



## **Traffic Design Report**

Hammond Pond Parkway Improvements, Phase I, Beacon Street to Route 9  
Newton, Massachusetts

September 2019 (Rev. 1 October 2020; Rev. 2 February 2021)

### **Prepared for:**

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## Executive Summary

BSC Group has prepared this Traffic Design Report to document existing traffic operations, evaluate safety and operational characteristics, and provide an evaluation of recommended improvements for an approximately 1-mile segment of Hammond Pond Parkway between Beacon Street and Boylston Street (Route 9) in the Newton Centre and Chestnut Hill neighborhoods of Newton, Massachusetts. The study area for the Project includes Hammond Pond Parkway and the intersections with Beacon Street/Hobart Road (signalized), the 300 Hammond Pond Parkway driveway (unsignalized), The Mall at Chestnut Hill driveway (signalized), and The Street driveway (signalized).

Hammond Pond Parkway was designed and built in the first half of the 1900's and has served as an integral transportation corridor connecting Newton and Brookline through the Chestnut Hill neighborhood. The Parkway provides access to adjacent conservation areas including the City of Newton's Webster Conservation Area and DCR's Hammond Pond Reservation. The Parkway has served many modes of transportation throughout its history and is currently lacking in adequate multi-modal accommodations, specifically for pedestrians and bicyclists.

The DCR is actively seeking opportunities to implement complete streets principles throughout their system of parkways in the Boston metropolitan area. Hammond Pond Parkway is a prime location to showcase the intent of converting a roadway that primarily serves motor vehicles to one that achieves a balance between various modes of transportation including pedestrian activity and bicycling. The Project will achieve these goals by reducing the cross section of Hammond Pond Parkway reserved for motor vehicles and constructing a shared-use path for bicycle and pedestrian uses. The Project will also upgrade all existing crosswalks, curb ramps, and traffic signal equipment within the study area. The signalized intersection of Hammond Pond Parkway at Beacon Street and Hobart Road will be reconfigured to shorten pedestrian crossings and provide optimal phasing for all users.

Further, the DCR is currently coordinating with the City of Newton to address their needs that were identified in the Newton Leads 2040, A Transportation Strategy for Newton planning study. That study identified Hammond Pond Parkway as a corridor for improvements to active transportation modes (walking and bicycling) and as a candidate for a road diet.

This study includes a review of existing traffic and roadway conditions, pedestrian and bicycle facilities, and a safety evaluation for the study area. The study identifies anticipated traffic growth throughout the corridor and provides an operations analysis of existing and future conditions, both with and without the proposed roadway improvements.

### Existing Conditions

Hammond Pond Parkway is primarily a four-lane urban principal arterial roadway under DCR jurisdiction that travels in a north-south direction between Beacon Street in Newton and Horace James Circle in Brookline. The Project limits are defined by Beacon Street to the north and Route 9 to the south. A sidewalk is provided along the west side of Hammond Pond Parkway from Route 9 to the 300 Hammond Pond Parkway driveway. Formal pedestrian facilities are not provided north of 300 Hammond Pond Parkway or to the adjacent conservation areas, although a wide shoulder and grassy areas are used for pedestrian activity. Daily traffic volumes counted along Hammond Pond Parkway through the study area

are approximately 18,460 vehicles per day and 1,550 vehicles per hour (both directions) during the peak commuter periods. Based on the *Road Diet Informational Guide*<sup>1</sup>, road diets for existing four lane roadways can work for roadways that experience up to 23,000 vpd. The Institute of Transportation Engineers (ITE) also provide guidance on the implementation of road diets<sup>2</sup>. According to ITE case studies, road diets reduce crashes and travel speeds and improve the flow of traffic while having minimal effects on capacity and traffic diversions on roadways under 20,000 vpd.

The posted speed limit on Hammond Pond Parkway is 30 miles per hour (mph). However, the 85<sup>th</sup> percentile vehicular speeds were measured to be in excess of 45 mph and the majority of vehicles were observed to travel over the posted speed limit, indicating that the current design of the roadway favors vehicular travel and does not address all users' needs.

The combination of high vehicular speeds and lack of pedestrian and bicycle facilities creates potential safety issues that can be addressed through the implementation of complete streets design principles, including a road diet and a separated shared-use path. The traffic volumes along Hammond Pond Parkway indicate that the roadway with the implementation of a road diet will operate within its design capacity.

The Project includes the approximately 1-mile long segment of Hammond Pond Parkway between Beacon Street and Route 9. The study area intersections include the following locations:

- Hammond Pond Parkway at Beacon Street and Hobart Road (signalized)
- Hammond Pond Parkway at 300 Hammond Pond Parkway (unsignalized)
- Hammond Pond Parkway at The Mall at Chestnut Hill (signalized)
- Hammond Pond Parkway at The Street Driveway (signalized)

Existing traffic data was collected to establish a baseline for traffic conditions throughout the study area. Manual turning movement counts (TMCs) were conducted during the weekday morning, weekday evening, and Saturday midday peak periods at the study area intersections and an automatic traffic recorder (ATR) was placed along Hammond Pond Parkway, south of Beacon Street, to collect daily traffic volumes and vehicular speeds.

The traffic counts were used to develop 2019 Existing conditions traffic volume networks for the weekday morning, weekday evening, and Saturday midday peak hours.

A review of motor vehicle crash data for the most recent five-year period for which data is available (2013-2017) was conducted for the study area. A total of 22 crashes occurred at the intersection of Hammond Pond Parkway at Beacon Street/Hobart Road; 7 crashes occurred at the intersection of Hammond Pond Parkway at The Mall at Chestnut Hill driveway; and 17 crashes occurred at the intersection of Hammond Pond Parkway at The Street driveway. The crash rates at each location are below the MassDOT District 6 average crash rate for signalized intersections.

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<sup>1</sup> *Road Diet Informational Guide*; Federal Highway Administration; Washington, DC; 2014.

<sup>2</sup> *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*; Institute of Transportation Engineers; Washington, DC; 2010.

Although there were no significant safety deficiencies that were identified, the Project will look to improve safety by reducing vehicular speeds, providing a separated facility for pedestrians and bicycles, and upgrading traffic signals.

### Future Conditions

Traffic volumes in the study area were projected to the year 2029, which reflects a ten-year traffic planning horizon. The future volumes considered general background traffic growth and site-specific growth from planned developments in the vicinity of the study area. A 0.5 percent per year annual traffic growth rate was applied to the 2019 traffic volumes. A review of other projects in the area indicates that Boston College is planning on renovating their property at 300 Hammond Pond Parkway. However, the renovations are not expected to change traffic volumes along the driveway or traffic patterns throughout the study area. A 2029 Future conditions traffic volume network was developed for the weekday morning, weekday evening, and Saturday midday peak hours.

### Proposed Design

The objective of the Project is to provide a modern design of Hammond Pond Parkway that will meet the current multi-modal needs of the transportation system. The improvements will incorporate complete streets principles by reducing the number of lanes on Hammond Pond Parkway and adding pedestrian and bicycle facilities to the corridor that accommodate ADA accessibility needs. The improvements will also include upgraded traffic signals throughout the corridor and geometric modifications at the intersection of Hammond Pond Parkway at Beacon Street and Hobart Road.

The Project consists of the following elements:

- Hammond Pond Parkway will be reduced from four travel lanes to two travel lanes, except at the southern end of the Project where there will continue to be two southbound lanes at the intersection with The Street driveway
- A new ten to twelve-foot wide shared-use pathway for bicycles and pedestrians will be constructed along the west (southbound) side of the roadway between Beacon Street and Route 9 separated by a landscaping strip.
- The geometry at the intersection of Hammond Pond Parkway at Beacon Street and Hobart Road will be modified to shorten pedestrian crossings by removing existing islands and eliminating a northbound left-turn lane
- The geometry at the intersection of Hammond Pond Parkway at The Mall at Chestnut Hill will be modified by removing an eastbound left-turn lane from the driveway approach
- New traffic signal equipment will be installed at the intersections in the above two bulleted items and will include an optimal signal phasing and timing plan that incorporates pedestrian movements
- All pedestrian facilities will be upgraded or replaced to comply with ADA requirements

### Traffic Operations Analysis

A traffic operations analysis was conducted for the study area intersections under the 2019 Existing Conditions, 2029 Future Conditions without Improvements, and 2029 Future Conditions with Improvements. The analyses indicate that the Project will not significantly impact traffic operations compared to current conditions. However, the Hammond Pond Parkway northbound left-turning

movements at Beacon Street will experience higher delays and queuing due to the removal of a left-turn lane.

# 1 Introduction

BSC Group (BSC) has prepared this Traffic Design Report to document existing traffic conditions, evaluate safety and operations, and develop roadway and intersection improvements for Hammond Pond Parkway between Beacon Street and Boylston Street (Massachusetts Route 9) in Newton, Massachusetts.

Hammond Pond Parkway was designed in 1913 and constructed in 1931-1932 and serves as an integral transportation corridor through the Chestnut Hill areas of Newton and Brookline. The southern terminus of Hammond Pond Parkway connects to other portions of the DCR parkway system at the Horace James Circle in Brookline and the northern terminus connects to Beacon Street in Newton.

The Parkway has served many modes of transportation throughout its history and is currently in need of an overhaul to meet the needs and requirements for multi-modal transportation. The Parkway will be redesigned to significantly improve both bicycle and pedestrian connectivity through the implementation of Complete Streets principles focusing on a reduction in travel lanes, the construction of a shared-use path, and the implementation of appropriate streetscape elements. The Project will also enhance accessibility to the two major conservation areas abutting Hammond Pond Parkway: the City of Newton's Webster Conservation Area and DCR's Hammond Pond Reservation.

The DCR is actively seeking opportunities to implement complete streets principles throughout their system of parkways in the Boston metropolitan area. Hammond Pond Parkway is a prime location to showcase the intent of converting a roadway that primarily serves motor vehicles to one that achieves a balance between various modes of transportation including pedestrian activity and bicycling. The Project will achieve these goals by reducing the cross section of Hammond Pond Parkway reserved for motor vehicles and constructing a shared-use path for bicycle and pedestrian uses. The Project will also upgrade all existing crosswalks, curb ramps, and traffic signal equipment within the study area. The signalized intersection of Hammond Pond Parkway at Beacon Street and Hobart Road will be reconfigured to shorten pedestrian crossings and provide optimal phasing for all users.

Further, the DCR is currently coordinating with the City of Newton to address their needs that were identified in the Newton Leads 2040, A Transportation Strategy for Newton planning study. That study identified Hammond Pond Parkway as a corridor for improvements to active transportation modes (walking and bicycling) and as a candidate for a road diet.

This study includes a review of existing traffic and roadway conditions, pedestrian and bicycle facilities, and a safety evaluation along the project corridor and at the intersecting roadways. The report identifies anticipated traffic growth throughout the corridor and provides an operations analysis of existing and future conditions, both with and without the proposed roadway improvements. The proposed improvements are shown in conceptual plans in the later sections of the study.



## 2 Existing Conditions

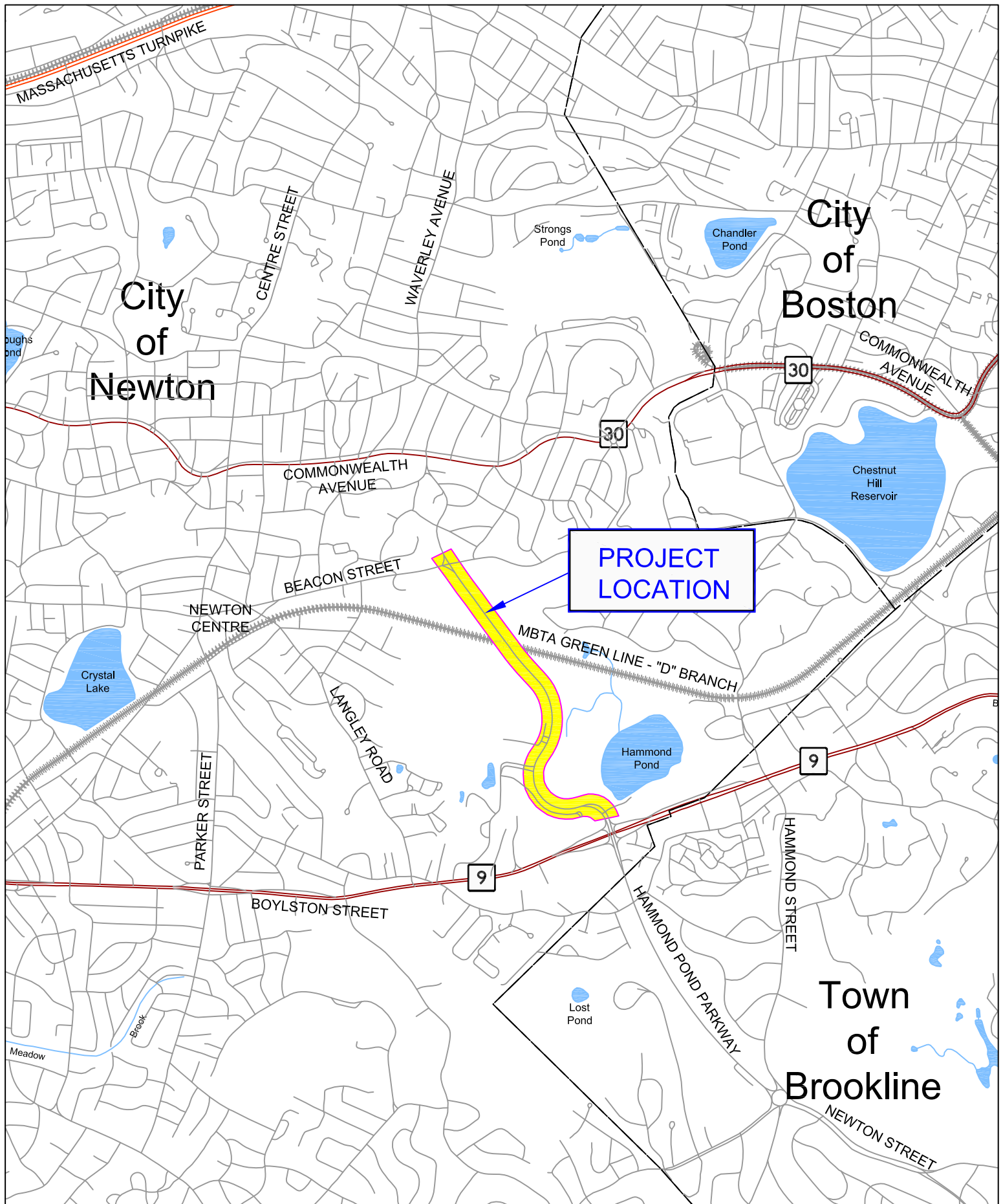
The Project will consist of the reconstruction of Hammond Pond Parkway between Beacon Street and Boylston Street in Newton, Massachusetts. This segment of Hammond Pond Parkway is approximately one-mile in length and includes three signalized intersections (excluding the intersections at the Route 9/Hammond Pond Parkway ramps). This section describes the study area roadway and intersections.

