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HANS LARSEN  
EXECUTIVE DIRECTOR OF GENERAL GOVERNMENT

Date: December 5, 2012

To: Meghan Jop,  
Planning Director

From: Terrance Connolly, *TC*  
Deputy Director

**RE: Wellesley Country Club Facilities Maintenance (PSI 12-01)**

At the meeting December 3, 2012, the Board voted unanimously (5-0) to approve the Traffic Impact and Access Study prepared by Ron Muller & Associates as being professionally prepared and having sufficient evidence that the traffic conditions resulting from the Wellesley Country Club Facilities Maintenance Project (PSI 12-01) will meet the Town's Project of Significant Impact standards for level of service, sight lines, proposed site connections, and pedestrian safety due to the minimal traffic impact; and further, that the proposed project is not expected to add significant traffic volumes to the Wellesley Avenue and Brookside Road intersections or impact the operation of these intersections.

The Board's vote included implementing the recommendations contained in the BETA Group peer review letter dated November 19, 2012.

If you have any questions, please do not hesitate to contact me.

Enclosures (2)



ENGINEERING SUCCESS TOGETHER

November 19, 2012

Mr. Hans Larsen  
Director of General Government  
Town of Wellesley  
525 Washington Street  
Wellesley, MA 02482

**Re: Wellesley Country Club Improvements Project, Wellesley, MA  
Peer Review of Traffic Impact & Access Study**

Dear Mr. Larsen:

At your request, BETA Group, Inc. (BETA) has completed their traffic peer review of the Traffic Impact & Access Study (TIAS) entitled *Wellesley Country Club Improvements* which was prepared in July 2012 by Ron Müller & Associates (RMA). This was prepared as part of an Application for Project of Significant Impact & Site Plan Review. Our findings for the information presented in the Traffic Impact & Access Study are as follows:

#### **INTRODUCTION**

The Wellesley Country Club is a private, 18-hole golf course situated on 163 acres off Wellesley Avenue in Wellesley, Massachusetts. As part of the proposed improvement project, the existing maintenance building will be replaced with a 2,300 square foot golf cart refueling and wash-down station with 20 additional parking spaces, a new 22,000 square foot maintenance building and environmental management center will be developed off the existing Forest Street driveway of the site, and a comfort station will be developed in the northeast corner of the site.

The report noted that the improvement project will upgrade existing site facilities, but will not add any new employees or services that would draw extra or new traffic to the surrounding area. Because the project proposes to move the maintenance building from the clubhouse area on Wellesley Avenue to an area on Forest Street, some trips will be redistributed or diverted on the roadway network near the site. In addition, employees work from 6AM to 2PM. Therefore, they arrive and depart before the peak AM and PM commuting periods.

#### **SITE AREA**

The TIAS examined the two adjacent roadways to the Wellesley Country Club, the two adjacent unsignalized intersections, and the intersection of Forest Street and the existing/proposed site driveway.

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The roadways examined are:

- Wellesley Avenue
- Forest Street
- Wellesley Avenue at Forest Street
- Wellesley Avenue at Brookside Road
- Forest Street at existing/proposed site driveway

It should be noted that Wellesley Avenue is referred to as Wellesley Road. Instances of Wellesley Road should be revised accordingly. BETA concurs with the study area and the descriptions of the existing roadway network within study boundaries.

### **TRAFFIC VOLUMES**

Traffic counts were collected using two methods for this study: automatic traffic recorder (ATR) and manual turning movement counts (TMC). Wellesley Avenue ATR counts and all TMCs were collected in the month of March 2012. Analysis of this data shows that counts were collected on a Wednesday in March. It should be noted that Wellesley Public Schools release students early on Wednesdays. On this particular day, March 28<sup>th</sup>, only Wellesley Elementary Schools released students early. Because some students were released early, these trips may not have been captured on the roadway network during the peak periods. In addition, this is the non-peak golf season/period.

Forest Street ATR counts were collected between the 21<sup>st</sup> and the 24<sup>th</sup> of June 2012. According to the Wellesley Public School calendar, schools were dismissed for the year on June 21<sup>st</sup>; Babson College would also have been closed at this time. Because schools were not in session during the Forest Street count periods, traffic volumes may have been lower than when school is normally in session.

It is unclear as to why the two ATR counts were not collected at the same time, but instead were collected three months apart from each other. Counts could have been collected in the month of May or early June, and would have captured both school activity and heavier golf activity.

BETA compared the traffic volumes collected from the previous Wellesley Country Club Redevelopment project completed in 2006 with the volumes collected by RMA. The 24-hour counts showed a 5% (about 500 vehicles per day) decrease in volume between 2006 and 2012. The decrease in volumes could be contributed by the above factors and the slow economy.

