



65 Glenn Street | 169 Ocean Blvd.
Lawrence, MA 01843 | Unit 101, PO Box 249
Hampton, NH 03842
T: 978.794.1792 T: 603.601.8154
TheEngineeringCorp.com

Mr. William Depietri
Capital Group Properties
259 Turnpike Road, Suite 100
Southborough, Massachusetts 01772

September 9, 2014

Re: Residential Condominium Development – 22 Pleasant Street, Wellesley, Massachusetts
Traffic Impact Evaluation

Dear Mr. Depietri:

TEC, Inc. has been retained by Capital Group Properties to prepare a Traffic Impact Assessment (TIA) associated with the construction of six (6) residential condominium units at 22 Pleasant Street in Wellesley, Massachusetts. The site currently contains a single-family home with a single driveway on the westerly side of Pleasant Street. The project will consist of razing the existing home and constructing six (6) residential condominium units with full access and egress via the existing driveway, which will be widened as part of the project.

As part of this TIA, TEC has evaluated factors affecting site access/egress and potential traffic-related impacts associated with the project. This TIA includes an assessment of the available sight lines at the proposed site driveway, an estimate of the site generated traffic volumes, and recommendations to improve safety.

SIGHT DISTANCE MEASUREMENTS

TEC, Inc. visited the site on Wednesday, August 27, 2014 to measure the available sight distances along Pleasant Street at the proposed site driveway. The available sight lines were compared to minimum requirements established by the American Association of State Highway and Transportation Officials (AASHTO).

Sight distance represents the length of roadway that is visible to a driver traveling within the roadway. Two types of sight distance are typically evaluated for driveways and intersections: stopping sight distance (SSD) and intersection sight distance (ISD). SSD is the minimum distance required for a driver traveling along a roadway to perceive an object in the roadway and stop safely in advance of the object when traveling on a wet pavement surface. SSD is measured from an eye height of 3.5 feet to an object height of 2 feet above the ground, which is equivalent to a driver viewing the taillight of a vehicle ahead. SSD is measured along the centerline of the travel lane approaching the driveway or intersection.

ISD represents the length of the roadway visible to a driver waiting to exit a driveway or minor street. Minimum ISD requirements are based on the distance required for a driver to exit a minor street onto a major street without requiring an approaching vehicle to reduce its speed from the design speed to less than 70 percent of the design speed. ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet, and is measured from a distance 15 feet off the edge of the travel-way of the major roadway to represent a driver waiting to exit a driveway or minor roadway.

SSD is typically considered the critical sight distance, as it represents the minimum distance required for safe stopping, while ISD represents an acceptable speed reduction for approaching vehicles. The ISD, however, must be at least equal to the minimum required SSD in order to prevent a driver from entering the roadway when an approaching vehicle is too close to safely stop. The guidance provided by AASHTO states:

"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."

Tables 1 provide a summary of the available sight distances at the proposed driveway location along the site frontage based on the signed advisory travel speed of 20 miles per hour (MPH) along Pleasant Street.

Table 1 – Existing Driveway Sight Distance Measurements

Approach / Direction	Speed	Minimum Required	Measured	
			Stopping Sight Distance	Intersection Sight Distance*
Proposed Site Driveway at:				
<i>North of Driveway</i>	20 mph	115 FT	260 FT	70 FT (215 FT)
<i>South of Driveway</i>	20 mph	115 FT	130 FT	105 FT (130 FT)

*XX FT (XX FT) = ISD measured 15 feet from the edge of travelway (ISD measured 10 feet from the edge of travelway)

As shown in Table 1, the SSD at the proposed 22 Pleasant Street driveway exceed AASHTO's minimum recommendations for safe operations. Although the ISD measured 15 FT from the edge of travelway does not meet AASHTO's recommendations for ISD due to shrubbery on the adjacent property to the north and a vertical crest curve on Pleasant Street to the south of the driveway, drivers exiting the driveway may pull forward to a distance of 10 FT from the edge of travelway in order to exceed AASHTO's recommendations for ISD. In addition, the available SSD are adequate to allow a vehicle on Pleasant Street to slow or swerve for a vehicle slightly entering the roadway for the driver to see oncoming traffic exiting the driveway. Therefore, the available SSD and ISD are adequate to provide safe operations at the proposed site driveway. It is recommended that vegetation within the public right-of-way along Pleasant Street to the north of the site driveway be trimmed to extend sight lines to the maximum extent possible. In addition, all vegetation along the site frontage should be sufficiently low or set back so as not to impede sight lines exiting the driveway.

SITE GENERATED TRAFFIC VOLUMES

The project consists of the construction of six (6) residential condominium units. The site-generated traffic-volumes for the project were estimated based on standard trip rates published in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 9th Edition* for Land Use Code (LUC) 210 – Single-Family Detached Housing, as this land use



provides the most conservative (highest) trip rates of all residential land uses. Table 5 provides a summary of the resulting trip generation estimate. The detailed trip generation calculation worksheets are provided in Attachment A.

Table 5 – Trip Generation Summary

Time Period	Site-Generated Trips		
	Entering	Exiting	Total
Weekday Daily	29	29	58
Weekday Morning Peak Hour	1	4	5
Weekday Evening Peak Hour	4	2	6
Saturday Daily	30	30	60
Saturday Midday Peak Hour	3	3	6

The project is anticipated to generate approximately 5 new vehicle trips (1 entering and 4 exiting) during the weekday morning peak period, and 6 new vehicle trips (4 entering and 2 exiting) during the weekday evening peak period. This level of trip generation represents one additional vehicle on Pleasant Street every 10 to 12 minutes during the peak hours, with lesser traffic volumes during all other periods, and will result in negligible impacts to traffic operations on surrounding area roadways.

