-	464	583	1330	-	-
HCM Lane V/C Ratio	0.008	-	-	0.277	0.086	0.053	-	-
HCM Control Delay (s)	7.5	0	-	15.7	11.8	7.9	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.3	0.2	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	50	20	1	0	0
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	83	83	92	92
Heavy Vehicles, %	0	4	5	0	0	0
Mvmt Flow	1	54	24	1	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	25	0	-	0	82	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	57	-
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	1603	-	-	-	925	1057
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1603	-	-	-	924	1057
Mov Cap-2 Maneuver	-	-	-	-	924	-
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	970	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1603	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	7.2	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	147	0	0	355	93	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	90	90	76	76
Heavy Vehicles, %	0	4	0	2	0	8
Mvmt Flow	169	0	0	394	122	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	541	147	172	0	-	0
Stage 1	147	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	6.4	6.24	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.2	-	-	-
Pot Cap-1 Maneuver	506	895	1417	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	506	895	1417	-	-	-
Mov Cap-2 Maneuver	506	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1417	-	506	-	-
HCM Lane V/C Ratio	-	-	0.334	-	-
HCM Control Delay (s)	0	-	15.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.5	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	93	0	233	355	0	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	90	90	86	86
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	122	0	259	394	0	186

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	642	456	0	0	653	0
Stage 1	456	-	-	-	-	-
Stage 2	186	-	-	-	-	-
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	442	609	-	-	943	-
Stage 1	643	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	442	609	-	-	943	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	442	943	-
HCM Lane V/C Ratio	-	-	0.277	-	-
HCM Control Delay (s)	-	-	16.2	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	3	87	42	0	3	20	1	0	11	32	14
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.64	0.64	0.64	0.92	0.66	0.66	0.66
Heavy Vehicles, %	2	0	0	3	2	0	5	0	2	0	3	0
Mvmt Flow	0	4	105	51	0	5	31	2	0	17	48	21
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.9	7.6	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	2%	12%	12%
Vol Thru, %	56%	66%	83%	88%
Vol Right, %	25%	32%	4%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	132	24	17
LT Vol	11	3	3	2
Through Vol	32	87	20	15
RT Vol	14	42	1	0
Lane Flow Rate	86	159	38	34
Geometry Grp	1	1	1	1
Degree of Util (X)	0.102	0.174	0.045	0.05
Departure Headway (Hd)	4.259	3.95	4.346	5.293
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	846	892	828	680
Service Time	2.261	2.048	2.352	3.297
HCM Lane V/C Ratio	0.102	0.178	0.046	0.05
HCM Control Delay	7.7	7.9	7.6	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	15	0
Peak Hour Factor	0.92	0.50	0.50	0.50
Heavy Vehicles, %	2	50	0	0
Mvmt Flow	0	4	30	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.6
HCM LOS	A

Lane

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	25	0	12	75	1	0	0	10	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	89	89	89	75	75	75	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	37	0	13	84	1	0	0	13	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	37	0	0	154	152	37	159	152	85
Stage 1	-	-	-	-	-	-	40	40	-	112	112	-
Stage 2	-	-	-	-	-	-	114	112	-	47	40	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1524	-	-	1587	-	-	817	743	1041	811	743	980
Stage 1	-	-	-	-	-	-	980	866	-	898	807	-
Stage 2	-	-	-	-	-	-	896	807	-	972	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1587	-	-	807	736	1041	795	736	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	807	736	-	795	736	-
Stage 1	-	-	-	-	-	-	979	865	-	897	800	-
Stage 2	-	-	-	-	-	-	884	800	-	959	865	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	8.5	8.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1041	1524	-	-	1587	-	-	980
HCM Lane V/C Ratio	0.013	0.001	-	-	0.008	-	-	0.004
HCM Control Delay (s)	8.5	7.4	0	-	7.3	0	-	8.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	27	78	2	2	11
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	83	83	94	94	60	60
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	33	83	2	3	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	85	0	-	0	129	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	45	-
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	1524	-	-	-	870	981
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1524	-	-	-	867	981
Mov Cap-2 Maneuver	-	-	-	-	867	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	979	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1524	-	-	-	962
HCM Lane V/C Ratio	0.004	-	-	-	0.023
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	31	14	0	87	50	25	136	0	37	211	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	91	91	91	81	81	81	72	72	72
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	3	1	0
Mvmt Flow	1	43	19	0	96	55	31	168	0	51	293	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	702	627	294	658	627	168	294	0	0	168	0	0
Stage 1	397	397	-	230	230	-	-	-	-	-	-	-
Stage 2	305	230	-	428	397	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.51	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.009	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	355	403	750	380	401	881	1279	-	-	1404	-	-
Stage 1	633	607	-	777	716	-	-	-	-	-	-	-
Stage 2	709	718	-	609	605	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	254	375	750	320	373	881	1279	-	-	1404	-	-
Mov Cap-2 Maneuver	254	375	-	320	373	-	-	-	-	-	-	-
Stage 1	616	581	-	756	697	-	-	-	-	-	-	-
Stage 2	558	699	-	526	579	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	16.2	1.2	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1279	-	-	437	472	1404	-	-
HCM Lane V/C Ratio	0.024	-	-	0.146	0.319	0.037	-	-
HCM Control Delay (s)	7.9	0	-	14.6	16.2	7.7	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.4	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	4	26	76	0	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	70	70	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	37	99	0	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	99	0	-	0	148	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	49	-
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	1507	-	-	-	849	962
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1507	-	-	-	846	962
Mov Cap-2 Maneuver	-	-	-	-	846	-
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	975	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1507	-	-	-	962
HCM Lane V/C Ratio	0.004	-	-	-	0.004
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	68	0	0	88	362	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	81	81	91	91
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	94	0	0	109	398	151

