



**CITY OF CAMBRIDGE**  
**Traffic, Parking and Transportation**  
344 Broadway  
Cambridge, Massachusetts 02139

[www.cambridgema.gov/traffic](http://www.cambridgema.gov/traffic)

Joseph Barr, Director  
Brad Gerratt, Assistant Director for Parking Management

Phone: (617) 349-4700  
Fax: (617) 349-4747

**MEMORANDUM**

**To:** Cambridge Planning Board  
**From:** Joseph E. Barr, Director  
**Date:** November 9, 2016  
**Re:** Mass + Main and 47 Bishop Allen Drive Projects (PB#321 and #320)

The Traffic, Parking, and Transportation Department (TP&T) reviewed the Special Permit Project Review Applications for the Mass + Main (PB#321) and 47 Bishop Allen Drive (PB#320) Projects, located in Central Square, by Watermark Central Venture LLC. The proposed Projects includes 306 housing units (283 units at Mass + Main and 23 units at 47 Bishop Allen Drive), and 17,279 gross square feet (GSF) retail space. The combined Projects propose 146 parking spaces (95 below-grade parking spaces at Mass + Main Building 1 and 51 surface parking spaces at 65 Bishop Allen Drive). It's important to note the proposed 23 unit Project at 47 Bishop Allen Drive will eliminate the existing 113 space parking garage which was previously used for Quest employee parking. The Project proposes 41 short-term bike parking spaces and 321 long-term bike parking spaces.

TP&T certified the Project's Transportation Impact Study (TIS) as complete and reliable on April 11, 2016. According to the TIS, the Project will generate a total of:

898 daily vehicle trips, including 53 AM and 82 PM peak hour vehicle trips,  
1,106 daily transit trips (64 AM/102 PM peak hour transit trips),  
1,048 daily pedestrian trips (52 AM/94 PM peak hour pedestrian trips), and,  
304 daily bicycle trips, (19 AM/28 PM peak hour bicycle trips).

The TIS had a slightly different development program than the Special Permit Application (i.e., 295 total units evaluated in the TIS versus 306 total units currently proposed in the Special Permit Application). The Applicant provided a technical memorandum dated October, 27, 2016, regarding the changes between the TIS and Special Permit Application. The memorandum is attached and TP&T agrees with the memorandum that the increase in trip generation will have an insignificant impact on the various analysis conducted in the certified TIS.

The TIS, like all Traffic Impact Studies, evaluated a Future 5-year Build scenario Condition which takes into account other area development projects and a background traffic growth rate. The TIS accounted for the MIT Kendall Square Redevelopment Project, 181 Massachusetts Avenue (Novartis), 300 Massachusetts Avenue (Forest City), 650 Main Street Office/R&D buildings, and 10 Essex Street project. The TIS Future Build Condition also included a 0.5% background traffic growth rate per year for 5 years.

The TIS summary sheets are attached and the full TIS is located on the Community Development Department (CDD) web site:

[http://www.cambridgema.gov/~media/Files/CDD/ZoningDevel/SpecialPermits/sp321/sp321\\_tis.pdf?la=en](http://www.cambridgema.gov/~media/Files/CDD/ZoningDevel/SpecialPermits/sp321/sp321_tis.pdf?la=en)

The TIS reported 8 Planning Board Criteria Exceedances including the following:

- Bishop Allen Drive between Norfolk Street and Douglas Street exceeded the traffic on residential streets criteria.
- Pedestrian Level of Service exceedances occurred at Bishop Allen Drive/Columbia Street, Bishop Allen Drive/Norfolk Street, and at the unsignalized crosswalk at Massachusetts Avenue that is located directly in front of the project site.
- Lack of bicycle facilities on Bishop Allen Drive and Columbia Street.

After reviewing the Planning Board Special Permit Applications for the Mass + Main Project (PB#321) and 47 Bishop Allen Drive Project (PB#320), TPT offers the Planning Board the following initial comments:

**General:**

Overall, we believe that the Project in many ways is consistent with City goals for mixed-use, transit oriented development, and we believe 306 new housing units and retail in Central Square is a positive replacement for vacant and outdated office and laboratory buildings and a parking garage.