CONCLUSIONS AND RECOMMENDATIONS

TEC has examined the potential traffic impacts associated with the proposed redevelopment of 22 Pleasant Street on the study area roadways and intersections. The following is a summary of the results and conclusions of this effort.

- The available SSD and ISD at the site driveway are adequate to provide safe operations along Pleasant Street. TEC recommends trimming of vegetation within the public right-of-way to the north of the site driveway to maximize ISD. In addition, vegetation along the site frontage should be kept low or sufficiently set back so as not to impede sight lines.
- The project is anticipated to generate approximately 5 new vehicle trips during the weekday morning peak period and 6 new vehicle trips during the weekday evening peak period. This level of trip generation represents one additional vehicle on Pleasant Street every 10 to 12 minutes during the peak hours, with lesser traffic volumes during all other periods, and will result in negligible impacts to traffic operations on surrounding area roadways.

Please feel free to contact our office at (978) 794-1792 should you require any further information regarding this project.

Sincerely,
TEC, INC.



Rebecca L. Brown, PE, PTOE
Senior Traffic Engineer





Mr. William Depietri
 Capital Group Properties
 259 Turnpike Road, Suite 100
 Southborough, Massachusetts 01772

September 18, 2014

Re: Residential Condominium Development – 22 Pleasant Street, Wellesley, Massachusetts
 Response to Comments from

Dear Mr. Depietri:

On behalf of Capital Group Properties, TEC, Inc. previously prepared a Traffic Impact Assessment (TIA) dated September 9, 2014 associated with the construction of six (6) residential condominium units at 22 Pleasant Street in Wellesley, Massachusetts. On September 15, 2014, the Town of Wellesley Planning Director, Michael Zehner, issued comments on the TIA and a request for additional information. The intent of this letter is to provide a response to these comments. The following provides a list of the additional information requested by Mr. Zehner in bold text, followed by TEC's response.

A. Vehicle speed;

TEC conducted an Automatic Traffic Recorder (ATR) count on Pleasant Street adjacent to the site on Tuesday, September 16, 2014 to record traffic volume, speed, and classification information over a 24-hour period. The detailed count sheets divided into 15-minute intervals are included as Attachment A. Table 1 below provides a summary of the resulting vehicle speeds along Pleasant Street at the site driveway intersection.

Table 1 – Vehicle Speed Summary (Pleasant Street at Site Driveway)

Location / Direction	Average Speed	85th Percentile Speed
Pleasant Street Northbound	21 mph	25 mph
Pleasant Street Southbound	20 mph	25 mph

As shown in Table 1, the average speed on Pleasant Street is 20-21 miles per hour (mph), which is consistent with the posted advisory speed limit of 20 mph on the S-curve located to the north of the site driveway.

B. 85th percentile vehicle speed;

As shown in Table 1, the 85th percentile speed along Pleasant Street at the site driveway is 25 mph, which is consistent with travel speeds on a local residential roadway and the posted advisory speed of 20 mph on the S-curve to the north of the driveway.

C. Sight distances;

TEC previously evaluated sight distances at the proposed site driveway intersection with Pleasant Street as part of the September 9, 2014 TIA based on the posted advisory speed

limit of 20 mph along Pleasant Street. Table 2 provides a summary of the available stopping sight distances (SSD) and intersection sight distances (ISD) at the proposed driveway location along the site frontage based on the 85th percentile travel speeds described in Comment A and B.

Table 2 – Existing Driveway Sight Distance Measurements

Approach / Direction	85 th Percentile Speed	Minimum Required	Measured	
			Stopping Sight Distance	Intersection Sight Distance*
Proposed Site Driveway at:				
North of Driveway	25 mph	155 FT	260 FT	70 FT (215 FT)
South of Driveway	25 mph	155 FT	130 FT	105 FT (130 FT)

*XX FT (XX FT) = ISD measured 15 feet from the edge of travelway (ISD measured 10 feet from the edge of travelway)

As shown in Table 2, the SSD at the proposed 22 Pleasant Street driveway exceed AASHTO's minimum recommendations for safe operations. Although the ISD measured 15 FT from the edge of travelway does not meet AASHTO's recommendations for ISD due to shrubbery on the adjacent property to the north and a vertical crest curve on Pleasant Street to the south of the driveway, drivers exiting the driveway may pull forward to a distance of 10 FT from the edge of travelway in order to exceed AASHTO's recommendations for ISD. In addition, the available SSD are adequate to allow a vehicle on Pleasant Street to slow or swerve for a vehicle slightly entering the roadway for the driver to see oncoming traffic exiting the driveway. Therefore, the available SSD and ISD are adequate to provide safe operations at the proposed site driveway. It is recommended that vegetation within the public right-of-way along Pleasant Street to the north of the site driveway be trimmed to extend sight lines to the maximum extent possible. In addition, all vegetation along the site frontage should be sufficiently low or set back so as not to impede sight lines exiting the driveway.

