



May 30, 2017

Blythe Robinson, Executive Director  
Town of Wellesley  
525 Washington Street  
Wellesley, MA 02482

Attn.: Meghan Jop  
Assistant Executive Director

Re: 900 Worcester Street (Route 9) – Wellesley Sports Response to Comments Review

Dear Ms. Robinson:

As requested, BETA Group, Inc. (BETA) has reviewed the Response to Comments (RTC) prepared by MDM Transportation Consultants, Inc (MDM), dated May 26, 2017. The RTC addressed comments provided by BETA on in their Traffic Impact and Access Study (TIAS) review, dated May 18, 2017. An updated TIAS was also submitted by MDM, dated May 2017, for review. This letter provides a summary of follow-up comments in response to MDM's RTC letter. For ease of review, BETA's initial comments are provided in normal text, MDM's responses are provided in *italics text*, and BETA's supplementary comments are provided in bold text.

## PROPOSED BUILDING PLAN

1. Discuss where the spectator seats will be located, e.g. how many will be provided for each use and will they all be occupied at one time.

*The project will include 79 fixed spectator seats for the east rink, 537 fixed seats for the east rink and 234 fixed spectator seats for the natatorium for a total of 850 seats. Consistent with the Applicant's other facilities, an operational management plan will be developed and implemented with details to be provided during the Site Plan approval stage. The Applicant will have the ability to manage and stagger events/game times and other programmed uses at the Site to efficiently manage operations and parking. The Applicant will avoid scheduling overlapping special events and may opt to limit or restrict access/use of certain non-event facilities during these times to ensure ample parking is available at the Site.*

This suggests that no spectator seats will be provided for the west rink or the athletic fields. The site plan noted the building is estimated to provide 1,050 spectator seats, approximately 200 more than discussed.

2. BETA recommends the Applicant coordinate with the Town of Wellesley Fire Department to ensure the proposed site plan, particularly the travel path, provides adequate fire access.

*The Applicant continues to work with the Town of Wellesley Fire Department to ensure that the proposed site plan adequately accommodates emergency access/egress and circulation, including*

*capability to accommodate a 3-point turn within the property. A detailed swept path analysis and exhibits will be produced during the Site Plan review process.*

BETA requests the updated plans be provided for review upon completion.

3. Consider providing Stop Signs and Stop Lines for approaches connecting the two parking lots at the intersection of the eastern driveway.

*The Applicant will review the plans and "STOP" signs and "STOP" lines will be provided where appropriate as the project moves into the site plan review process as part of the Site Plan review process.*

BETA requests the updated plans be provided for review upon completion.

## STUDY AREA

4. In addition to the above intersections, the study should include the Beechwood Road, Manor Avenue, Overbrook Drive, Russell Road, and Fells Road neighborhoods. It is recommended this study include traffic volumes, speeds, and vehicle classification for a minimum of 72 hours for each neighborhood.

*The Applicant will collect the requested traffic volume and travel speed data on area neighborhood street including Beechwood Road, Manor Avenue, Overbrook Drive, Russell Road, and Fells Road to establish baseline conditions. These volumes will set the baseline traffic volumes along the neighborhood roadways which will also be part of a traffic monitoring program associated with the project. These data shall be collected during the Site Plan review process or as directed by the Town prior to Site development.*

BETA requests the collected data be provided for review.

## SIDEWALK STUDY

5. BETA recommends the Applicant complete the Pedestrian and Bicycle Safety Study as noted in the Wellesley PSI Requirements. This should include a discussion regarding the Cochituate Aqueduct Trail.

*The April 2017 TIAS has been updated to include a pedestrian and bicycle safety study within the study area. The Updated TIAS includes pedestrian and bicycle volumes networks for the weekday morning, weekday evening, and Saturday midday peak hours and identifies existing available pedestrian/bicycle infrastructure at and proximate to the Site.*

An evaluation of existing pedestrian infrastructure was provided in the updated TIAS. To improve pedestrian conditions, BETA recommends the Applicant construct sidewalks along the southern side and northern side of Route 9 from Russell Road to the Cochituate Aquifer (Crosstown) Trail.

## TRAFFIC VOLUMES

### DAILY TRAFFIC

6. The weekday afternoon peak hour traffic volume provided in Table 1 of the TIAS does not appear to match data provided in the Appendix. Please clarify.

*The afternoon peak hour traffic volume provided in Table 1 of the April 2017 TIAS are confirmed to match the ATR data provided in the TIAS Appendices for Thursday, March 23, 2017 for the peak hour of 4:45 PM to 5:45 PM.*

Evening peak hour has been clarified. No further comment.

## PEAK HOUR TRAFFIC

7. Explain how the one hour of traffic data was determined to be the peak hour. Typically TMC are collected from 7:00-9:00AM, 4:00-6:00PM, and 11:00AM-1:00PM.