The proposed Project will transform the Massachusetts Avenue frontage into an active and vibrant place that will link to and enhance Jill Brown Rhone Park/Lafayette Square. The public passageways, known as "New Coolidge Place" and "Central Market", between Massachusetts Avenue and Municipal Parking Lot #6 will be positive east-west public connections and will break-up a long block face on Massachusetts Avenue. Loading, delivery services, and move-in/move-out activities will occur off-street from Bishop Allen Drive, which will help to limit the impacts on the adjacent streets and neighborhoods.

TP&T supports the Project, however some additional work is still needed on items listed below.

**Site Plan/Loading and Service Operations**

The Project proposes one loading dock located behind the Mass + Main Building 1 with access off Bishop Allen Drive through Parking Lot #6. The loading dock will be used for trash and recycling pick-up as well as retail deliveries. Trash from Building 2 will be wheeled over to the loading dock on trash days. Move-in and move-out activities will also be accommodated along the back side of Building 1.

TP&T has been working with the DPW and Applicant on the easement through Parking Lot #6 and generally supports the plan to accommodate service and loading behind Building 1. However, we believe some additional work is needed, such as, how exactly the loading area will operate with regards to conflicts between trucks, cars using Lot #6, pedestrians, and bicyclists and how vehicles will be prevented from parking in the loading/service area. Other details needing further review include, parking garage sightlines, pedestrian walkway widths and type of pavement material, and truck turning movements in/out of the loading dock.

**Automobile Parking**

The Project proposes a total of 146 parking spaces. There will be 95 parking spaces located in the Building 1 underground garage and 51 parking spaces in the 65 Bishop Allen Drive surface parking lot. The Project

also proposes at least 3 spaces for carsharing vehicles and has committed to increase to a total of 5 carsharing parking spaces if demand exists.

To discourage auto ownership, residents will be required to pay market rate parking fees. Visitors to residential units will be able to park at the 65 Bishop Allen Drive lot with the use of a visitor pass. If that lot is full, TP&T recommends visitors to residents also be permitted to park in the Building 1 underground garage, if spaces are available. The retail patrons will use various short-term parking options available in Central Square including on-street meter spaces and Municipal Parking Lots.

Because the Project is located in Central Square near the MBTA Red Line Central Square Station and multiple bus routes and stops (Bus Lines 1, 47, 64, 68, 70, 83, 91, CT1, and LMA M2 shuttle), TP&T believes the Project is proposing a generally appropriate number of parking spaces. TP&T will work with the applicant on reviewing the number and management of parking spaces in more detail, including the following items:

- Status of agreements with a carsharing company.
- Garage access (i.e. sightlines, ramp slopes/grades).
- Detailed parking management plan, including additional TDM measures to reduce auto ownership.

### **Bicycle Parking**

The Mass + Main long-term bicycle parking space layout needs additional refinement because it does not appear to meet the City's zoning layout requirements (i.e., bike racks units parallel to a wall must be at least 3 feet from the rack to a wall). The Applicant should also consider providing power assist doors to enter/exit the bicycle room, which will make it more convenient for cyclists.

TP&T does not agree with the Applicant's Special Permit application which states that short-term bicycle parking cannot be reasonably accommodated on site without displacing other desirable public space and retail activities, such as relaxing, dining and shopping. The Applicant has met with staff from TP& T and the Community Development Department to gain guidance and discuss possible locations for short-term bicycle parking and continues to work towards creating a plan that that both provides the required short-term bike parking on their property and creates a vibrant retail frontage.

The 47 Bishop Allen Drive Project proposes a bike shed in the back for long-term bicycle parking spaces. The Applicant should provide detailed plans for the bike shed for TP&T's review. The location for the short-term bike parking is also unclear for the 47 Bishop Allen Drive project.

### **Transit Improvements**

The Project will generate 1,106 daily transit trips, including 64 AM and 102 PM peak hour transit trips. The TIS conducted a transit analysis, including existing peak hour train and bus capacity, ridership, utilization, project generated transit trips, and a transit Build Condition scenario (Existing + Project Trips).

Red Line capacity analysis was based on MBTA's annual average 2015 On-Time Performance (84.8%) and field observations done on May 12 & 13, 2015, as part of the MIT Kendall Square Redevelopment TIS (with adjustments for Central Square Station). The data found that the MBTA Red Line peak hour capacity ranged from 10,020 to 14,028 passengers per direction during peak hours, depending on the number of trains operating (10-14 trains). Fewer trains often operate during a peak hour due to issues such as train or power system break downs to medical emergencies.