### 2.1. Study Area

The study area for the traffic impact analysis includes the following intersections along Hammond Pond Parkway:

- Hammond Pond Parkway at Beacon Street and Hobart Road
- Hammond Pond Parkway at 300 Hammond Pond Parkway
- Hammond Pond Parkway at 250 Hammond Pond Parkway (The Mall at Chestnut Hill)
- Hammond Pond Parkway at The Street Driveway

The location of the Project in relation to the surrounding roadway network is shown in Figure 1.



Project Location  
Hammond Pond Parkway Improvements  
Newton, MA

Figure 1

## 2.2. Existing Roadway Conditions

### Hammond Pond Parkway

Hammond Pond Parkway is primarily a four-lane urban principal arterial roadway under DCR jurisdiction that travels in a north-south direction between Beacon Street in Newton and Horace James Circle in Brookline. The Project limits are defined by Beacon Street to the north and Boylston Street to the south. Within the study area, the directions of travel are generally separated by a double-yellow centerline throughout the study area. The segment of Hammond Pond Parkway between The Street Driveway and The Mall at Chestnut Hill contains a one-lane segment in the northbound direction, with the directions of travel separated by a painted median. The existing cross section of this segment is shown in Figure 2.

**Figure 2** Hammond Pond Parkway between The Street and The Mall at Chestnut Hill



Dedicated turn lanes are also provided along Hammond Pond Parkway at key intersections. Sidewalks are provided along both sides of Hammond Pond Parkway south of The Street Driveway and through the Route 9 interchange. A sidewalk is provided along the west (southbound) side of Hammond Pond Parkway from the Route 9 interchange to 300 Hammond Pond Parkway. The sidewalk terminates north of 300 Hammond Pond Parkway, where it becomes an informal pedestrian path created from heavy



usage. The existing cross section of the segment between 300 Hammond Pond Parkway and Beacon Street is shown in Figure 3.

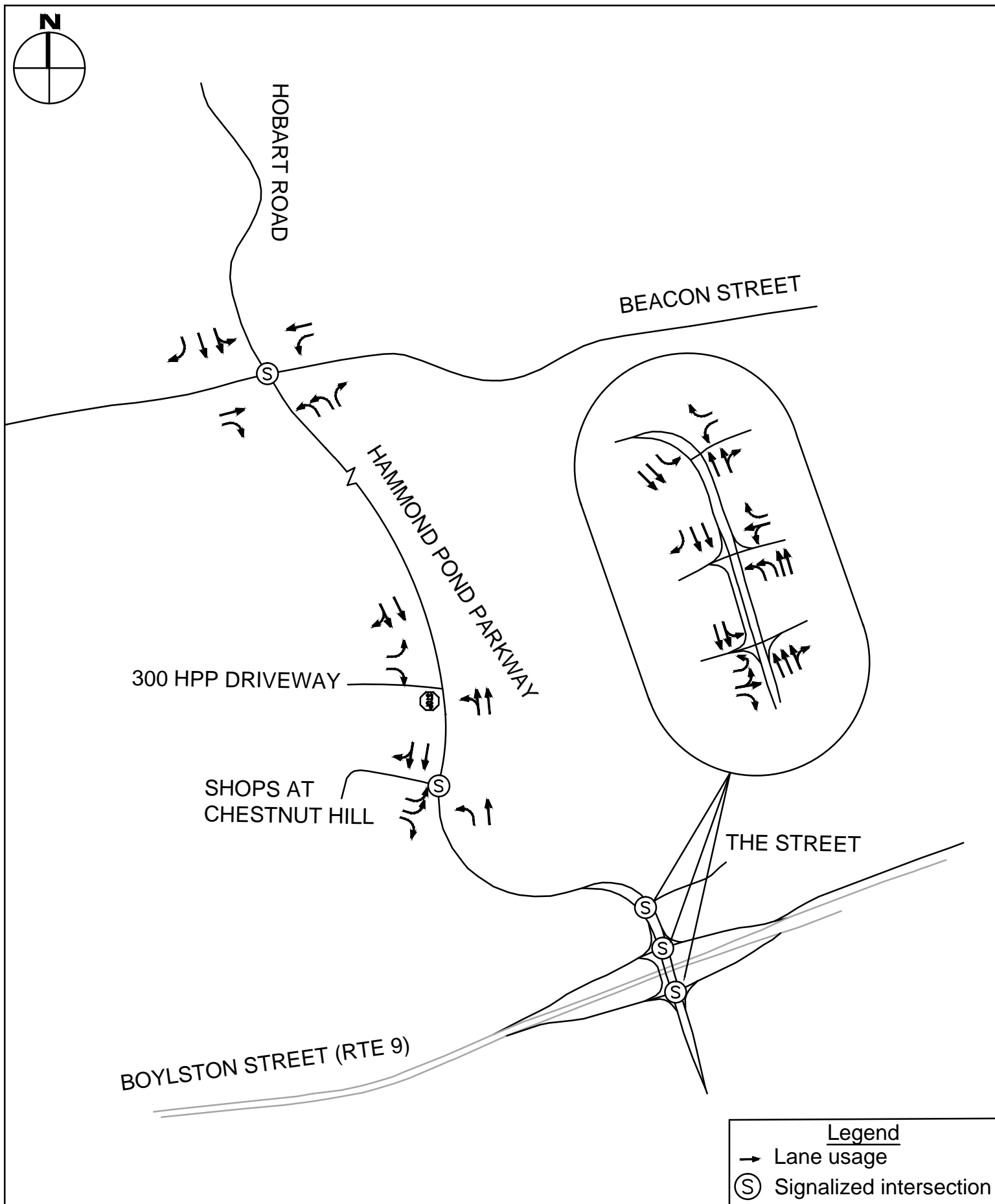
**Figure 3** Hammond Pond Parkway between 300 Hammond Pond Parkway and Beacon Street



Formal pedestrian facilities are not provided from Beacon Street to 300 Hammond Pond Parkway, although a wide shoulder and grassy areas are used for pedestrian activity along this segment. The posted speed limit along Hammond Pond Parkway is 30 miles per hour (mph). However, a review of available traffic data indicates that the 85<sup>th</sup> percentile vehicular speed is in excess of 45 mph. A summary of vehicular speeds along Hammond Pond Parkway is provided in Section 2.4. Land uses along Hammond Pond Parkway include the Hammond Pond Reservation, the Webster Conservation Area, the Cohen Conservation Area, a synagogue on property currently owned by Boston College, and retail/shopping areas. Hammond Pond Parkway is also used for parking during football games at Boston College, as there are currently no parking restrictions along the roadway.

### 2.3. Existing Intersection Conditions

The following describes the geometric conditions and traffic control at the study area intersections. Figure 4 shows the lane geometry and traffic control at the study area intersections.



Existing Conditions Geometry and Traffic Control  
Hammond Pond Parkway Improvements  
Newton, MA

Figure 4

Hammond Pond Parkway at Beacon Street and Hobart Road

Hammond Pond Parkway, Beacon Street, and Hobart Road intersect to form a four-legged, signalized intersection at the north end of the Project limits. The Beacon Street eastbound approach consists of a through travel lane, a short exclusive, channelized right-turn lane, and a bicycle lane. The Beacon Street westbound approach consists of an exclusive left-turn lane, a through travel lane, and a bicycle lane. The Hammond Pond Parkway northbound approach consists of two exclusive left-turn lanes and a short exclusive, channelized right-turn lane under stop-sign control. The two northbound left-turn lanes quickly merge into one receiving lane along Beacon Street westbound, creating conflicts that occur just west of the intersection. The Hobart Road southbound approach is one-way and consists of a shared left-turn/through lane, a through lane, and an exclusive, channelized right-turn lane under stop-sign control. Marked crosswalks and pedestrian signal equipment is provided across the north, east, and south legs of the intersection. Sidewalks are provided along both sides of Beacon Street and along the west side of Hobart Road. Land uses at the intersection consist of conservation land, recreational park land, and residential properties.

Hammond Pond Parkway at 300 Hammond Pond Parkway Driveway

The 300 Hammond Pond Parkway driveway intersects Hammond Pond Parkway from the west to form a three-legged, unsignalized intersection. The driveway eastbound approach consists of a single lane under stop-sign control and serves an existing synagogue located on the property. The Hammond Pond Parkway northbound and southbound approaches consist of two travel lanes in each direction. A sidewalk is provided along the west side of Hammond Pond Parkway at the intersection.

Hammond Pond Parkway at 250 Hammond Pond Parkway Driveway (The Mall at Chestnut Hill)

The 250 Hammond Pond Parkway driveway intersects Hammond Pond Parkway from the west to form a three-legged, signalized intersection. The driveway eastbound approach consists of two exclusive left-turn lanes and an exclusive right-turn lane and serves The Mall at Chestnut Hill. The Hammond Pond Parkway northbound approach consists of an exclusive left-turn lane and a through travel lane. The Hammond Pond Parkway southbound approach consists of a through travel lane and a shared through/right-turn lane. A sidewalk is provided along the west side of Hammond Pond Parkway and the south side of the driveway. Crosswalks and pedestrian signal equipment are not provided at the intersection.

Hammond Pond Parkway at The Street Driveway

The Street Driveway intersects Hammond Pond Parkway from the east to form a three-legged, signalized intersection. The driveway westbound approach consists of an exclusive left-turn lane and an exclusive right-turn lane. The Hammond Pond Parkway northbound approach consists of a through lane and a shared through/right-turn lane. The Hammond Pond Parkway southbound approach consists of an exclusive left-turn lane and two through travel lanes. Sidewalks are provided along both sides of Hammond Pond Parkway and the north side of the driveway. Crosswalks and pedestrian signal equipment are provided across the south and east legs of the intersection.

## 2.4. Existing Traffic Conditions

Existing traffic data was collected to establish a baseline for traffic conditions throughout the Project's study area.

Manual turning movement counts (TMCs) were conducted in April 2019 during the weekday morning (7:00 – 9:00 AM), weekday evening (4:00 – 6:00 PM), and Saturday midday (11:00 AM – 2:00 PM) peak periods at the following three study intersections:

- Hammond Pond Parkway at Beacon Street and Hobart Road
- Hammond Pond Parkway at 300 Hammond Pond Parkway
- Hammond Pond Parkway at 250 Hammond Pond Parkway (The Mall at Chestnut Hill)

TMCs conducted in November 2016 were obtained from a previous study for the same peak periods for the intersection of Hammond Pond Parkway at The Street Driveway. A review of the traffic volumes in 2016 indicate that they are generally higher than those collected in 2019. Based on this review, a growth rate was not applied to the 2016 volumes to represent the existing 2019 conditions. The 2019 Existing weekday morning, weekday evening, and Saturday peak hour traffic volumes are shown on Figures 5 through 7.

An automatic traffic recorder (ATR) were placed on Hammond Pond Parkway, south of Beacon Street, to collect traffic volumes and vehicular speeds. The ATRs collected data from Tuesday March 12 to Monday March 18, 2019. The summary of the ATR data is presented in Table 1 and Figure 8. The speed data is presented in Figure 9.

The weekday daily traffic reported in Table 1 is the average from the Tuesday through Thursday during the week that the data was collected. Average weekday traffic volumes are approximately 18,460 and below the threshold of 23,000 vpd for the feasibility of a road diet as previously stated. The peak hourly volumes range from 515 vehicles per hour (vph) to 1,095 vph during the weekday morning period and 765 vph to 795 vph during the weekday evening period. These volumes are also below the vehicular capacity of a single lane (1,900 vph). To accommodate the volume at the intersections, additional turn lanes are provided.