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	582	473	548	0	-	0
Stage 1	473	-	-	-	-	-
Stage 2	109	-	-	-	-	-
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	479	595	1032	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	479	595	1032	-	-	-
Mov Cap-2 Maneuver	479	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	921	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1032	-	479	-	-
HCM Lane V/C Ratio	-	-	0.197	-	-
HCM Control Delay (s)	0	-	14.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	14.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	362	0	161	88	0	225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	81	81	72	72
Heavy Vehicles, %	0	1	0	0	3	1
Mvmt Flow	398	0	199	109	0	312

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	566	253	0	0	307	0
Stage 1	253	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.4	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	489	788	-	-	1248	-
Stage 1	794	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	489	788	-	-	1248	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	746	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.2	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	489	1248	-
HCM Lane V/C Ratio	-	-	0.814	-	-
HCM Control Delay (s)	-	-	37.2	0	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	7.8	0	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	3	28	21	0	19	86	6	0	27	13	13
Peak Hour Factor	0.92	0.72	0.72	0.72	0.92	0.90	0.90	0.90	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	4	39	29	0	21	96	7	0	31	15	15
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.4	8	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	51%	6%	17%	7%
Vol Thru, %	25%	54%	77%	78%
Vol Right, %	25%	40%	5%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	53	52	111	40
LT Vol	27	3	19	3
Through Vol	13	28	86	31
RT Vol	13	21	6	6
Lane Flow Rate	60	72	123	59
Geometry Grp	1	1	1	1
Degree of Util (X)	0.073	0.08	0.143	0.071
Departure Headway (Hd)	4.349	4.076	4.164	4.321
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	829	884	849	834
Service Time	2.35	2.076	2.252	2.323
HCM Lane V/C Ratio	0.072	0.081	0.145	0.071
HCM Control Delay	7.7	7.4	8	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.5	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	3	31	6
Peak Hour Factor	0.92	0.68	0.68	0.68
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	4	46	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.7
HCM LOS	A

Lane

APPENDIX H

2023 No Build Capacity/Level-of-Service Analysis

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	51	3	1	23	0	0	0	18	1	0	0
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	88	88	88	80	80	80	25	25	25
Heavy Vehicles, %	0	0	67	0	5	0	0	0	0	0	0	0
Mvmt Flow	0	57	3	1	26	0	0	0	22	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	26	0	0	60	0	0	86	86	60	98	88	28
Stage 1	-	-	-	-	-	-	58	58	-	28	28	-
Stage 2	-	-	-	-	-	-	28	28	-	70	60	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1601	-	-	1556	-	-	905	808	1011	889	806	1053
Stage 1	-	-	-	-	-	-	959	851	-	994	876	-
Stage 2	-	-	-	-	-	-	994	876	-	945	849	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1598	-	-	1553	-	-	903	807	1009	867	805	1051
Mov Cap-2 Maneuver	-	-	-	-	-	-	903	807	-	867	805	-
Stage 1	-	-	-	-	-	-	959	851	-	994	875	-
Stage 2	-	-	-	-	-	-	991	875	-	922	849	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	8.6	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1009	1598	-	-	1553	-	-	867
HCM Lane V/C Ratio	0.022	-	-	-	0.001	-	-	0.005
HCM Control Delay (s)	8.6	0	-	-	7.3	0	-	9.2
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	71	24	5	5	5
Conflicting Peds, #/hr	7	0	0	7	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	94	94	81	81	83	83
Heavy Vehicles, %	0	0	10	0	0	0
Mvmt Flow	2	76	30	6	6	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	36	0	-	0	113	40
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	80	-
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	1588	-	-	-	888	1037
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1579	-	-	-	887	1031
Mov Cap-2 Maneuver	-	-	-	-	887	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	947	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	954
HCM Lane V/C Ratio	0.001	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	92	27	0	15	28	11	235	0	65	142	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	76	76	76	90	90	90	86	86	86
Heavy Vehicles, %	0	0	4	0	8	9	0	1	2	0	2	0
Mvmt Flow	0	106	31	0	20	37	12	261	0	76	165	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	630	602	165	671	602	261	165	0	0	261	0	0
Stage 1	316	316	-	286	286	-	-	-	-	-	-	-
Stage 2	314	286	-	385	316	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.58	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4.072	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	397	416	874	373	406	761	1426	-	-	1315	-	-
Stage 1	699	659	-	726	664	-	-	-	-	-	-	-
Stage 2	701	679	-	642	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	342	385	874	268	376	761	1426	-	-	1315	-	-
Mov Cap-2 Maneuver	342	385	-	268	376	-	-	-	-	-	-	-
Stage 1	692	617	-	719	657	-	-	-	-	-	-	-
Stage 2	641	672	-	480	603	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	12.1	0.3	2.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	441	561	1315	-	-
HCM Lane V/C Ratio	0.009	-	-	0.31	0.101	0.057	-	-
HCM Control Delay (s)	7.5	0	-	16.8	12.1	7.9	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.3	0.3	0.2	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	54	22	1	0	0
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	83	83	92	92
Heavy Vehicles, %	0	4	5	0	0	0
Mvmt Flow	1	59	27	1	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	28	0	-	0	88	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	61	-
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	1599	-	-	-	918	1054
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	967	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1599	-	-	-	917	1054
Mov Cap-2 Maneuver	-	-	-	-	917	-
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	966	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1599	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	157	0	0	381	101	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	90	90	76	76
Heavy Vehicles, %	0	4	0	2	0	8
Mvmt Flow	180	0	0	423	133	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	584	161	189	0	-	0
Stage 1	161	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Critical Hdwy	6.4	6.24	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.2	-	-	-
Pot Cap-1 Maneuver	477	879	1397	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	879	1397	-	-	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	665	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1397	-	477	-	-
HCM Lane V/C Ratio	-	-	0.378	-	-
HCM Control Delay (s)	0	-	17.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.7	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	101	0	246	381	0	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	90	90	86	86
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	133	0	273	423	0	197