The existing peak hour MBTA Red Line volume to capacity (v/c) ratios for inbound trains exiting Central Square Station in the morning peak hour was a 1.83 v/c, and outbound trains entering Central Square Station in the evening peak hours was 1.66 v/c, based on 2015 MBTA data. It should be noted that a v/c ratio above 1.0 does not necessarily mean a passenger cannot board a train; instead the ratio indicates passengers riding above the MBTA's policy for safe and comfortable ride.

The TIS estimated that in the AM peak hour, the Project will generate 30 inbound Red Line trips and 10 outbound Red Line trips. During the PM peak hour, the Project will generate 23 inbound Red Line trips and 44 outbound Red Line trips.

Adding the Project generated Red Line trips to the existing Red Line conditions was not large enough to change the AM and PM peak hour v/c ratios for the MBTA Red Line. However, based on existing conditions, new peak hour transit riders at the Central Square Station will experience congested trains. They may not be able to board the first train that arrives or may be getting off a congested train, especially if traveling inbound in the morning peak hour or arriving home on an outbound train in the evening peak hour. TP&T is also concerned about the capacity of the staircases located at the southeastern end of both the inbound and outbound platforms, which will form the main access to the Red Line for residents and retail patrons associated with this project.

All study area bus routes were expected to operate within the MBTA policy capacity with v/c ratios below 1.0 in the Build Condition during the AM and PM peak hours. The most highly used bus routes included Route 64 Inbound Entering Central Square in the AM peak hour (0.96 v/c), and Route 47 Outbound Entering Central Square in the PM peak hour (0.96 v/c).

The transit analysis did not take into account other proposed or permitted development projects or regional transit ridership growth, which was beyond the scope of this Project. It is not disputed that the MBTA Red Line is congested during peak hours today. But, it is also not reasonable that this Project or any one Project can fix or substantially improve the MBTA Red Line conditions. However, TP&T believes that the Project should make a reasonable contribution to transit, whether through funding studies or transit investments. TP&T will work with the Applicant on this issue as part of a transportation mitigation package.

#### **Transportation Mitigation and Monitoring**

The Project proposes a concept plan of a protected bicycle facility on the north side of Massachusetts Avenue between Sidney Street and Douglas Street. TP&T is reviewing the plan which may require a broader discussion with the community about the concept. TP&T will continue to work with the Applicant on the idea.

TP&T has begun discussing transportation mitigation with the Applicant but additional work is needed. TP&T expects to have a proposed mitigation package for the Planning Board before the Planning Board Special Permit decision for this project is made. Mitigation is expected to include infrastructure improvement, TDM measures, transit enhancements, and transportation monitoring.



## Memorandum

To: Joseph E. Barr, Director  
Cambridge Traffic, Parking and  
Transportation Department

Date: October 27, 2016

Project #: 13471.00

From: Susan Sloan-Rossiter  
Sarah Wetmore, EIT  
Selma Mandzo-Prelidzic, P.E.

Re: Mass+Main TIS Trip Generation Update

On behalf of Watermark Central Venture LLC/Twining, VHB is submitting an update to the previously certified Transportation Impact Study (TIS) for the Mass+Main residential project in Central Square, Cambridge, Massachusetts (the Project). The original TIS was submitted to the Cambridge Traffic, Parking and Transportation Department on August 1, 2016 and certified as complete and reliable on August 11, 2016. Since the original filing the program has changed slightly from a total of 295 residential units to 306 units. This new program has been submitted to the Planning Board through Article 19 for the Mass+Main Project and 47 Bishop Allen Drive (BAD) Project. Both of these projects were analyzed as one development for the TIS, but are being filed separately under Article 19. **Table 1** provides the program changes from the TIS program to the Article 19 programs.