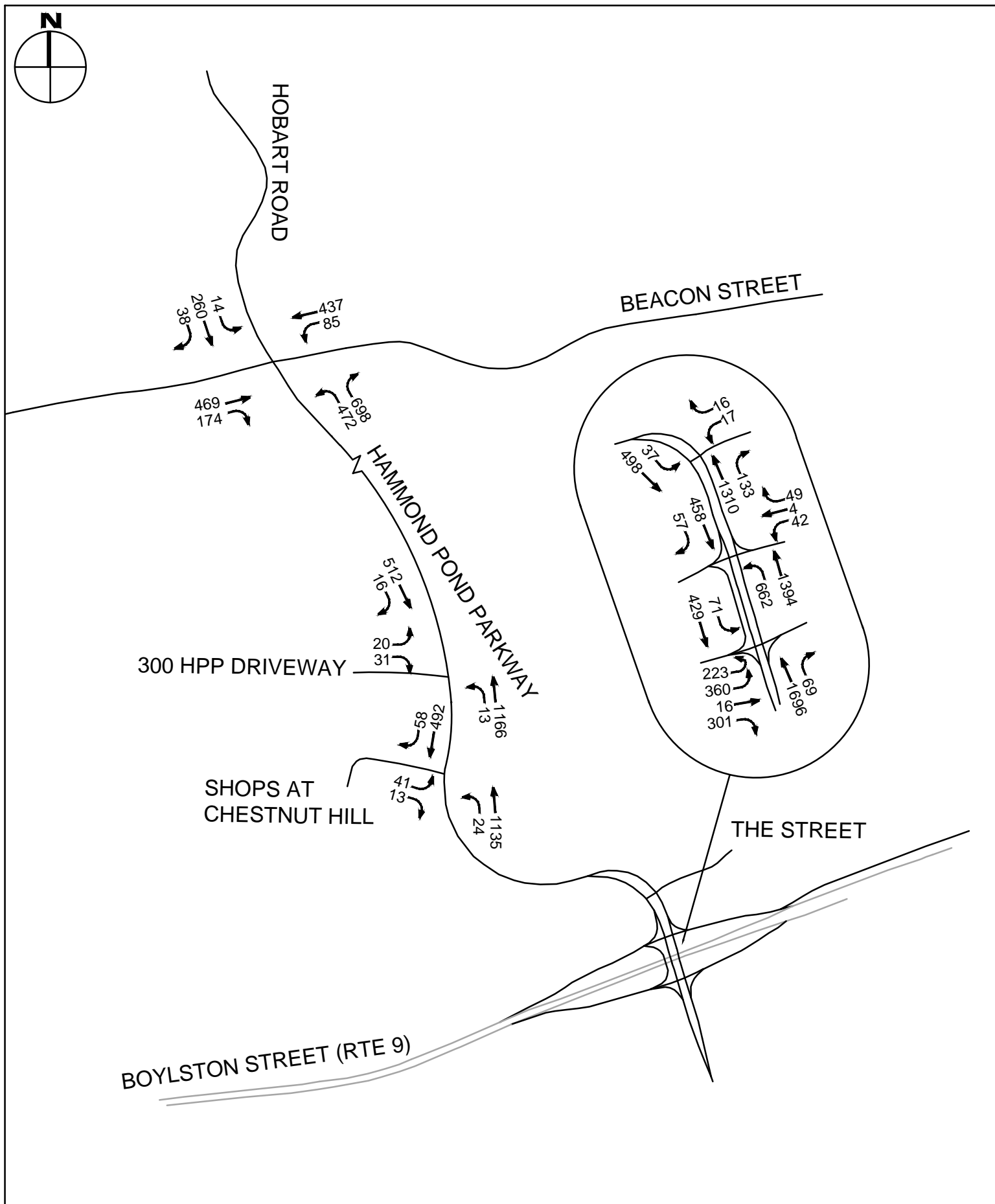
The 85<sup>th</sup> percentile speeds are 47 mph in the northbound direction and 43 mph in the southbound direction, well in excess of the posted 30 mph speed limits along Hammond Pond Parkway. The detailed traffic data is provided in the Appendix.

Table 1 **Automatic Traffic Recorder (ATR) Data Summary  
Hammond Pond Parkway, South of Beacon Street**

<b>Weekday Daily Volume<sup>1</sup></b>	18,460
<b>Weekday Morning Peak Hour</b>	
Volume <sup>2</sup>	1,550 (1,050 NB/500 SB)
K Factor <sup>3</sup>	8.4%
Directional Flow <sup>4</sup>	68% NB
<b>Weekday Evening Peak Hour</b>	
Volume	1,490 (730 NB/760 SB)
K Factor	8.1%
Directional Flow	51% SB
<b>Saturday Daily Volume</b>	14,840
<b>Saturday Midday Peak Hour</b>	
Volume	1,350 (700 NB/650 SB)
K Factor	9.0%
Directional Flow	52% NB

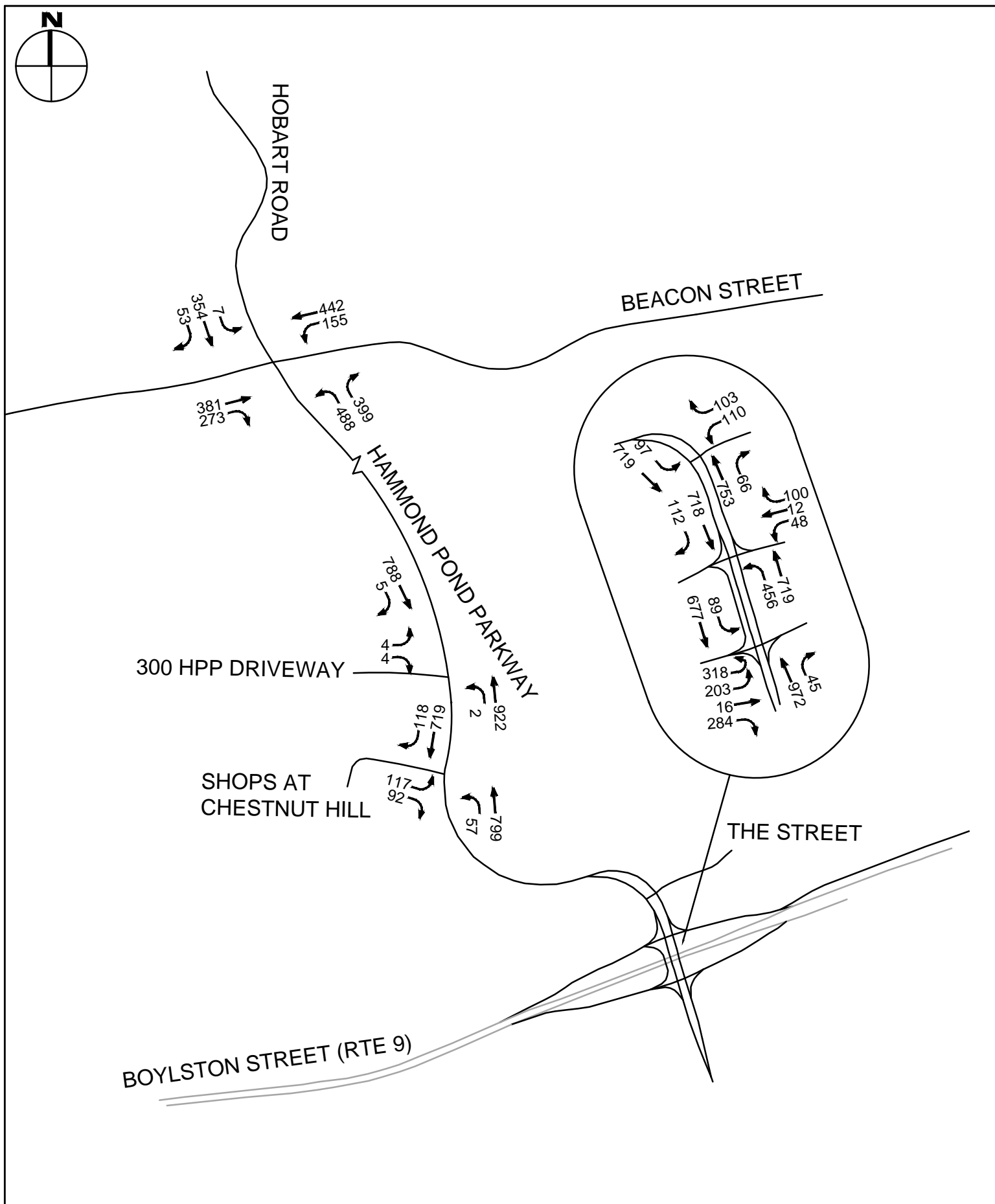
- 1 vehicles per day
- 2 vehicles per hour
- 3 percentage of daily trips that occur during the peak hour
- 4 percentage of peak hour traffic by direction





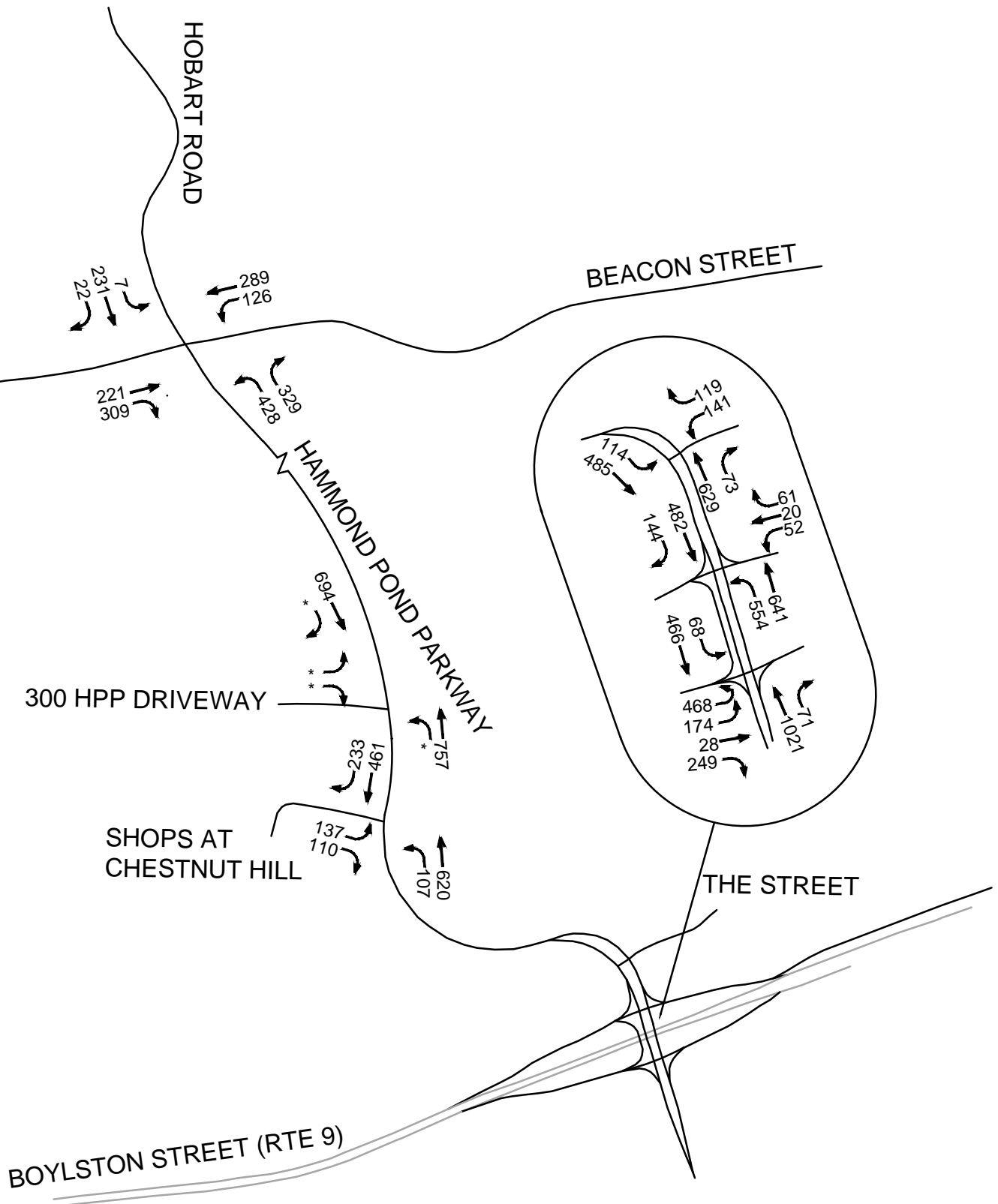
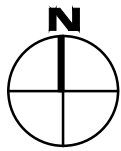
2019 Weekday Morning Existing Peak Hour Traffic Volumes  
Hammond Pond Parkway Improvements  
Newton, MA

