



Edward Devotion School Administrative Site Plan Review

Brookline, Massachusetts

August 2015



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August 17, 2015

Polly Selkoe
Assistant Director of Regulatory Planning
Brookline Town Hall, 3rd Floor
333 Washington Street
Brookline, MA 02445

Re: Administrative Site Plan Review
Edward Devotion School

Dear Ms. Selkoe:

We are pleased to submit ten (10) copies of documents in support of the Administrative Site Plan Review for the Edward Devotion School project.

The following are included within this submittal:

1. Project Narrative
2. Illustrative Site Plan
3. Letters from the Brookline Preservation Commission and the Massachusetts Historical Commission
4. Traffic Study

Under separate cover are drawings describing the project including:

4. Existing Conditions Survey
5. Site Utility Plans
6. Site Improvements Plan
7. Architectural Floor Plans
8. Elevations

Very truly yours,

HMFH Architects, Inc.



Deborah Collins

cc: Tony Guigli, George Metzger, Pip Lewis



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The Edward Devotion School campus is bounded by Harvard, Babcock, and Stedman Streets. The school shares its site with the Edward Devotion House. Built in 1745, the Devotion House was added to the National Register of Historic Places in 1978 and currently serves as the headquarters of the Brookline Historic Society. The Devotion House will be maintained in its current location. Two significant oak trees that overhang the Devotion House will be protected and retained in the new campus.

The site organization of the proposed project will follow existing patterns on the site. The proposed Edward Devotion School project will include new entrance walks and a reconfigured driveway loop from Harvard Street. On Harvard Street, the main entrance to the 1913 school building will remain, and will be modified to incorporate universal access ramps. Flanking the main entrance are two proposed outdoor classroom terraces, accessed from the school. At the corner of Stedman Street and Harvard Street, the site will be planted to create an urban orchard. On the Babcock Street side of the site, the existing playground along Harvard Street will be reconfigured with new playground equipment. A required fire access lane will be added from Harvard Street between the playground and neighboring properties. This fire access lane will transition to a meandering path to Devotion Street, maintaining an existing pedestrian pathway. This path will pass by a redesigned and expanded school garden area, with planting boxes and areas of informal seating for classes. In the existing school, many students travel to the school from the northeast, along Stedman Street, and from Devotion Street. Two main entrances to the school are proposed to receive these students. The lower level of the site along Stedman Street will be developed as structured playgrounds, informal play space, a soccer field, a water play area, and two basketball courts. In the existing site, a public path bisects the playfields to provide pedestrian access from Devotion Street to Stedman Street. This access will continue but will be shifted to the northeast to allow for the installation of the soccer field. A required fire access lane from Stedman Street will serve double-duty as hard-surface play space for games.

The Devotion School community is committed to alternative modes of transportation; many students walk to school. While the proposed student population will increase from 813 to 1044 students (1010 in grades K-8 with 34 students in Pre-K), the pattern of walking and biking to school is expected to continue. A traffic analysis performed for the project, included in this submittal, indicated that traffic operations on key streets and intersections surrounding the school will not be negatively impacted by the project. Even so, the project includes several transportation improvements. The main driveway loop on Harvard Street will be reconstructed to better accommodate emergency vehicles and fire apparatus. Parking in the loop will be limited to five visitor spaces and one space for the Devotion House. Buses will continue to use the driveway loop; three to four buses are projected. Stedman Street is proposed to be widened by up to 8 feet to allow for improved curbside operations during pick-up and drop-off times. The effective length of the drop-off lane will increase from 23 to 29 spaces. The sidewalk along Stedman Street will be widened and two new raised crosswalks are proposed. An additional nine (9) new on-site parking spaces will be provided (5 visitor and 4 faculty/staff spaces), for a total of 73. Sixty-seven (67) faculty/staff spaces, including accessible spaces, will be located in a two-level parking garage beneath the Stedman Street classroom wing, accessed from Stedman Street, and screened from Stedman Street with vines on a "green" wall. Loading and service will be provided within the parking garage. The loading area will be increased from 1 bay to 2 bays. Employees will be encouraged to commute by alternative modes of transportation. On-site bicycle storage will be increased, including secure, indoor spaces within the parking garage. The school will include two on-site shower rooms for staff in addition to several other staff-specific shower rooms.

The Edward Devotion School is comprised of its original central 1913 structure and 1954 and 1974 additions. In the proposed project, the central 1913 portion of the school, approximately 24,224 GSF, will be retained and renovated. Work on the façade facing Harvard Street will include restoration of the exterior masonry, new windows, and repair of the roof, including the cupola. The 1954 and 1974 wings of the building will be demolished and replaced by an addition of 202,863 GSF, for a total building area of 227,087 GSF.

The proposed building will be expressed in three simple forms; two bars enclosing core academic spaces composed around the renovated 1913 historic building, which, along with the new common spaces—library, gym, cafeteria and multi-purpose room – will remain at the heart of the school.

From Harvard Street, the historic Edward Devotion House and the façade of the 1913 school will remain a primary focal point. The addition will be composed of two classroom wings that frame the original Devotion School, one along the Babcock Street side of the site and the other along Stedman Street. The two classroom wings will extend toward Harvard Street, creating a courtyard with the original Devotion House at its center.

The long façade along Stedman Street will be separated into three smaller masses to reduce the apparent length of the building. As the site slopes down Stedman Street towards the playfields, a two-level parking garage will be located under this classroom wing. The academic spaces will project over the parking garage to reference the two-story academic wings at the Harvard Street courtyard. A higher, more dramatically overhanging volume of classrooms and music rooms will draw attention to the Stedman Street school entrance, which will be additionally emphasized by a seating area and angled wall.

Viewed from the playfields, the organization of the school with two academic wings joined by the common spaces will be expressed. A central stair will connect all three levels of the schools. The façade will be transparent at the stair, to allow for views from the school out to the playfields and for the central stair to be visible from the exterior. The community spaces of the school, including the library the multi-purpose room, gymnasium, and cafeteria are arranged around this central stair. Views to these spaces from the playfield will announce the activities of the school to its neighborhood.

Illustrative Site Plan





Town of Brookline
Massachusetts

Brookline Preservation Commission

David King, Chair
Elton Elperin, Vice-Chair
James Batchelor
Paul Bell
Wendy Ecker
Rosemary Battles Foy
Judith Selwyn
Peter Ames, Alternate
Kirstin Gamble Bridier, Alternate
Peter Kleiner, Alternate
Giti Ganjei Saeidian, Alternate

April 21, 2015

Brona Simon, Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

RE: Edward Devotion School

Dear Ms. Simon:

The Brookline Preservation Commission discussed the schematic plans for the new Edward Devotion School at its meetings on February 25 and March 11, 2014, and most recently on April 14, 2015. In addition the design and OPM team has met for consultation with the commission staff on two other occasions. This letter reports that the Preservation Commission finds that there is no negative impact on the Edward Devotion House National Register property and that there is a respectful preservation of the central 1913 portion of the school building.

The Devotion School campus, bounded by Harvard, Babcock and Stedman Streets, includes the Edward Devotion House at 347 Harvard Street. Built in 1745, the Devotion House was added to the National Register of Historic Places in 1978 and currently serves as the headquarters of the Brookline Historic Society. In addition, the Edward Devotion School building consists of a central structure of the historic school campus constructed in 1913 with subsequent additions built in 1925, 1954 and 1974. The 1913 structure is a two story yellow brick building designed in Georgian revival style by Kilham & Hopkins, a noted Boston architectural firm. In spite of additions the original building is in reasonably good condition, retaining its original exterior detail on the front façade and its slate roof.

The proposed Edward Devotion School project retains the oldest, central portion of the original building, provides a restoration of the primary (front) facade exterior masonry, windows, entrance and roof, including the cupola. The front entry is only modified to incorporate universal access ramps. Once incorporated into the new and expanded structure, the old Devotion school will be fully accessible on the exterior and interior and updated with new systems including a full fire suppression system. The interior of the 1913 building has previously been substantially modified, and in the proposed project the uses in that part of the building are substantially retained, albeit newly renovated and made fully accessible.

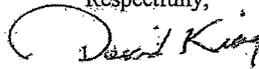
The site development will include new entrance walks and drives from Harvard Street and takes care to respect unchanged the historic Edward Devotion House in its current location, with space for historically accurate gardens to be developed with other funding. In addition two significant oak trees that overhang the Devotion House and the front of the Devotion School will be protected and retained in the new campus. Overall the setting of the Devotion House will be enhanced by this project.

At its meeting on April 14, 2015 the Preservation Commission found that all of the proposed improvements and alterations have been developed with proper consultation with the Commission and will result in no derogation of the historic character of the existing site and buildings. The Commission provided input to the Devotion School architectural team on this date, including modest suggestions for consideration as the project proceeds into design development. A member of the Preservation Commission (James Batchelor) has been a designated member of the Devotion School Building Committee, having participated since the formation of the Committee in June 2012. A 12-month delay of demolition imposed on the school building on March 11, 2014 has expired.

Accordingly, the Brookline Preservation Commission urges the Massachusetts Historical Commission to notify MEPA through the ENF process that the proposed Devotion School project will have no negative impact on the Edward Devotion House National Register property.

Please do not hesitate to contact me to discuss the historic and architectural characteristics of the Edward Devotion School and the Edward Devotion House as the school design development process continues.

Respectfully,



David King, chair
Brookline Preservation Commission



Massachusetts Historical Commission



The Commonwealth of Massachusetts William Francis Galvin, Secretary of the Commonwealth Massachusetts Historical Commission

July 13, 2015

William H. Lupini, Ed.D.
Superintendent of Schools
Town of Brookline
333 Washington Street
Brookline, MA 02445

RE: Devotion School; Harvard Street, Babcock Street, and Stedman Street; Brookline; MA; MHC# RC.57999

Dear Dr. Lupini:

The Massachusetts Historical Commission (MHC) has reviewed information submitted by HMFH Architects, Inc., received June 12, 2015, concerning the proposed project referenced above. The proposed project includes the property at 347 Harvard Street, historically known as the Edward Devotion House, and the property at 345 Harvard Street, historically known as the Devotion School (MHC# BKL.2529). The Edward Devotion House is individually listed in the State Register of Historic Places. The Devotion School is included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth and may be eligible for listing in the National Register of Historic Places (36 CFR 60). After a review of the information submitted, MHC staff have the following comments.

The proposed project involving the renovation; addition; and some demolition work, to later sections, at the Devotion School is described in the Project Notification Form, received June 12, 2015. Site work, landscaping, and accessibility improvements are also proposed as part of the project. The central 1913 portion of the Devotion School will be retained. The Edward Devotion House and two nearby mature trees will be retained as part of the proposed project. It is the opinion of the MHC that the portions of the Devotion School that are proposed for demolition would not contribute to the historic significance of the school due to considerable alterations and lack of historic integrity (36 CFR 60). The MHC appreciates the timely submission of information concerning the proposed project and notes that comments previously submitted by the Brookline Preservation Commission indicates that the BPC has no concerns regarding the proposed project.

After a review of the proposed plans submitted, I have determined that the proposed project will have "no adverse effect" (950 CMR 71.07(2)(b)(2)) on the Edward Devotion House and the Devotion School.

These comments are offered to assist in compliance with M.G.L. Chapter 9, Section 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00), and MEPA (301 CMR 11.03(10)). Please do not hesitate to contact me Ryan Maciej of my staff if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Brona Simon".

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Tony Guigli, Town of Brookline
Maureen Valente and Jack McCarthy—MSBA
Secretary Matthew Beaton, EEA; ATTN: MEPA Unit
Brookline Preservation Commission



Transportation Study

*Edward Devotion School
Project*

Brookline,
Massachusetts

Submitted to: **HMFH Architects, Inc.**
On Behalf Of: **The Town of Brookline**
Prepared by: **Vanasse Hangen Brustlin, Inc.**
Boston, Massachusetts

April 2015

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Transportation Impact Study

Introduction

This Transportation Study presents an evaluation and summary of existing and future transportation infrastructure and operations that are expected in connection with the Edward Devotion School Project in the Town of Brookline, Massachusetts. The purposes of these analyses are to:

- Define existing transportation conditions in the Project study area;
- Quantify the transportation impacts under future conditions based on anticipated traffic activities generated by the Project; and
- Provide input and guidance relative to the ongoing development of the Schematic Design of the Project.

The sections below provide an overview of the Project, a description of the study area, a discussion of the study methodology, and a description of anticipated impacts. Subsequent sections provide detailed discussions of existing and future transportation conditions expected with the proposed Project.