**Table 1 Program Comparison**

Project Component	Certified TIS	Article 19	Difference
Mass+Main	270 units	283 units	13
47 BAD	25 units	23 units	(-2)
<b>Total Residential Units</b>	<b>295</b>	<b>306</b>	<b>11</b>
Mass+Main Retail	17,000 GSF	17,279 GSF	279 GSF
Vehicle Parking Spaces	146 Spaces B-1 Garage – 95 65 Bishop Allen – 51	146 Spaces B-1 Garage – 95 65 Bishop Allen – 51	No Difference
Bicycle Parking Spaces	Long-Term: 310 Short-Term: 41	Long-Term: 321 Short-Term: 41	Long-Term: 11 Short-Term: 0

The minimal increase in residential units results in a nominal increase in trip generation. The vehicle trip generation increases by 20 daily trips (10 in, 10 out), while only 2 morning peak hour trips (1 in, 1 out) and 1 evening peak hour trip (1 in, 0 out) are added to the network. The transit trip generation increases by 22 daily trips with an increase of only 2 trips in both the morning and evening peak hours (1 in, 1 out for each peak hour). These minor increases to trip generation have an insignificant impact on the various analysis conducted in the certified TIS.

The Project will maintain compliance with the City of Cambridge Bicycle Parking Guidelines and will provide an increased number of bicycle spaces to account for the increase in residential units. **Table 2** provides the new bicycle parking being provided.

99 High Street  
Boston, MA 02110-2354  
P 617.728.7777

**Table 2      Bicycle Parking**

Project Component	Long-Term	Short-Term
Mass+Main	296	28
47 BAD	23	2
Mass+Main Retail	2	11
<b>Total</b>	<b>321</b>	<b>41</b>

This is an increase of 11 long-term bike parking spaces for the increase of 11 residential units.

The minor increase in residential units does not have adverse effects of the information or analyses conducted in the certified TIS. The slight trip generation increase does not affect the overall intersection LOS analysis or the transit capacity analysis.

CITY OF CAMBRIDGE

Special Permit – Transportation Impact Study (TIS)

Planning Board Criteria Performance Summary

Mass + Main

Planning Board Permit Number: \_\_\_\_\_

**PROJECT**

Project Name: Mass + Main  
Project Address: 415 Massachusetts Avenue  
Cambridge, MA 02139  
Owner/Developer Name: Watermark Central Venture LLC  
Contact Person: Mark Barer  
Contact Address: Twining Properties  
One Broadway  
Cambridge, MA 02142  
Contact Phone Number: 617-340-2411

**SIZE**

ITE sq. ft. : 325,529 GSF – 295 residential units; 17,000 GSF of retail  
Land Use Type: Residential; Retail

**PARKING**

Existing Parking Spaces\*: 164 Use: Currently not used  
Project Parking Spaces\*\*: 146 Use: Residential, carshare  
Net-New Parking Spaces\*\*\*: (-18)  
\*Existing parking spaces on TIS Building sites: 51 on 65 Bishop Allen Drive surface lot and 113 in 47 Bishop Allen Drive garage.

**TRIP GENERATION:**

	<b>Daily</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
Vehicle	898	53	82
Transit	1,106	64	102
Pedestrian	1,048	52	94
Bicycle	304	19	28
Other	138	9	13

**MODE SPLIT (Person Trips)**

	<b>Residential</b>	<b>Retail</b>
Drive Alone	25%	20%
Rideshare	5%	3%
Transit	31%	31%
Walk	24%	38%
Bike	10%	6%
Other	5%	2%

**TRANSPORATION CONSULTANT**

Company Name: VHB  
Contact Name: Susan Sloan-Rossiter  
Contact Phone Number: 617-607-2930

**Total Data Entries = 195****Total Number of Criteria Exceedances = 8****Criteria A –Project Vehicle Trip Generation**

Time Period	Criteria (trips)	Build	Exceeds Criteria?
Weekday Daily	2,000	898	No
Week AM Peak Hour	240	53	No
Week PM Peak Hour	240	82	No