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	682	485	0	0	697	0
Stage 1	485	-	-	-	-	-
Stage 2	197	-	-	-	-	-
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	419	586	-	-	909	-
Stage 1	623	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	419	586	-	-	909	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	841	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	419	909	-
HCM Lane V/C Ratio	-	-	0.317	-	-
HCM Control Delay (s)	-	-	17.5	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.3	0	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	3	93	44	0	3	22	1	0	12	34	15
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.64	0.64	0.64	0.92	0.66	0.66	0.66
Heavy Vehicles, %	2	0	0	3	2	0	5	0	2	0	3	0
Mvmt Flow	0	4	112	53	0	5	34	2	0	18	52	23
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8	7.6	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	2%	12%	11%
Vol Thru, %	56%	66%	85%	89%
Vol Right, %	25%	31%	4%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	140	26	18
LT Vol	12	3	3	2
Through Vol	34	93	22	16
RT Vol	15	44	1	0
Lane Flow Rate	92	169	41	36
Geometry Grp	1	1	1	1
Degree of Util (X)	0.11	0.186	0.049	0.053
Departure Headway (Hd)	4.293	4.075	4.377	5.33
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	839	886	821	675
Service Time	2.296	2.075	2.385	3.335
HCM Lane V/C Ratio	0.11	0.191	0.05	0.053
HCM Control Delay	7.8	8	7.6	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.7	0.2	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	16	0
Peak Hour Factor	0.92	0.50	0.50	0.50
Heavy Vehicles, %	2	50	0	0
Mvmt Flow	0	4	32	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.6
HCM LOS	A

Lane

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	29	0	13	82	1	0	0	11	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	89	89	89	75	75	75	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	43	0	15	92	1	0	0	15	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	93	0	0	43	0	0	170	168	43	176	168	93
Stage 1	-	-	-	-	-	-	46	46	-	122	122	-
Stage 2	-	-	-	-	-	-	124	122	-	54	46	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1514	-	-	1579	-	-	798	728	1033	791	728	970
Stage 1	-	-	-	-	-	-	973	861	-	887	799	-
Stage 2	-	-	-	-	-	-	885	799	-	963	861	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1579	-	-	788	720	1033	773	720	970
Mov Cap-2 Maneuver	-	-	-	-	-	-	788	720	-	773	720	-
Stage 1	-	-	-	-	-	-	972	860	-	886	791	-
Stage 2	-	-	-	-	-	-	873	791	-	948	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	8.5	8.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1033	1514	-	-	1579	-	-	970
HCM Lane V/C Ratio	0.014	0.001	-	-	0.009	-	-	0.004
HCM Control Delay (s)	8.5	7.4	0	-	7.3	0	-	8.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	31	85	2	2	12
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	83	83	94	94	60	60
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	37	90	2	3	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	93	0	-	0	140	91
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	49	-
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	1514	-	-	-	858	972
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1514	-	-	-	855	972
Mov Cap-2 Maneuver	-	-	-	-	855	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	975	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1514	-	-	-	953
HCM Lane V/C Ratio	0.004	-	-	-	0.024
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	35	16	0	94	59	27	148	0	42	230	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	91	91	91	81	81	81	72	72	72
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	3	1	0
Mvmt Flow	1	49	22	0	103	65	33	183	0	58	319	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	770	686	320	721	687	183	321	0	0	183	0	0
Stage 1	437	437	-	249	249	-	-	-	-	-	-	-
Stage 2	333	249	-	472	438	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.51	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.009	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	320	373	725	345	371	865	1250	-	-	1386	-	-
Stage 1	602	583	-	759	702	-	-	-	-	-	-	-
Stage 2	685	704	-	576	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	214	344	725	281	342	865	1250	-	-	1386	-	-
Mov Cap-2 Maneuver	214	344	-	281	342	-	-	-	-	-	-	-
Stage 1	585	553	-	737	682	-	-	-	-	-	-	-
Stage 2	522	684	-	483	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	17.9	1.2	1.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1250	-	-	405	446	1386	-	-
HCM Lane V/C Ratio	0.027	-	-	0.178	0.377	0.042	-	-
HCM Control Delay (s)	8	0	-	15.8	17.9	7.7	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1.7	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	4	30	83	0	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	70	70	77	77	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	43	108	0	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	108	0	-	0	162	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	54	-
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	1495	-	-	-	834	951
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	974	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1495	-	-	-	831	951
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	970	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1495	-	-	-	951
HCM Lane V/C Ratio	0.004	-	-	-	0.004
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	77	0	0	105	402	153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	81	81	91	91
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	107	0	0	130	442	168