*The TMC data provided at the Worcester Street (Route 9)/Lexington Road/Site Driveway as reported in the April 2017 TIAS coincide with the peak hour of the adjacent intersections in the study area which were counted during the cited 2-hour peak hour periods. Accordingly, the expanded TMC data to include the full 2-hour counts at this location were not included in the Attachments. The counts indicate that no heavy vehicles observed beyond through travel on Route 9 for which heavy vehicle count sheets are included in the updated TIAS.*

Full traffic count data was provided. No further comment.

8. Since the TMC sheets did not include heavy vehicles, explain how the heavy vehicle percentages were determined for analysis purposes.

*Heavy vehicle count sheets are included in the updated TIAS; these sheets were not originally included in the April TIAS Appendices.*

Full traffic count data was provided. No further comment.

## TRAVEL SPEEDS

9. Please clarify the means of data collection. Was a speed radar gun utilized, or were other detection methods utilized?

*Vehicle speeds were obtained for Route 9 adjacent to the Site using a Spot Speed study and Jamar® traffic data collector (TDC-12). Specifically, vehicles traveling both eastbound and westbound were timed over a known distance and then the travel times were converted into travel speeds in miles per hour (mph). The Spot Speed Study included 100 free flow movements in each travel direction along Route 9 immediately adjacent to the Site, representing a statistically significant sampling size following industry standards. While other means of obtaining spot speeds are possible such as radar, the methodology employed in the TIAS follows accepted industry practices, with the added benefit of avoiding the potential for influencing driver behavior as is sometimes the case with radar guns.*

BETA finds the discussed methodology to be acceptable. No further comment.

10. The TIAS did not discuss the time period of the spot speed study. Clarify if these speeds were collected during commuting peak periods where congestion may impact speed readings.

*The Spot Speed Study was conducted on Monday, March 27, 2017 between 9:00AM and 10:00AM and only vehicles traveling at a free flow speed were recorded. The use of free-flow speeds is preferred for analysis purposes, as travel speeds during peak hours is likely lower and less conservative when calculating sight line requirements for a driveway - the primary purpose of conducting the spot speed study.*

Clarification provided. No further comment.

## SAFETY EVALUATION

11. Upon completion, the advisory opinion regarding MEPA thresholds should be provided for review. Should the Project satisfy MEPA thresholds the Applicant is expected to complete the RSA for the intersection of Route 9 at Overbrook Drive/CVS Driveway in accordance with MassDOT.

*As indicated in the April 2017 TIAS, while the intersection was observed to have a crash rate of 0.63, which is below the District 3 average of 0.90, MassDOT has listed the intersection as a Highway Safety Improvement Program (HSIP) crash cluster for 2012-2014. Roadway improvements were completed for this location in August 2014 as part of the CVS Pharmacy re-development, however, no Road Safety Audit has been completed to date. Should the project require MEPA review, the Applicant will complete an RSA for the intersection of Route 9 at Overbrook Drive/CVS Driveway.*

BETA requests that the Applicant provide updates regarding the MEPA review status.

## SIGHT LINE ANALYSIS

### INTERSECTION SIGHT DISTANCE

12. The methodology discussed in the TIAS represents ISD for a two-lane highway. Since Route 9 is a four-lane highway with median, vehicles may require more time to make the left turning maneuver. Based on the AASHTO *Green Book* this increases the recommended sight distance to approximately 588 feet for left turns. Despite the increased distance, the measured available sight distance of greater than 800 feet is acceptable.

*MDM notes that there is no option currently being considered that would allow left-turns onto Route 9 without a traffic signal. The ISD criteria shown looking to the east is for the Lexington Road approach to Route 9. The language has been clarified in the update TIAS. That said, MDM concurs that the available sight distances are acceptable and no further review is required.*

The updated TIAS discussed ISD for right turning vehicles only. The intent of examining the left turn ISD when exiting the site is to ensure that adequate sight distance is provided should the proposed traffic signal enter "flash mode" due to conflict. Flash mode at this signal would require left turning vehicles out of the site to exit in an "unsignalized" manner. The previous discussion in the April 2017 TIAS is sufficient. No further comment.

13. The calculated sight distances discussed in this section were based on passenger cars. Trucks typically take longer to accelerate and therefore require longer sight distances. According to AASHTO, the recommended ISD for a single unit truck (or a bus) is approximately 735 feet. Based on the field measurements discussed in the TIAS, the available sight distance of greater than 800 feet is acceptable.

*MDM concurs that the available sight distances are acceptable and no further review is required.*

No further comment.

## PLANNED ROADWAY IMPROVEMENTS

14. BETA recommends the Applicant coordinate with MassDOT and provide an estimated project schedule for these improvements. Particularly those related to proposed roadway and sidewalk changes that may coincide with the potential installation of a traffic signal at the Site Driveway.