Project Description & Summary of Impacts

The Edward Devotion School is located at 345 Harvard Street, in Brookline, MA as shown in **Figure 1**. The school serves over 800 students from Pre-K through Grade 8 making it the largest elementary school in the Town of Brookline. The existing school totals approximately 162,000 SF. The planned Project will renovate 24,224 SF and add approximately 172,755 SF in building additions. The Project will also add 30,108 SF of structured parking on two levels for staff for a total of 70 striped parking spaces (15 new garage spaces) for a total of 12 net-new spaces on-site.

In April 2014, VHB completed a study of Existing Conditions to assist the design team in understanding existing school operations, identify access challenges and opportunities, and to provide suggestions and input regarding the framework of future transportation conditions and operations at the school. This study included an in-depth analysis of parent drop-off/pick-up needs, school bus operations, pedestrian amenities, parking demand, and loading and service operations. The outcome of this study identified measures that should be



incorporated in the Project. As a result, the Project will implement the following infrastructure changes:

- On-site parking will be increased by 12 spaces (5 visitor and 7 faculty/staff spaces);
- Stedman Street will be widened by up to 8 feet to better accommodate drop-off and pick-up activities along the corridor;
- The parent drop-off area along Stedman Street will be lengthened to approximately 565 feet to better accommodate drop-off/pick-up activity.
- Sidewalks on Stedman Street adjacent to the School property will be reconstructed;
- Raised crosswalks will be installed on Stedman Street at existing crossing locations to improve safety for students walking to school;
- One of the existing crosswalks on Stedman Street will be relocated to meet pedestrian desire lines at the Devotion Path;
- The Harvard Entrance Driveway will be modified to adequately accommodate fire truck access to the School; and
- The existing loading area will be relocated internally on-site and increased from one bay to two bays; and
- The school will provide a combination of both on-site, outdoor bicycle parking, and indoor, secured bicycle parking for staff and students.

The results of the transportation analysis indicate that traffic operations with the Edward Devotion School Project will not result in noticeable changes to delay in traffic at surrounding intersections. The planned improvements described above will result in better transportation operations at the School.

Study Methodology

The transportation analysis provides an evaluation of anticipated impacts of the Project on the surrounding transportation system. This analysis was conducted in two phases. The first phase involved defining and quantifying the existing transportation conditions in the Project study area, including roadway and intersection geometry, traffic demand, and operational characteristics for the surrounding transportation infrastructure.

The second phase of the study projected the future transportation conditions in the Project study area by adding traffic from other planned developments in the area, and traffic from the Project to the existing conditions defined in phase one.

The transportation analysis considers two analysis scenarios as follows:

- 2014 Existing Condition – Reflecting conditions today without the Project in place; and

- 2019 Future Condition – Which accounts for planned transportation infrastructure improvements and background growth associated with increased regional growth and specific planned development projects; and includes Project-related traffic. The Project is anticipated to be occupied by late 2019 and all site improvements are expected to be completed by 2020.

Synchro 8.0 was used to analyze the 2014 Existing Condition as well as 2019 Future Condition.



Study Area

To evaluate the transportation impacts associated with the proposed development, it is necessary to review the existing roadway system serving the site. As shown in **Figure 2**, the following six intersections were included in this assessment, including the school's driveways:

1. Beals Street / Harvard Street
2. Beals Street / Stedman Street / Gibbs Street
3. Stedman Street / Entrance & Exit to School Parking Garage
4. Stedman Street / Harvard Street
5. Harvard Street / Harvard Entrance Driveway
6. Harvard Street / Babcock Street

Existing Conditions

Evaluation of the transportation impacts associated with the proposed Project is based upon an understanding of the existing transportation system in the Project study area. The evaluation of existing transportation conditions in the study area includes roadway, driveway and intersection geometry; traffic controls; daily and peak hour traffic volumes; pedestrian activity; and public transportation information. The following sections describe each of these elements.



Roadway Conditions

Descriptions of the study area physical transportation characteristics, adjacent land uses, and traffic control devices are provided below.



Roadways

Harvard Street

Harvard Street is a two-lane roadway running in a north/south direction connecting Brookline Village to the south with Boston's Allston Village to the north. On-street bicycle lanes and regulated on-street parking are provided in each direction. Land uses along Harvard Street are primarily commercial and result in active pedestrian environment. Sidewalks are provided on both sides of the street and are considered to be in good condition.

Stedman Street

Stedman Street is a one-way residential street connecting Manchester Street to the east to Harvard Street to the west. The street provides 2-hour and resident parking on the northwest side only. The south side of the street, adjacent to the Edward Devotion School, operates with active student drop-off and pick-up which often impacts the sidewalk due to narrow street width. Sidewalks are provided on both sides of the street and are considered to be in poor condition.

Intersections

Beals Street / Harvard Street

The intersection of Harvard Street at Beals Street is a three-legged unsignalized intersection with two approaches. Harvard Street northbound and southbound each have one general purpose lane and one bicycle lane. Beals Street is one way eastbound headed away from the intersection. Sidewalks are provided on all sides of Harvard Street and Beals Street. Crosswalks are provided across Beals Street and across the eastbound approach of Harvard Street with ADA ramps on all corners. Parking is allowed on both sides of Harvard Street and on the southern side of Beals Street.

Beals Street /Stedman Street / Gibbs Street

The intersection of Beals Street, Gibbs Street, and Stedman Street is a four-legged unsignalized intersection with three approaches. Beals Street and Gibbs Street are both stop controlled. Beals Street is one-way eastbound with a general purpose approach lane. The Gibbs Street southbound and the Stedman Street eastbound approaches each have a general purpose lane. The west leg of Stedman Street is one way westbound heading away from the intersection. Sidewalks are provided on both sides of all approaches. On street parking is permitted on the south side of Beals Street, on the north side of Gibbs Street and on the north side of the eastern leg of Stedman Street. Crosswalks are provided across Beals Street, Gibbs Street and on the south leg of Stedman Street with ADA ramps on all corners.

Stedman Street / Entrance & Exit to School Parking Garage

The intersection of Stedman Street and the Entrance/Exit to the School parking garage is a three legged unsignalized intersection with two approaches. Stedman Street is one-way eastbound with one general purpose approach lane. The Garage Driveway has a left-turn only exit approach. Sidewalks are provided on both sides of Stedman Street and the Garage Driveway. Parking is only permitted on the north side of Stedman Street. However, even though parking is restricted on the south side of Stedman Street, parents are allowed to stop in order to pick-up or drop-off students.

Harvard Street / Stedman Street / Williams Street

The intersection of Stedman Street, Williams Street, and Harvard Street is a four legged signalized intersection with three approaches. The signal includes a left-turn only phase for the Harvard Street northbound approach and an exclusive pedestrian phase. The Harvard Street northbound approach provides one left-turn only lane and a thru/shared bicycle lane. The Harvard Street southbound approach provides one shared right/thru lane and a bicycle lane. Stedman Street is one-way westbound and provides a right-turn lane and a left-turn lane. Williams Street is one-way heading westbound away from the intersection. Sidewalks are provided on both sides of all streets. Crosswalks are provided across Stedman Street, Williams Street and the southern leg of Harvard Street as well as ADA ramps on all corners. Parking is permitted on the northern side of Stedman Street and stopping to pick up/drop off students is permitted on the southern side. Parking is also allowed on both sides of the southbound approach of Harvard Street, on the west side of the northbound approach of Harvard Street, and on the south side of Williams Street. There is a Massachusetts Bay Transportation Authority (MBTA) bus stop on the east side of the northbound approach of Harvard Street. A police detail is present to help direct traffic and pedestrians at the intersection during morning arrivals and afternoon dismissal.

Harvard Street / Shailer Street / Harvard Street Entrance Driveway

The intersection of Harvard Street, Shailer Street and the Harvard Entrance Driveway is a five-legged unsignalized intersection with four approaches. The Harvard Street northbound and southbound approaches each provide one general purpose lane and a bicycle lane. The School Driveway entrance is one way eastbound away from the intersection and loops around the front of the school and becomes the School Driveway exit, which provides a westbound approach with a general purpose lane. Shailer Street is a one way eastbound street with one general purpose lane. Sidewalks are provided on both sides of Harvard Street and Shailer Street, and along the School Driveway. A crosswalk is provided across Shailer Street with ADA ramps on both corners. Parking is permitted on the south side of Shailer Street. There is accessible parking provided on the east side of Harvard Street and there are faculty parking spaces provided along the School



Driveway. There is a MBTA bus stop on the east side of the northbound approach on Harvard Street.

Harvard Street / Babcock Street

The intersection of Harvard Street and Babcock Street is a three-legged signalized intersection with three approaches. The signal includes a protected left-turn phase for the Harvard Street southbound approach as well as lead pedestrian intervals. The Harvard Street southbound approach has one left-turn only lane, a thru lane, and a bicycle lane. The Harvard Street northbound approach has one thru lane and a right-turn only shared bicycle lane. The Babcock Street eastbound approach has one left-turn only lane and one right-turn only lane. Sidewalks are provided on both sides of all approaches. Crosswalks are provided on all approaches as well as ADA ramps on all corners. Parking is permitted on both sides of Harvard Street and on the south side of the Babcock Street approach.



Traffic Volume Data Collection

To assess existing conditions in the study area, peak hour traffic volumes for the study intersections were collected during a typical school day. Peak period manual Turning Movement Counts (TMCs) were conducted at the study area intersections from 6:30 to 8:30 AM and 2:00 to 4:00 PM on Monday, February 24, 2014.

The resulting peak hours for School operations are 7:15 – 8:15 AM and 2:15 – 3:15 PM. Hourly TMC volumes for vehicles are shown in **Figures 3 and 4**.

TMC data are included in the Appendix.



Crash Analysis

A safety assessment was conducted to determine if safety concerns exist for vehicles, pedestrians and/or bicyclists within the study area. To identify potential vehicle crash trends in the project study area, the most current vehicle crash data for the study area intersections were obtained from MassDOT for the years 2010 through 2012. At the time of this study, data for 2013 and more recent years were not available.

Crash rates for the intersections were calculated based on the number of crashes relative to the volume of traffic traveling through the intersections on a daily basis. These crash rates were then compared to the average MassDOT's District 6 (generally the Metropolitan Boston area) rates where the School resides. Rates that exceed MassDOT's average for crashes could indicate safety or geometric deficiencies at a particular intersection. The latest published average crash rate by MassDOT in District 6 is 0.76 for signalized intersections and 0.58 for unsignalized intersections.

A summary of the MassDOT vehicle crash data for locations where crashes were identified is presented in **Table 1**. Locations not listed did not have reported crash data. A detailed summary by location is provided in the Appendix.

No intersections in the study area exceed the 2010 average crash rates for District 6.



**Table 1
Vehicular Crash Summary (2010 – 2012)**

	Harvard Street/ Babcock Street	Harvard Street/ Shailer Street / Harvard Driveway	Harvard Street/ Stedman Street / Williams Street
Signalized?	Yes	No	Yes
District 6 Average Crash Rate	0.76	0.58	0.76
Calculated Crash Rate	0.23	0.09	0.42
Exceeds?	No	No	No
Year			
2010	0	0	1
2011	3	1	1
<u>2012</u>	<u>0</u>	<u>0</u>	<u>3</u>
Total	3	1	5
Collision Type			
Angle	0	0	0
Head-on	0	0	2
Rear-end	1	0	0
Sideswipe, opposite direction	0	0	1
Sideswipe, same direction	0	0	1
Single-vehicle crash	2	1	1
<u>Unknown</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	1	5
Severity			
Injury (non-fatal)	0	0	2
Property damage only	3	1	3
<u>Not Reported</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	1	5
Time of day			
Weekday, 7:00 AM - 9:00 AM	0	0	0
Weekday, 4:00 PM - 6:00 PM	1	0	0
Saturday, 11:00 AM - 2:00 PM	0	1	0
Weekday, other time	2	0	4
<u>Weekend, other time</u>	<u>0</u>	<u>0</u>	<u>1</u>
Total	3	1	5
Pavement Conditions			
Dry	3	1	4
Wet	0	0	1
Snow	0	0	0
<u>Other</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	1	5
Non Motorist (Bike/Pedestrian)	1	0	2

Source: MassDOT vehicle crash data



Pedestrians and Bicycles

The Edward Devotion School creates a significant amount of pedestrian traffic immediately before and after school as shown in **Figures 5 and 6**. The majority of students (approximately two-thirds) walk to school. Pedestrians are well dispersed through the School's campus due to non-centralized entrance/exit operations.

As shown in **Figures 7 and 8**, bicycle volumes are highest along Harvard Street where there are bike lanes. Harvard Street accommodates approximately 20-40 bicycles per hour. It is expected that these volumes may be higher during warmer months.