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	656	526	610	0	-	0
Stage 1	526	-	-	-	-	-
Stage 2	130	-	-	-	-	-
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	433	556	979	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	433	556	979	-	-	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	979	-	433	-	-
HCM Lane V/C Ratio	-	-	0.247	-	-
HCM Control Delay (s)	0	-	16	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Int Delay, s/veh	26.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	402	0	175	105	0	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	81	81	72	72
Heavy Vehicles, %	0	1	0	0	3	1
Mvmt Flow	442	0	216	130	0	342

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	623	281	0	0	346	0
Stage 1	281	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.4	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	453	760	-	-	1207	-
Stage 1	771	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	453	760	-	-	1207	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	724	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	66.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	453	1207	-
HCM Lane V/C Ratio	-	-	0.975	-	-
HCM Control Delay (s)	-	-	66.7	0	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	12.2	0	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	3	33	22	0	20	94	6	0	28	14	14
Peak Hour Factor	0.92	0.72	0.72	0.72	0.92	0.90	0.90	0.90	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	4	46	31	0	22	104	7	0	32	16	16
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.5	8.1	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	5%	17%	7%
Vol Thru, %	25%	57%	78%	79%
Vol Right, %	25%	38%	5%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	58	120	42
LT Vol	28	3	20	3
Through Vol	14	33	94	33
RT Vol	14	22	6	6
Lane Flow Rate	64	81	133	62
Geometry Grp	1	1	1	1
Degree of Util (X)	0.078	0.092	0.155	0.075
Departure Headway (Hd)	4.39	4.108	4.184	4.37
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	820	876	843	823
Service Time	2.396	2.118	2.282	2.377
HCM Lane V/C Ratio	0.078	0.092	0.158	0.075
HCM Control Delay	7.8	7.5	8.1	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.5	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	3	33	6
Peak Hour Factor	0.92	0.68	0.68	0.68
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	4	49	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.7
HCM LOS	A

Lane

APPENDIX I

2023 Build Capacity/Level-of-Service Analysis

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	60	3	1	27	24	0	1	18	46	2	2
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	88	88	88	80	80	80	92	92	92
Heavy Vehicles, %	0	0	67	0	5	0	0	0	0	0	0	0
Mvmt Flow	1	67	3	1	31	27	0	1	22	50	2	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	70	0	0	120	131	70	129	119	46
Stage 1	-	-	-	-	-	-	71	71	-	47	47	-
Stage 2	-	-	-	-	-	-	49	60	-	82	72	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1559	-	-	1544	-	-	860	763	998	849	775	1029
Stage 1	-	-	-	-	-	-	944	840	-	972	860	-
Stage 2	-	-	-	-	-	-	969	849	-	931	839	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1556	-	-	1541	-	-	854	761	996	826	773	1027
Mov Cap-2 Maneuver	-	-	-	-	-	-	854	761	-	826	773	-
Stage 1	-	-	-	-	-	-	943	839	-	971	859	-
Stage 2	-	-	-	-	-	-	962	848	-	906	838	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	8.8	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	980	1556	-	-	1541	-	-	830
HCM Lane V/C Ratio	0.024	0.001	-	-	0.001	-	-	0.065
HCM Control Delay (s)	8.8	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	125	52	5	5	5
Conflicting Peds, #/hr	7	0	0	7	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	94	94	81	81	83	83
Heavy Vehicles, %	0	0	10	0	0	0
Mvmt Flow	2	133	64	6	6	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	70	0	-	0	204	74
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	137	-
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	1544	-	-	-	789	993
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1535	-	-	-	788	987
Mov Cap-2 Maneuver	-	-	-	-	788	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1535	-	-	-	876
HCM Lane V/C Ratio	0.001	-	-	-	0.014
HCM Control Delay (s)	7.3	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	122	33	0	30	28	14	235	0	65	142	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	76	76	76	90	90	90	86	86	86
Heavy Vehicles, %	0	0	4	0	8	9	0	1	2	0	2	0
Mvmt Flow	0	140	38	0	39	37	16	261	0	76	165	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	646	608	165	697	608	261	165	0	0	261	0	0
Stage 1	316	316	-	292	292	-	-	-	-	-	-	-
Stage 2	330	292	-	405	316	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.58	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4.072	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	387	413	874	358	402	761	1426	-	-	1315	-	-
Stage 1	699	659	-	720	660	-	-	-	-	-	-	-
Stage 2	687	675	-	626	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	319	382	874	231	371	761	1426	-	-	1315	-	-
Mov Cap-2 Maneuver	319	382	-	231	371	-	-	-	-	-	-	-
Stage 1	690	617	-	711	651	-	-	-	-	-	-	-
Stage 2	606	666	-	433	603	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	13.6	0.4	2.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	434	493	1315	-	-
HCM Lane V/C Ratio	0.011	-	-	0.411	0.155	0.057	-	-
HCM Control Delay (s)	7.6	0	-	19	13.6	7.9	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2	0.5	0.2	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	55	24	5	9	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	92	92	83	83	92	92
Heavy Vehicles, %	0	4	5	0	0	0
Mvmt Flow	1	60	29	6	10	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	35	0	-	0	94	32
Stage 1	-	-	-	-	32	-
Stage 2	-	-	-	-	62	-
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	1589	-	-	-	911	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1589	-	-	-	910	1048
Mov Cap-2 Maneuver	-	-	-	-	910	-
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1589	-	-	-	922
HCM Lane V/C Ratio	0.001	-	-	-	0.012
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	187	0	0	381	101	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	90	90	76	76
Heavy Vehicles, %	0	4	0	2	0	8
Mvmt Flow	215	0	0	423	133	76