*The Applicant will continue to coordinate with MassDOT with respect to planned roadway improvements and proposed project mitigation. MassDOT is planning transportation improvements (Project 608180) to Route 9 that will include resurfacing using NHS funding. The project limits will include Route 9 from MassDOT's limits of its Add-A-Lane project at Route 128 to a point just east of Overbrook Drive at the Natick Town Line. The resurfacing project is pending through the District 6 office and is listed with an estimated completion date of Spring 2018. A larger planned roadway improvement (Project 607340) which includes sidewalk repairs, signal improvements, reflectorized pavement markings and recessed roadway reflectors is also in the preliminary design stage. The project limits will include Route 9 between Dearborn Street and the Natick Town Line. As indicated the design is in the preliminary design stage with no current construction period provided.*

BETA recommends the Applicant continue coordination with MassDOT. To improve pedestrian conditions, BETA recommends the Applicant construct sidewalks along the southern side and northern side of Route 9 from Russell Road to the Cochituate Aquifer (Crosstown) Trail.

## NO-BUILD TRAFFIC VOLUMES

### HISTORICAL AREA GROWTH

15. To be consistent with all the TIAS completed in the Town of Wellesley, BETA recommends a 1.0% per year compounded growth rate.

*The April 2017 TIAS has been updated to include the use of a 1% per year compounded growth rate over a 7-year period. This growth rate is higher than historic rates and provides a conservative assessment of future year conditions.*

The TIAS was updated for 1% growth per year. The larger growth rate was found to slightly degrade No-Build and Build conditions when compared to the April 2017 TIAS due to the added background traffic growth. No further comment.

## TRIP GENERATION

### ATHLETIC FIELD

16. The morning trip generation (1 trip) for the athletic field may be higher depending on the operating program/schedule.

*Based on a review of the Applicants existing facility in Middleton, MA (Essex Sports Center) events are typically scheduled on the turf field prior to 10:00 am on weekdays and 9:00 am on Saturdays. This is consistent with MDM's observations of other similar indoor turf field facilities including for instance the Fore Kicks sports complex in Marlborough. ITE trip rates inherently reflect this trend are result in negligible trip generation prior to AM peak commuter periods. The Applicant will provide more detail on facility programming that supports this during the Site Plan approval process.*

BETA requests the facility programming information be provided for review when developed.

## HEALTH AND FITNESS – SWIMMING POOL

17. Discuss consideration for using LUC 493 – Athletic Club, which generates more trips by square footage than LUC 492 – Health/Fitness Club.

*MDM initially reviewed the trip generation rates and combination of rates for various land use categories in ITE's Trip Generation Manual including Health/Fitness Club, Athletic Club, and Recreational Community Center Based on discussions with the Applicant a Health/Fitness Club was determined to best fit the health/fitness club component of the Site. ITE LUC 492 also provides a substantially greater number of sites (and hence reliability of trip rate) than the LUC 493 category. The resulting trips present a reasonable basis for analysis following ITE Trip Generation Handbook guidance.*

BETA finds this discussion to be acceptable. No further comment.

## TOTAL SITE

18. Given the use of operating hours to determine daily trip generation, discuss overall operating hours/programming and how this might impact traffic. Are all site features expected to be in full use at the same time, or will there be staggered programs?

*Consistent with the Applicant's other facilities, an operational management plan will be developed and implemented with details to be provided during the Site Plan approval stage. The Applicant will have the ability to manage and stagger events/game times and other programmed uses at the Site to efficiently manage operations and parking. The Applicant will avoid scheduling overlapping special events and may opt to limit or restrict access/use of certain non-event facilities during these times to ensure ample parking is available at the Site.*

BETA requests the operation management plan be provided for review.

19. It was noted that the site is expected to generate approximately 10-15 special events per year (swim meets, hockey tournaments, etc.) that may draw additional trips. Trip generation for special events should be discussed and analyzed.

*The Applicant will provide a special event management plan to accommodate the various special events proposed for the Site which are estimated at 10-15 events per year. These special events are typically expected to occur on holiday weekends and are anticipated to include the Wellesley/Newton hockey games. This special event management plan will provide an operating scenario that relies solely on available on-site parking capacity and that will limit or restrict use of other Site facilities to the extent necessary to ensure that no off-site parking is necessary to accommodate special event operations. Special event programming to allow concurrent non-event facility use will be considered only if ample reserve off-site parking is available, which is subject to ongoing discussion with the adjoining office use.*

The Applicant plans to provide a special event management plan. BETA recommends examining conditions with maximum attendance, that being a full on-site parking lot and a full overflow parking lot. Currently, the TIAS shows an estimated weekday evening peak hour trip generation to be 283 trips which represents approximately 150 parking spaces, slightly less than half of the proposed parking supply (355 spaces) on site not including the overflow space.

## TRIP DISTRIBUTION AND ASSIGNMENT

20. Figure 9 in the TIAS shows approximately 60% of trips traveling to/from the east via Route 9 which is inconsistent with the exercise provided in the Appendix and subsequent turning movement volume diagrams.