**Criteria B – Vehicular LOS**

Intersection	AM Peak Hour				PM Peak Hour			
	Existing Condition	Build Condition	Traffic Increase	Exceeds Criterion?	Existing Condition	Build Condition	Traffic Increase	Exceeds Criterion?
Bishop Allen Dr at Douglass St	B	B	6.2%	No	C	C	4.7%	No
Bishop Allen Dr at Columbia St	B	B	4.6%	No	B	C	4.9%	No
Columbia St at Main St/Sidney St	C	D	3.3%	No	D	D	4.0%	No
Massachusetts Ave at Sidney St	C	C	0.6%	No	C	C	1.8%	No
Massachusetts Ave at Brookline St/Douglass St	B	B	0.1%	No	B	B	0.4%	No
Bishop Allen Dr at Norfolk St	B	B	3.7%	No	A	B	4.8%	No
Bishop Allen Dr at Prospect St	B	B	0.6%	No	C	C	0.9%	No
Massachusetts Ave at Prospect St/ River St/ Western Ave	C	C	0.7%	No	C	C	1.0%	No
Green St at River St/ Western Ave	B	B	0.2%	No	B	B	0.6%	No
Massachusetts Ave at Essex St	B	B	1.3%	No	A	B	1.8%	No



**Criteria C – Traffic on Residential Streets**

Roadway	Segment	Amount of Residential	AM Peak Hour			PM Peak Hour		
			Existing <sup>1</sup>	Project Trips	Exceeds Criteria?	Existing <sup>1</sup>	Project Trips	Exceeds Criteria?
Bishop Allen Drive	Prospect St to Essex St	1/3 or less	340	8	No	357	13	No
	Essex St to Norfolk St	1/3 or less	355	12	No	377	24	No
	Norfolk St to Douglass St	1/2 or more	300	23	No	331	37	<b>Yes</b>
	Douglass St to Columbia St	1/3 or less	365	31	No	409	45	No
	Columbia St to Main St	> 1/3 but < 1/2	230	8	No	243	12	No
Columbia Street	Bishop Allen Dr to Main St	1/3 or less	325	18	No	387	24	No
	Bishop Allen Dr to Washington St	1/2 or more	430	5	No	481	9	No
Sidney Street	Main St to Mass Ave	1/3 or less	530	18	No	709	24	No
	Mass Ave to Green St	1/3 or less	425	7	No	471	5	No
Mass Ave	Prospect St to Essex St	1/3 or less	785	11	No	970	16	No
	Essex St to Norfolk St	1/3 or less	765	7	No	946	5	No
	Norfolk St to Douglass St	1/3 or less	750	0	No	846	0	No
	Douglass St to Sidney St	1/3 or less	730	0	No	903	0	No
Douglass Street	Mass Ave to Bishop Allen Dr	1/2 or more	115	1	No	119	4	No

<sup>1</sup> Where driveways/on-street parking created a segment inflow/outflow volume imbalance, an average was calculated per direction and added

**Criteria D – Lane Queue (for signalized intersections)**

Intersection	Movement	AM Peak Hour			PM Peak Hour		
		Existing	Build	Exceeds Criteria?	Existing	Build	Exceeds Criteria?
Columbia Street at Main Street/Sidney Street	Eastbound – Thru	0	0	No	0	0	No
	Eastbound – Right	6	6	No	4	4	No
	Westbound – Thru/Right	3	3	No	5	5	No
	Northbound – Left/Right	1	1	No	2	2	No
Massachusetts Avenue at Sidney Street	Eastbound – Left	2	2	No	3	3	No
	Eastbound – Thru/Right	8	8	No	5	5	No
	Westbound – Left	2	2	No	2	2	No
	Westbound – Thru/Right	6	6	No	9	9	No
	Northbound – Right	2	2	No	2	2	No
	Southbound – Left/Thru	3	3	No	4	4	No
	Southbound – Right	0	0	No	0	0	No
Massachusetts Avenue at Brookline Street/Douglass Street	Eastbound – Left/Thru	2	2	No	4	4	No
	Westbound – Thru/Right	3	3	No	1	1	No
	Northbound – Left	2	2	No	2	2	No
	Northbound – Thru/Right	3	3	No	6	6	No