Bicycle volumes on Stedman Street and entering/exit the campus were low with less than 5 per hour. Bicycle racks are provided at the school for visitors, staff, and faculty. Due to the young student ages, students do not bike to school.

Pedestrian and bicycle counts for the study area are presented in the Appendix.



Public Transportation

The School is in close proximity of the Massachusetts Bay Transportation Authority's (MBTA) C Line services on the Green Line as shown in **Figure 9**. Coolidge Corner Station on the C Line is approximately two blocks away. The C Line provides service between Cleveland Circle and North Station where connections can be made to the Commuter Rail and Orange Line. The C Line also provides connections to the Red Line at Park Street Station, the Orange Line at Park Street and Haymarket Station, and the Blue Line at Government Center Station. The C Line runs every 6 minutes during rush hour and every 10 minutes off-peak on weekdays.

The MBTA's Route 66 Bus also provides service on Harvard Street adjacent to the School. Route 66 connects Harvard Station on the Red Line with Dudley Station on the Orange Line. Peak hour headways are 9 minutes or less. Midday headways are 16 minutes.



School Operations

The Edward Devotion School provides a circular loop driveway on Harvard Street. The Harvard Entrance Driveway is restricted to staff parking and school buses only. The School provides below-grade structured parking accessed via a



curb cut on Stedman Street. A second curb cut to the garage on Stedman Street is currently closed.

The Edward Devotion School creates a significant amount of pedestrian traffic immediately before and after school. The majority of students live in close proximity and walk to school. Those that do arrive by automobile are primarily dropped-off and picked-up on Stedman Street. A smaller number of parents use Harvard Street for drop-off and pick-up.

School buses are provided; however, due to the close proximity of the student population, few students use buses (approximately 5 percent of students were observed on the buses). Four scheduled buses drop-off and pick-up students on Harvard Street or at the Harvard Entrance Driveway for loading and unloading.

Drop-off & Pick-up

School hours are 8:00 AM to 2:30 PM on Monday thru Thursday. On Fridays, school hours are 8:00 AM thru 1:40 PM. Various after school programs are provided as well as extended homework hours resulting in staggered dismissal times. For purposes of the traffic analysis, the peak arrival and dismissal hours were studied.

Arrival and dismissal observations were conducted from 7:00 to 8:30 AM and 2:00 to 3:30 PM on Monday, February 24, 2014. The observations indicated that student arrival patterns were somewhat dispersed with up to 23 vehicles queued just prior to 8:00 AM. Approximately 50 percent of parents escort their students from the car to the building. Prior to dismissal, when parents were waiting, up to 29 vehicles were observed queued along Stedman Street. Some of these vehicles were parked partially on the sidewalk due to the narrow street width.

A police detail is provided at the intersection of Stedman Street and Harvard Street to help with traffic and pedestrian safety during arrivals and dismissal.

Four buses were observed at the school with less than ten students per bus. These buses were observed at the Harvard Entrance Driveway and on Harvard Street. As mentioned previously, the majority of students walk to school.

Detailed results of these observations are provided in the Appendix.

Parking

The Devotion School (and Devotion House) currently utilize 129 total parking spaces, including a combination on-site surface and garage spaces and supplementary on-street staff parking spaces by permit. On-site, there are 63 spaces in the garage and 8 surface spaces along the Harvard Entrance Driveway

dedicated to school staff (71 total on-site staff spaces). There is also 1 space on the Harvard Entrance Driveway specifically dedicated to use by the Devotion House. Additionally, the School has been allocated parking permits from the Town to allow up to 65 staff to park on-street along nearby residential streets (see Figure 10). Staff that have been granted an on-street parking permit are required to display a parking tag on their front windshield. In total, about 90 percent of the faculty/staff population park on-campus or on-street in the vicinity of the School.

A summary of on-street parking availability while school is in session is provided in **Table 2**. As summarized in the table, the current on-street parking pass program does not appear to have a measurable impact on daytime parking space availability in the neighborhood.

Table 2
Available On-Street Parking Summary

	Spaces Available at 9:00 AM	Spaces Available at 2:00 PM
Harvard Street – Williams Street to Naples Road	9	7
Harvard Street – Naples Road to Beals Street	3	2
Harvard Street – Beals Street to Stedman Street	2	0
Harvard Street – Williams Street to Shailer Street	2	2
Harvard Street – Shailer Street to Babcock Street	1	3
Harvard Street – Babcock Street to School Entrance	2	1
Harvard Street – School Entrance to School Exit	3	2
<i>Harvard Street Sub-Total</i>	22	17
Beals Street – Gibbs Street to 58 Beals Street	14	15
Beals Street – 58 Beals Street to Harvard Street	9	7
<i>Beals Street Sub-Total</i>	23	22
Stedman Street – Harvard Street to Devotion Street	0	0
Stedman Street – Devotion Street to Gibbs Street	11	9
<i>Stedman Street Sub-Total</i>	11	9
Babcock Street – Harvard Street to John Street	8	5
Babcock Street – John Street to Devotion Street	5	4
<i>Babcock Street Sub-Total</i>	13	9
Shailer Street – Centre Street to Harvard Street	0	1
<i>Shailer Street Sub-Total</i>	0	1
Williams Street – Harvard Street to Centre Street	1	1
<i>Williams Street Sub-Total</i>	1	1
All Streets Total	70	59



With the exception of Shailer Street at 9:00 AM, an ample amount of available parking was observed in the neighborhood during the morning and afternoon hours while school was in session.

Parents and visitors utilize existing on-street parking in the vicinity of the school for parking. During school hours there is ample 2-hour visitor parking on Stedman Street and metered spaces on Harvard Street within close walking proximity of the school. On-street data is provided in the Existing Conditions Report in the Appendix.

Loading Operations

One off-street loading bay and dumpster is located adjacent to the School on Stedman Street. The dock orientation is backwards requiring an awkward back up maneuver from the street to access the dock. Additional loading and service activity were observed at the Harvard Entrance Driveway and on the paved area adjacent to the playing fields on Stedman Street.

Transportation Demand Management

The Devotion School has an informal Transportation Demand Management (TDM) plan that encourages staff and teachers to utilize alternative transportation measures to commute including:

- Encouraging the use of public transportation;
- Providing limited on-site parking; and
- Providing on-site bicycle storage.

With the Project, new showers and changing areas will be provided for staff and faculty.

Future Conditions

A 2019 Future Condition was developed to evaluate future transportation operations with the Project completed and fully occupied. This condition also includes other known development projects in the area and an increase in general background growth in addition to Project.

Background Growth

For this Project, a background growth rate of one percent per year was applied to the baseline traffic volumes to account for increased population growth. Historic traffic volumes provided by MassDOT indicate that traffic volumes on Harvard Street to the north of the School have declined by -1 percent per year. However, to be conservative five years of 1 percent annual background were added to the network. No additional project development forecasts were identified for the study area.

Project Generated Traffic

The planned Project includes renovations to the existing Edward Devotion School and a 172,755 SF addition as shown in **Figure 11**. This will allow the School to accommodate anticipated student growth. The following components are included with the Project:

- Student population growth from 824 students to 1,044 students
- The addition of 42 new faculty/staff

Project Generated Trips

The planned renovations and addition at the Edward Devotion School will prepare the School for the anticipated increase in students. For this reason, standard Institute of Transportation Engineer's (ITE) trip generation rates were not deemed appropriate. Instead, forecasted student and staff/faculty growth was used to develop a custom trip generation estimate. This estimate was based on estimated increase in 220 students and 42 new staff and/or faculty with the Project. Existing calculated trip rates based on existing traffic counts were applied to the new population.

Table 3 shows the existing trips to School on a typical peak day and the estimated traffic growth for 2019.



Table 3
Estimated Net-New Vehicle Trips

Time	AM Peak	Afternoon Peak
<u>Student/Parent</u>		
In	24	12
Out	24	12
Total	48	24
<u>Faculty/Staff</u>		
In	20	0
Out	0	11
Total	20	11

As shown in **Table 3**, it is anticipated that there will be 24 new student drop-offs during the morning peak hour and 12 pick-ups during the afternoon pick-up. It was assumed that each of these vehicles arrives and departs within the hour. New garage trips will total 20 entering and 11 exiting staff and/or faculty during the morning and afternoon peak hour respectively.

Trip Distribution

Project trips were distributed based on the existing trip patterns to the School. All faculty and staff were assigned to the new parking garage structure on Stedman Street. All parent drop-off and pick-up activity was assigned to the widened Stedman Street drop-off/pick-up lane.

Project generated trips are shown in **Figure 12** and **Figure 13**. The project-generated trips were then added to the 2014 Existing Conditions networks in addition to the background traffic to establish the 2019 Future Condition volumes shown in **Figures 14 and 15**.



Project Parking

The Project will provide an increased parking supply of 12 spaces at the School as shown in **Table 4**.

**Table 4
Devotion School Parking Summary**

Location	Existing	Future	Net-Change
<i>Faculty & Staff</i>			
Surface Spaces	8	0	-8
Garage Spaces	55	70	+15
Neighborhood Permit Plan	65	65	0
<i>Subtotal Faculty & Staff</i>	128	135	+7
<i>Devotion House</i>			
Surface Spaces	1	1	0
<i>Subtotal Devotion House</i>	1	1	0
<i>Visitors</i>			
Surface Spaces	0	5	+5
<i>Subtotal Visitors</i>	0	5	+5
Total Spaces	129	141	+12

As shown in **Table 4**, the Project will eliminate surface spaces at the Harvard Entrance Driveway to accommodate emergency and fire truck access. The remaining six spaces will be reserved for visitors (5 spaces) and the Devotion House (1 space). Faculty and staff spaces will be relocated to the new parking garage. The parking garage will be a two-level structure with 70 striped spaces.

There is an additional parking demand of 38 spaces with the planned staff and faculty growth (42 persons), assuming that 90 percent of new employees drive to the School as is the trend today. With the Project, the School should determine if measures need to be taken to reduce the overall employee parking demand via the employment of proactive transportation demand management actions, such as the issuance of discounted MBTA passes and encourage other alternative transportation options. Alternatively, it may be necessary to revisit the total number of on-street parking permits that should be provided in the neighborhood to adequately accommodate school staff parking needs.



Project Mitigation

To help facilitate the planned population increase at the School, the follow mitigation will be implemented with the Project as previously shown in **Figure 11**.

- Increase loading area from 1 bay to 2 bays. The two bays will be provided internal to the parking garage in an enclosed environment.
- Widen Stedman Street by up to 8 feet to allow for improved curbside operations before and after school and increase the effective length of the drop-off lane from 23 spaces to 29 spaces.
- Reconstruct sidewalks on Stedman Street adjacent to the School property and provide improved raised crossings.



- Relocate one of the Stedman Street crossing locations to the pedestrian desire line at the Devotion Path.
- Increase on-site bicycle storage.
- Provide on-site showers for faculty and staff.
- Reconstruct the Harvard Entrance Driveway to accommodate emergency and fire truck access.
- Continue to encourage employees to commute by alternative modes of transportation
- Provide 12 new parking spaces in the new garage and improved Harvard Entrance Driveway.
- Reserve parking spaces for visitors at the Harvard Entrance Driveway.

Traffic Operations Analysis

Capacity analyses were conducted for the 2014 Existing Condition and 2019 Future Condition to determine how well the roadway facilities serve the existing and future traffic demands. These classifications of operating conditions are quantified as levels of service.

Level-Of-Service Criteria

Level of service (LOS) is a qualitative measure of control delay at an intersection that provides an index to the operational qualities of a roadway or intersection. Level-of-service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level-of-service designation is reported differently for signalized and unsignalized locations.

For signalized intersections, the analysis considers the operation of each lane or lane group entering the intersection and the LOS designation is for overall conditions at the intersection. For unsignalized intersections, the analysis assumes that traffic on the main roadway is not affected by traffic on the side streets. The LOS is only determined for left turns from the main street and all movements from the minor street. The LOS designation is for the most critical movement, which is most often the left turn out of the side street.

The evaluation criteria used for the LOS analysis are based on the 2000 Highway Capacity Manual (HCM)¹. **Table 5** below presents the level of service delay criteria as defined in the 2000 Highway Capacity Manual (HCM).

¹ ▼

¹ [2000 Highway Capacity Manual](#), Transportation Research Board, Washington D.C. (2000).

Table 5
Level of Service Criteria

Level of Service	Signalized Intersection Control Delay (sec/veh)	Unsignalized Intersection Control Delay (sec/veh)
LOS A	≤ 10	0 - 10
LOS B	> 10-20	>10 - 15
LOS C	> 20-35	>15 - 25
LOS D	> 35-55	>25 - 35
LOS E	> 55-80	>35 - 50
LOS F	> 80	>50

Source: 2000 HCM

Synchro 8 software was used to model LOS operations at all signalized and unsignalized study area intersections. Synchro 8 reports are provided in the Appendix.