Figure 5



2019 Weekday Evening Existing Peak Hour Traffic Volumes  
Hammond Pond Parkway Improvements  
Newton, MA

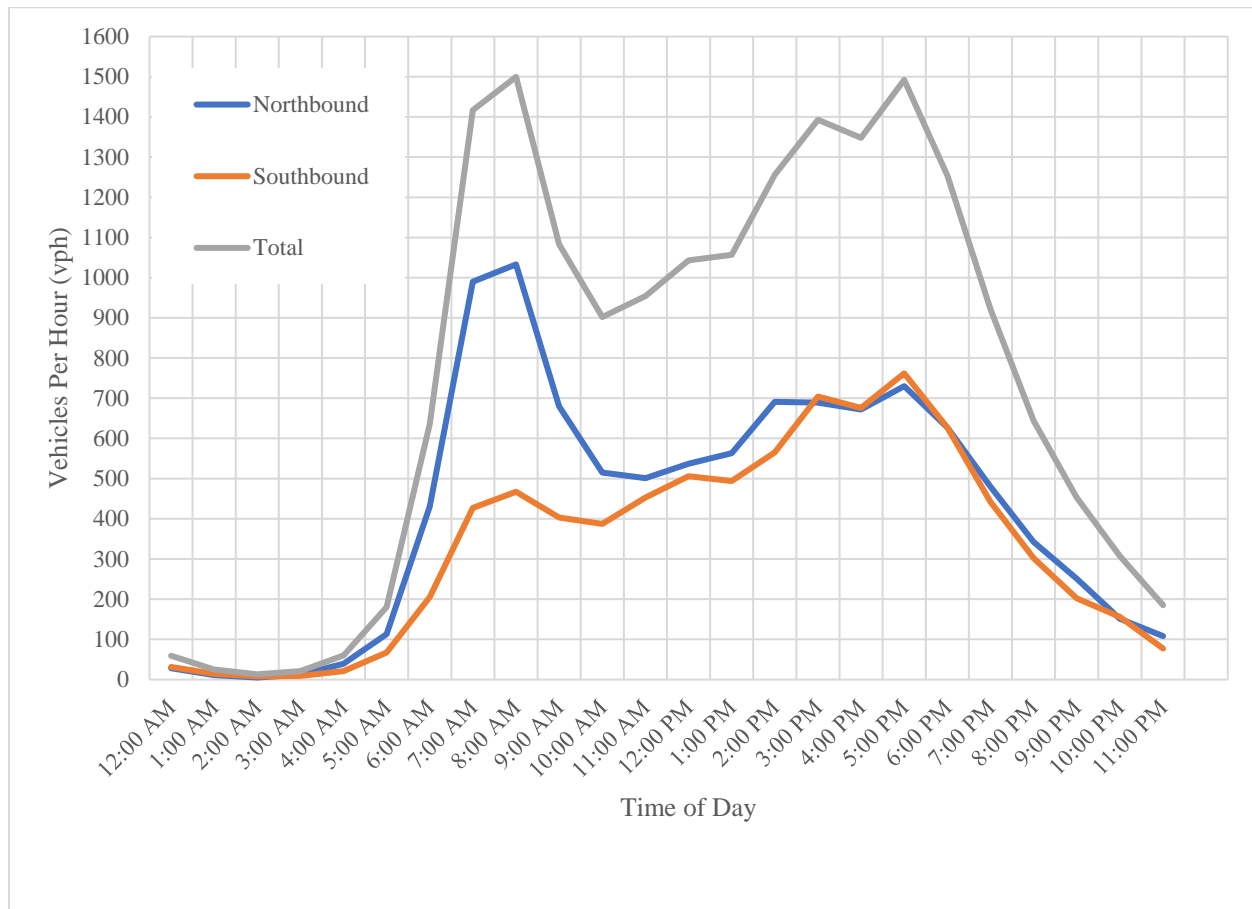
Figure 6

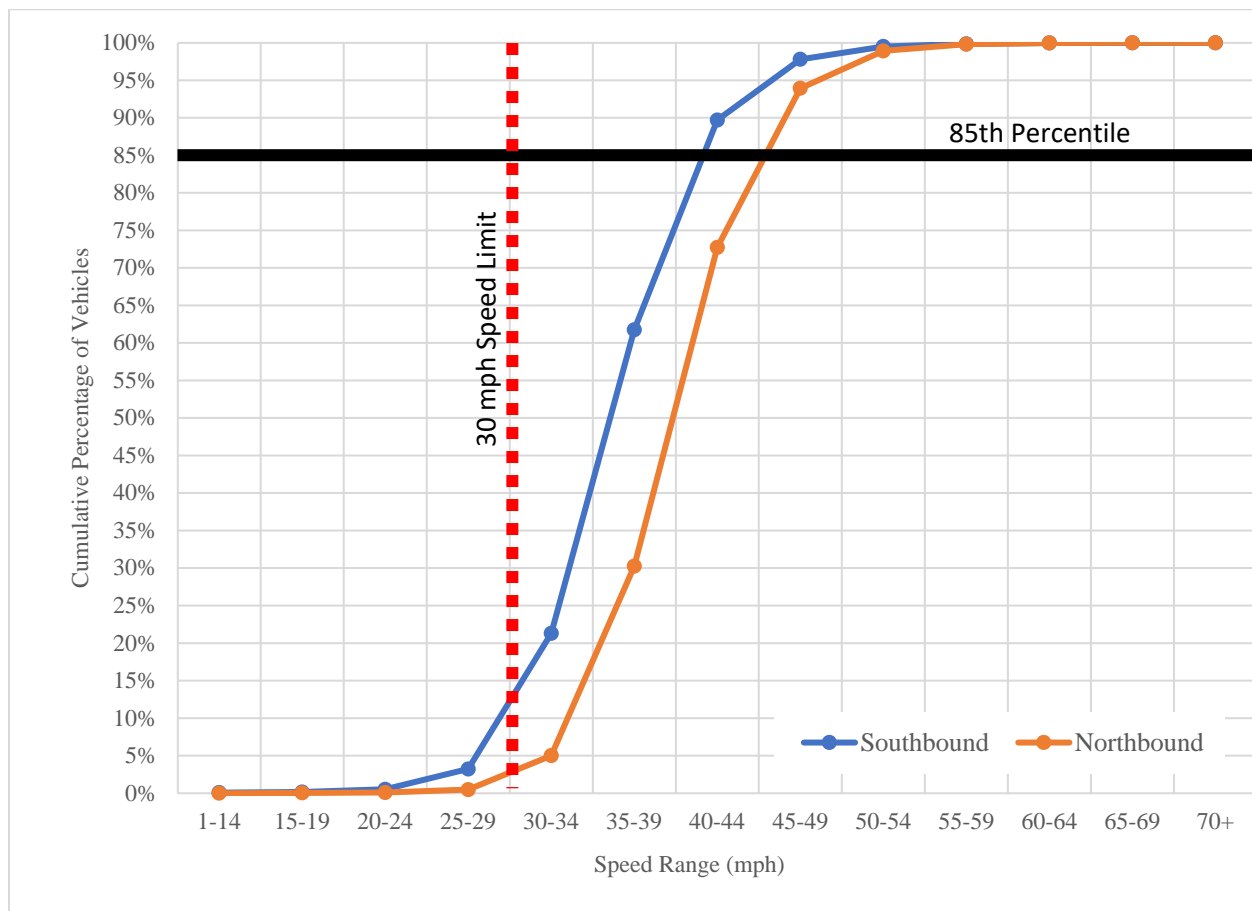


\* Movement not counted during Saturday midday peak hour

Figure 7

Figure 8 Daily Traffic Volumes – Hammond Pond Parkway south of Beacon Street



**Figure 9 Motor Vehicle Speeds – Hammond Pond Parkway south of Beacon Street**

## 2.5. Motor Vehicle Crash Data

Motor vehicle crash data were obtained for the Project's study area from the MassDOT crash database for the years 2012-2016. The data is used to identify correctable safety issues and crash trends. The current MassDOT average crash rate for unsignalized intersections in District 6 (the MassDOT district in which the Project is located) is 0.52 and the average crash rate for signalized intersections is 0.71. Table 2 presents the motor vehicle crash data for the years 2013-2017.

As shown in Table 2, the calculated crash rates throughout the study area are lower than the District 6 average for signalized intersection locations. The evaluation indicates that there are no significant safety issues based on the crash history. However, vehicular speeds continue exceed the posted speed limit and desired speed, creating potential safety issues for multi-modal users such as bicyclists and pedestrians.

The intersection of Hammond Pond Parkway at Beacon Street and Hobart Road experienced a total of 22 crashes over the five-year review period and a crash rate of 0.40 crashes per million entering vehicles. The majority of crashes were rear-end collisions, possibly indicating issues with the traffic signal timings, queues at the intersection, and overall levels of congestion.

The intersection of Hammond Pond Parkway at the Chestnut Hill Mall Driveway experienced seven crashes over the five-year review period, with angle and rear-end type collisions comprising the majority.

The intersection of Hammond Pond Parkway at The Street Driveway experienced a total of 17 crashes over the five-year period. Angle type collisions represented the majority, which could be due to conflicting vehicle maneuvers at the intersection. With the exception of a single crash resulting in an injury, all crashes at this intersection resulted in property damage only, indicating that the collisions may be occurring at lower speeds through the intersection.

The review of the motor vehicle crash data also indicated that there were no reported crashes at the intersection of Hammond Pond Parkway at 300 Hammond Pond Parkway driveway and that all crashes identified along the roadway were related to one of the intersections shown in Table 2.

Table 2 Motor Vehicle Crash Data Summary

	Hammond Pond Parkway/ Beacon Street/ Hobart Road	Hammond Pond Parkway/ Mall at Chestnut Hill	Hammond Pond Parkway/ The Street Driveway
<b>Total Crashes</b>	<b>22</b>	<b>7</b>	<b>17</b>
<b>Year</b>			
2013	3	0	1
2014	4	3	1
2015	4	1	11
2016	4	2	3
2017	7	1	1
<b>Severity</b>			
Property Damage	16	5	16
Injury	6	2	1
Fatality	0	0	0
<b>Collision Type</b>			
Angle	4	3	12
Rear End	12	3	4
Sideswipe	1	0	0
Other	5	1	1
<b>Time</b>			
12AM – 7AM	2	0	0
7AM – 9AM	1	0	1
9AM – 4PM	11	4	11
4PM – 6PM	1	1	1
6PM – 12AM	7	2	4
<b>Road Conditions</b>			
Dry	17	6	16
Wet	4	0	1
Ice/Snow	1	1	0
<b>Month</b>			
Dec – Feb	5	3	3
Mar – May	8	1	6
June – Aug	5	3	3
Sept – Nov	4	0	5
<b>Light Conditions</b>			
Daylight	13	4	15
Dark	9	3	2
Dawn	0	0	0
Dusk	0	0	0
Average Per Year	4.40	1.40	3.40
Intersection Type	Sig	Sig	Sig
Calculated Crash Rate <sup>1</sup>	0.40	0.17	0.43
Exceeds District Average?	No	No	No

<sup>1</sup> Per million entering vehicles, as defined by the MassDOT Highway Division

### 3 Future Conditions

Traffic volumes in the study area were projected to the year 2029, which reflects a ten-year traffic planning horizon. The future traffic volumes considered general traffic growth trends in the area and new traffic expected to be generated by planned and proposed projects in the vicinity of the Project.

#### 3.1. Background Traffic Growth

A review of historical traffic count data indicates that volumes have decreased from 2016 to 2019 along Hammond Pond Parkway. To account for unforeseen traffic growth along the roadway, an annual traffic growth rate of 0.5 percent per year was applied to the 2019 traffic volumes.

#### 3.2. Site Specific Growth

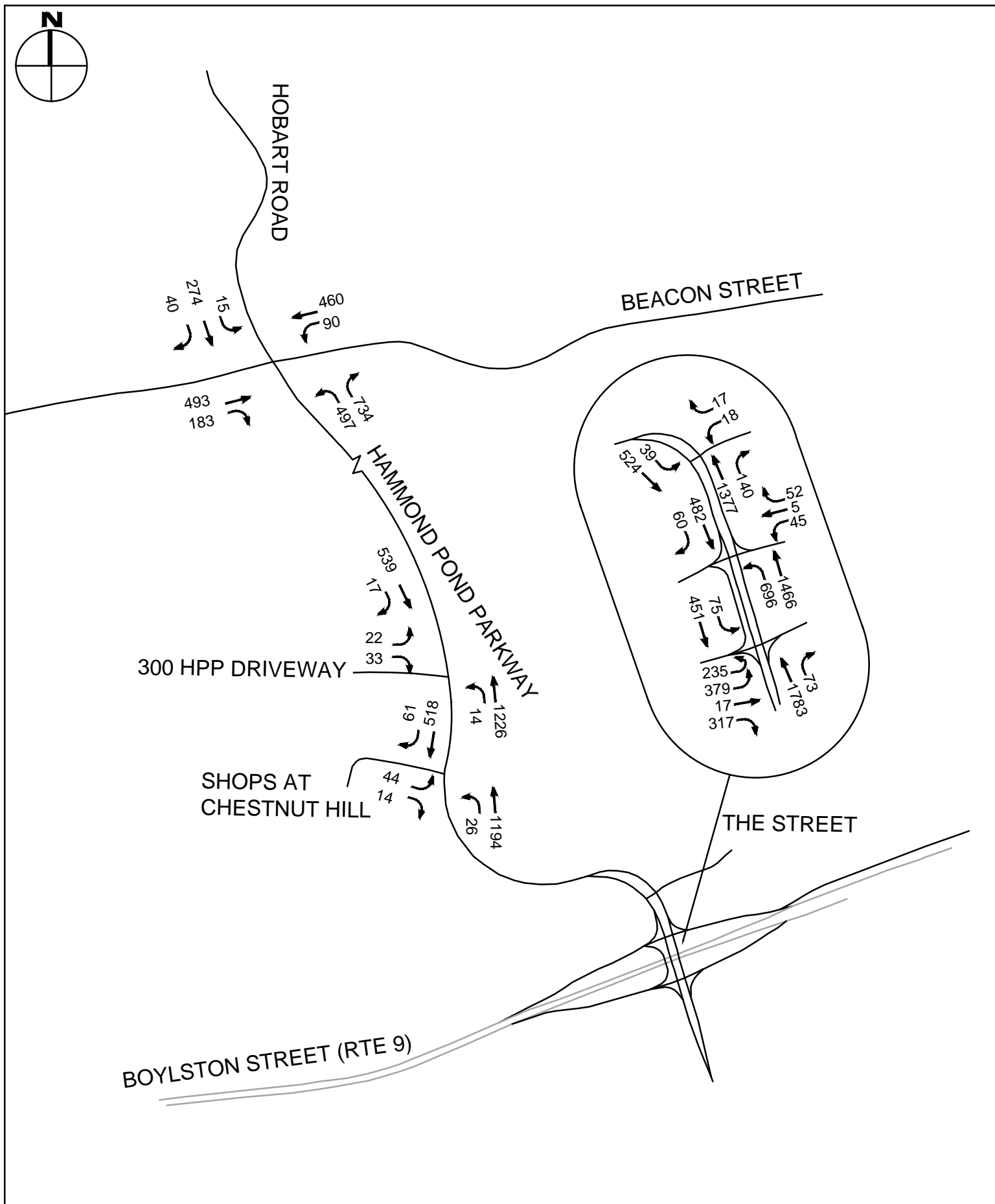
The 300 Hammond Pond Parkway property is currently owned by Boston College and will be renovated for future university use. Operations and usage of the site are not expected to change significantly from existing conditions after the renovations are complete. As such, traffic volumes from the future renovation project were not added to or subtracted from the existing traffic volume network. There are no additional proposed projects within the vicinity of the study area that are expected to change traffic patterns along Hammond Pond Parkway.