*Supporting calculations for Site trip distribution are provided in the TIAS Appendices which are consistent with Figure 9; the Appendices also include a separate calculation of trip distribution for the adjacent office use which shows a different pattern than the Site (60 percent oriented to/from the west versus 40% for the Site uses). The Updated TIAS also contains these data; the TIAS correctly applies these trip patterns in the assignment of traffic volumes and signal warrant analyses.*

Figure 9 was updated in the May 2017 TIAS to show 15% of vehicles utilizing Weston Road with 45% of vehicles using Route 9 to the east. This is consistent with data provided in the April 2017 Appendix. No further comment.

21. Discuss how trip distribution will be affected for special events.

*The trip distribution for special events will depend on several factors including the event type, event timing, and participant type (local, regional, and/ or national). The various events will be outlined in the special event management plan which will be prepared in consultation with Town, and for which a separate special events traffic evaluation/sensitivity analysis will be developed to ensure traffic operations are consistent with cumulative Site trip impacts documented in the Updated TIAS.*

A separate special events traffic evaluation/sensitivity analysis should be developed.

## ADJACENT OFFICE RE-DISTRIBUTION

22. BETA recommends the Applicant collect traffic volumes at the 888-892 Worcester Street driveways to validate the number of existing trips generated by the adjacent office property.

*Traffic volumes will be collected at the 888-892 Worcester Street driveways as part of the Site Plan review process to validate assumptions used in the TIAS.*

Traffic volumes should be collected to validate the assumptions used in the TIAS.

23. On-site traffic circulation impacts associated with the cross-over traffic from the 888-892 Worcester Street offices should be addressed.

*On-site traffic impacts associated with the cross-over traffic and on-site traffic flow will be further reviewed as the Site Plans are refined and updated during the Site Plan review process. The Applicant will consider an alternative location of the cross-connecting driveway that is slightly south of the current conceptual location to ensure that proper on-site circulation can be achieved without undue impact to travel or parking operations.*

BETA requests the updated plans be provided for review upon completion.

## TRAFFIC SIGNAL WARRANT

24. Clarify how empirical data was used to determine hourly driveway volumes used for the signal warrant analysis. Please provide the empirical data for ease of review and understanding.

*The requested empirical data and worksheets are included in the Updated TIAS. The hourly driveway volumes used in the signal warrant analysis were estimated by applying a combination of ITE and empirical trip patterns. The Institute of Transportation Engineers Parking Generation<sup>1</sup> contains an hourly breakdown of trip demands for office use which are applied to the adjacent office buildings at 888-892 Worcester Street. Empirical parking data for health and fitness clubs in Framingham and Westborough were used to project hourly traffic for the health/fitness center and skating rink/turf field uses. The empirical data patterns are normalized to match daily trip totals that are consistent with ITE daily volumes for each use.*

*As a conservative measure, the signal warrant analysis considered the existing traffic volumes along Route 9 and only the projected left-turn exit volume in the analysis. Accordingly, hourly exiting trips were adjusted to reflect an exiting proportion of 60% for the office trips (assuming a cross-connection is provided) and 40% distribution of exiting trips for the sports complex. Additional engineering support for warrants may also consider up to 25% of exiting right-turn volume exiting the Site given the high-speed nature of travel on Route 9; however, these right-turns are excluded from the analysis of warrants to present a conservative assessment.*

*Based on the above, MUTCD traffic signal Warrant 1 is satisfied. Thus, with the proposed sports complex in place and cross-connecting driveway to the adjacent 888-892 Worcester Road office building a traffic signal is warranted and justified at the Route 9 intersection with Lexington Road/Primary Site Driveway. While not directly accounted for in the traffic signal warrant analysis, it should be noted that signal control would also specifically benefit pedestrian crossings of Route 9 along a route that is proximate to the Cochituate Aquifer (Crosstown) Trail system and would create gaps for westbound left turns into the facility and right turns onto Route 9 from the facility.*

Discussion provided; no further comment.

25. Request that the Town and BETA be included in future meetings with MassDOT.

*The Applicant anticipates additional meetings with MassDOT for discuss the Project access and will include the Town and BETA in all such requested future meetings.*

Response noted.

## TRAFFIC OPERATIONS ANALYSIS

26. Upon examination of Synchro output sheets provided in the Appendix, it appears that the traffic volume analyzed at the intersection of Weston Road and the Route 9 Westbound ramps does not match volumes shown in the turning movement diagrams. Clarify traffic volumes and update the analysis accordingly.

*The Route 9 Westbound on-Ramp was modeled as a separate intersection from the Weston Road intersection with Cleveland Road and the Route 9 Westbound off Ramp to more accurately model actual operations. Revised traffic volume networks and capacity analysis results are provided in the updated TIAS which reflect the higher background growth rate.*

Traffic analysis sheets represent conditions located at the intersection of Weston Road at Cleveland Road. At this location, vehicles may access Route 9 Westbound from both east and west approaches. The analysis assumes all northbound vehicles on Weston Road destined to Route 9 Westbound (and subsequently the site) will turn right toward Cleveland Road to access the Route 9 Westbound ramp despite the presence of existing volume turning left onto the other Route 9

Westbound ramp. Consider installing way finding signage that might promote the use of the Cleveland Road ramp to discourage northbound left turns at this intersection.