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	594	171	209	0	-	0
Stage 1	171	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Critical Hdwy	6.4	6.24	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.2	-	-	-
Pot Cap-1 Maneuver	471	868	1374	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	471	868	1374	-	-	-
Mov Cap-2 Maneuver	471	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	665	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1374	-	471	-	-
HCM Lane V/C Ratio	-	-	0.456	-	-
HCM Control Delay (s)	0	-	18.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	2.3	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	101	0	249	381	0	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	90	90	86	86
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	133	0	277	423	0	203

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	691	488	0	0	700	0
Stage 1	488	-	-	-	-	-
Stage 2	203	-	-	-	-	-
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	413	584	-	-	906	-
Stage 1	621	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	413	584	-	-	906	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	413	906	-
HCM Lane V/C Ratio	-	-	0.322	-	-
HCM Control Delay (s)	-	-	17.8	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0	-

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	9	129	56	0	3	40	1	0	18	34	15
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.64	0.64	0.64	0.92	0.66	0.66	0.66
Heavy Vehicles, %	2	0	0	3	2	0	5	0	2	0	3	0
Mvmt Flow	0	11	155	67	0	5	62	2	0	27	52	23
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.7	8	8.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	5%	7%	9%
Vol Thru, %	51%	66%	91%	73%
Vol Right, %	22%	29%	2%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	194	44	22
LT Vol	18	9	3	2
Through Vol	34	129	40	16
RT Vol	15	56	1	4
Lane Flow Rate	102	234	69	44
Geometry Grp	1	1	1	1
Degree of Util (X)	0.128	0.271	0.086	0.067
Departure Headway (Hd)	4.544	4.173	4.503	5.449
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	789	862	796	658
Service Time	2.57	2.191	2.527	3.478
HCM Lane V/C Ratio	0.129	0.271	0.087	0.067
HCM Control Delay	8.2	8.7	8	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	1.1	0.3	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	16	4
Peak Hour Factor	0.92	0.50	0.50	0.50
Heavy Vehicles, %	2	50	0	0
Mvmt Flow	0	4	32	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.9
HCM LOS	A

Lane

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	35	0	13	91	40	0	2	11	30	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	89	89	89	75	75	75	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	52	0	15	102	45	0	3	15	33	2	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	52	0	0	218	237	52	224	215	125
Stage 1	-	-	-	-	-	-	61	61	-	154	154	-
Stage 2	-	-	-	-	-	-	157	176	-	70	61	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1447	-	-	1567	-	-	743	667	1021	736	686	931
Stage 1	-	-	-	-	-	-	955	848	-	853	774	-
Stage 2	-	-	-	-	-	-	850	757	-	945	848	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1447	-	-	1567	-	-	731	658	1021	716	677	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	731	658	-	716	677	-
Stage 1	-	-	-	-	-	-	952	845	-	850	766	-
Stage 2	-	-	-	-	-	-	836	749	-	926	845	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.7	8.9	10.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	941	1447	-	-	1567	-	-	728
HCM Lane V/C Ratio	0.018	0.003	-	-	0.009	-	-	0.052
HCM Control Delay (s)	8.9	7.5	0	-	7.3	0	-	10.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	67	133	2	2	12
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	83	83	94	94	60	60
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	81	141	2	3	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	144	0	-	0	236	143
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	93	-
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	1451	-	-	-	757	910
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	936	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1451	-	-	-	754	910
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	932	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1451	-	-	-	884
HCM Lane V/C Ratio	0.004	-	-	-	0.026
HCM Control Delay (s)	7.5	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	55	20	0	121	59	32	148	0	42	230	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	91	91	91	81	81	81	72	72	72
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	3	1	0
Mvmt Flow	1	76	28	0	133	65	40	183	0	58	319	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	798	699	320	751	700	183	321	0	0	183	0	0
Stage 1	437	437	-	262	262	-	-	-	-	-	-	-
Stage 2	361	262	-	489	438	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.51	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.009	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	306	366	725	330	365	865	1250	-	-	1386	-	-
Stage 1	602	583	-	747	693	-	-	-	-	-	-	-
Stage 2	662	695	-	564	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	183	335	725	245	334	865	1250	-	-	1386	-	-
Mov Cap-2 Maneuver	183	335	-	245	334	-	-	-	-	-	-	-
Stage 1	580	553	-	720	668	-	-	-	-	-	-	-
Stage 2	473	670	-	444	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.8	21.1	1.4	1.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1250	-	-	385	418	1386	-	-
HCM Lane V/C Ratio	0.032	-	-	0.274	0.473	0.042	-	-
HCM Control Delay (s)	8	0	-	17.8	21.1	7.7	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	2.5	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	32	85	9	6	2
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	70	70	77	77	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	7	46	110	12	7	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	122	0	-	0	176	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	60	-
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	1478	-	-	-	818	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1478	-	-	-	814	942
Mov Cap-2 Maneuver	-	-	-	-	814	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	963	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1478	-	-	-	843
HCM Lane V/C Ratio	0.005	-	-	-	0.01
HCM Control Delay (s)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	97	0	0	105	402	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	81	81	91	91
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	135	0	0	130	442	198