Signalized Intersection Capacity Analysis

Capacity analyses were conducted for the two signalized intersections identified in the study area. Capacity analyses were conducted for 2014 Existing Condition and Build Condition and are summarized in **Table 6**.



**Table 6
Signalized Intersection Capacity Analysis Summary**

Location	Time Period	Movement	2014 Existing Conditions				2019 Future Conditions			
			V/C ^a	Delay ^b	LOS ^c	50 th % Queue ^d	V/C ^a	Delay ^b	LOS ^c	50 th % Queue ^d
Harvard Street at Babcock Street	Morning Peak Hour	EB L	0.19	6.6	A	14	0.22	7.1	A	15
		EB T	0.39	7.6	A	84	0.41	8.0	A	92
		WB T	0.58	17.9	B	171	0.63	19.3	B	193
		WB R	0.15	11.8	B	19	0.16	12.1	B	21
		SB L	0.57	38.1	D	70	0.58	38.4	D	73
		SB R	0.50	37.1	D	45	0.52	37.4	D	47
		Overall	0.59	17.0	B	-	0.63	17.8	B	-
	Afternoon Peak Hour	EB L	0.18	6.4	A	12	0.19	6.7	A	13
		EB T	0.41	7.8	A	92	0.44	8.2	A	101
		WB T	0.54	16.9	B	158	0.58	17.9	B	174
		WB R	0.16	12.0	B	16	0.17	12.3	B	17
		SB L	0.56	38.5	D	60	0.58	39.0	D	63
		SB R	0.56	40.2	D	45	0.57	40.7	D	47
		Overall	0.57	16.5	B	-	0.60	17.2	B	-
Harvard Street at Stedman Street / Williams Street	Morning Peak Hour	EB T	0.61	15.7	B	147	0.68	18.9	B	161
		WB L	0.20	7.7	A	15	0.24	9.0	A	17
		WB T	0.55	9.9	A	133	0.62	12.3	B	151
		SB L	0.45	29.6	C	19	0.39	28.4	C	24
		SB TR	0.37	29.0	C	14	0.32	27.9	C	16
		Overall	0.45	14.9	B	-	0.48	17.3	B	-
	Afternoon Peak Hour	EB T	0.69	17.0	B	198	0.70	17.1	B	217
		WB L	0.29	7.9	A	21	0.31	8.1	A	23
		WB T	0.52	9.0	A	136	0.54	9.2	A	152
		SB L	0.39	31.1	C	17	0.53	33.9	C	25
		SB TR	0.38	31.0	C	15	0.46	32.6	C	19
Overall	0.49	14.9	B	-	0.52	15.8	B	-		

- a volume to capacity ratio
- b average delay in seconds per vehicle
- c level of service
- d 50th percentile queue in feet

Under 2015 Existing Conditions the two signalized intersections operate at acceptable levels of service (LOS D or better) during both the morning and afternoon peak hours. A police detail is present to help with pedestrian and traffic operations at the intersection of Harvard Street and Stedman Street before and after school.

Under 2019 Future Conditions (i.e., with the proposed Project in place) the two signalized intersections continue to operate with the same LOS operations as they would under the Existing Condition. Once the Project trips are dispersed through the study area, they result in minimal to no increase in delay (less than 3 seconds) for each intersection.

Unsignalized Intersection Capacity Analysis

In addition to the signalized analysis, four unsignalized access driveway intersections were analyzed for 2014 Existing and 2019 Future Condition. A summary of the unsignalized capacity analysis by approach is presented in **Table 7**. Overall LOS results are not available for unsignalized intersections.

It should be noted that the analytical methodologies typically used for the analysis of unsignalized intersections use conservative analysis parameters such as large critical gaps. Actual field observations indicate that drivers on minor streets and driveways generally accept smaller gaps in traffic than the default values used in the analysis procedures and therefore experience less delay than reported by the analysis software. The net effect of these analysis procedures is the over-estimation of calculated delays at unsignalized intersections in the study area. Cautious judgment should therefore be exercised when interpreting the capacity analysis results at unsignalized intersections.

Table 7
Unsignalized Intersection Capacity Analysis Summary

Time Period	Movement	2014 Existing Conditions				2019 Future Conditions				
		Demand ^a	Delay ^b	LOS ^c	95 th % Queue ^d	Demand	Delay	LOS	50 th % Queue	
Harvard Street at School Driveways	Morning Peak Hour	EB L	3	0.1	A	0	3	0.1	A	0
		WB R	6	0.0	A	0	6	0.0	A	0
		NB LR	88	18.7	C	24	93	19.1	C	26
	Afternoon Peak Hour	SB LR	20	18.6	C	6	20	19.1	C	6
		EB L	0	0.0	A	0	0	0.0	A	0
		WB R	2	0.0	A	0	2	0.0	A	0
Harvard Street at Beals Street	Afternoon Peak Hour	NB LR	58	23.3	C	22	62	24.6	D	25
		SB LR	12	25.4	D	5	12	26.5	D	5
Stedman Street at School Garage Driveway	Morning Peak Hour	EB L	43	1.5	A	4	52	1.9	A	5
		WB R	74	0.0	A	0	107	0.0	A	0
	Afternoon Peak Hour	EB L	23	0.8	A	2	26	1.0	A	3
		WB R	46	0.0	A	0	61	0.0	A	0
Stedman Street at Beals Street / Gibbs Street	Morning Peak Hour	WB L	0	0.0	A	0	0	0.0	A	0
		SB L	41	1.7	A	2	36	1.2	A	2
		WB L	28	10.1	B	3	25	10.3	B	3
Stedman Street at Beals Street / Gibbs Street	Morning Peak Hour	SB L	2	0.1	A	0	2	0.1	A	0
		NEB LR	118	11.7	B	18	154	12.9	B	29
		EB LR	125	11.6	B	17	125	12.6	B	20
	Afternoon Peak Hour	SB R	6	0.3	A	0	6	0.2	A	0
		NEB LR	92	10.3	B	12	111	10.7	B	16
		EB LR	56	10.1	B	6	65	10.5	B	7
		SB R	9	1.0	A	0	9	0.9	A	0

- a Demand in vehicles per hour - applies to the stop controlled approaches only the most critical street approach or lane group.
b Delay of critical stop-controlled approach only.
c Level of Service of the critical side street movement.
d 95th percentile queue in feet



Under Existing Conditions, the Harvard Entrance Driveway on Harvard Street operates at a LOS D due to high volumes of pedestrians during dismissal. The model assumes that the volume of students and parents crossing the driveways is equally spread out throughout the hour, but in reality most pedestrians cross during a short period of time right after dismissal and do not coincide with traffic exiting the Harvard Entrance Driveway. All other intersections operate at acceptable levels of service.

Under 2019 Future Conditions, the proposed Project results in minimal additional traffic at nearby intersections and, therefore, has little impact on operations at the study area unsignalized intersections. All intersections continue to operate at acceptable levels of service.

Conclusion

The results of the transportation analysis indicate that traffic operations on key streets and intersections surrounding the school will not be negatively impacted by the Edward Devotion School Project. To facilitate planned student and faculty/staff growth, various transportation improvements will be made. The criteria set forth in the April 2014 Existing Conditions and Traffic and Parking Analysis (see the Appendix) have been incorporated into the site plan by the School and project team. A summary of these goals are provided in **Table 8**.

Table 8
Transportation Infrastructure Summary

	Identified Goal	Criteria Met
Parent Drop-off/Pick-up	Provide 6 new spaces for a total of 29 spaces	Yes
School Bus Staging	Maintain 3-4 bus spaces	Yes
Pedestrian Amenities	Maintain non-centralized entry/exit options to disperse pedestrians	Yes
Parking	Increase Parking	Yes
Loading and Service	Provide 2 Loading Bays	Yes

The improvements more specifically include the following:

- Increase loading area from 1 bay to 2 bays. The two dock spaces will be provided internal to the parking garage in an enclosed environment;
- Widen Stedman Street by up to 8 feet to allow for drop-off and pick-up activity to occur outside of the travel lane and increase the effective length of the drop-off lane from 23 spaces to 29 spaces;
- Reconstruct sidewalks on the east side of Stedman Street adjacent to the School property and provide improved raised crossings for students;
- Relocate one of the existing Stedman Street crosswalks to meet the pedestrian desire line at the Devotion Path;
- Increase on-site bicycle storage (both outdoor racks and indoor secured storage);
- Provide new on-site showers for faculty and staff;
- Reconstruct the Harvard Entrance Driveway to accommodate a fire truck;
- Maintain off-street bus staging;
- Continue to encourage employees to commute by alternative modes of transportation;
- Provide 12 new parking spaces (5 visitor and 7 faculty/staff spaces); and
- Reserve parking spaces for visitors at the Harvard Entrance Driveway.



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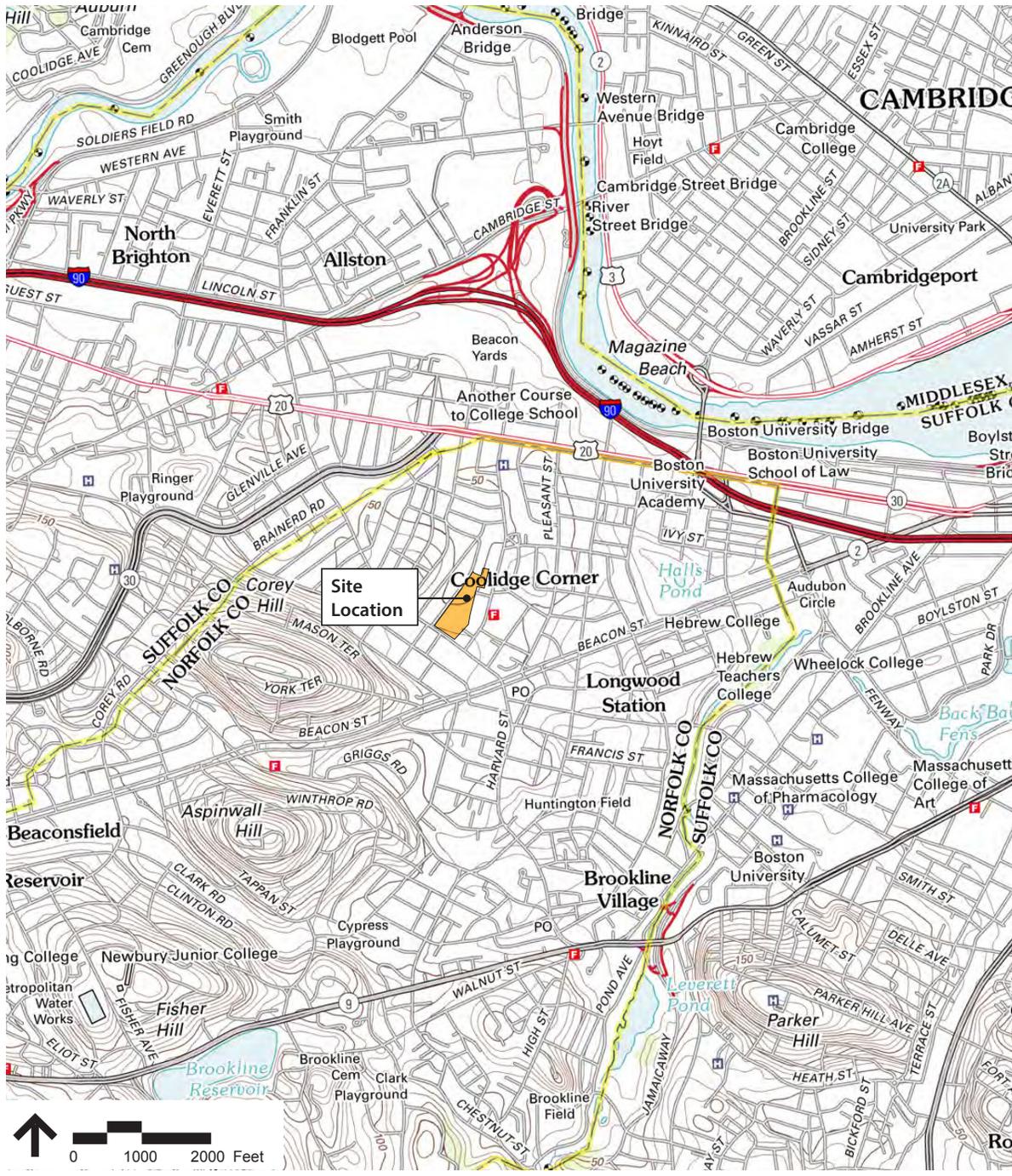