27. Similarly, traffic volumes at the intersection of Route 9 at Overbrook Drive/CVS Drive were found to be slightly different than those shown in the turning movement diagrams. Please clarify and update accordingly.

*The April 2017 TIAS has been updated and the traffic volumes have been adjusted as required. Revised traffic volume networks and capacity analysis results are provided in the updated TIAS which reflect the higher background growth rate.*

Analysis has been updated. No further comment.

28. The intersection of Route 9 at Overbrook Drive/CVS Drive was analyzed as coordinated during existing and no-build conditions. How will the existing coordination be impacted by future coordination with the proposed site driveway signal?

*The proposed site driveway signal is expected to operate on the same cycle length as Overbrook Drive/CVS and is assumed to operate under coordinated control with that intersection during the weekday morning and weekday evening peak periods. As shown in the April 2017 TIAS, the signal will continue to operate with nominal increases in delay and queues compared to No-Build conditions. Determination of whether these locations should be coordinated or whether cycle times/timing adjustments are necessary to optimize operations will be considered in more detail during the engineering design stage with input from the Town and subject to MassDOT review and approval.*

Adaptive signal system operations should be included as part of the design efforts with MassDOT.

29. The build analysis does not propose any signal timing alterations at the intersection of Route 9 at Overbrook Drive/CVS Drive, despite the recommended coordination with the proposed site drive. Discuss whether signal timing adjustments may improve overall traffic operations on Route 9.

*The Route 9 at Overbrook Drive/CVS Drive signal was recently upgraded in August 2014 as part of the CVS Pharmacy re-development. Determination of whether these locations should be coordinated or whether cycle times/timing adjustments are necessary to optimize operations will be considered in more detail during the engineering design stage with input from the Town and subject to MassDOT review and approval.*

Signal timing and phasing optimization should be explored as part of this project.

30. Analysis output sheets in the Appendix suggest that pedestrian phases are not included for the Route 9 at Overbrook Drive and Route 9 at Site Driveway traffic signals. Discuss how the presence of pedestrian phases may impact overall operations on Route 9.

*The presence of pedestrian phases typically results in the traffic signal dropping the coordination to re-allocate time to the pedestrian phase. The traffic counts conducted in March and April identified nominal (less than 5) pedestrian activity at the Route 9 intersection with Overbrook Drive/CVS Drive during the peak hours. The Applicant will work with MassDOT to provide appropriate pedestrian accommodations at the proposed signal at the Route 9 intersection with the Site Driveway/Lexington Road and will review both exclusive and concurrent pedestrian phasing.*

Though existing pedestrian volume may be low due to the vacancy of the existing site, pedestrian volume may increase with the addition of the site and the significant pedestrian improvements to the nearby trail as a result of the added signal. Signal timing plans should minimize the

coordination impact due to drops generated by pedestrian calls. BETA recommends utilizing the traffic median as a pedestrian refuge with two separate pedestrian crossings with concurrent phasing.

## LEVEL OF SERVICE RESULTS

31. Traffic analysis results in Table 8, Table 9, and Table 10 of the TIAS show analysis summaries for each intersection by approach, rather than by lane use.

*The April TIAS shows the analysis summaries for each intersection by approach. The results by lane use are provided in the detailed capacity analysis worksheets provided in the Appendices.*

Though providing intersection summary by approach may explain some characteristics of the analysis, this methodology averages multiple lane uses together rather than representing conditions for each lane. While reporting results by approach is acceptable in the industry, for ease of review BETA recommends reporting by lane use to provide a more complete picture.

32. It is unclear, based on the tables, how much these approaches with LOS F degrade or improve as there is little comparison shown in the Table. For example, the Route 9 Eastbound Ramp at Weston Road is noted to "operate with long delays" and that the ramp will experience a "net reduction of up to 100 vehicles during the peak hour with associated net reduction in travel delay," however the Synchro analysis worksheets reveal an increase in delay for this approach during the morning peak hour as a result of the project.

*The project was estimated to result in a net increase of approximately 16 right turns during the weekday morning peak hour on the Route 9 EB ramp approach to Weston Road. Therefore, the increase in delay between No-Build and Build is approximately 1 additional right turn onto Weston Road every four minutes or less during the weekday morning peak hour.*

The original comment is in respect to upper thresholds provided in the tables where approaches are labeled as ">80 seconds" or ">50 seconds" for all three analysis cases. Recommend using a larger threshold such as 200 or 300 seconds to provide a more complete summary of the analysis. This will provide a better understanding of whether the approach (or lane use) experiences a "Bad LOS F" (>200 seconds) or a "Less Bad LOS F" (50 or 80 seconds).