The proponent applied seasonal adjustment factors and background growth factors to the traffic count data. Based on the factors added to the traffic data, we find the adjusted traffic data utilized for the analysis to be acceptable. A seasonal adjustment factor of 0.5 percent was applied to increase traffic volumes collected in March, as traffic volumes are lower than average during the month of March. No seasonal adjustment was made to volumes collected in June, as traffic volumes are typically higher than average during the month of June.

#### **ACCIDENTS/CRASHES**

Three years, 2007 – 2009, of crash data were analyzed for the study area intersections. The report found 11 crashes for Wellesley Ave. at Forest St. and 9 crashes for Wellesley Ave. at Brookside Rd. This yielded a 0.80 crash rate for both intersections. The MassDOT - District 6 crash rate for unsignalized intersections is 0.57 crashes/million entering vehicles. The crash rates for the two intersections are higher than the MassDOT - District 6 crash rate.

The all-way STOP intersection of Wellesley Ave. and Forest St. was found to have 6 angle crashes and 5 rear-end crashes. These were likely a result of the all-way STOP condition. The report recommends the use of “4-WAY” plaques at each STOP sign.

It should be noted that the latest MUTCD does not approve of using “4-WAY” plaques at stop signs, but instead recommends using the “ALL WAY” plaque. BETA recommends the installation of “ALL WAY” plaques (R1-3P).

The report did not include the accident analysis at the existing golf course crosswalk located east of the Wellesley Country Club driveway on Wellesley Avenue. This crosswalk is heavily used by golfers to cross from one side of the course to the other. Under the proposed conditions, additional crossing activity will be added to this crosswalk. We recommend that an accident/safety analysis be performed for this crossing.

#### **VEHICLE SPEEDS**

Vehicle speeds were collected via the ATRs used to count 24-hour volumes. The 85<sup>th</sup> percentile speeds were found to be as high as 41 miles per hour on Wellesley Avenue. BETA concurs with the speeds observed as they are consistent with results obtained in the 2006 study. Because speed limit signs are not posted, the governing speed limit for the roadways would be 30 miles per hour. Table 3 should be updated for comparison. The superscripts in Table 3 should also be revised accordingly.

#### **SIGHT DISTANCE**

Sight distances were measured at study area intersections and driveways. It was found that sight distance requirements could be fulfilled with the trimming of bushes and trees alongside the Wellesley Country Club driveways. BETA visited the site and concurs with the sight distance analysis and recommends that the trees and bushes be trimmed to improve sight lines.

#### **TRAFFIC GROWTH**

A conservative traffic background growth rate of 1.0 percent per year was used for the traffic analysis. BETA finds the growth rate acceptable.

#### **TRIP GENERATION**

The proposed improvement project relocates and upgrades the existing maintenance facilities. The Wellesley Country Club does not plan to add members or employees in the future. The project is not expected to increase traffic on the roadway network other than the redistributed maintenance trips from Forest Street to Wellesley Avenue. The study notes that the Wellesley Country Club currently

has 25 maintenance employees, 6 of whom work later hours in the summer. The maintenance staff has three company vehicles that would require the use of local roadways: a pickup truck, a dump truck, and a back hoe. Maintenance also uses smaller utility golf carts that will use on-site pathways. Material deliveries were noted to occur during the off peak periods.

For analysis purposes, the study assumed a worst case scenario where ten diverted vehicle trips will be added to the network during the peak commuting periods. While the report did not clearly define these ten vehicle trips, it is likely that these vehicles can be attributed to: the six late working employees, three roaming maintenance vehicles, and one miscellaneous (delivery) vehicle. We request that the ten vehicle trips be clarified.

#### **TRIP DISTRIBUTION**

The 10 redistributed vehicle trips were split based on entering and exiting the Forest Street driveway. Eight vehicles were claimed to use the unsignalized intersection of Wellesley Avenue and Forest Street, and two vehicles were claimed to come to/from the south on Forest Street. Of the eight vehicles traversing the unsignalized intersection, four would come to/from the east, two would come to/from the north, and two would come two/from the west. It is unclear how these distributions were obtained, but it is likely that all trips were evenly split between directions and doubled the approach housing Wellesley Country Club. This would represent the maintenance vehicle trips traveling between sites. Since the amount of vehicle trips is so small, these trips would have a negligible impact to the study area.

#### **BUILD CONDITIONS**

It should be noted that this paragraph references Figure 9, which does not exist in the report.

#### **TRAFFIC INCREASES**

The report noted that a conservative increase of four peak hour vehicles was expected at the intersection of Wellesley Avenue and Forest Street. This number should be revised to ten, in order to match the volume diagrams in Figure 10 and the proposed trip generation.

This section also references Figure 9, which does not exist in the report.

#### **CAPACITY ANALYSIS**

Synchro capacity analysis for the study intersections showed long queues and poor level of service for the AM Peak eastbound approach and PM Peak westbound approach of Wellesley Avenue at Forest Street. These large queues and delay are consistent with previous studies of this intersection. However, the existing PM Peak westbound approach has been previously observed to have longer queues than 335 feet.