D. Existing safety records include accident data;

TEC has reviewed Massachusetts Department of Transportation (MassDOT) and Wellesley Police Department crash records for all collisions occurring along Pleasant Street between January 1, 2010 and September 15, 2014. The collision records indicate that only one collision occurred on Pleasant Street during this period, which occurred when a vehicle traveling southbound on Pleasant Street rear-ended a school van stopped in front of #76 Pleasant Street. Solar glare blinding the driver was reported as a contributing cause to this collision, and no injuries were reported. Therefore, no significant collision trends exist along Pleasant Street.

E. Description of existing traffic controls;

There are currently no existing traffic control devices along Pleasant Street at the site driveway. An advisory speed placard (W13-1P) and S-curve ahead (W1-4) sign are posted on Pleasant Street in either direction just north of the proposed site driveway to alert drivers to the presence of the curve. As traffic on Pleasant Street will remain free-flowing,



no additional signal control is proposed along Pleasant Street at the site driveway as part of the project.

F. Annual Average Daily Traffic;

As discussed in Comment G below, the Average Daily Traffic (ADT) on Pleasant Street along the site frontage in September 2014 was recorded as 713 vehicles per day (vpd). To estimate Annual Average Daily Traffic (AADT), TEC reviewed historic traffic-volume counts collected by MassDOT at permanent count stations in the area to evaluate the seasonal variation in traffic. The count stations indicate that traffic volumes in September are 2.6 percent higher than average month conditions. Therefore, the ADT was adjusted by 2.6 percent to estimate the AADT. The resulting AADT on Pleasant Street along the site frontage is 695 vpd. The seasonal adjustment calculations are provided in Attachment B.

G. Average Daily Traffic;

As discussed in Comment A, TEC conducted an ATR count on Pleasant Street in September 2014 to record traffic volumes over a 24-hour period. The results of this count indicate that the ADT on Pleasant Street along the site frontage is 713 vpd. Table 3 provides a summary of the ATR counts.

Table 3 - Existing Weekday Traffic Volume Summary^a

Location	Weekday Traffic Volume ^b	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		Traffic Volume ^c	K Factor ^d	Directional Distribution ^e	Traffic Volume	K Factor	Directional Distribution
Pleasant Street along Site Frontage	713	59	8.3	57.6% SB	90	12.6	61.1% SB

^aTwo-way traffic volume
^bDaily traffic expressed in vehicles per day.
^cExpressed in vehicles per hour.
^dPercent of daily traffic volumes which occurs during the peak hour.
^ePercent of peak-hour volume in the predominant direction of travel.
 NB = northbound; SB = southbound

H. Peak-Hour Traffic (morning, afternoon and other peak(s));

The ATR counts collected on Pleasant Street indicate that the weekday morning peak hour occurs from 8:00 to 9:00 AM and the weekday evening peak hour occurs at 5:15 to 6:15 PM. As shown in Table 3, the volume during the weekday morning peak hour is 59 vehicles per hour (vph) and the volume during the weekday evening peak hour is 90 vph.

I. Peak-Hour Factor;

TEC calculated the Peak-Hour Factor (PHF) for the weekday morning and weekday evening peak hours based on the following formula, using the ATR count data provided in Attachment A:

$$PHF = \frac{\text{(Peak Hour Volume)}}{4 \times \text{(Volume in Peak 15 Minutes)}}$$



The resulting PHF for the weekday morning peak hour is 0.87 $[59 / (4 \times 17)]$ and the PHF for the weekday evening peak hour is 0.87 $[90 / (4 \times 26)]$.

J. Design Hourly Volume;

The Design Hourly Volume (DHV) is equivalent to the average traffic volume during the peak hour under design year conditions. Based on the results of the ATR count summarized in Table 3, the peak hour occurs during the weekday evening peak hour, at which time the existing traffic volume is 90 vph on Pleasant Street along the site frontage.

To estimate DHV, traffic volumes must be projected to design year conditions. The proposed residential development is anticipated to be completed in 2015; therefore, traffic volumes were projected to 2015 conditions. Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in Wellesley in the vicinity of the site were reviewed in order to determine traffic growth trends. Based on the MassDOT traffic volume data, traffic volumes in the area have been decreasing at a rate of 1.2 percent per year since 2003. In order to provide a conservative (worse case) analysis scenario, a 1.0 percent per year compounded annual background traffic growth rate was used to account for potential future traffic growth external to the study area and presently unforeseen development. Count station data has been included in Attachment B. The 2015 No-Build traffic volumes for the weekday morning and evening peak hours were estimated by applying the 1.0 percent per year growth rate to the 2014 Existing traffic volumes as shown in Figure 1.

Traffic generated by the proposed residential development was estimated as part of the September 9 TIA and is described in Comment M. The 2015 Build traffic volumes were estimated by adding the site-generated traffic volumes to the 2015 No-Build traffic volumes as shown in Figure 1.

The resulting traffic volume on Pleasant Street along the site frontage during the weekday evening peak hour represents the DHV, which is equivalent to 97 vpd.

K. K-Factor;

The K-Factor is a measure of the percentage of daily traffic that occurs during the peak hour. As described in Comment G and in Table 3, the K-factor for the weekday morning peak hour is 8.3, while the K-factor for the weekday evening peak hour is 12.6. This indicates that approximately 8.3 percent of the total daily traffic on Pleasant Street occurs during the weekday morning peak hour and 12.6 percent of the total daily traffic occurs during the weekday evening peak hour.

L. Level of Service (LOS);

TEC performed capacity and queue analysis of the Pleasant Street / Site Driveway intersection using the *Highway Capacity Manual (HCM) 2010* methodology for the 2015 Build conditions during the weekday morning and evening peak hours. The detailed



Synchro analysis worksheets are included as Attachment C and the results of the analysis are summarized in Table 4.