## QUEUE ANALYSIS

33. The queue lengths provided in Table 11 and Table 12 were found to be inconsistent with those provided in the Appendix. Please clarify and update accordingly.

*The April 2017 TIAS has been updated and the queue lengths have been adjusted as required.*

Tables have been updated. No further comment.

34. Table 12 shows an eastbound left turn lane on Route 9 at the Site Driveway. This left turn movement was noted in the TIAS as being prohibited. Clarify if the signal will allow left turns and if the left turn lane will be provided.

*Per discussions with the Town, there will be no eastbound left-turn lane provided and left-turns onto Lexington Road will continue to be prohibited; the Updated TIAS contains analysis worksheets that are consistent with this restriction. Given the sensitivity of the neighborhood to potential cut-through traffic, left-turns into the neighborhood will continue to be accommodated via Overbrook Drive. As presented in the Updated TIAS, the Applicant has also further refined the concept access*

*improvement plan to eliminate through movements between Lexington Road and the Site, thereby eliminating neighborhood impact for potential "cut-through" traffic.*

The tables and analysis have been updated to match the lane use description provided. No further comment.

35. Field observation revealed longer westbound queues in the evening, typically extending back Weston Road and beyond. The long queues will easily block the left turn lane entering the site. Similarly, during the morning commuting period, the queue on Route 9 Eastbound typically extends from the Kingsbury Street signal to Weston Road and beyond. The traffic analysis does not reflect or take into consideration these existing operational issues.

*The westbound queues along Route 9 may occasionally block the left-turn lane into the Site, however, there is no feasible design of the left-turn lane that can be provided to prohibit occasional queue blockage. While occasional queue blockage occurs along Route 9 which may block the left-turn lane, the traffic signal will also provide the benefit of enhanced pedestrian crossings and will provide gaps in traffic to accommodate left-turns into the Site as well as left- and right-turns from the Site onto Route 9. Based on field observations, the queue along Route 9 in the eastbound direction during the weekday morning peak hour did not appear to significantly affect operations at Weston Road nor the section of roadway adjacent to the Site.*

Response noted.

36. The Kingsbury Street signal is scheduled to be reconstructed this year by MassDOT (Project 608180). The MassDOT project will replace two existing unsignalized U-Turn lanes with traffic signals. Since 45% of the site traffic will be arrive and depart from Route 9 east of the site, the proposed Kingsbury Street signals should be included in the study.

*The sports complex project will result in an increase in traffic along Route 9 to the east of Weston Street of less than 3% during the peak hours. The reconstruction project by MassDOT along Route 9 at Kingsbury Street has been designed to accommodate background growth and the level of impact from the project will not change operating conditions at Kingsbury Street. Therefore, further analysis to include Kingsbury Street would not present any additional useful information than already exists to support this improvement.*

BETA recommends the Applicant include the proposed signalized Kingsbury Street signals as part of the follow-up traffic monitoring program.

37. Provide a table that summarizes queuing conditions at the Route 9 Ramps.

*The queuing conditions at the Route 9 ramps provided in the capacity analysis that was include in the Updated TIAS are provided in Table R1 and Table R2. As outlined in the updated report, a delay study was completed at the Weston Road at Route 9 eastbound ramps during the critical weekday morning peak hour to calibrate the Synchro model to actual observed conditions. These observed conditions show substantially lower delays and queues than the unadjusted modeled results. In summary, maximum (95th percentile) vehicle queues on the Route 9 ramps are contained without any impact to travel on Route 9 under all analysis scenarios; maximum queues in the case where a signal is not implemented on Route 9 are 312 feet (AM peak hour) and 234 feet (PM peak hour) which falls well within available storage length of 475 feet to Route 9. Implementation of a signal would reduce these queues to 156 feet (AM peak hour) and 80 feet (PM peak hour).*

Delay study data for one hour during the morning commuting peak was provided in the Appendix. It is unclear how this one hour of data was used to calibrate all three analysis scenarios: morning, evening, and Saturday mid-day.

38. Based on the Appendix sheets, the Route 9 Eastbound Ramp at Weston Road was found to queue approximately 665 feet, which would extend well onto Route 9. Explain how added queueing at the Route 9 Ramps may impact the already congested Route 9 during peak periods.

*Based on the calibrated model as presented in the Updated TIAS with queues shown above in Table R1 and Table R2, even under the unsignalized alternative the project would not result in queue along the Route 9 eastbound approach to Weston Road that have any impact on travel along Route 9. That said, MDM does concur that under an unsignalized option, there would be additional delay occurred, however, under the signalized option there will generally be a reduction in delay and queues.*

See response to Comment 37.