It should also be noted that the PM Peak westbound approach queue decreases between the No-Build and the Build condition, even though more vehicles (diverted trips) are added to this approach. Please verify the analysis.

While the Wellesley Avenue/Forest Street intersection experiences long queues and poor level of service, none of the study area intersections meet the PSI criteria for an impacted roadway. In addition, due to the small amount of diverted vehicle trips using the study area roadway network, the overall traffic impact to the study area will be negligible.

#### CONCLUSIONS

- We recommend trimming the trees and bushes to improve the sight lines at the site drive approach to Forest Street.
- We recommend "ALL WAY" plaques be used instead of the "4-WAY" plaques for the intersection of Forest Street and Wellesley Avenue.
- We recommend performing a safety analysis of the interactions between pedestrians, golf carts, and vehicles at the existing crosswalk located east of the clubhouse. Additional safety improvements to this crosswalk should be considered if needed.
- Provide clarification on the trip generation related to the 10 diverted trips.
- A crosswalk is proposed on the existing driveway between the proposed site facility and Forest Street, which passes through an existing fairway. Please ensure that proper traffic safety control devices be provided to control entering/exiting vehicles and golfers/carts traveling in this area, e.g. yield to pedestrian signage.
- The traffic study revealed that none of the study area intersections met the PSI criteria for an impacted roadway/intersection. The proposed project will not be generating new vehicular trips. In addition, the majority of the employees work from 6AM to 2PM and they arrive and depart before the AM and PM peak commuting periods. Therefore, the small diverted vehicle trips, approximately 10 vehicles per hour, will have no adverse traffic impact to the study area..

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

Very truly yours,  
**BETA Group, Inc.**



**Kien Ho, PE, PTOE**  
Senior Associate



***Ron Müller & Associates***  
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Ref.: 12016

December 3, 2012

Mr. Hans Larsen  
Director of General Government  
Town of Wellesley  
525 Washington Street  
Wellesley, MA 02482

Reg.: Response to BETA Group, Inc. Comments  
Wellesley Country Club Improvements, Wellesley, MA

Dear Mr. Larsen:

Ron Müller & Associates (RMA) has prepared this letter to respond to the peer review comments by BETA Group, Inc. (BETA) in their review of the Traffic Impact and Access Study<sup>1</sup> prepared for the Wellesley Country Club improvement project. The BETA review comments are detailed in their letter to you dated November 19, 2012 and summarized in the conclusions section of their letter. These review comments are paraphrased below along with responses to those comments:

1. BETA concurs with the recommended trimming of trees and bushes to improve sight lines for motorists exiting the Forest Street site driveway. The project proponent has agreed to trim the vegetation necessary to achieve the desirable sight distances shown in the traffic study. No further response required.
2. BETA recommends that ALL WAY (R1-3P) plaques be used below the STOP signs at the Wellesley Avenue and Forest Street intersection. RMA concurs with this recommendation and the project proponent has agreed to install the ALL WAY plaques on all four approaches to the intersection.
3. BETA recommended that a safety analysis be conducted at the Wellesley Avenue crosswalk located east of the clubhouse. BETA has subsequently obtained accident information from the Wellesley Police Department and has found that there were no reported accidents within

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<sup>1</sup> *Traffic Impact and Access Study, Wellesley Country Club Improvements, Wellesley, MA*; prepared for Allen & Major Associates, Inc.; prepared by Ron Müller & Associates; July 5, 2012.

the past three years. Therefore, no safety issues exist at this crosswalk. No further response required.

4. BETA requested clarification on how the trip generation estimates were derived. Based on information supplied by the Wellesley Country Club, there are very few, if any, vehicle trips currently generated by the maintenance facility during peak commuting hours. Employees generally work from 6:00 AM to 2:00 PM and material deliveries (loam, stone, and sand) are typically made during off-peak hours. However, to account for employees who may work later during the summer months as well as the three registered maintenance vehicles that can travel on public streets, the traffic study conservatively estimated a total of 10 diverted vehicle trips during the peak commuting hours.
5. BETA requested that safety control devices be installed at the proposed crosswalk across the maintenance facility access road to assure safe crossing by golfers and golf carts. It is recommended that W11-11 signs (GOLFERS CROSSING - graphic) be installed on the access road on both approaches to the crosswalk. The project proponent has agreed to install these signs.
6. BETA concurs with the traffic study findings that the project will not generate any new traffic and instead results in the diversion of a small amount of traffic that will not have an adverse impact on the study area. BETA also concludes that none of the study area intersections meet the PSI criteria for an impacted intersection. No further response required.

Please feel free to contact me if you have any questions regarding these responses.

Sincerely,

*Ron Müller & Associates*



Ronald Müller, P.E.  
Principal

cc: Phil Cordeiro, Allen & Major Associates, Inc.