Table 4 – Intersection Capacity and Queue Analysis Summary

Intersection / Lane Group	2015 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d
Pleasant Street / Site Driveway				
<i>Weekday Morning Peak Hour</i>				
Pleasant Street NB Left-Turn	0.01	7.3	A	<25
Pleasant Street SB	0.00	0.0	A	<25
Site Driveway EB	0.01	8.7	A	<25
<i>Weekday Evening Peak Hour</i>				
Pleasant Street NB Left-Turn	0.01	7.4	A	<25
Pleasant Street SB	0.00	0.0	A	<25
Site Driveway EB	0.01	8.9	A	<25

^a Volume-to-capacity ratio

^b Delay expressed in seconds per vehicle (average)

^c Level of service

^d 95th Percentile Queue

As shown in Table 4, all movements at the intersection of Pleasant Street / Site Driveway are anticipated to operate at LOS A during all analysis time periods under 2015 Build conditions with the proposed residential development.

M. Project generated traffic and its distribution;

The project consists of the construction of six (6) residential condominium units. The site-generated traffic-volumes for the project were estimated based on standard trip rates published in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 9th Edition* for Land Use Code (LUC) 210 – Single-Family Detached Housing, as this land use provides the most conservative (highest) trip rates of all residential land uses. Table 5 provides a summary of the resulting trip generation estimate. The detailed trip generation calculation worksheets are provided in Attachment D.

Table 5 – Trip Generation Summary

Time Period	Site-Generated Trips		
	Entering	Exiting	Total
Weekday Daily	29	29	58
Weekday Morning Peak Hour	1	4	5
Weekday Evening Peak Hour	4	2	6
Saturday Daily	30	30	60
Saturday Midday Peak Hour	3	3	6

The project is anticipated to generate approximately 5 new vehicle trips (1 entering and 4 exiting) during the weekday morning peak period, and 6 new vehicle trips (4 entering and 2 exiting) during the weekday evening peak period. This level of trip generation represents one additional vehicle on Pleasant Street every 10 to 12 minutes during the peak hours, with lesser traffic volumes during all other periods, and will result in negligible impacts to traffic operations on surrounding area roadways.



N. Volume to Capacity Ratio;

As shown in Table 4, the volume-to-capacity (V/C) ratio for all movements at the intersection of Pleasant Street and the site driveway are anticipated to be 0.01 or lower under 2015 Build conditions, clearly indicating there is adequate capacity to accommodate the anticipated traffic volumes from the proposed residential development.

O. Average Delay;

As shown in Table 4, the average delay on all approach to the intersection of Pleasant Street / Site Driveway will be less than nine (9) seconds per vehicle.

P. Average and 95th Percentile Queue Lengths;

As shown in Table 4, the average and 95th percentile queues on all approaches to the Pleasant Street / Site Driveway intersection are not expected to exceed a single vehicle.

Q. Roadways Impacted by Development Traffic;

The proposed residential development is anticipated to generate approximately 6 new vehicle trips during the weekday evening peak hour and lesser vehicle trips during all other time periods. This equates to one additional vehicle every 10 minutes and will not result in a noticeable impact on the traffic operations on any area roadways. As shown in Table 4, all movements at the site driveway intersection with Pleasant Street will operate at LOS A with less than 10 seconds of delay per vehicle during all time periods.

R. Delay and Gap Study (when deemed necessary by the Town's traffic engineering consultant); and

Delay and gap studies are typically completed on high-volume, congested roadways to identify the number of gaps in mainline traffic of adequate length of accommodate traffic exiting a side street. These studies are also completed to calibrate a Synchro analysis model when the delay modeled by the software analysis is inconsistent with field observed delay or gap acceptance behavior. Pleasant Street is a low-volume, residential roadway with very little delay and more than adequate capacity to accommodate the proposed development. As such, delay and gap studies are not necessary to calibrate the Synchro model.

S. Data Calibration

TEC conducted a capacity and queue analysis of the Pleasant Street / Site Driveway intersection using Synchro 8.0 analysis software and the HCM 2010 methodology. The results of the capacity and queue analysis are consistent with traffic operations on a low-volume roadway. Therefore, no additional calibration of the analysis model was necessary.



T. Pedestrian and Bicycle Safety

Sidewalks are currently provided along both sides of Pleasant Street in the vicinity of the site. The sidewalk along the easterly side of Pleasant Street is separated from the roadway by a grass strip. There are no marked crosswalks or bicycle accommodations along Pleasant Street. However, traffic volumes along Pleasant Street are less than 100 vehicles per hour during the peak hours and travel speeds are less than 25 mph. As such, pedestrians are able to safely cross the roadway and bicyclists may ride in the roadway with limited conflict from vehicles.

CONCLUSIONS AND RECOMMENDATIONS

TEC has examined the potential traffic impacts associated with the proposed redevelopment of 22 Pleasant Street on the study area roadways and intersections. The following is a summary of the results and conclusions of this effort.