Figure 1

Regional Context Map
Edward Devotion School

Source: MASSGIS USGS Quad



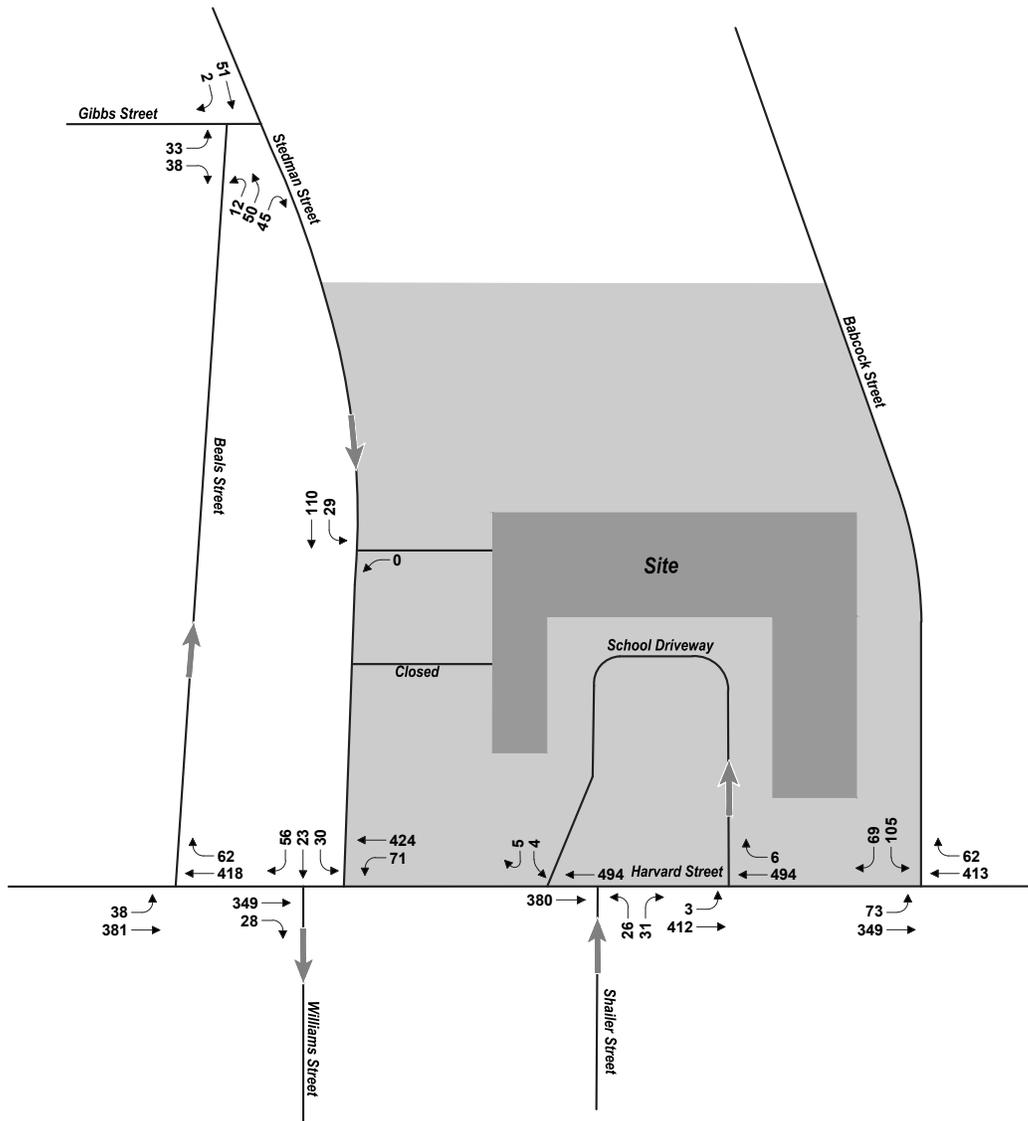
Figure 2

Study Area Intersections
Edward Devotion School

Source: MASSGIS Orthography



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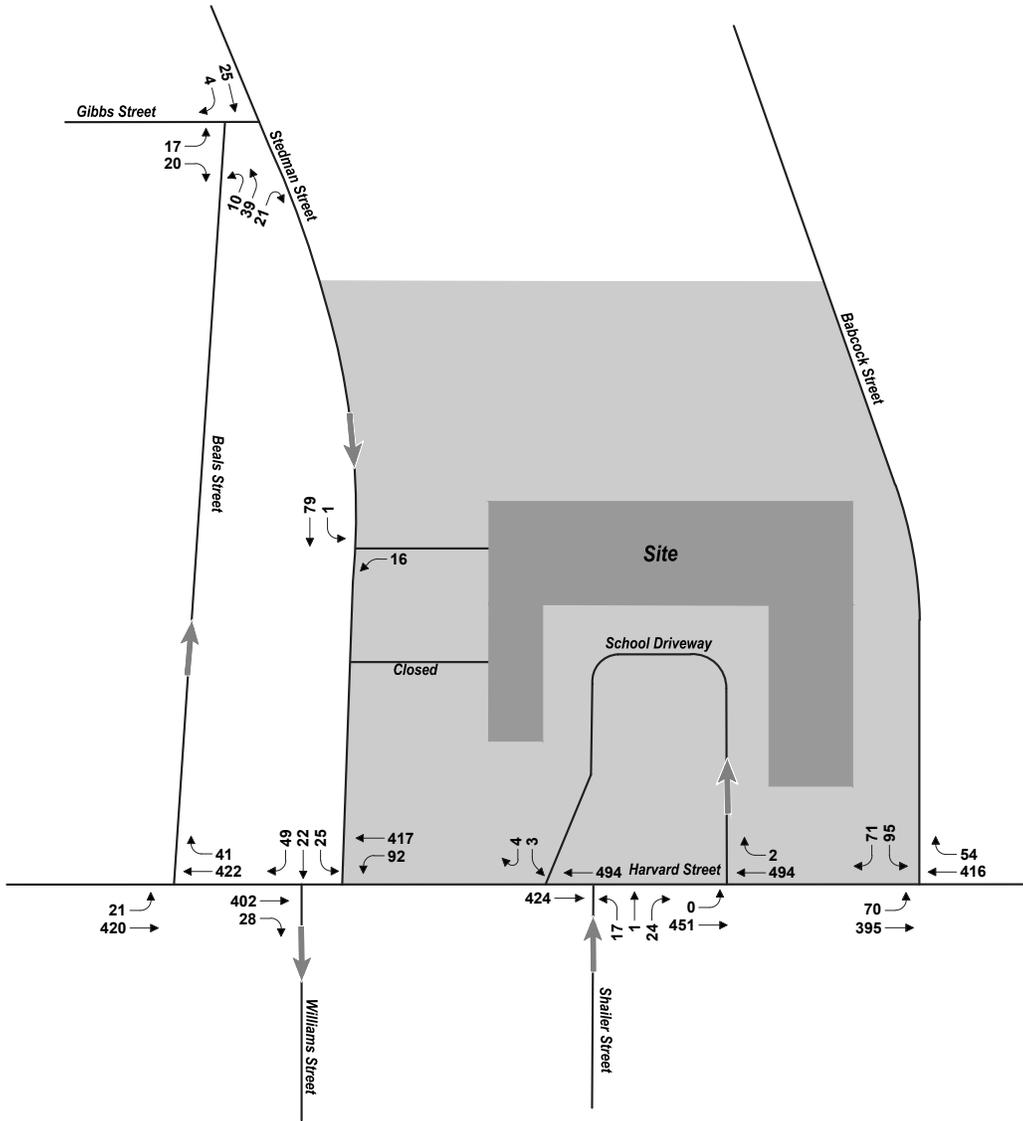


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Figure 3
2014 Existing Traffic Volumes
AM Peak Hour (7:15 AM - 8:15 AM)

**Edward Devotion School
Brookline, MA**



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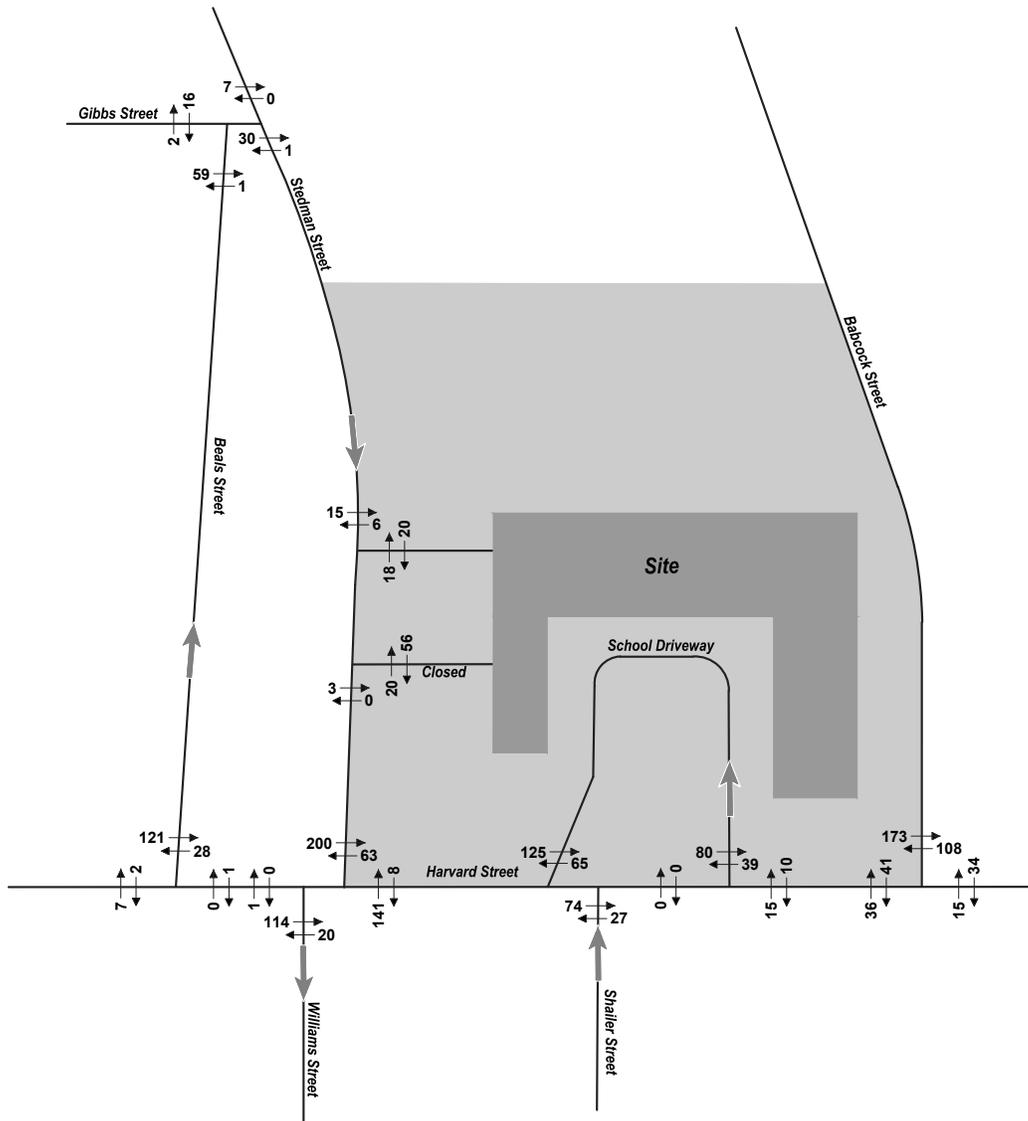


Figure 4
2014 Existing Traffic Volumes
PM Peak Hour (2:15 PM - 3:15 PM)