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	671	541	640	0	-	0
Stage 1	541	-	-	-	-	-
Stage 2	130	-	-	-	-	-
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	425	545	954	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	425	545	954	-	-	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	954	-	425	-	-
HCM Lane V/C Ratio	-	-	0.317	-	-
HCM Control Delay (s)	0	-	17.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-

Intersection	
Int Delay, s/veh	27.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	402	0	180	105	0	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	81	81	72	72
Heavy Vehicles, %	0	1	0	0	3	1
Mvmt Flow	442	0	222	130	0	347

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	634	287	0	0	352	0
Stage 1	287	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Critical Hdwy	6.4	6.21	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	-	-	2.227	-
Pot Cap-1 Maneuver	446	754	-	-	1201	-
Stage 1	766	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	754	-	-	1201	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	71	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	446	1201	-
HCM Lane V/C Ratio	-	-	0.99	-	-
HCM Control Delay (s)	-	-	71	0	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	12.6	0	-

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	7	57	30	0	20	126	6	0	39	14	14
Peak Hour Factor	0.92	0.72	0.72	0.72	0.92	0.90	0.90	0.90	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	10	79	42	0	22	140	7	0	44	16	16
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8	8.5	8.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	58%	7%	13%	6%
Vol Thru, %	21%	61%	83%	70%
Vol Right, %	21%	32%	4%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	94	152	47
LT Vol	39	7	20	3
Through Vol	14	57	126	33
RT Vol	14	30	6	11
Lane Flow Rate	76	131	169	69
Geometry Grp	1	1	1	1
Degree of Util (X)	0.098	0.154	0.206	0.087
Departure Headway (Hd)	4.639	4.247	4.381	4.53
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	774	845	821	791
Service Time	2.663	2.269	2.401	2.555
HCM Lane V/C Ratio	0.098	0.155	0.206	0.087
HCM Control Delay	8.2	8	8.5	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.5	0.8	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	3	33	11
Peak Hour Factor	0.92	0.68	0.68	0.68
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	4	49	16
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8
HCM LOS	A

Lane

APPENDIX J

Capacity/Level-of-Service Analysis

Capacity Analysis Summary
Glen Ellen Country Club
Millis, Massachusetts

Weekday Morning Peak Hour											
			2016 Existing			2023 No Build			2023 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Orchard St at West Site Driveway	EB	LT	A	0.1	0.00	A	0.1	0.00	A	0.1	0.00
	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	LR	A	0.0	0.00	A	0.0	0.00	A	9.0	0.01
		Overall	*A*	*0.1*	*0.00*	*A*	*0.1*	*0.00*	*A*	*1.0*	*0.01*
Orchard St at	EB	LTR	A	0.0	0.00	A	0.0	0.00	A	0.1	0.00
Grove St/Main Site Drive	WB	LTR	A	0.3	0.00	A	0.3	0.00	A	0.1	0.00
	NB	LTR	A	8.6	0.02	A	8.6	0.02	A	8.8	0.02
	SB	LTR	A	9.1	0.01	A	9.2	0.01	A	9.6	0.07
		Overall	*A*	*2.1*	*0.02*	*A*	*2.1*	*0.02*	*A*	*3.6*	*0.07*
Orchard St at Bullard Ln	EB	LT	A	0.2	0.00	A	0.2	0.00	A	0.1	0.00
	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	LR	A	8.8	0.01	A	8.8	0.01	A	9.2	0.01
		Overall	*A*	*1.0*	*0.01*	*A*	*1.0*	*0.01*	*A*	*0.6*	*0.01*
Orchard St at Ridge St	EB	LTR	A	7.9	0.18	A	8.0	0.19	A	8.7	0.27
	WB	LTR	A	7.6	0.05	A	7.6	0.05	A	8.0	0.09
	NB	LTR	A	7.7	0.10	A	7.8	0.11	A	8.2	0.13
	SB	LTR	A	8.6	0.05	A	8.6	0.05	A	8.9	0.07
		Overall	*A*	*7.9*	*0.18*	*A*	*8.0*	*0.19*	*A*	*8.5*	*0.27*
Orchard St at Middlesex St	EB	LTR	C	15.7	0.28	C	16.8	0.31	C	19.0	0.41
	WB	LTR	B	11.8	0.09	B	12.1	0.10	B	13.6	0.16
	NB	LTR	A	0.3	0.01	A	0.3	0.01	A	0.4	0.01
	SB	LTR	A	2.5	0.05	A	2.5	0.06	A	2.5	0.06
		Overall	*A*	*4.9*	*0.28*	*A*	*5.2*	*0.31*	*A*	*6.7*	*0.41*
Middlesex St at Exchange St	WB	L	C	16.2	0.28	C	17.5	0.32	C	17.8	0.32
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	T	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
		Overall	*A*	*2.1*	*0.28*	*A*	*2.3*	*0.32*	*A*	*2.3*	*0.32*
Orchard St at Exchange St	EB	T	C	15.6	0.33	C	17.1	0.38	C	18.9	0.46
	WB	LT	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
		Overall	*A*	*3.6*	*0.33*	*A*	*3.9*	*0.38*	*A*	*4.8*	*0.46*