- The collision history indicates that no significant collision trends exist along Pleasant Street.
- The project is anticipated to generate approximately 5 new vehicle trips during the weekday morning peak period and 6 new vehicle trips during the weekday evening peak period. This level of trip generation represents one additional vehicle on Pleasant Street every 10 to 12 minutes during the peak hours, with lesser traffic volumes during all other periods, and will result in negligible impacts to traffic operations on surrounding area roadways.
- The capacity and queue analysis indicates that all movements at the Pleasant Street / Site Driveway intersection will operate at LOS A during all time periods under 2015 Build conditions. In addition, queues will not exceed a single vehicle and V/C ratios will be below 0.01, indicating there will be ample capacity to accommodate the anticipate traffic volumes.
- The proposed residential development is not anticipated to have a measurable impact on traffic operations along Pleasant Street or any other surrounding area roadways.

Please feel free to contact our office at (978) 794-1792 should you require any further information regarding this project.

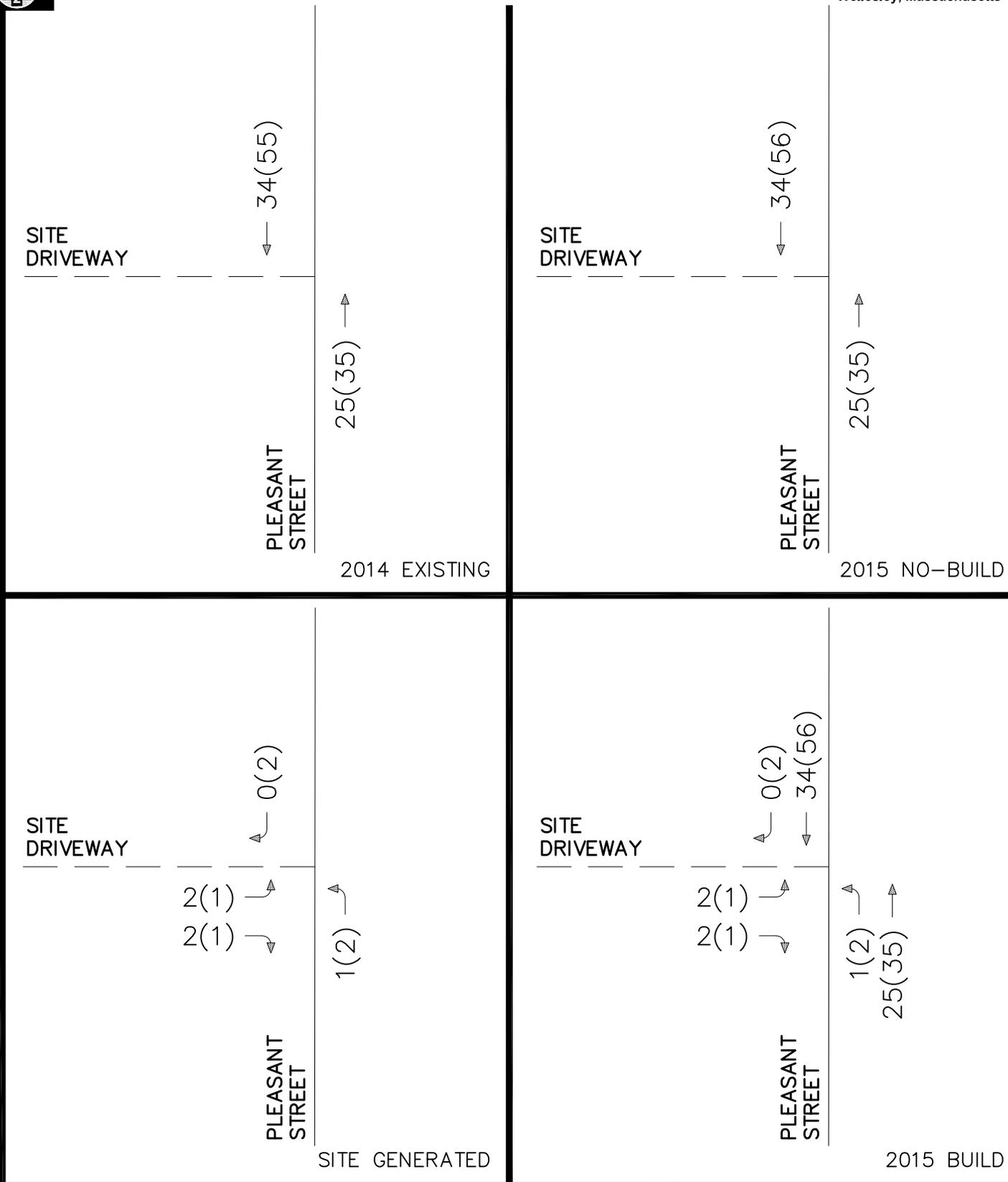
Sincerely,
TEC, INC.



Rebecca L. Brown, PE, PTOE
Senior Traffic Engineer



North
Not to Scale



XX(XX) = AM(PM)

Figure 1

Peak Hour Traffic Volumes



T:\T0560\CAD\Civil\Graphics\T0560_Traffic Networks.dwg 9/18/2014 5:25:32 PM

Attachment A

Automatic Traffic Recorder Counts

Pleasant Street
 north of Westerly Street
 City, State: Wellesley, MA
 Client: TEC/ R. Brown



PRECISION
 D A T A
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
 Office: 508.481.3999 Fax: 508.545.1234
 Email: datarequests@pdillc.com