**Edward Devotion School
Brookline, MA**



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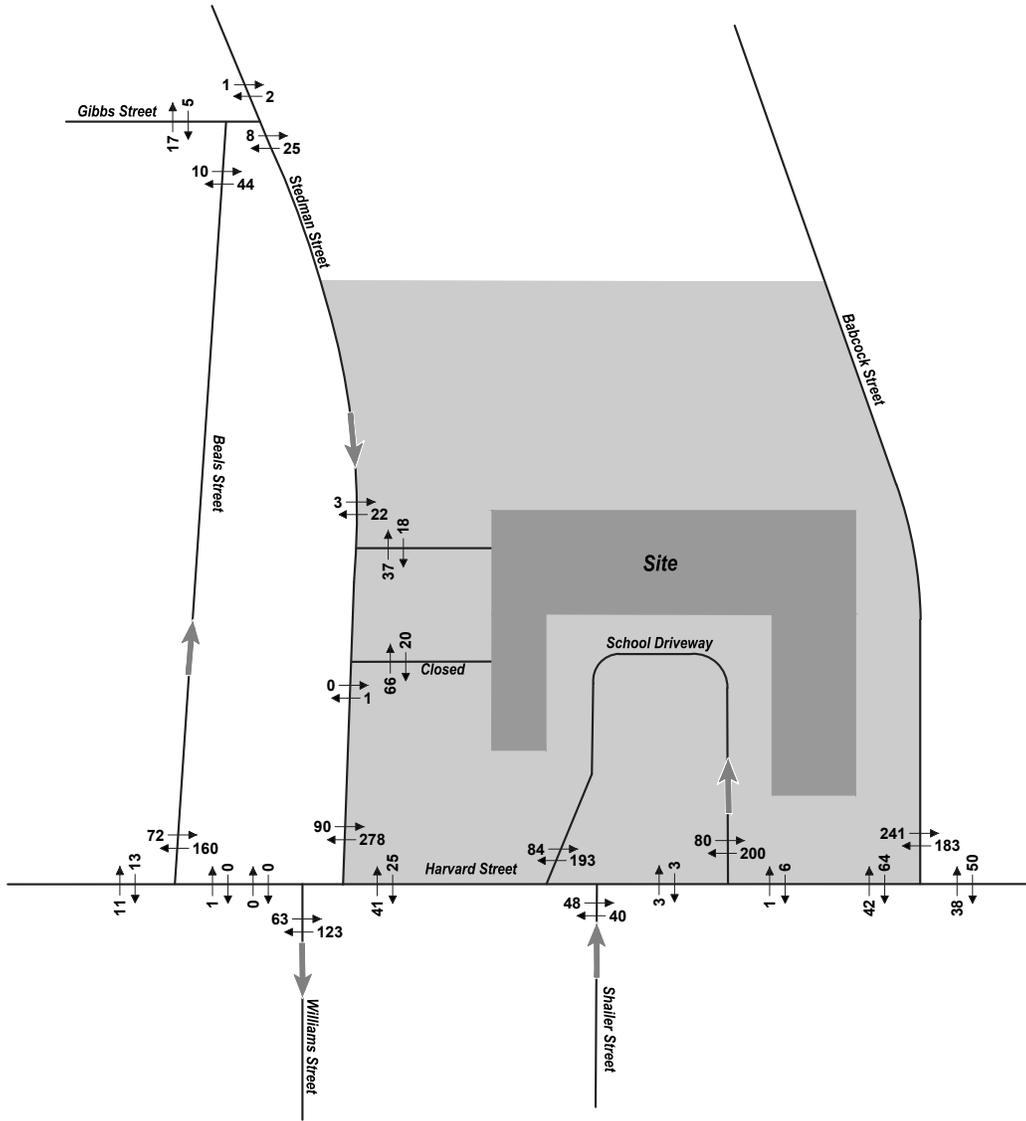


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Figure 5
2014 Existing Pedestrian Volumes
AM Peak Hour (7:15 AM - 8:15 AM)

**Edward Devotion School
Brookline, MA**



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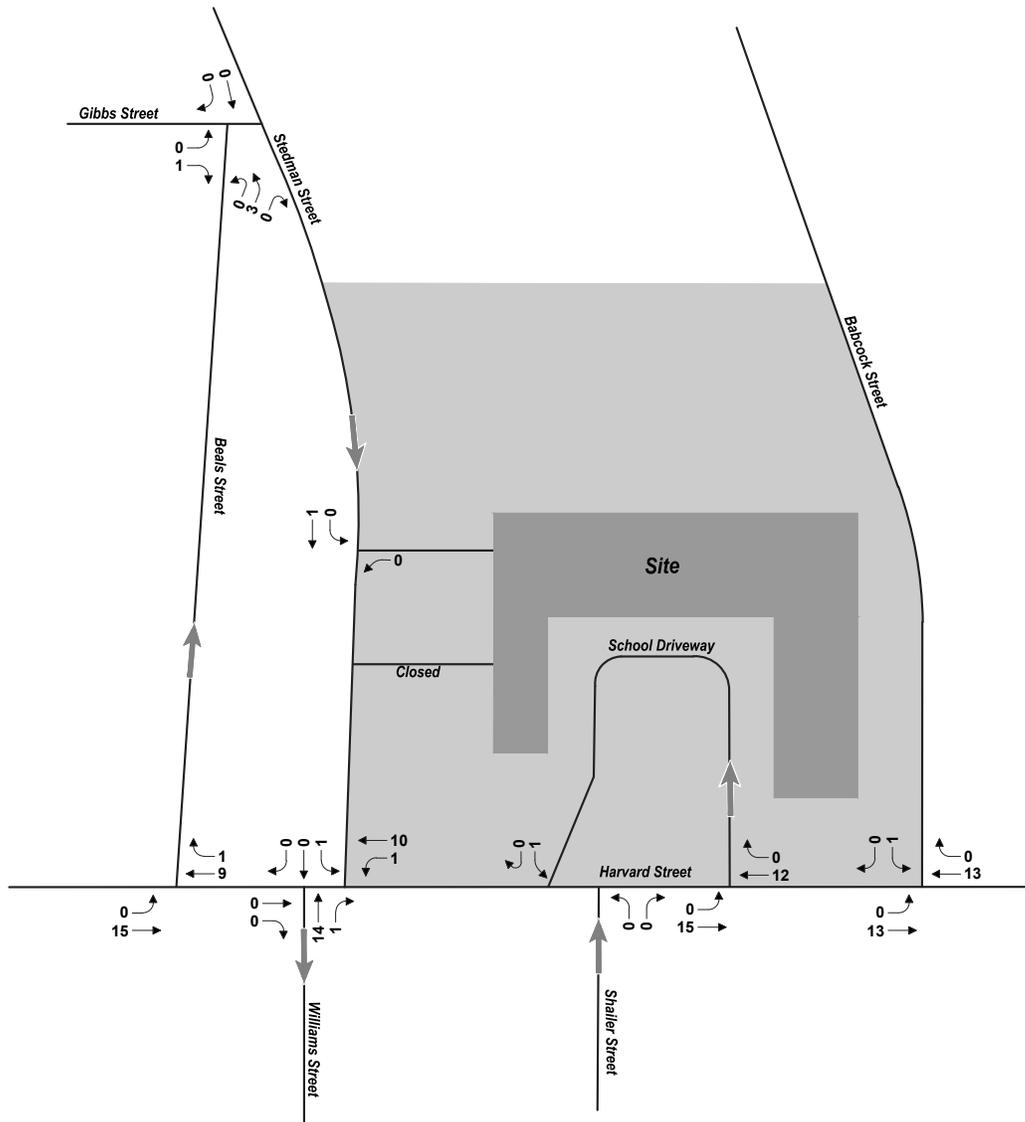
Figure 6

2014 Existing Pedestrian Volumes
PM Peak Hour (2:15 PM - 3:15 PM)

Edward Devotion School
Brookline, MA



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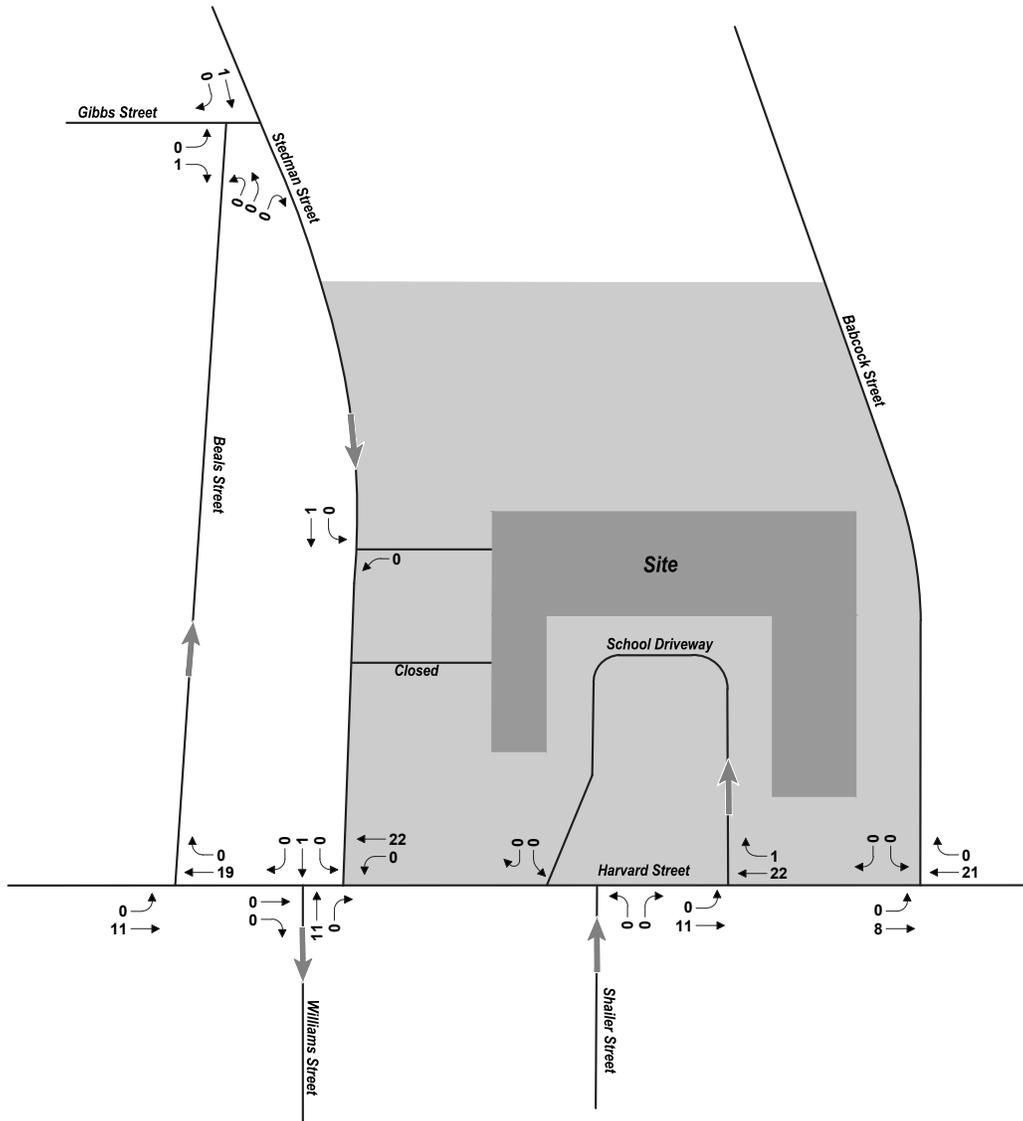


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Figure 7
2014 Existing Bicycle Volumes
AM Peak Hours (7:15 AM - 8:15 AM)

**Edward Devotion School
Brookline, MA**



Not to Scale



Figure 8
2014 Existing Bicycle Volumes
PM Peak Hour (2:15 PM - 3:15 PM)