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
n/a Not Applicable

Queue Summary
Glen Ellen Country Club
Millis, Massachusetts

			Weekday Morning Peak Hour					
			2016 Existing		2023 No Build		2023 Build	
Intersection	**Movement**		**50th Queue[1]**	**95th Queue[2]**	**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
Orchard St at West Site Driveway	EB	LT	n/a	0	n/a	0	n/a	0
	WB	TR	n/a	0	n/a	0	n/a	0
	SB	LR	n/a	0	n/a	0	n/a	0
Orchard St at	EB	LTR	n/a	0	n/a	0	n/a	0
Grove St/Main Site Drive	WB	LTR	n/a	0	n/a	0	n/a	0
	NB	LTR	n/a	3	n/a	3	n/a	3
	SB	LTR	n/a	0	n/a	0	n/a	5
Orchard St at Bullard Ln	EB	LT	n/a	0	n/a	0	n/a	0
	WB	TR	n/a	0	n/a	0	n/a	0
	SB	LR	n/a	0	n/a	0	n/a	0
Orchard St at Ridge St	EB	LTR	n/a	15	n/a	18	n/a	28
	WB	LTR	n/a	3	n/a	5	n/a	8
	NB	LTR	n/a	8	n/a	10	n/a	10
	SB	LTR	n/a	5	n/a	5	n/a	5
Orchard St at Middlesex St	EB	LTR	n/a	28	n/a	33	n/a	50
	WB	LTR	n/a	8	n/a	8	n/a	13
	NB	LTR	n/a	0	n/a	0	n/a	0
	SB	LTR	n/a	5	n/a	5	n/a	5
Middlesex St at Exchange St	WB	L	n/a	28	n/a	33	n/a	35
	NB	TR	n/a	0	n/a	0	n/a	0
	SB	T	n/a	0	n/a	0	n/a	0
Orchard St at Exchange St	EB	T	n/a	38	n/a	43	n/a	58
	WB	LT	n/a	0	n/a	0	n/a	0
	NB	R	n/a	0	n/a	0	n/a	0

1 50th Percentile Queue Length in feet
2 95th Percentile Queue Length, in feet
n/a Not Applicable

Capacity Analysis Summary
Glen Ellen Country Club
Millis, Massachusetts

Weekday Afternoon Peak Hour											
			2016 Existing			2023 No Build			2023 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Orchard St at West Site Driveway	EB	LT	A	1.0	0.00	A	0.9	0.00	A	1.0	0.01
	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	LR	A	8.8	0.00	A	8.8	0.00	A	9.3	0.01
		Overall	*A*	*0.5*	*0.00*	*A*	*0.5*	*0.00*	*A*	*0.7*	*0.01*
Orchard St at	EB	LTR	A	0.3	0.00	A	0.2	0.00	A	0.6	0.00
Grove St/Main Site Drive	WB	LTR	A	1.0	0.01	A	1.0	0.01	A	0.7	0.01
	NB	LTR	A	8.5	0.01	A	8.5	0.01	A	8.9	0.02
	SB	LTR	A	8.7	0.00	A	8.7	0.00	B	10.2	0.05
		Overall	*A*	*1.7*	*0.01*	*A*	*1.6*	*0.01*	*A*	*2.5*	*0.05*
Orchard St at Bullard Ln	EB	LT	A	1.2	0.00	A	1.0	0.00	A	0.5	0.00
	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	LR	A	8.8	0.02	A	8.9	0.02	A	9.2	0.03
		Overall	*A*	*1.6*	*0.02*	*A*	*1.6*	*0.02*	*A*	*1.0*	*0.03*
Orchard St at Ridge St	EB	LTR	A	7.4	0.08	A	7.5	0.09	A	8.0	0.16
	WB	LTR	A	8.0	0.15	A	8.1	0.16	A	8.5	0.21
	NB	LTR	A	7.7	0.07	A	7.8	0.08	A	8.2	0.10
	SB	LTR	A	7.7	0.07	A	7.7	0.08	A	8.0	0.09
		Overall	*A*	*7.7*	*0.15*	*A*	*7.8*	*0.16*	*A*	*8.2*	*0.21*
Orchard St at Middlesex St	EB	LTR	B	14.6	0.15	C	15.8	0.18	C	17.8	0.27
	WB	LTR	C	16.2	0.32	C	17.9	0.38	C	21.1	0.47
	NB	LTR	A	1.2	0.02	A	1.2	0.03	A	1.4	0.03
	SB	LTR	A	1.1	0.04	A	1.2	0.04	A	1.2	0.04
		Overall	*A*	*5.3*	*0.32*	*A*	*5.8*	*0.38*	*A*	*7.5*	*0.47*
Middlesex St at Exchange St	WB	L	E	37.2	0.81	F	66.7	0.98	F	71.0	0.99
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	T	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
		Overall	*B*	*14.5*	*0.81*	*D*	*26.1*	*0.98*	*D*	*27.5*	*0.99*
Orchard St at Exchange St	EB	T	B	14.4	0.20	C	16.0	0.25	C	17.4	0.32
	WB	LT	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
		Overall	*A*	*1.8*	*0.20*	*A*	*2.0*	*0.25*	*A*	*2.6*	*0.32*