144083 A Class
 Site Code: T0560
 Date Start: 16-Sep-14

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/16/1														
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
07:00	0	19	2	0	0	1	0	0	0	0	0	0	0	22
08:00	0	20	3	2	0	0	0	0	0	0	0	0	0	25
09:00	0	14	0	0	1	0	0	0	0	0	0	0	0	15
10:00	1	11	2	0	0	0	0	0	0	0	0	0	0	14
11:00	0	24	5	0	0	0	0	0	0	0	0	0	0	29
12 PM	0	17	2	0	0	0	0	0	0	0	0	0	0	19
13:00	0	16	0	0	0	0	0	0	0	0	0	0	0	16
14:00	0	30	4	0	0	0	0	0	0	0	0	0	0	34
15:00	0	27	1	0	1	0	0	0	0	0	0	0	0	29
16:00	0	23	2	0	0	0	0	0	0	0	0	0	0	25
17:00	0	33	1	0	1	0	0	0	0	0	0	0	0	35
18:00	0	30	1	1	0	0	0	0	0	0	0	0	0	32
19:00	0	17	0	0	0	0	0	0	0	0	0	0	0	17
20:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
21:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	306	24	3	3	1	0	0	0	0	0	0	0	338
Percent	0.3%	90.5%	7.1%	0.9%	0.9%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	08:00	09:00	07:00								11:00
Vol.	1	24	5	2	1	1								29
PM Peak		17:00	14:00	18:00	15:00									17:00
Vol.		33	4	1	1									35
Total		306	24	3	3	1	0	0	0	0	0	0	0	338

Pleasant Street
 north of Westerly Street
 City, State: Wellesley, MA
 Client: TEC/ R. Brown



PRECISION
 D A T A
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
 Office: 508.481.3999 Fax: 508.545.1234
 Email: datarequests@pdillc.com

144083 A Class
 Site Code: T0560
 Date Start: 16-Sep-14

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/16/1														
4	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
06:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
07:00	0	29	2	0	0	0	0	0	0	0	0	0	0	31
08:00	1	30	3	0	0	0	0	0	0	0	0	0	0	34
09:00	0	25	2	0	1	0	0	0	0	0	0	0	0	28
10:00	2	15	2	0	1	0	0	0	0	0	0	0	0	20
11:00	2	18	4	0	2	0	0	0	0	0	0	0	0	26
12 PM	0	19	3	0	0	0	0	0	0	0	0	0	0	22
13:00	0	12	5	0	0	0	0	0	0	0	0	0	0	17
14:00	0	21	4	0	0	0	0	0	0	0	0	0	0	25
15:00	0	23	7	0	0	0	0	0	0	0	0	0	0	30
16:00	0	23	3	0	0	0	0	0	0	0	0	0	0	26
17:00	1	44	4	0	1	0	0	0	0	0	0	0	0	50
18:00	0	23	1	0	0	0	0	0	0	0	0	0	0	24
19:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
20:00	0	10	0	0	0	0	0	0	0	0	0	0	0	10
21:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	6	323	41	0	5	0	0	0	0	0	0	0	0	375
Percent	1.6%	86.1%	10.9%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	08:00	11:00		11:00									08:00
Vol.	2	30	4		2									34
PM Peak	17:00	17:00	15:00		17:00									17:00
Vol.	1	44	7		1									50
Total		323	41	0	5	0	0	0	0	0	0	0	0	375

Pleasant Street
 north of Westerly Street
 City, State: Wellesley, MA
 Client: TEC/ R. Brown



PRECISION
 D A T A
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
 Office: 508.481.3999 Fax: 508.545.1234
 Email: datarequests@pdillc.com

144083 A Speed
 Site Code: T0560
 Date Start: 16-Sep-14

NB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/16/																													
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
06:00	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	25	21	
07:00	0	0	16	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	26	24	
08:00	1	7	14	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	23	19	
09:00	0	2	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	23	21	
10:00	4	2	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	22	16	
11:00	2	8	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	26	20	
12 PM	1	5	8	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	26	20	
13:00	1	2	9	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	26	21	
14:00	0	1	21	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	27	24	
15:00	2	3	18	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	25	21	
16:00	0	3	15	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	26	22	
17:00	0	3	23	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	25	22	
18:00	0	5	21	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	25	22	
19:00	0	3	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	23	21	
20:00	0	1	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	29	25	
21:00	0	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	26	22	
22:00	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	30	22	
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	

%	3.3%	14.2%	59.2%	20.1%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AM Peak	08:00	08:00	07:00	07:00	07:00																					08:00			
Vol.	1	7	16	5	1																					25			
Midda y Peak	11:00	11:00	14:00	11:00	14:00																					14:00			
Vol.	2	8	21	9	3																					34			
PM Peak	15:00	18:00	17:00	17:00	20:00																					17:00			
Vol.	2	5	23	9	2																					35			

% ile
 15th Percentile : 15 MPH
 50th Percentile : 21 MPH
 85th Percentile : 25 MPH
 95th Percentile : 28 MPH

Stats
 10 MPH Pace Speed : 18-27 MPH
 Number in Pace : 238
 Percent in Pace : 70.4%
 Number of Vehicles > 25 MPH : 59
 Percent of Vehicles > 25 MPH : 17.5%
 Mean Speed(Average) : 21 MPH

Pleasant Street
 north of Westerly Street
 City, State: Wellesley, MA
 Client: TEC/ R. Brown



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144083 A Speed
 Site Code: T0560
 Date Start: 16-Sep-14