#### 3.3. Future Traffic Volumes

The 0.5 percent per year annual growth rate was applied to the 2019 existing condition traffic volumes. The 2029 future condition traffic volumes are presented in Figures 10 through 12 for the weekday morning, weekday evening, and Saturday midday peak hours. Based on information obtained from MassDOT<sup>3</sup>, traffic volumes through 2020 and early 2021 have decreased significantly from the levels experienced in 2019. Traffic reductions along the Massachusetts Turnpike through Newton have fluctuated by week and have generally been between 25 to 40 percent since July 2020. It is expected that traffic volumes will continue to be lower than 2019 levels throughout 2021, while the various restrictions on employment and commerce remain in place. Traffic volumes are expected to increase from 2020 levels in the future. However, the levels of increase are unpredictable and will be influenced by systemic changes in trends in employment and residential patterns. It is possible that traffic volumes in 2029 will not reach the volumes projected in this study by applying the 0.5 percent annual growth rate to the 2019 volumes. To account for the unpredictability of future traffic patterns, the projected traffic volumes are conservative or higher than what may be realized in ten years.

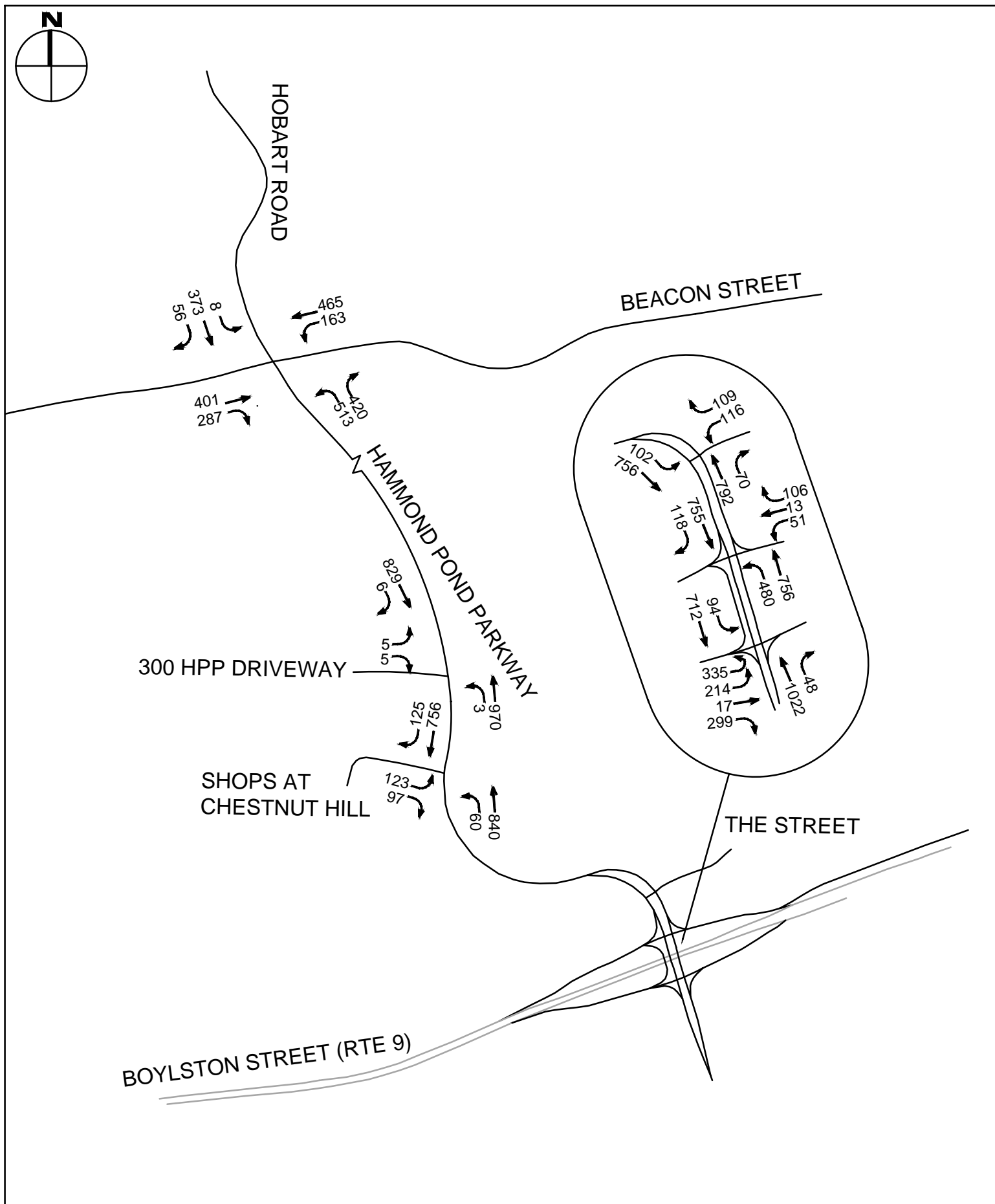
<sup>3</sup> MassDOT Mobility Dashboard; data updated January 26, 2021.





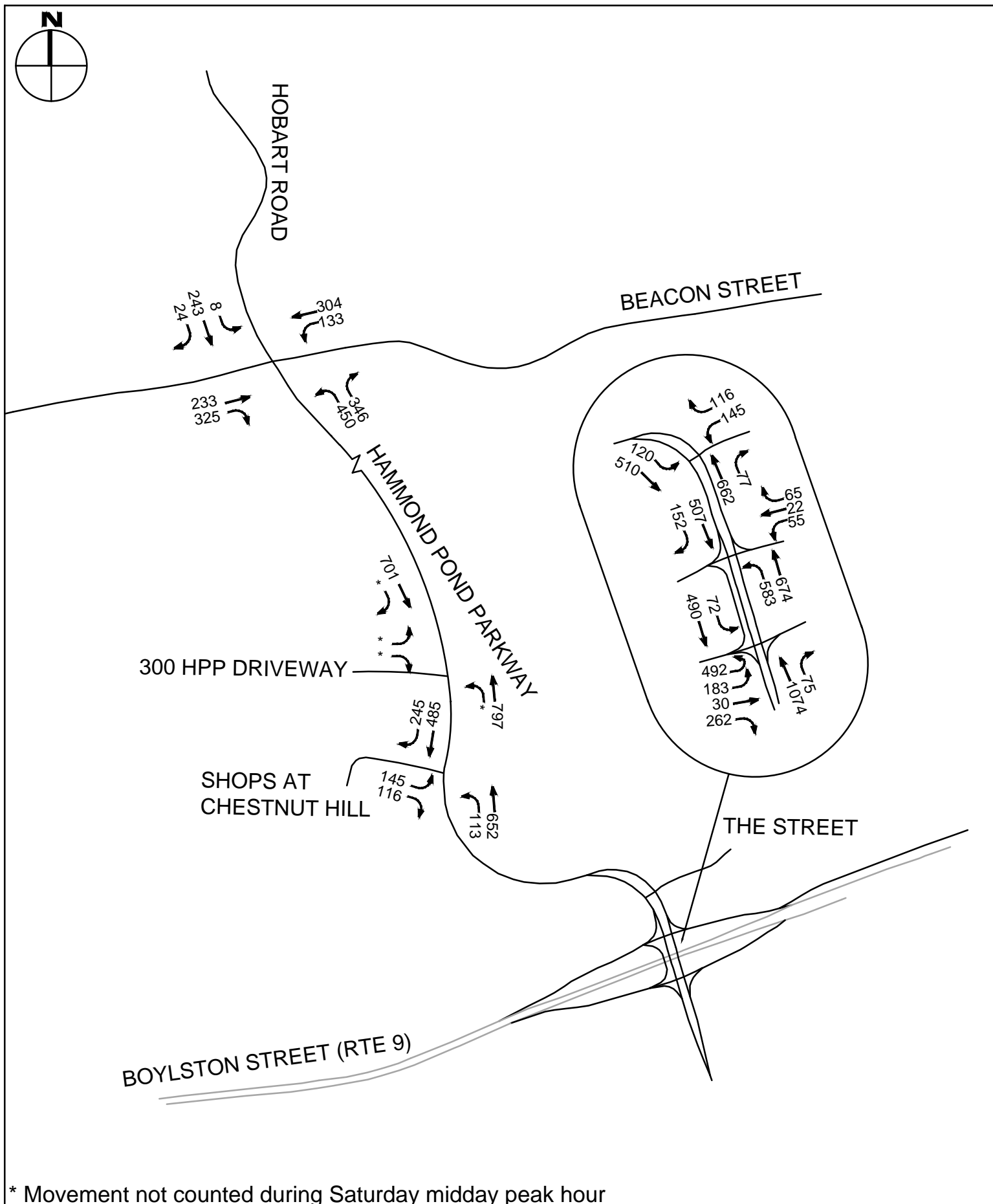
2029 Projected Weekday Morning Peak Hour Traffic Volumes  
Hammond Pond Parkway Improvements  
Newton, MA

Figure 10



2029 Projected Weekday Afternoon Peak Hour Traffic Volumes  
Hammond Pond Parkway Improvements  
Newton, MA

Figure 11



2029 Projected Saturday Midday Traffic Volumes  
Hammond Pond Parkway Improvements  
Newton, MA

Figure 12

## 4 Proposed Design

The objective of the Project is to provide a modern design that will meet the current multi-modal needs of the transportation system. The Project will redesign Hammond Pond Parkway between Route 9 and Beacon Street to align with the long-term vision of a comprehensive bicycle and pedestrian network throughout the parkway system. Currently, the Parkway is not conducive to bicycling and pedestrian activity due to the high travel speeds and lack of formal infrastructure to accommodate user needs other than vehicles.

The Hammond Pond Parkway improvement project will incorporate complete streets principles by reducing the number of vehicular travel lanes and adding pedestrian and bicycle facilities to the corridor. The lane reductions along with the new pedestrian and bicycle facilities are achievable based on the prevailing traffic volumes along Hammond Pond Parkway. The Project will increase safety throughout the corridor by reducing vehicular speeds and providing a separated facility for bicyclists and pedestrians. This Project is intended to both improve conditions for existing non-vehicular users of the parkway and to attract additional users through the installation of a separated bicycle and pedestrian facility that will fundamentally change the character of this segment of Hammond Pond Parkway. The Project will upgrade the entire corridor to accommodate ADA accessibility needs and improve access to the adjacent conservation areas. The proposed design includes a dedicated shared-use pathway for bicycles and pedestrians along the west (southbound) side of Hammond Pond Parkway that will connect the bicycle lanes along Beacon Street to the Route 9 interchange. The Project will also incorporate a geometric re-design of the intersection of Hammond Pond Parkway/Beacon Street/Hobart Road to upgrade the pedestrian and bicycle facilities. Stormwater drainage will also be evaluated as part of this Project and included in later submissions. An evaluation of the existing catch basins and Hammond Brook culvert will be conducted in further design stages of the Project. This section describes the elements of the proposed design of Hammond Pond Parkway.

### 4.1. Conceptual Improvement Plan

The proposed concept plan for the Hammond Pond Parkway improvements incorporates complete street principles to address the multi-modal needs for improved mobility throughout the corridor. A road diet will be introduced that reduces the number of travel lanes along Hammond Pond Parkway from four lanes to two lanes. Daily traffic volumes counted along Hammond Pond Parkway through the study area are approximately 18,460 vehicles per day and 1,550 vehicles per hour (both directions) during the peak commuter periods. Based on the *Road Diet Informational Guide*<sup>4</sup>, road diets for existing four lane roadways can work for roadways that experience up to 23,000 vpd. The Institute of Transportation Engineers (ITE) also provide guidance on the implementation of road diets<sup>5</sup>. According to ITE case studies, road diets reduce crashes and travel speeds and improve the flow of traffic while having minimal effects on capacity and traffic diversions on roadways under 20,000 vpd.

Pedestrian and bicyclists' amenities are currently minimal to absent throughout most of this segment of Hammond Pond Parkway. The concept plan shows a new 10 to 12-foot wide shared-use path along the entirety of the west (southbound) side of Hammond Pond Parkway that is intended to improve safety and

<sup>4</sup> *Road Diet Informational Guide*; Federal Highway Administration; Washington, DC; 2014.

<sup>5</sup> *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*; Institute of Transportation Engineers; Washington, DC; 2010.

ADA accessibility by providing pedestrians and bicyclists with a separated facility. In general, the shared-use path will be separated from the roadway by a grass buffer from the roadway to provide additional comfort and safety for all users. In addition to the redesign of Hammond Pond Parkway, the intersection of Hammond Pond Parkway at Beacon Street and Hobart Road will also be reconstructed to improve pedestrian and bicycle facilities.

There may be additional challenges related to design of stormwater management systems and grading-related issues at the southern end of the Project as Hammond Pond Parkway slopes downward toward Route 9. The Project also includes an existing bridge crossing over an existing MBTA right-of-way approximately a quarter-mile south of Beacon Street. No changes to the bridge will be required to accommodate the Project. It is also not expected that there will be any right-of-way issues, as the Project will not encroach beyond the existing roadway layout lines. The following presents a summary of the elements shown in the concept plans in Figures 13 through 17.