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
n/a Not Applicable

Queue Summary
Glen Ellen Country Club
Millis, Massachusetts

			Weekday Afternoon Peak Hour					
			2016 Existing		2023 No Build		2023 Build	
Intersection	**Movement**		**50th Queue[1]**	**95th Queue[2]**	**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
Orchard St at West Site Driveway	EB	LT	n/a	0	n/a	0	n/a	0
	WB	TR	n/a	0	n/a	0	n/a	0
	SB	LR	n/a	0	n/a	0	n/a	0
Orchard St at	EB	LTR	n/a	0	n/a	0	n/a	0
Grove St/Main Site Drive	WB	LTR	n/a	0	n/a	0	n/a	0
	NB	LTR	n/a	0	n/a	0	n/a	3
	SB	LTR	n/a	0	n/a	0	n/a	5
Orchard St at Bullard Ln	EB	LT	n/a	0	n/a	0	n/a	0
	WB	TR	n/a	0	n/a	0	n/a	0
	SB	LR	n/a	3	n/a	3	n/a	3
Orchard St at Ridge St	EB	LTR	n/a	8	n/a	8	n/a	13
	WB	LTR	n/a	13	n/a	13	n/a	20
	NB	LTR	n/a	5	n/a	8	n/a	8
	SB	LTR	n/a	5	n/a	5	n/a	8
Orchard St at Middlesex St	EB	LTR	n/a	13	n/a	15	n/a	28
	WB	LTR	n/a	35	n/a	43	n/a	63
	NB	LTR	n/a	3	n/a	3	n/a	3
	SB	LTR	n/a	3	n/a	3	n/a	3
Middlesex St at Exchange St	WB	L	n/a	195	n/a	305	n/a	315
	NB	TR	n/a	0	n/a	0	n/a	0
	SB	T	n/a	0	n/a	0	n/a	0
Orchard St at Exchange St	EB	T	n/a	18	n/a	25	n/a	33
	WB	LT	n/a	0	n/a	0	n/a	0
	NB	R	n/a	0	n/a	0	n/a	0

1 50th Percentile Queue Length in feet
2 95th Percentile Queue Length, in feet
n/a Not Applicable

ENGINEERING SUCCESS **TOGETHER**

October 31, 2016

Mr. Robert Cantoreggi, Chairman
Planning Board
900 Main Street, Room 220
Millis, MA 02054

Re: Glen Ellen Senior Residential Development, Millis, MA – Traffic Review

Dear Mr. Cantoreggi:

At the request of the Planning Board, BETA Group, Inc. (BETA) has reviewed supplemental information related to traffic provided by McMahon Associates, Inc. (McMahon) in support of the application for modification to the previously approved Special Permit for Glen Ellen Senior Residential Development off Orchard Street in Millis. This letter is provided to summarize the information provided and outline BETA's findings, comments and recommendations.

TRIP GENERATION: The elimination of the nine-hole golf course and the reduction in number of units from 341 to 324 results in a reduction of traffic associated with the project. For the proposed project, Average Daily Trips (ADT) are stated to decrease by approximately 1,244 trips (2,385 to 1,141). AM weekday Peak Hour trips are expected to decrease by approximately 30 trips (122 to 92). PM weekday Peak Hour trips are also expected to decrease, with a reduction of approximately 95 trips (197 to 102). BETA review of a detailed trip generation summary provided by McMahon reveals that the trip generation is consistent with industry standards using data published by the Institute of Traffic Engineers (ITE). Land use codes were chosen for Senior Adult Housing – Attached and Senior Adult Housing – Detached, consistent with the land uses proposed for the project.

T1. ITE trip generation rates are based on data compiled from nationwide sources, and may not represent regional and local trends in the distribution of seniors living in 55+ communities and still maintaining full time employment. This distribution may have a notable impact on the number of trips generated in the morning and afternoon peak hour. It is recommended that local empirical data be reviewed to verify the accuracy of trip generation data.

TRAFFIC VOLUME DATA: Automatic Traffic Recorder (ATR) and turning movement counts (TMC) were conducted in April 2016 at intersections along Orchard Street. Continuous counting station data from a nearby count station on I-495 in Franklin were reviewed to determine seasonal variation. April was found to be lower than average daily traffic, and therefore existing data were seasonally adjusted upwards to reflect an average month. This approach is consistent with industry standards.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.

Greg E. Lucas, PE, PTOE
Senior Traffic Engineer

cc: Camille Standley (Planning Board) Job No: 4912-7

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