## PARKING

39. These data are more than five years old. New data should be collected for this study.

*Health/Fitness Club. Supplemental parking data during the peak parking demand periods was collected at the Framingham YMCA in May 2017 indicating a peak parking demand rate for the health club of 3.76 spaces per 1,000 square feet which below the rates used in the report. Therefore, the results of the supplemental parking data indicate that the parking rates outlined in the April 2017 TIAS remain valid. Supplemental parking data is contained in the Updated TIAS Attachments.*

*Soccer Use. A review of the parking demands at the Applicant's existing Essex Sports Complex in Middleton under conditions with turf field use and little hockey or other activity indicates that a peak parking demand of up to 26 vehicles, inclusive of employees and other minor uses of the building, for the use of the single turf field. This rate is highly consistent with the empirical data provided in the April 2017 TIAS for staggered use of a single turf field.*

Data was collected at the YMCA between 5:00PM and 6:30PM on May 24, 2017; and between 9:30AM and 10:30AM on May 25, 2017. Empirical data for Essex Sports Complex was not provided in the Appendix for review.

40. The parking demand estimates for special events were not provided. For parking and traffic management purposes, this information should be provided.

*The Applicant will provide a special event management plan to accommodate the various special events proposed for the Site which are estimated at 10-15 events per year. These special events are typically expected to occur on holiday weekends and are anticipated to include the Wellesley/Newton hockey games. This special event management plan will provide an operating scenario that relies solely on available on-site parking capacity and that will limit or restrict use of other Site facilities to the extent necessary to ensure that no off-site parking is necessary to accommodate special event operations. Special event programming to allow concurrent non-event facility use will be considered only if ample reserve off-site parking is available, which is subject to ongoing discussion with the adjoining office use.*

The Special Event Management Plan should be provided for BETA's review upon completion.

41. Given the office nature of the adjacent parcel, it is expected that overflow parking would be utilized after business closing hours. Should the adjacent property be used as overflow parking, ensure that all tournaments or heavy traffic events occur outside of business hours.

*The Applicant will coordinate and schedule all tournaments and heavy traffic events to occur outside business hours should the adjacent parcel be used for overflow parking.*

Response noted.

42. A traffic management plan for special events should be developed for this project.

*The Applicant will provide a special event management plan to accommodate the various special events proposed for the Site which are estimated at 10-15 events per year. These special events are typically expected to occur on holiday weekends and are anticipated to include the Wellesley/Newton hockey games. This special event management plan will provide an operating scenario that relies solely on available on-site parking capacity and that will limit or restrict use of other Site facilities to the extent necessary to ensure that no off-site parking is necessary to accommodate special event operations. Special event programming to allow concurrent non-event facility use will be considered only if ample reserve off-site parking is available, which is subject to ongoing discussion with the adjoining office use.*

The Special Event Management Plan should be provided for BETA's review upon completion.

43. Though these compact spaces are covered under the parking by-law, compact spaces are discouraged per the ITE *Traffic Engineering Handbook, 7<sup>th</sup> Edition*. Since vehicle sizes have been increasing as larger SUVs have become popular, standard "compact" cars no longer fit within the 7.5' x 15' space. As a result, drivers can become confused as to whether their vehicle is actually a "compact" or "small" vehicle. This can increase the number of larger vehicles attempting to park in these areas. The ITE *Traffic Engineering Handbook* recommends no more than 10% of parking stalls be labeled Small-Car-Only.

*The Applicant will continue to work with the Town on the number and adequacy of the compact parking spaces at the Site.*

Response noted.

## UNSIGNALIZED ACCESS ALTERNATIVE

### LEVEL OF SERVICE ANALYSIS

44. Given the large delays at the Route 9 eastbound ramp, discuss whether a traffic signal at this location will alleviate some delay on the Route 9 ramp and Weston Road. A traffic signal warrant should be performed.

*The Applicant and the Town are both working with MassDOT to provide a traffic signal at the Route 9 intersection with the primary site driveway/Lexington Road which would provide a benefit to the Route 9 eastbound ramp approach to Weston Road.*

*In the absence of a signal on Route 9, the Updated TIAS analysis demonstrates that the Weston Road interchange has ample capacity to accommodate Site-generated trip increases without the need for further improvements; we specifically cite the Route 9 Eastbound Ramp which would sustain a modest increase in demand of about 60 to 70 vehicles per hour and would operate at LOS E or better*

during peak hours. However, in lieu of a Route 9 signal the Applicant is also willing to consider any reasonable/feasible improvement at the Weston Road interchange that would further enhance capacity such as widening the eastbound ramp to provide separate turn lanes (to the extent right-of-way is available). Signal options at this location are not proposed by the Applicant given the complex nature of issues involving illegal curbside parking, school period queue impacts and other factors that are beyond its control and that serve to reduce or eliminate the practicality or benefit that a signal may otherwise have at this location.

Queue observations at the Route 9 Eastbound ramp suggest that traffic generally forms two lanes exiting onto Weston Road, consistent with Synchro analysis provided in the Appendix. Despite the unsignalized nature of the intersection, significant courtesy is provided to exiting vehicles from the ramp which artificially improves ramp conditions. Conversely, this generates queueing conditions along Weston Road. Without this courtesy, it is expected that vehicles exiting Route 9 will struggle to find gaps.