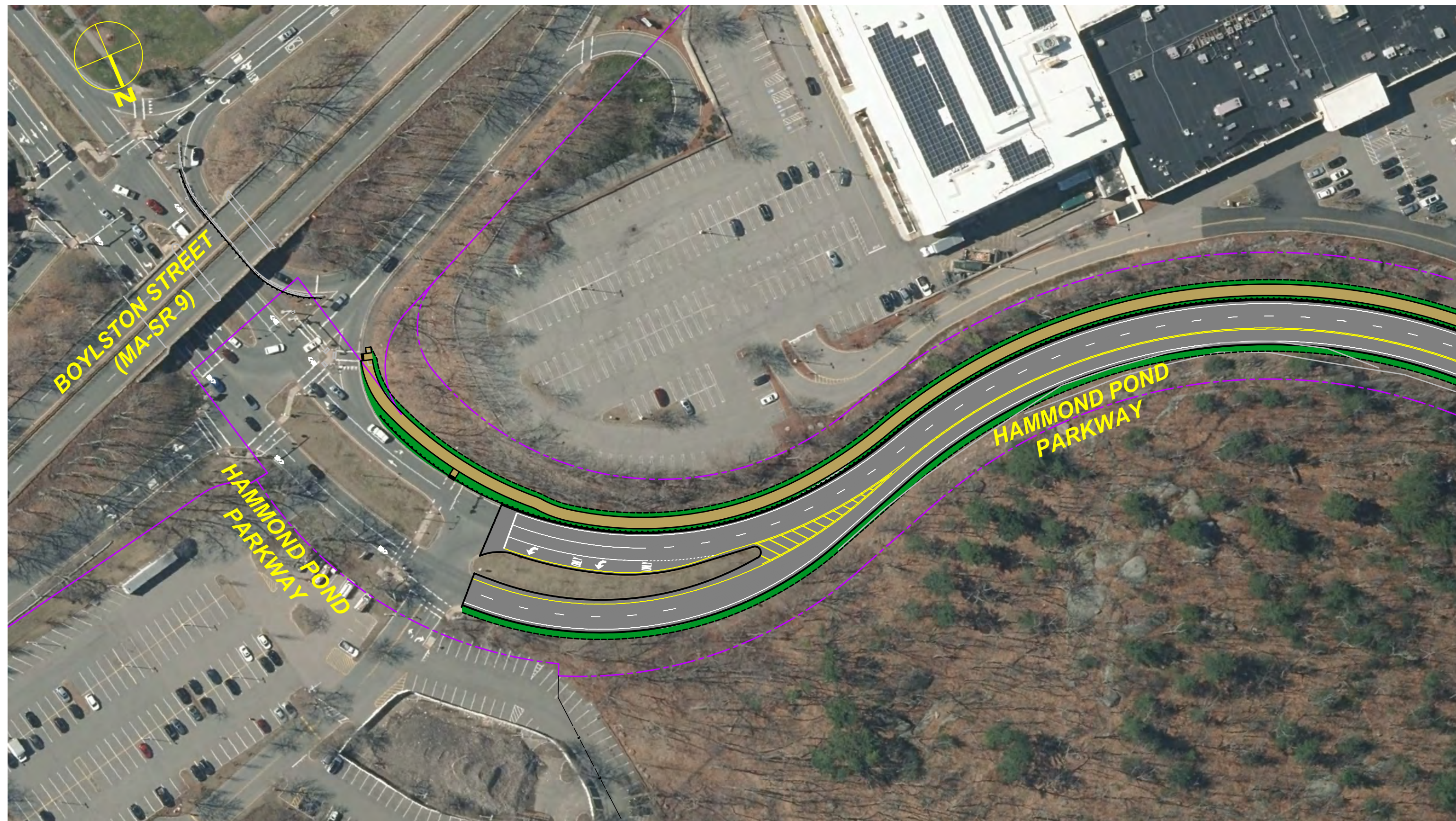
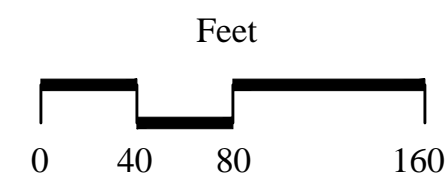


Figure 13  
 Conceptual Improvement Plan (1 of 5)  
 Hammond Pond Parkway Improvements  
 Department of Conservation & Recreation

# Conceptual Design





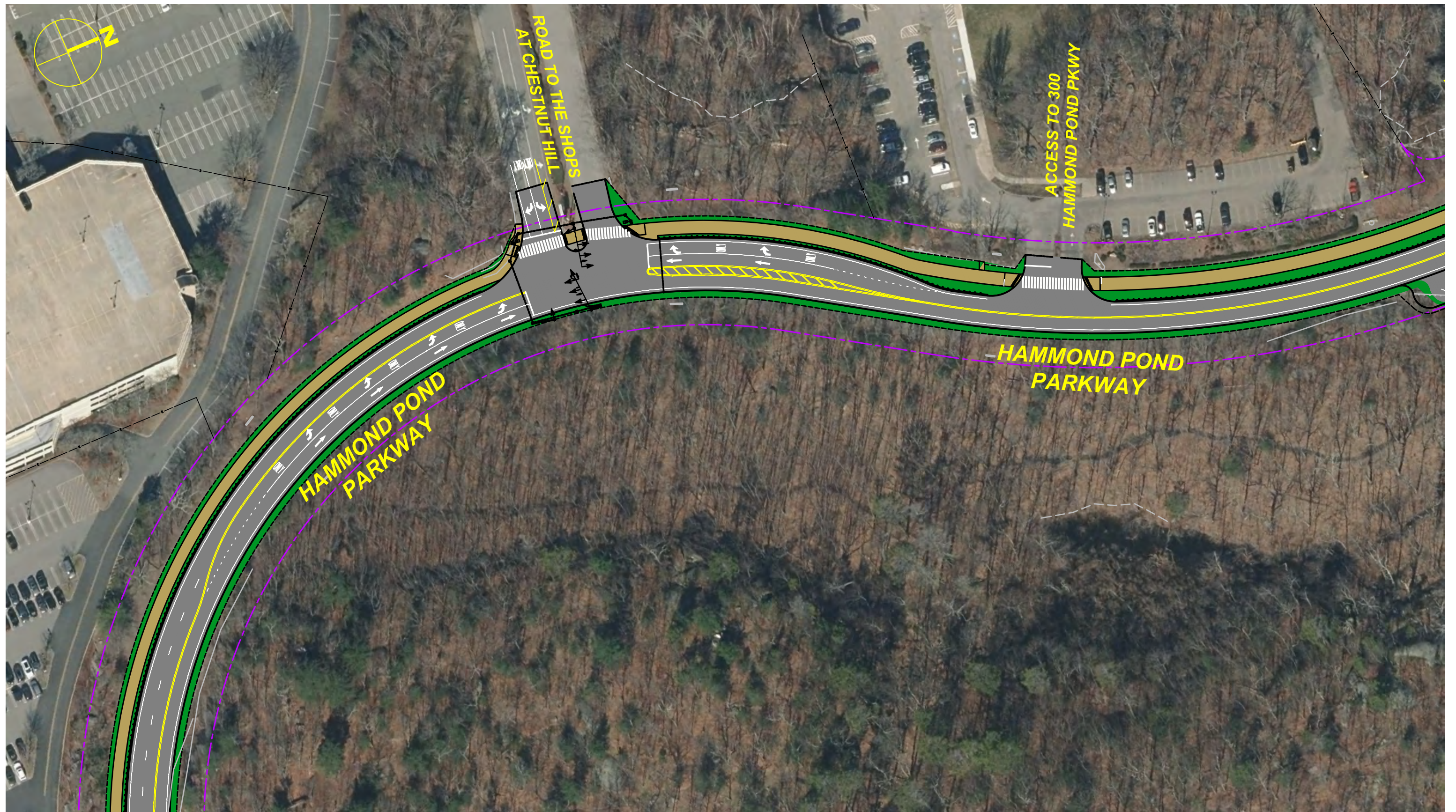


Figure 14  
 Conceptual Improvement Plan (2 of 5)  
 Hammond Pond Parkway Improvements  
 Department of Conservation & Recreation

# Conceptual Design

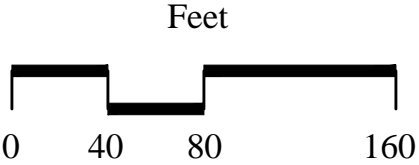
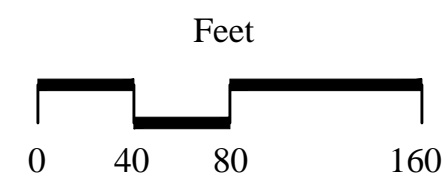






Figure 15  
 Conceptual Improvement Plan (3 of 5)  
 Hammond Pond Parkway Improvements  
 Department of Conservation & Recreation

## Conceptual Design





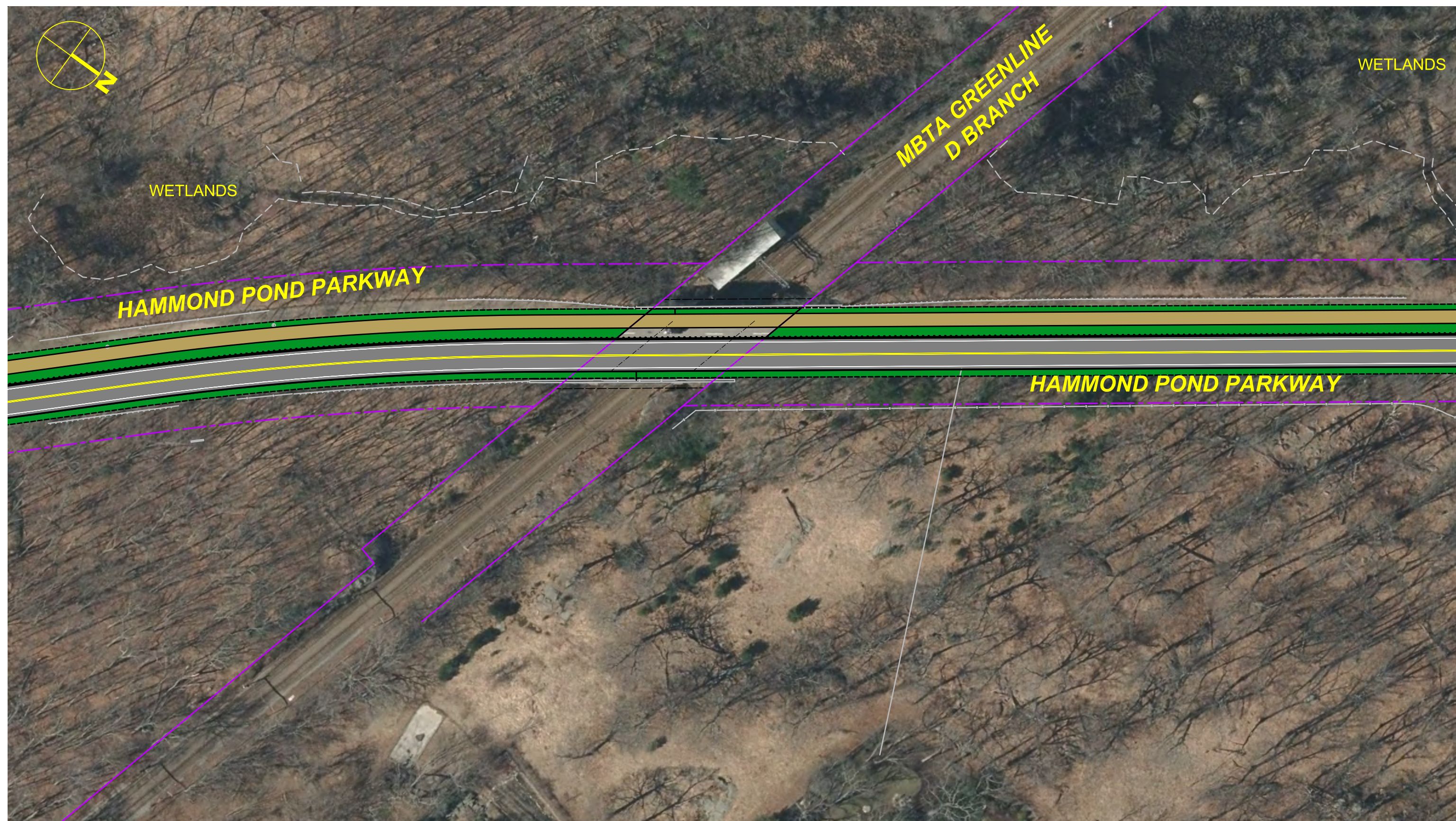


Figure 16  
 Conceptual Improvement Plan (4 of 5)  
 Hammond Pond Parkway Improvements  
 Department of Conservation & Recreation

## Conceptual Design

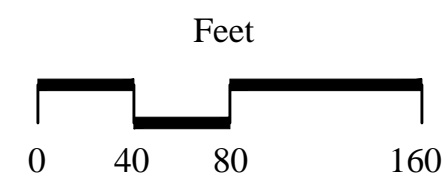
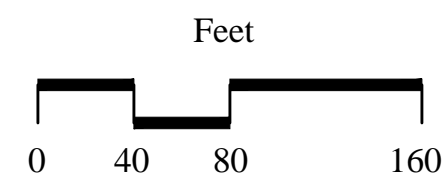






Figure 17  
 Conceptual Improvement Plan (5 of 5)  
 Hammond Pond Parkway Improvements  
 Department of Conservation & Recreation

# Conceptual Design





**4.1.1. Hammond Pond Parkway at Beacon Street and Hobart Road**

The intersection of Hammond Pond Parkway/Beacon Street/Hobart Road will be reconfigured. The intersection will include upgraded crosswalks and will connect the proposed shared-use path along Hammond Pond Parkway to bicycle lanes along Beacon Street. The Hammond Pond Parkway northbound approach will be reduced to a single left-turn lane and a channelized right-turn lane. The Beacon Street westbound approach will generally remain the same as the existing conditions. The Beacon Street eastbound approach will remove the existing channelizing island and consist of a through lane and an exclusive right-turn lane. The removal of the island will provide for better pedestrian and bicycle accessibility and safety. The Hobart Road southbound approach will generally remain the same as the existing conditions. A new crosswalk will be installed along the west leg of Beacon Street and the existing crosswalk across the east leg will be removed. New signal equipment will be installed and an optimal traffic signal timing and phasing plan will be implemented. The intersection improvements are shown in Figure 18.