SB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
09/16/14	14	19	24	29	34	39	44	49	54	59	64	69	9999			
09/16/14	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18	15
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3	22	19
06:00	1	1	5	1	1	0	0	0	0	0	0	0	0	9	26	20
07:00	0	6	18	7	0	0	0	0	0	0	0	0	0	31	25	21
08:00	0	0	17	14	3	0	0	0	0	0	0	0	0	34	28	25
09:00	1	5	14	8	0	0	0	0	0	0	0	0	0	28	26	21
10:00	3	5	10	2	0	0	0	0	0	0	0	0	0	20	23	17
11:00	3	6	12	5	0	0	0	0	0	0	0	0	0	26	24	19
12 PM	0	5	10	7	0	0	0	0	0	0	0	0	0	22	26	21
13:00	1	7	6	3	0	0	0	0	0	0	0	0	0	17	24	18
14:00	1	5	15	4	0	0	0	0	0	0	0	0	0	25	24	20
15:00	2	5	16	7	0	0	0	0	0	0	0	0	0	30	25	20
16:00	2	8	13	3	0	0	0	0	0	0	0	0	0	26	23	18
17:00	1	7	27	14	1	0	0	0	0	0	0	0	0	50	26	22
18:00	0	2	11	11	0	0	0	0	0	0	0	0	0	24	27	23
19:00	0	4	6	0	0	0	0	0	0	0	0	0	0	10	22	19
20:00	0	2	4	4	0	0	0	0	0	0	0	0	0	10	26	22
21:00	0	3	1	2	0	0	0	0	0	0	0	0	0	6	26	19
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2	18	15
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18	15

%	4.0%	20.3%	49.9%	24.5%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AM Peak	06:00	07:00	07:00	08:00	08:00								08:00
Vol.	1	6	18	14	3								34
Midda y Peak	11:00	13:00	14:00	12:00									11:00
Vol.	3	7	15	7									26
PM Peak	15:00	16:00	17:00	17:00	17:00								17:00
Vol.	2	8	27	14	1								50
% ile			15th Percentile :			13 MPH							
			50th Percentile :			20 MPH							
			85th Percentile :			25 MPH							
			95th Percentile :			28 MPH							

Stats
 10 MPH Pace Speed : 18-27 MPH
 Number in Pace : 241
 Percent in Pace : 64.3%
 Number of Vehicles > 25 MPH : 64
 Percent of Vehicles > 25 MPH : 17.1%
 Mean Speed(Average) : 21 MPH

Pleasant Street
north of Westerly Street
City, State: Wellesley, MA
Client: TEC/ R. Brown



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Email: datarequests@pdillc.com

144083 A Volume
Site Code: T0560
Date Start: 16-Sep-14

Start Time	NB		SB		Combin ed		16-Sep-14 Tue							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
12:00	0	6	0	10	0	16								
12:15	0	5	0	7	0	12								
12:30	0	2	0	2	0	4								
12:45	0	0	6	19	1	1	41							
01:00	0	3	0	3	0	6								
01:15	0	4	0	3	0	7								
01:30	0	4	0	5	0	9								
01:45	0	0	5	16	0	0	33							
02:00	0	3	0	7	0	10								
02:15	0	9	0	8	0	17								
02:30	0	10	0	3	0	13								
02:45	0	0	12	34	0	0	59							
03:00	0	6	0	4	0	10								
03:15	0	6	0	11	0	17								
03:30	0	8	0	5	0	13								
03:45	0	0	9	29	0	0	59							
04:00	0	7	0	5	0	12								
04:15	0	9	0	12	0	21								
04:30	0	7	0	6	0	13								
04:45	0	0	2	25	0	0	51							
05:00	0	10	0	5	0	15								
05:15	0	7	2	19	2	26								
05:30	0	10	0	15	0	25								
05:45	0	0	8	35	1	3	85							
06:00	1	10	0	10	1	20								
06:15	1	5	5	5	6	10								
06:30	0	8	1	5	1	13								
06:45	2	4	9	32	3	9	56							
07:00	4	6	11	4	15	10								
07:15	9	4	8	4	17	8								
07:30	5	4	5	1	10	5								
07:45	4	22	3	17	7	31	27							
08:00	8	4	9	1	17	5								
08:15	8	1	6	2	14	3								
08:30	7	3	7	7	14	10								
08:45	2	25	3	11	12	34	21							
09:00	5	2	9	1	14	3								
09:15	2	3	3	3	5	6								
09:30	6	2	11	2	17	4								
09:45	2	15	0	7	5	28	13							
10:00	2	1	9	1	11	2								
10:15	3	0	4	0	7	0								
10:30	3	3	3	1	6	4								
10:45	6	14	0	4	4	20	6							
11:00	7	0	5	0	12	0								
11:15	8	0	7	0	15	0								
11:30	7	0	7	0	14	0								
11:45	7	29	0	0	7	26	1							
Total	109	229	152	223	261	452								
Percent	41.8%	50.7%	58.2%	49.3%										
Day Total		338		375		713								
Peak Vol.	11:00	-	02:15	-	08:45	-	05:15	-	08:00	-	05:15	-	-	-
P.H.F.	0.906	-	0.771	-	0.729	-	0.724	-	0.868	-	0.865	-	-	-

Attachment B

Seasonal and Annual Adjustment Data

Seasonal Adjustment Factor Summary Table

Project: 22 Pleasant Street - Wellesley, MA
 Date: September 18, 2104
 Analyst: TEC, Inc. / Rebecca L. Brown, P.E., PTOE
 Source: MassDOT Permanent Count Stations