**Edward Devotion School
Brookline, MA**



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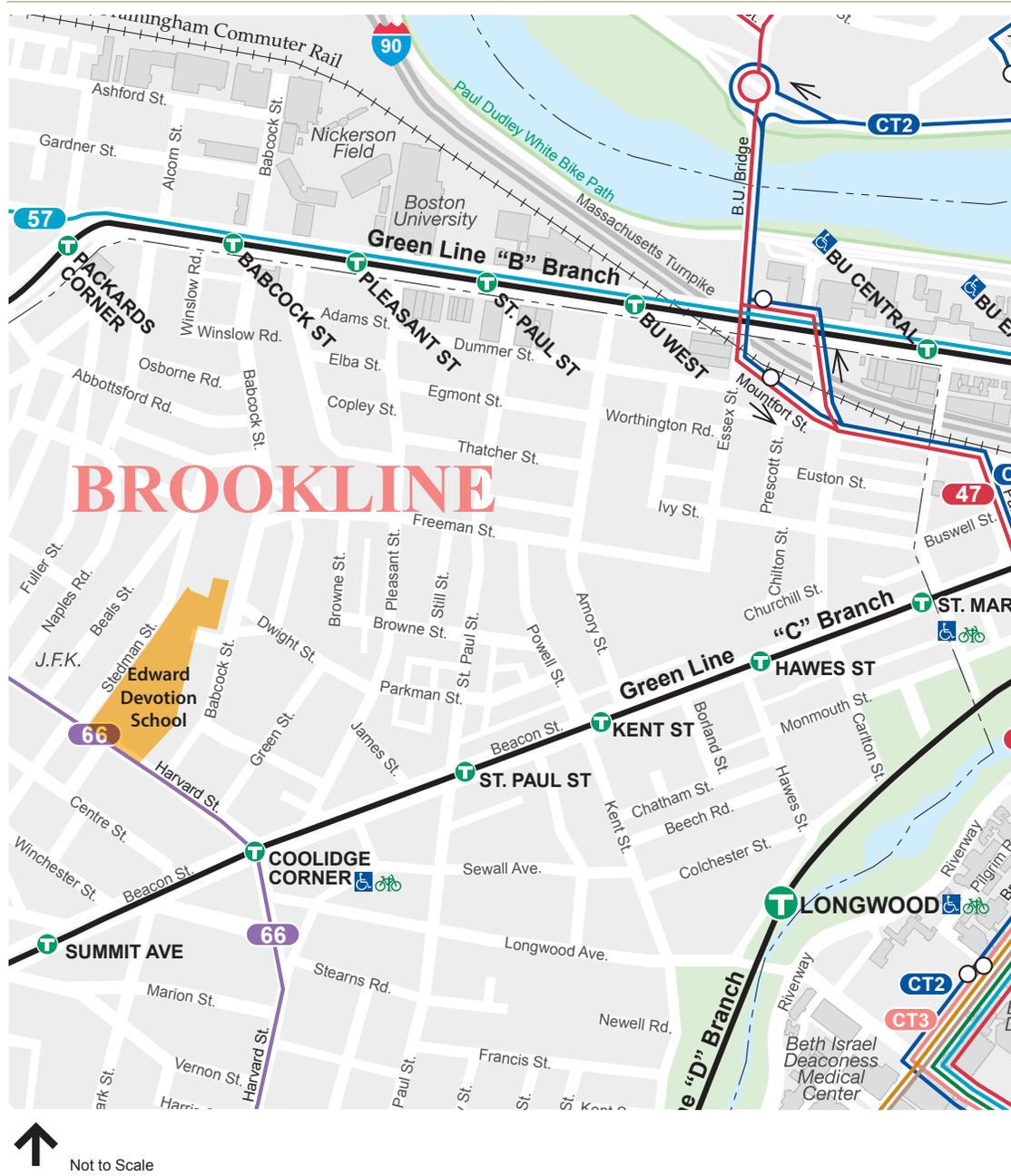


Figure 9

Public Transportation
Edward Devotion School

Source: MBTA Transit Map

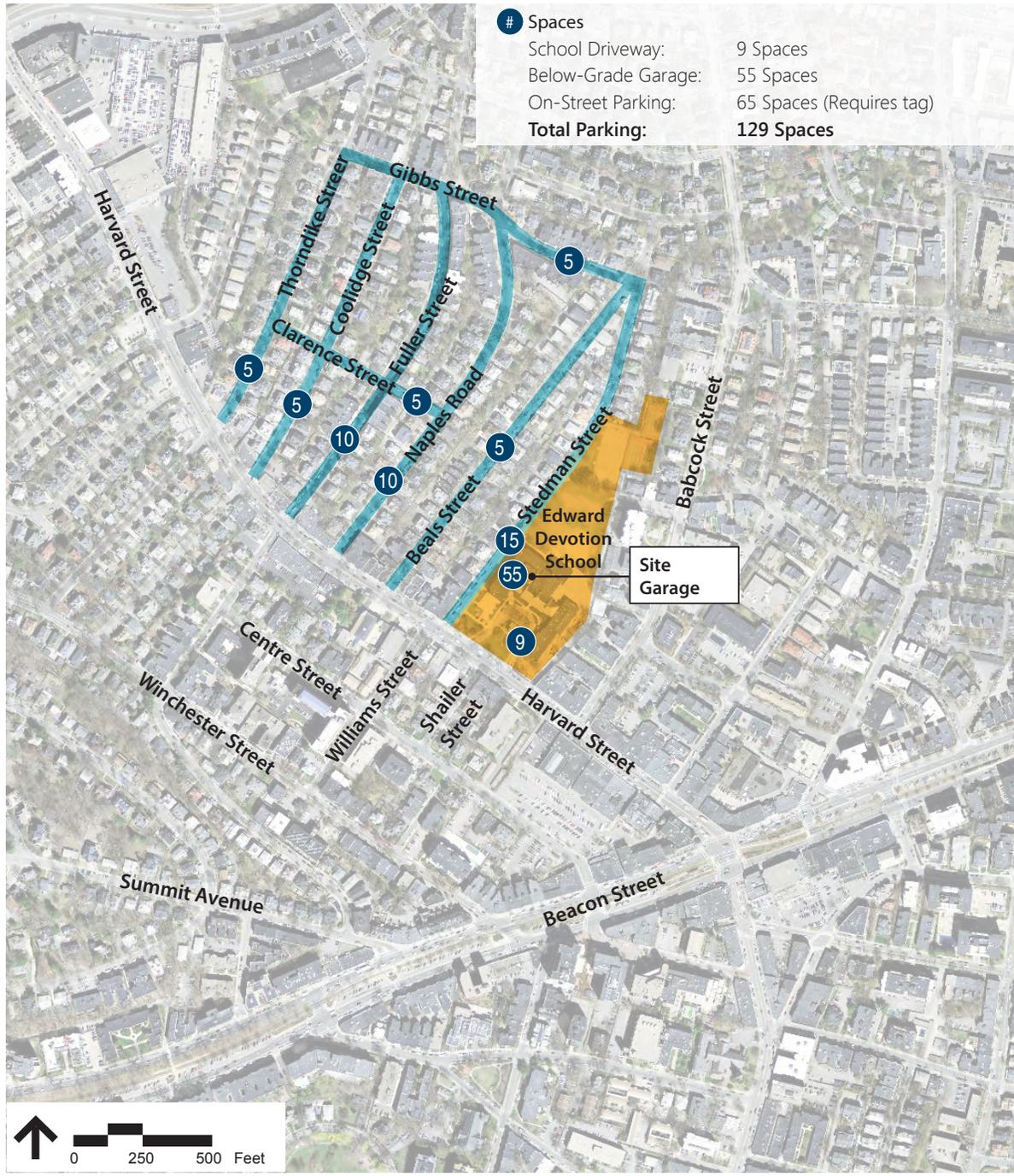


Figure 10

Existing Parking
Edward Devotion School

Source: MASSGIS Orthography



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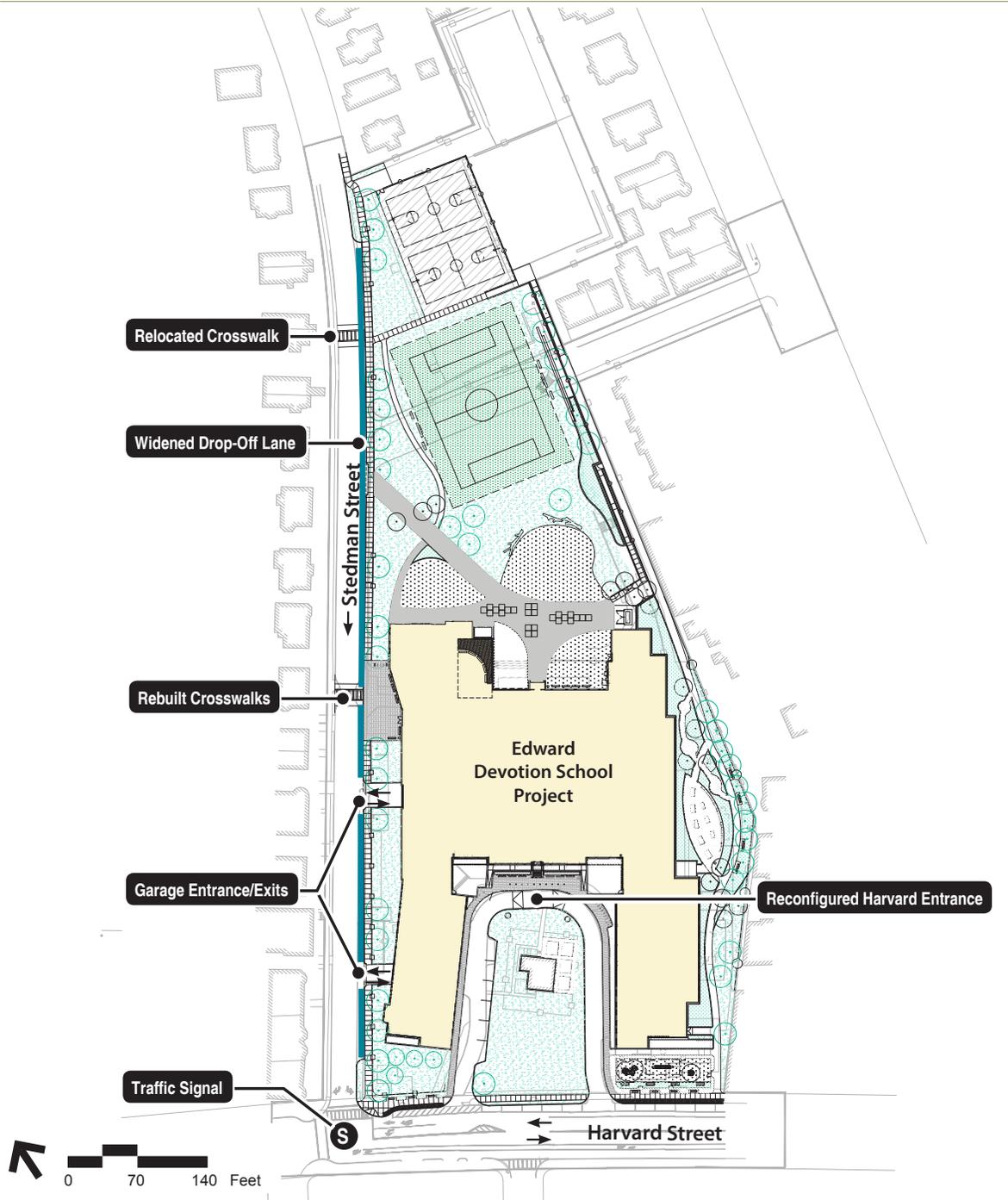
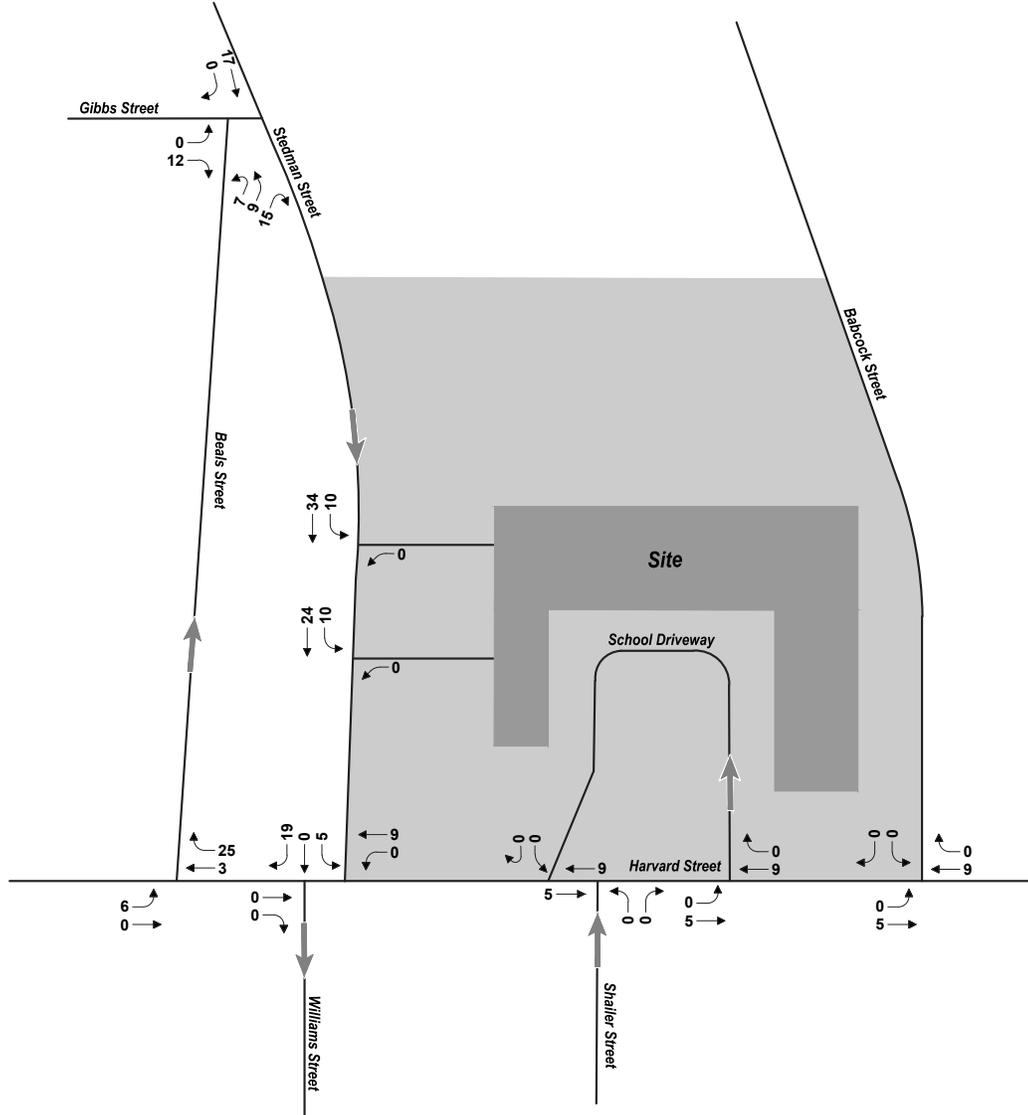