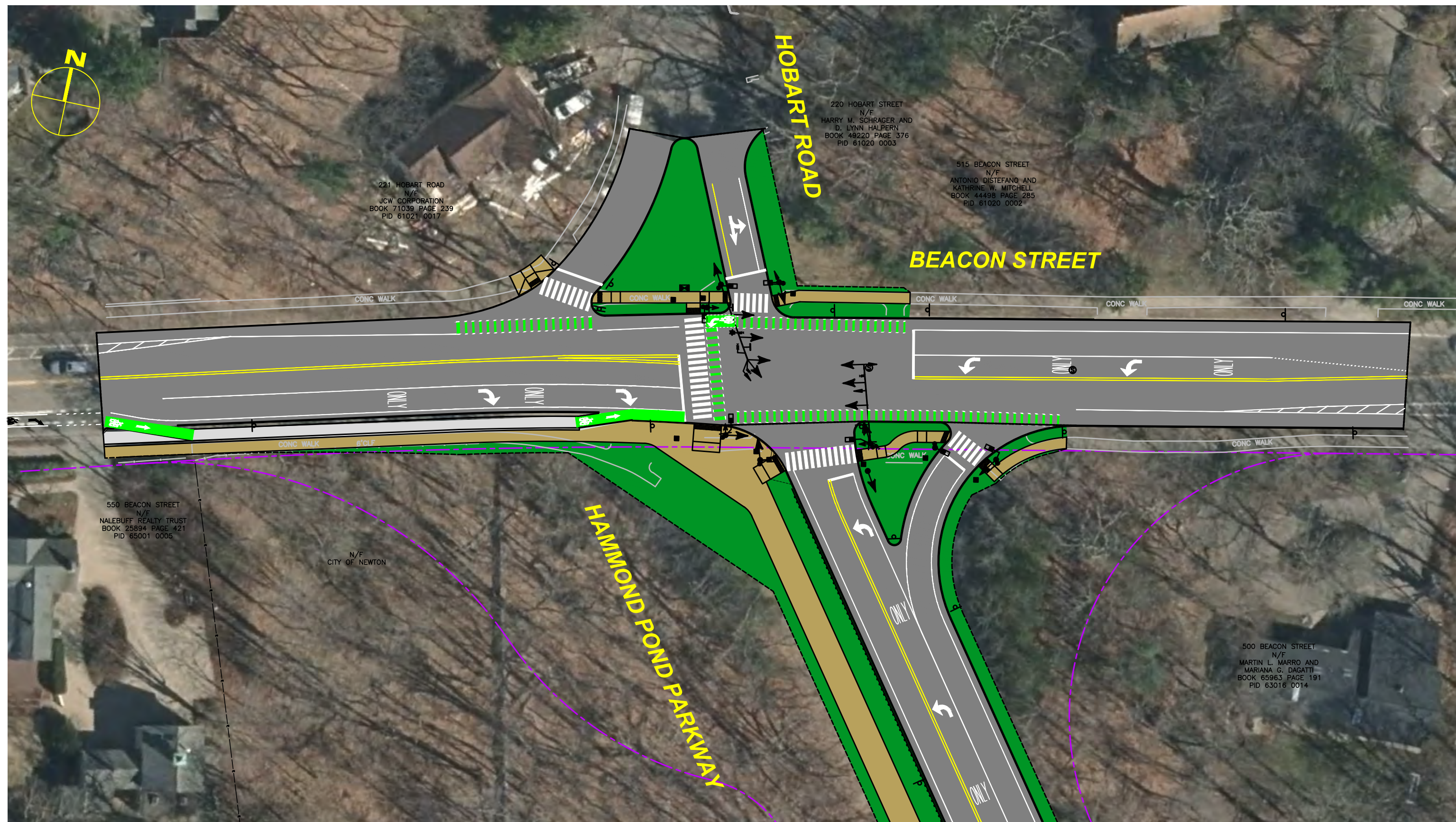


Figure 18  
Hammond Pond Parkway at Beacon Street  
Conceptual Improvement Plan  
Department of Conservation & Recreation

# Conceptual Design



#### **4.1.2. Hammond Pond Parkway: Beacon Street to 300 Hammond Pond Parkway**

Hammond Pond Parkway between Beacon Street and the 300 Hammond Pond Parkway Driveway will consist of a shared-use path, a grass buffer, and two travel lanes separated by a double-yellow centerline. The total length of this segment is approximately 3,100 feet. Parking will be prohibited along this segment of Hammond Pond Parkway. The intersection of Beacon Street at 300 Hammond Pond Parkway will be reconstructed to accommodate the Project. The driveway's lane configuration will remain as two lanes, with the exiting lane placed under stop-sign control. Hammond Pond Parkway at Chestnut Hill Mall Driveway

The intersection of Hammond Pond Parkway/Chestnut Hill Mall Driveway will consist of exclusive left and right-turn lanes along the driveway. This serves as a reduction in overall width by eliminating one of the existing left-turn lanes. The reduction in width will serve pedestrians by providing a shorter and safer crossing. Geometric modifications will be required to provide for the extension of the shared-use path through the intersection including the extension of the median island along the driveway approach to the intersection. The traffic signal equipment will require modifications.

#### **4.1.3. Hammond Pond Parkway: Chestnut Hill Mall Driveway to The Street Driveway**

Hammond Pond Parkway between 250 Hammond Pond Parkway and a point approximately 400 feet north of The Street Driveway will consist of a shared-use path, a small grass buffer, and two travel lanes separated by a double-yellow centerline. The total length of this segment is approximately 1,025 feet. The intersection of Hammond Pond Parkway at The Street Driveway will be reconstructed north of the driveway to match existing conditions, with the addition of the shared-use path, which will extend to the Route 9 westbound on-ramp.

### **4.2. Pedestrian and Bicycle Accessibility**

The project will greatly enhance pedestrian and bicycle accessibility along Hammond Pond Parkway by constructing a shared-use path along the west side of the roadway, upgrading all curb ramps to meet ADA requirements, and upgrading and installing crosswalks where needed. Pedestrian access will be improved to provide safe connections to the commercial properties and the conservation areas located along Hammond Pond Parkway. Upgrades to the geometry and traffic signals at Beacon Street and The Mall at Chestnut Hill will be upgraded to include pedestrian phases and shorter crossings.

### **4.3. Construction and Traffic Management**

Hammond Pond Parkway and all access points are expected to remain open during construction. Hammond Pond Parkway will continue to operate with two-way travel and the potential for lane closures throughout construction. Short traffic disruptions are expected to accommodate the contractor's operations.

Pedestrians and bicycles will be protected and detoured as necessary where there are dedicated facilities during construction. There are no existing bicycle or pedestrian facilities north of the 300 Hammond Pond Parkway driveway and no special accommodations will be made through the work zone.

## 5 Traffic Operations Analysis

To assess the quality of traffic flow, capacity analyses were conducted at the study area intersections for the weekday morning, weekday evening, and Saturday midday peak hours. Analyses were conducted using the Synchro 10 traffic analysis software, which is based on methods defined in the Highway Capacity Manual 2010<sup>6</sup>.

A primary result of capacity analyses is the assignment of a Level of Service (LOS) to traffic facilities under various traffic flow conditions. Six Levels of Services are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions with little delay and LOS F representing the worst, with the most delay.

The average delay per vehicle approaching an intersection is used to quantify the LOS at a particular intersection. The LOS designations are defined below in Table 3. Average delay measures the mean stopped delay experienced by vehicles entering an intersection during the analysis period. Average delay is measured for each individual turning movement that must yield the right of way and for the intersection as a whole, if signalized.

Table 3 Level of Service Designations

Level of Service	Average Delay (seconds/vehicle)	
	Unsignalized	Signalized
A	0.0 - 10.0	0.0 - 10.0
B	>10.0 – 15.0	>10.0 – 20.0
C	>15.0 – 25.0	>20.0 – 35.0
D	>25.0 – 35.0	>35.0 – 55.0
E	>35.0 – 50.0	>55.0 – 80.0
F	>50.0	>80.0

Source: Transportation Research Board, *Highway Capacity Manual*, National Research Council, 2010.

Tables 4 through 6 show the operating conditions of the study intersections during the weekday morning, weekday evening, and Saturday midday peak hours for the following scenarios:

- 2019 Existing Conditions
- 2029 Future Conditions without Improvements
- 2029 Future Conditions with Improvements

<sup>6</sup> *Highway Capacity Manual* 2010; Transportation Research Board; Washington, DC; 2010.

Table 4 Traffic Operations Analysis Summary – Weekday Morning Peak Hour

	2019 Existing Conditions					2029 Future Conditions without Improvements					2029 Future Conditions with Improvements				
	Delay	LOS	v/c	50th queue	95th queue	Delay	LOS	v/c	50th queue	95th queue	Delay	LOS	v/c	50th queue	95th queue
<b>SIGNALIZED INTERSECTIONS</b>															
<b>Hammond Pond Parkway/Beacon Street/Hobart Road</b>															
Hammond Pond Parkway NBL	47.1	D	0.69	179	239	49.1	D	0.74	191	253	119.4	F	1.13	461	674
Hammond Pond Parkway NBR	1.1	A	0.51	0	0	1.5	A	0.56	0	0	30.7	C	0.90	316	607
Hobart Road SBT	59.8	E	0.75	127	170	62.8	E	0.80	135	190	121.9	F	1.08	262	439
Hobart Road SBR	0.1	A	0.03	0	0	0.1	A	0.04	0	0	0.0	A	0.03	0	0
Beacon Street EBT	213.1	F	1.36	531	699	241.6	F	1.43	574	743	73.3	E	0.98	394	619
Beacon Street EBR	18.3	B	0.47	42	104	19.4	B	0.49	49	113	39.8	D	0.49	124	200
Beacon Street WBL	34.7	C	0.20	53	98	34.9	C	0.22	57	103	63.8	E	0.58	70	127
Beacon Street WBT	20.3	C	0.51	228	317	20.9	C	0.54	245	338	28.7	C	0.62	276	390
<b>Overall</b>	<b>58.4</b>	<b>E</b>				<b>64.4</b>	<b>E</b>				<b>64.3</b>	<b>E</b>			
<b>Hammond Pond Parkway/Mall at Chestnut Hill</b>															
Hammond Pond Parkway NBL	30.2	C	0.07	14	35	30.3	C	0.08	15	37	25.2	C	0.07	11	34
Hammond Pond Parkway NBT	19.4	B	0.90	585	833	25.6	C	0.95	733	1063	15.6	B	0.86	505	1041
Hammond Pond Parkway SBT	14.6	B	0.34	117	157	14.8	B	0.36	125	166	21.6	C	0.52	329	413
Hammond Pond Parkway SBR	-	-	-	-	-	-	-	-	-	-	8.3	A	0.07	9	32
Driveway EBL	38.3	D	0.11	14	28	38.3	D	0.11	16	30	41.5	D	0.20	28	61
Driveway EBR	8.0	A	0.02	0	11	8.0	A	0.02	0	11	6.1	A	0.02	0	11
<b>Overall</b>	<b>18.5</b>	<b>B</b>				<b>22.7</b>	<b>C</b>				<b>17.7</b>	<b>B</b>			
<b>Hammond Pond Parkway/The Street</b>															
Hammond Pond Parkway NBT	2.6	A	0.57	126	128	2.8	A	0.60	146	36	2.4	A	0.50	50	28
Hammond Pond Parkway SBL	2.9	A	0.14	3	9	3.2	A	0.16	4	10	2.6	A	0.13	4	10
Hammond Pond Parkway SBT	1.6	A	0.18	26	40	1.6	A	0.19	28	43	2.5	A	0.35	64	106
Driveway WBL	42.3	D	0.16	10	31	42.4	D	0.17	11	33	42.4	D	0.17	11	33
Driveway WBR	20.1	C	0.14	0	20	19.7	B	0.15	0	21	20.1	C	0.14	0	21
<b>Overall</b>	<b>2.8</b>	<b>A</b>				<b>3.0</b>	<b>A</b>				<b>3.0</b>	<b>A</b>			
<b>UNSIGNALIZED INTERSECTIONS</b>															
<b>Hammond Pond Parkway/300 HPP Driveway</b>															
Hammond Pond Parkway NBL	8.7	A	0.03	-	3	8.8	A	0.03	-	3	8.7	A	0.02	-	0
Hammond Pond Parkway NBT	0.4	A	0.00	-	0	0.6	A	0.00	-	0	0.0	A	0.00	-	0
Hammond Pond Parkway SBT	0.0	A	0.00	-	0	0.0	A	0.00	-	0	0.0	A	0.00	-	0
Hammond Pond Parkway SBR	0.0	A	0.00	-	0	0.0	A	0.00	-	0	0.0	A	0.00	-	0
Driveway EBL	49.6	E	0.44	-	48	50.0	F	0.65	-	98	86.0	F	0.36	-	26
Driveway EBR	10.6	B	0.09	-	8	0.0	A	0.00	-	0	12.6	B	0.07	-	5
<b>Overall</b>	<b>2.2</b>	<b>A</b>				<b>3.5</b>	<b>A</b>				<b>1.3</b>	<b>A</b>			