## QUEUE ANALYSIS

45. Given the projected spill-back onto Route 9 as a result of the 950 foot long queue, discuss any impacts to the Russell Road and Fells Road neighborhoods generated by cut-through vehicles avoiding the Route 9 interchange.

*These extensive queues are not projected to occur based on recently observed operations and updated analysis as presented in the Updated TIAS. In summary, maximum (95th percentile) vehicle queues on the Route 9 ramps are contained without any impact to travel on Route 9 under all analysis scenarios; maximum queues in the case where a signal is not implemented on Route 9 are 312 feet (AM peak hour) and 234 feet (PM peak hour) which falls well within available storage length of 475 feet to Route 9. Implementation of a signal would reduce these queues to 156 feet (AM peak hour) and 80 feet (PM peak hour). Notwithstanding this updated finding, the Russell Road and Fells Road neighborhoods will also be part of a traffic monitoring program associated with the project to ensure that such cut-through is monitored and addressed should it occur as a result of the Project.*

See response to Comment 44.

46. Long westbound queues generated from the Overbrook Drive intersection in the evening peak hour will block the left turn lane into the site.

See Response 35.

Response noted.

## RECOMMENDATIONS

### ACCESS/EGRESS IMPROVEMENTS

47. Given the existing queueing problems on Route 9, evaluate any impacts to the Lexington Road and Beechwood Road neighborhoods generated by potential cut-through traffic.

*As presented in the Updated TIAS, the Applicant has also further refined the concept access improvement plan to eliminate through movements between Lexington Road and the Site, thereby eliminating neighborhood impact for potential "cut-through" traffic. The traffic signal will continue*

*to prohibit left turns into Lexington Road. The Lexington Road and Beechwood neighborhoods will also be part of a traffic monitoring program associated with the project.*

The updated site plan restricts through movements between Lexington Road and the Site by means of an extended median island for the westbound approach. Ensure that this configuration may safely accommodate left turns out of the Site and westbound U-Turns, particularly for trucks or large vehicles.

## SPECIAL EVENT PARKING MANAGEMENT

48. A traffic management plan for special events should be developed for this project.

*The Applicant will provide a special event management plan which will include a traffic management plan to accommodate the various special events proposed for the Site which are estimated at 10-15 events per year which are typically expected to occur on holiday weekends and are also anticipated to include the Wellesley/Newton hockey games. This special event management plan will include an overflow parking plan. The special event management plan will be prepared in consultation to the Town.*

The Special Event Management Plan should be provided for BETA's review upon completion.

## TRANSPORTATION DEMAND MANAGEMENT (TDM)

49. The bus stop location provided on the site plan is located adjacent to the north side of the building. This location requires busses to exit via the secondary (right-out) driveway which would require westbound destined buses to utilize the Weston Road interchange to reverse direction. The TDM notes that this location would be adjacent to the Main Driveway. Please discuss.

*The April 2017 TIAS indicates that the bus drop-off/parking area will be located near a main entranceway to the building. The buses destined to the west on Route 9 will need to use the Weston Road interchange to reverse direction. The number of buses that will be destined to the west on Route 9 during the peak hours is expected to be nominal.*

Provide an updated site plan that shows the location of bus drop off.

50. Discuss whether preferential parking may or may not reduce the overall number of "useable" parking spaces. How will these spaces be enforced?

*Preferential parking locations for those who for carpools and vanpools will be provided on-site. The number and location of the parking space(s) will be identified more specifically during the local site plan review and approval process. The spaces will be enforced with signage and are not expected to materially reduce the useable parking spaces.*

The Preferential Parking Plan should be provided for BETA's review.

## GENERAL COMMENTS

51. A post-construction traffic monitoring program should be established for this project, similar to the nearby CVS project.

*The Applicant agrees to provide a post construction monitoring program for this project.*

Response noted. BETA will collaborate with the Town on drafting the conditions and criteria for the Traffic Monitoring Program.

52. Traffic impacts related to the project construction should be discussed.

*Details of the overall construction schedule, working hours, number of construction workers, worker transportation, and parking, number of construction vehicles, and routes will be addressed in detail in a construction management plan which will be required by MassDOT as part of the Highway Access Permit. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.*

*To minimize transportation impacts during the construction period, the following measures will be considered for the CMP:*

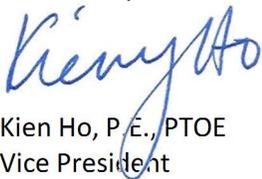
- *Construction workers will be encouraged to use public transportation and/or carpool.*
- *Secure spaces will be provided on-site for workers' supplies and tools so they do not need to be brought to the Project site each day.*

*The CMP will be executed with MassDOT and the Town prior to commencement of construction and will document all committed measures.*

The CMP should be provided for BETA's review upon completion.

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, P.E., PTOE  
Vice President

cc: Tyler de Ruitter, P.E.

Job No: 5475-05