Figure 11

Site Plan
Edward Devotion School

Source: MASSGIS Orthography



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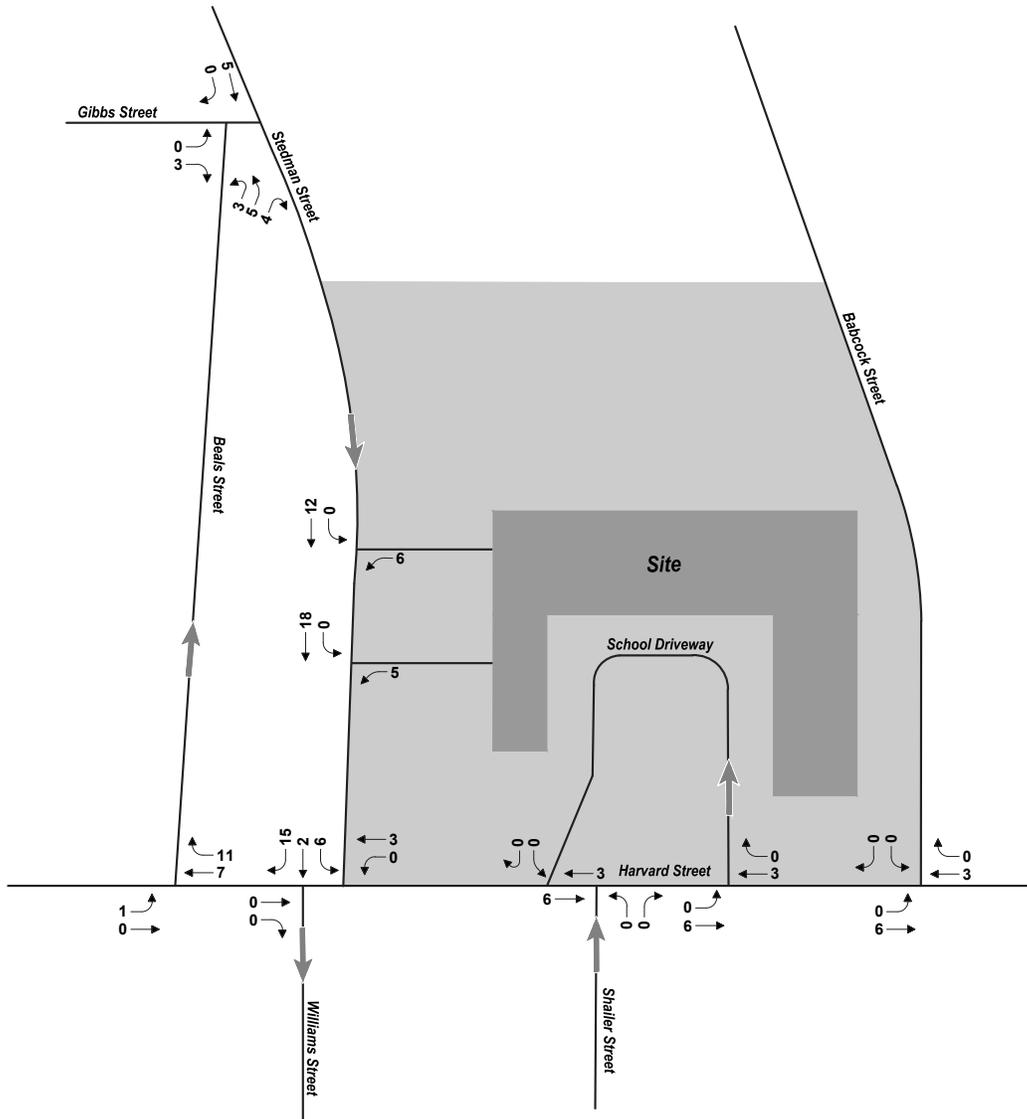


Figure 12
Project Generated Trips
AM Peak Hour (7:15 AM - 8:15 AM)

**Edward Devotion School
Brookline, MA**



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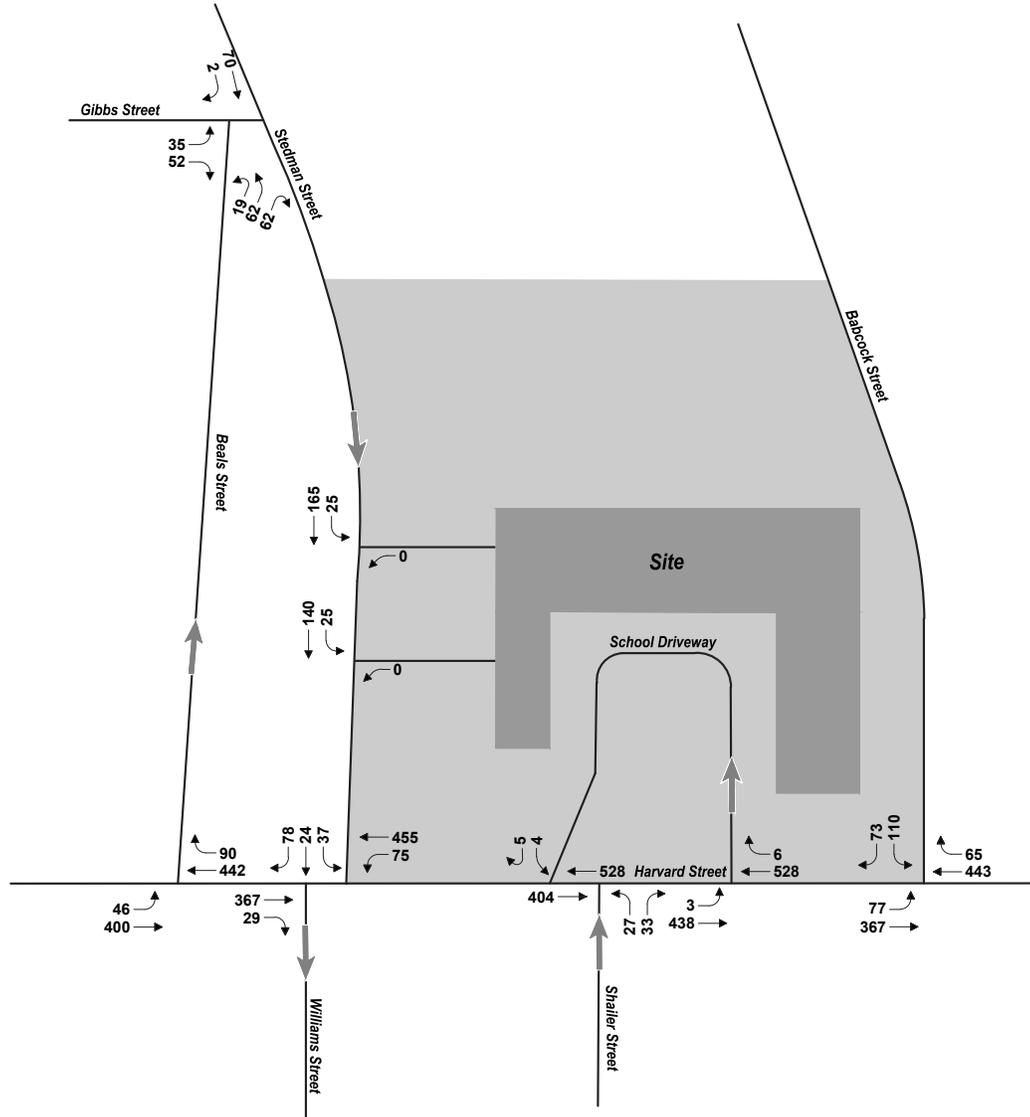


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Figure 13
Project Generated Trips
PM Peak Hour (2:15 PM - 3:15 PM)

**Edward Devotion School
Brookline, MA**



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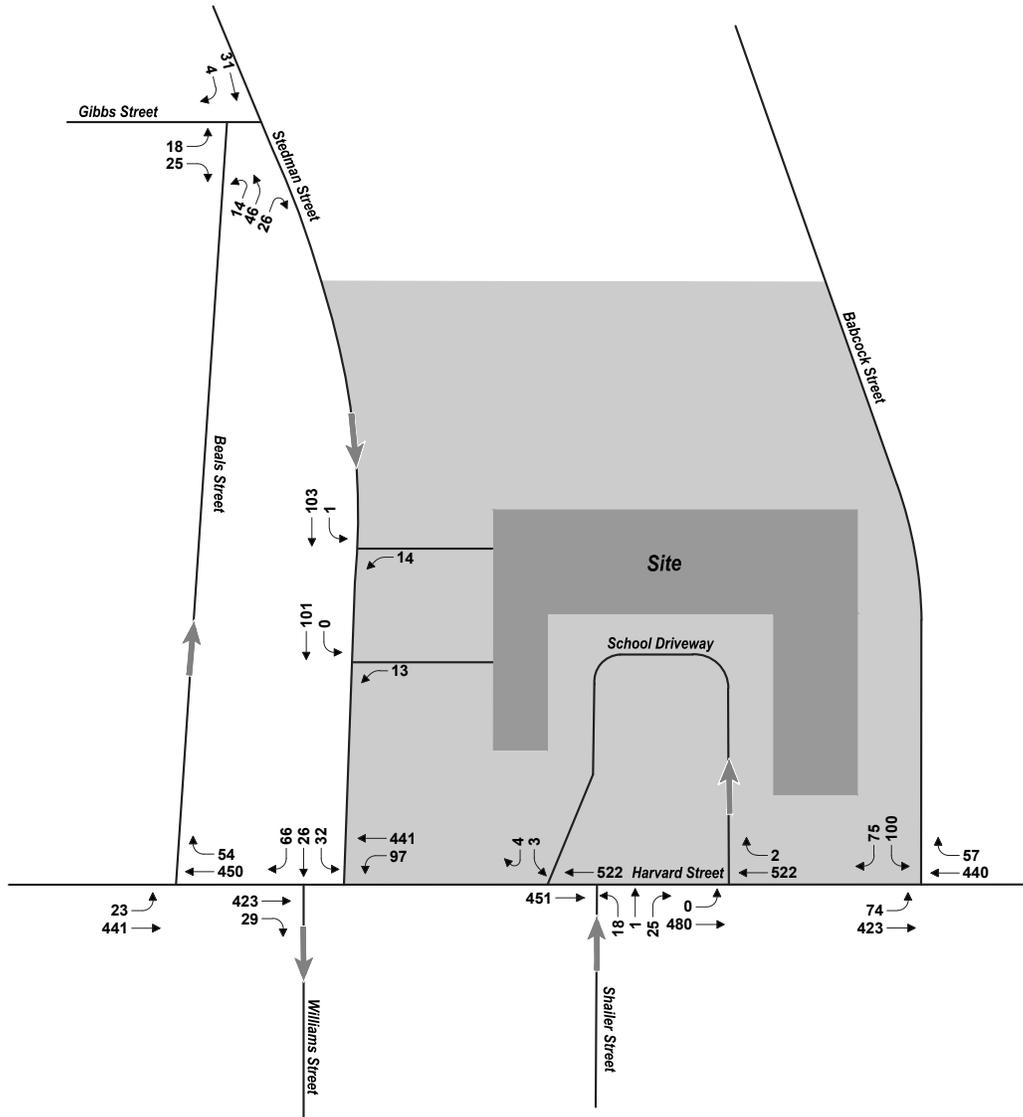


Figure 14
2019 Future Traffic Volumes
AM Peak Hour (7:15 AM - 8:15 AM)

**Edward Devotion School
Brookline, MA**



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Not to Scale



Figure 15
2019 Future Traffic Volumes
PM Peak Hour (2:15 PM - 3:15 PM)

**Edward Devotion School
Brookline, MA**