STATION 415 - NEWTON - RTE.I-95 (128) - SOUTH OF RTE.I-90

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	<u>Average Rate Sept.</u>
06	126,000	126,906	136,149	136,322	140,602	142,863	135,563	142,863	140,973	141,211	138,206	133,710	136,781	-3.1%

STATION 6189 - DEDHAM - RTE.I-95 (128) - NORTH OF RTE.109

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	<u>Average Rate Sept.</u>
05	138,000	132,174	136,654	142,226	145,240	152,638	138,350	146,758	142,964	139,299	131,242	132,683	139,852	-2.2%

Average Adj. = **-2.6%**

Average Daily Traffic Summary Table

Project: 22 Pleasant Street - Wellesley, MA
 Date: September 18, 2104
 Analyst: TEC, Inc. / Rebecca L. Brown, P.E., PTOE
 Source: MassDOT Permanent Count Stations

STA.	TOWN	ROUTE/STREET	LOCATION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
4895	WELLESLEY	WORCESTER STREET (RTE 9)	WEST OF LEXINGTON ROAD			48900					47000				-0.79%
6698	WELLESLEY	GREAT PLAIN AVENUE	NORTH OF MARY CHILTON ROAD		9400	9247	9129	9703	9543	9469	9848				0.83%
4894	WELLESLEY	CENTRAL STREET	EAST OF UNION STREET	10900							10373				-0.71%
4023	WELLESLEY	BACON STREET	WEST OF PARK AVENUE		3700	3743	3679	4600	4552	4527	3400	3468	3357	2193	-4.21%

Average Annual Ambient Growth = **-1.2%**

Assume 1% Ambient Growth Rate

Attachment C

Capacity and Queue Analysis Worksheets

Lanes, Volumes, Timings
3: Site Driveway & Pleasant Street

2015 Build
 Weekday AM

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	2	2	1	25	34	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976			0.998		
Satd. Flow (prot)	1694	0	0	1700	1837	0
Flt Permitted	0.976			0.998		
Satd. Flow (perm)	1694	0	0	1700	1837	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	500			500	500	
Travel Time (s)	11.4			11.4	11.4	
Peak Hour Factor	0.85	0.85	0.78	0.78	0.71	0.71
Heavy Vehicles (%)	2%	2%	2%	8%	0%	2%
Adj. Flow (vph)	2	2	1	32	48	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	33	48	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 13.3% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	2	1	25	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	78	78	71	71
Heavy Vehicles, %	2	2	2	8	0	2
Mvmt Flow	2	2	1	32	48	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	83	48	48	0	-	0
Stage 1	48	-	-	-	-	-
Stage 2	35	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	919	1021	1559	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	987	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	918	1021	1559	-	-	-
Mov Cap-2 Maneuver	918	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	8.7		0.3		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1559	-	967	-	-
HCM Lane V/C Ratio	0.001	-	0.005	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lanes, Volumes, Timings
3: Site Driveway & Pleasant Street

2015 Build
 Weekday PM

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1	1	2	35	56	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.995	
Flt Protected	0.976			0.998		
Satd. Flow (prot)	1694	0	0	1780	1792	0
Flt Permitted	0.976			0.998		
Satd. Flow (perm)	1694	0	0	1780	1792	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	500			500	500	
Travel Time (s)	11.4			11.4	11.4	
Peak Hour Factor	0.85	0.85	0.88	0.88	0.72	0.72
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	1	1	2	40	78	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	0	42	81	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 13.5% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	1	1	2	35	56	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	88	88	72	72
Heavy Vehicles, %	2	2	2	3	2	2
Mvmt Flow	1	1	2	40	78	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	123	79	81
Stage 1	79	-	-
Stage 2	44	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	872	981	1517
Stage 1	944	-	-
Stage 2	978	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	871	981	1517
Mov Cap-2 Maneuver	871	-	-
Stage 1	944	-	-
Stage 2	977	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1517	-	923	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Attachment D

Trip Generation Calculations

Site Generated Trip Assessment

Project: T0560 - Condominium Development - Wellesley, Massachusetts

Date: August 27, 2014

Analyst: TEC, Inc. / Samuel W. Gregorio, P.E.

Source: Institute of Transportation Engineers - Trip Generation - 9th Ed.

Institute of Transportation Engineers (ITE) Land Use Code (LUC) 210 - Single-Family Detached Housing

Average Vehicle Trips vs: Dwelling Units

Independent Variable (X): 6

AVERAGE WEEKDAY DAILY

$$T = 9.52 * (X)$$

$$T = 9.52 * 6$$

$$T = \boxed{58} \text{ vehicle trips}$$

with 50% (29 vpd) entering and 50% (29 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.75 * (X)$$

$$T = 0.75 * 6$$

$$T = \boxed{5} \text{ vehicle trips}$$

with 25% (1 vph) entering and 75% (4 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 1.00 * (X)$$

$$T = 1.00 * 6$$

$$T = \boxed{6} \text{ vehicle trips}$$

with 63% (4 vph) entering and 37% (2 vph) exiting.

SATURDAY DAILY

$$T = 9.91 * (X)$$

$$T = 9.91 * 6$$

$$T = \boxed{60} \text{ vehicle trips}$$

with 50% (30 vpd) entering and 50% (30 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$$T = 0.93 * (X)$$

$$T = 0.93 * 6$$

$$T = \boxed{6} \text{ vehicle trips}$$

with 54% (3 vph) entering and 46% (3 vph) exiting.