Table 5 Traffic Operations Analysis Summary – Weekday Evening Peak Hour

	2019 Existing Conditions					2029 Future Conditions without Improvements					2029 Future Conditions with Improvements				
	Delay	LOS	v/c	50th queue	95th queue	Delay	LOS	v/c	50th queue	95th queue	Delay	LOS	v/c	50th queue	95th queue
<b>SIGNALIZED INTERSECTIONS</b>															
<b>Hammond Pond Parkway/Beacon Street/Hobart Road</b>															
Hammond Pond Parkway NBL	47.9	D	0.71	187	247	49.4	D	0.75	198	261	131.6	F	1.16	489	703
Hammond Pond Parkway NBR	0.5	A	0.29	0	0	0.5	A	0.32	0	0	4.5	A	0.49	13	75
Hobart Road SBT	81.9	F	0.95	167	247	93.8	F	1.00	179	269	186.3	F	1.28	392	587
Hobart Road SBR	0.1	A	0.05	0	0	0.1	A	0.05	0	0	0.1	A	0.04	0	0
Beacon Street EBT	118.7	F	1.10	374	536	137.8	F	1.16	409	573	77.7	E	0.97	321	525
Beacon Street EBR	14.4	B	0.61	36	112	16.1	B	0.63	47	127	10.3	B	0.40	66	100
Beacon Street WBL	37.6	D	0.37	102	166	38.0	D	0.39	108	174	79.9	E	0.83	129	239
Beacon Street WBT	20.4	C	0.52	231	322	21.0	C	0.54	248	342	32.2	C	0.68	293	417
<b>Overall</b>	<b>45.9</b>	<b>D</b>				<b>51.2</b>	<b>D</b>				<b>75.2</b>	<b>E</b>			
<b>Hammond Pond Parkway/Mall at Chestnut Hill</b>															
Hammond Pond Parkway NBL	33.4	C	0.22	35	66	33.5	C	0.23	36	68	37.6	D	0.27	33	74
Hammond Pond Parkway NBT	9.0	A	0.70	222	279	9.7	A	0.73	248	312	9.0	A	0.67	204	384
Hammond Pond Parkway SBT	16.0	B	0.54	164	261	16.6	B	0.57	184	280	25.6	C	0.82	355	647
Hammond Pond Parkway SBR	-	-	-	-	-	-	-	-	-	-	0.8	A	0.11	1	12
Driveway EBL	36.6	D	0.27	39	64	37.7	D	0.29	42	67	40.5	D	0.47	71	127
Driveway EBR	5.8	A	0.16	5	32	7.3	A	0.17	11	39	6.7	A	0.17	6	39
<b>Overall</b>	<b>14.4</b>	<b>B</b>				<b>15.1</b>	<b>B</b>				<b>17.5</b>	<b>B</b>			
<b>Hammond Pond Parkway/The Street</b>															
Hammond Pond Parkway NBT	11.9	B	0.40	80	207	6.8	A	0.43	80	110	6.1	A	0.42	79	91
Hammond Pond Parkway SBL	4.9	A	0.24	13	32	5.3	A	0.26	14	34	5.2	A	0.26	14	33
Hammond Pond Parkway SBT	4.1	A	0.31	60	102	4.5	A	0.32	65	11	7.7	A	0.60	166	322
Driveway WBL	49.0	D	0.60	68	116	49.1	D	0.61	71	121	49.1	D	0.61	69	119
Driveway WBR	11.2	B	0.40	0	44	10.9	B	0.41	0	45	11.1	B	0.40	0	46
<b>Overall</b>	<b>10.7</b>	<b>B</b>				<b>8.6</b>	<b>A</b>				<b>10.3</b>	<b>B</b>			
<b>UNSIGNALIZED INTERSECTIONS</b>															
<b>Hammond Pond Parkway/300 HPP Driveway</b>															
Hammond Pond Parkway NBL	9.6	A	0.01	-	0	9.8	A	0.01	-	0	9.8	A	0.01	-	0
Hammond Pond Parkway NBT	0.1	A	0.00	-	0	0.1	A	0.00	-	0	0.0	A	0.00	-	0
Hammond Pond Parkway SBT	0.0	A	0.00	-	0	0.0	A	0.00	-	0	0.0	A	0.00	-	0
Hammond Pond Parkway SBR	0.0	A	0.00	-	0	0.0	A	0.00	-	0	0.0	A	0.00	-	0
Driveway EBL	35.3	E	0.09	-	8	40.6	E	0.13	-	15	82.5	F	0.25	-	23
Driveway EBR	11.3	B	0.01	-	0	11.6	B	0.02	-	3	16.0	C	0.03	-	3
<b>Overall</b>	<b>0.3</b>	<b>A</b>				<b>0.5</b>	<b>A</b>				<b>0.7</b>	<b>A</b>			



Table 6 Traffic Operations Analysis Summary – Saturday Midday Peak Hour

Movement	2019 Existing Conditions					2029 Future Conditions without Improvements					2029 Future Conditions with Improvements				
	Delay	LOS	v/c	50th queue	95th queue	Delay	LOS	v/c	50th queue	95th queue	Delay	LOS	v/c	50th queue	95th queue
<b>SIGNALIZED INTERSECTIONS</b>															
<b>Hammond Pond Parkway/Beacon Street/Hobart Road</b>															
Hammond Pond Parkway NBL	45.1	D	0.63	160	215	46.1	D	0.66	170	226	61.1	E	0.92	304	596
Hammond Pond Parkway NBR	0.3	A	0.24	0	0	0.4	A	0.25	0	0	3.0	A	0.39	0	50
Hobart Road SBT	54.2	D	0.63	106	145	55.9	E	0.67	113	153	62.3	E	0.82	169	349
Hobart Road SBR	0.0	A	0.02	0	0	0.0	A	0.02	0	0	0.0	A	0.02	0	0
Beacon Street EBT	48.3	D	0.62	173	249	50.8	D	0.68	185	265	55.9	E	0.77	157	261
Beacon Street EBR	8.7	A	0.60	0	63	8.4	A	0.61	0	64	47.9	D	0.78	210	422
Beacon Street WBL	36.3	D	0.30	82	139	36.6	D	0.32	87	145	57.3	E	0.66	91	164
Beacon Street WBT	17.0	B	0.33	134	193	17.5	B	0.36	143	206	27.9	C	0.51	166	245
<b>Overall</b>	<b>27.8</b>	<b>C</b>				<b>28.6</b>	<b>C</b>				<b>43.0</b>	<b>D</b>			
<b>Hammond Pond Parkway/Mall at Chestnut Hill</b>															
Hammond Pond Parkway NBL	30.3	C	0.33	50	110	32.3	C	0.38	57	118	30.1	C	0.36	41	122
Hammond Pond Parkway NBT	7.2	A	0.57	138	176	7.3	A	0.59	151	191	9.5	A	0.60	129	295
Hammond Pond Parkway SBT	14.9	B	0.53	111	188	15.3	B	0.54	127	202	28.1	C	0.78	175	358
Hammond Pond Parkway SBR	-	-	-	-	-	-	-	-	-	-	17.4	B	0.56	39	140
Driveway EBL	32.1	C	0.28	35	73	34.1	C	0.31	41	77	28.5	C	0.39	53	140
Driveway EBR	3.8	A	0.16	0	29	3.9	A	0.18	0	29	3.2	A	0.15	0	30
<b>Overall</b>	<b>13.8</b>	<b>B</b>				<b>14.3</b>	<b>B</b>				<b>18.2</b>	<b>B</b>			
<b>Hammond Pond Parkway/The Street</b>															
Hammond Pond Parkway NBT	6.2	A	0.37	39	52	6.7	A	0.40	56	71	6.2	A	0.38	53	69
Hammond Pond Parkway SBL	5.5	A	0.25	17	40	6.0	A	0.28	18	43	5.3	A	0.27	17	39
Hammond Pond Parkway SBT	4.2	A	0.21	40	72	4.5	A	0.22	44	78	5.6	A	0.41	91	176
Driveway WBL	49.3	D	0.66	86	139	49.4	D	0.67	91	145	49.0	D	0.62	75	127
Driveway WBR	9.9	A	0.41	0	45	9.6	A	0.41	0	46	10.6	B	0.48	0	52
<b>Overall</b>	<b>9.8</b>	<b>A</b>				<b>10.1</b>	<b>B</b>				<b>9.7</b>	<b>A</b>			

The following summarizes the traffic operations analysis:

#### **Hammond Pond Parkway at Beacon Street and Hobart Road**

The intersection of Hammond Pond Parkway at Beacon Street and Hobart Road currently operates at an overall LOS E during the weekday morning peak hour, LOS D during the weekday evening peak hour and LOS C during the Saturday midday peak hour. Beacon Street and Hammond Pond Parkway are both used heavily during the commuter periods and some approaches are currently operating over capacity, with high levels of delay and queuing. The Beacon Street eastbound movement operates at LOS F, with traffic volumes at its operating capacity.

The intersection geometry will be modified and one of the northbound left-turn lanes along the Hammond Pond Parkway approach will be eliminated, consistent with the receiving lanes along Beacon Street westbound, west of the intersection. An optimal traffic signal timing and phasing plan will also be implemented at the intersection. The Project will not provide additional capacity at the intersection but will enhance the pedestrian and bicycle connectivity and safety. The intersection is expected to operate at an overall LOS E during the weekday morning and evening peak hours and LOS D during the Saturday midday peak hour. The Hammond Pond Parkway northbound left-turn movement is expected to operate at or near its operating capacity during the commuter peak hours due to the reduction in travel lanes. The Beacon Street eastbound approach is expected to improve, but still operate at or near its capacity.

#### **Hammond Pond Parkway/The Mall at Chestnut Hill Driveway**

This intersection currently operates at an overall LOS B during all three analysis peak hours. The Project will reduce the number of lanes along the eastbound driveway approach by eliminating a left-turn lane and will also reduce the number of lanes along Hammond Pond Parkway by eliminating one lane of travel from each approach. The Project will also upgrade all curb ramps, pedestrian signal equipment, and crosswalks at the intersection. With implementation of the Project, the intersection is expected to continue to operate at an overall LOS B during all three analysis periods, with all approaches operating under capacity.

#### **Hammond Pond Parkway/The Street Driveway**

This intersection currently operates at an overall LOS A during the weekday morning peak hour and LOS B during the weekday evening and Saturday midday peak hours. Signal upgrades and pedestrian improvements will be implemented at this intersection as part of the Project. The Project is expected to have minimal impact on traffic operations at this intersection. The overall LOS is not expected to change from existing conditions.

#### **Hammond Pond Parkway at 300 Hammond Pond Parkway**

This intersection currently operates at an overall LOS A during the weekday morning and evening peak hours, with minimal delay along Hammond Pond Parkway. The driveway approach operates at LOS E during the peak hours and is expected to operate at LOS F in the future. The driveway approach operates under capacity and experiences delays due to the high traffic volume along Hammond Pond Parkway, which is typical of a minor driveway that intersects a major roadway.

## 6 Conclusions

Hammond Pond Parkway is one of DCR's integral transportation corridors that travels through Chestnut Hill in the City of Newton and Town of Brookline. The corridor was selected by the DCR to implement complete street principles that encourage multi-modal travel. The parkway primarily serves motor vehicles and has substandard accommodations for bicyclists and pedestrians. The DCR looks to improve pedestrian and bicycle travel along Hammond Pond Parkway to provide a better balance for all modes of transportation. The Project will reconstruct the roadway to reduce the cross section dedicated for vehicle travel and construct a shared-use path to significantly enhance both pedestrian and bicycle travel. The Project will also upgrade all existing crosswalks, curb ramps, and traffic signal equipment within the study area. The signalized intersection of Hammond Pond Parkway at Beacon Street and Hobart Road will be reconfigured to shorten pedestrian crossings and provide optimal phasing for all users.

Further, the DCR is currently coordinating with the City of Newton to address their needs that were identified in the Newton Leads 2040, A Transportation Strategy for Newton planning study. That study identified Hammond Pond Parkway as a corridor for improvements to active transportation modes (walking and bicycling) and as a candidate for a road diet. The prevailing traffic volumes and vehicular speeds along Hammond Pond Parkway indicate that the segment between Route 9 and Beacon Street is an ideal candidate for a road diet and the construction of a separated shared-use path.

Based on the results of the technical analysis, the improvements can be implemented with little impact to vehicular operations. The intersection of Hammond Pond Parkway at Beacon Street and Hobart Road will be reconfigured to reduce the number of approach lanes along the parkway. The reduction in lanes will remove some operating capacity from the intersection and will improve both pedestrian and bicycle safety at the intersection by shortening crossing lengths and providing defined facilities for both modes of transportation.

The Project will also improve safety for all modes of transportation by reducing vehicular speeds on Hammond Pond Parkway. The posted speed limit is currently 30 mph; however, observed speeds are significantly higher, with the 85<sup>th</sup> percentile speed in excess of 45 mph. By reducing the overall cross section of the roadway, it is expected that vehicular speeds will be lowered.

The proposed design of Hammond Pond Parkway is essential to meeting DCR's and the City of Newton's plans for improvements to multi-modal transportation and implementing complete street principles. It will greatly improve regional connectivity for pedestrians and bicyclists to provide a better balance between all modes of transportation in the area.