## CITY OF CAMBRIDGE

## Special Permit – Transportation Impact Study (TIS)

## Planning Board Criteria Performance Summary

Mass + Main

Planning Board Permit Number: \_\_\_\_\_

Intersection	Movement	AM Peak Hour			PM Peak Hour		
		Existing	Build	Exceeds Criteria?	Existing	Build	Exceeds Criteria?
Bishop Allen Drive at Prospect Street	Westbound – Left/Thru/Right	5	5	No	8	~ 8	No
	Northbound – Left	0	0	No	0	0	No
	Northbound – Thru/Right	7	7	No	6	6	No
	Southbound – Left	0	0	No	1	1	No
	Southbound – Thru/Right	5	5	No	6	6	No
Massachusetts Avenue at Prospect Street/River Street/Western Avenue	Eastbound – Thru	7	7	No	7	7	No
	Eastbound – Right	0	0	No	0	0	No
	Westbound – Thru	3	4	No	7	8	No
	Westbound – Right	1	1	No	2	2	No
	Northbound – Thru	6	6	No	4	4	No
	Northbound – Right	2	2	No	1	1	No
	Southbound – Thru/Right	11	11	No	12	12	No
Green Street at Western Avenue/River Street	Westbound – Left/Thru	3	3	No	6	6	No
	Westbound – Right	2	2	No	2	2	No
	Northbound – Left	1	1	No	3	3	No
	Northbound – Thru	5	5	No	4	4	No
	Southbound – Thru	13	13	No	11	11	No
Massachusetts Avenue at Essex Street	Eastbound – Left	1	1	No	1	1	No
	Eastbound – Thru	5	5	No	3	3	No
	Westbound – Thru/Right	3	3	No	3	4	No

## Criteria E – Pedestrian Delay

Intersection	Crosswalk	AM Peak Hour			PM Peak Hour		
		Existing	Build	Exceeds Criteria?	Existing	Build	Exceeds Criteria?
Columbia Street at Main Street/Sidney Street	East	C	C	No	B	B	No
	West	C	C	No	B	B	No
Massachusetts Avenue at Sidney Street	East	C	C	No	B	B	No
	West	C	C	No	B	B	No
	North	C	C	No	B	B	No
	South	C	C	No	B	B	No
Massachusetts Avenue at Brookline Street/Douglass Street	East	C	C	No	C	C	No
	North	B	B	No	B	B	No
	South	B	B	No	B	B	No
Bishop Allen Drive at Prospect Street	East	A	A	No	A	A	No
	West	A	A	No	A	A	No
	North	C	C	No	C	C	No
	South	C	C	No	C	C	No
Massachusetts Avenue at Prospect Street/River Street/Western Avenue	East	B	B	No	B	B	No
	West	B	B	No	B	B	No
	North	B	B	No	C	C	No
	South	B	B	No	C	C	No
	East	B	B	No	C	C	No

## CITY OF CAMBRIDGE

## Special Permit – Transportation Impact Study (TIS)

## Planning Board Criteria Performance Summary

Mass + Main

Planning Board Permit Number: \_\_\_\_\_

Intersection	Crosswalk	AM Peak Hour			PM Peak Hour		
		Existing	Build	Exceeds Criteria?	Existing	Build	Exceeds Criteria?
Green Street at Western Avenue/River Street	West	C	C	No	C	C	No
	North	D	D	No	D	D	No
	South	D	D	No	D	D	No
Massachusetts Avenue at Essex Street	West	C	C	No	C	C	No
	North	C	C	No	C	C	No
Bishop Allen Drive at Douglass Street	South	A	A	No	A	A	No
Bishop Allen Drive at Columbia Street	East	A	A	No	B	B	No
	West	C	C	No	E	E	Yes
	North	C	C	No	C	C	No
	South	B	B	No	B	B	No
Bishop Allen Drive at Norfolk Street	East	B	C	Yes	C	D	Yes
	West	C	C	No	D	D	No
	North	B	B	No	A	A	No
	South	A	A	No	A	A	No
Site Parking Lot Driveway at Bishop Allen Drive	South	A	A	No	A	A	No
Unsignalized Crosswalk at Massachusetts Avenue	N/A	F	F	Yes	F	F	Yes

**Criteria E – Pedestrian and Bicycle Facilities**

Adjacent Street	Link (between)	Sidewalk or Walkway Present	Exceeds Criteria?	Bicycle Facilities or Right of Ways Present	Exceeds Criteria?
Bishop Allen Drive	Norfolk Street and Columbia Street	Yes	No	No	Yes
Columbia Street	Bishop Allen Drive and Main Street	Yes	No	No	Yes
Massachusetts Avenue	Douglass Street and Sidney Street	Yes	No	Yes	No