

May 6, 2021

Jennifer Raitt
Director of Planning and Community Development
Town of Arlington
730 Massachusetts Avenue Annex
Arlington, MA 02476

**Re: 1165R Mass Ave Apartments – Arlington, MA
Traffic Comment Response Review**

Dear Ms. Raitt:

BETA Group, Inc. (BETA) has reviewed Applicant's Comment Responses, dated April 30, 2021, and subsequent revised Traffic Impact Report (TIR) (and Appendix), dated April 30, 2021, for the proposed multi-unit housing redevelopment of the 1165R Massachusetts Avenue parcel (the Site) within the Mirak Innovation Park in the Arlington Heights neighborhood. This letter is provided to outline BETA's comments, *Applicant's responses, and any follow-up comment.*

SITE ACCESS, CIRCULATION, AND PARKING

- T1. Clarify how these signs will be implemented. Site Plans do not propose any changes for the Massachusetts Avenue driveway.

The wayfinding signage has been included in the revised Site Plan package. See attached.

BETA: Revised Site Plan package was not provided for review.

The revised Site Layout Plan, dated April 13, 2021, has been attached to this comment response letter for review.

See comment T2.

- T2. The Site Plan shows DO NOT ENTER markings for the Ryder Street Driveway, suggesting a one-way "Exit Only" condition. This is not replicated on Architectural Plans.

The Architectural Plans depict design within the building and does not represent access to the site. The Site Plan depicts everything on-site, including access signage and markings, outside the building footprint. Therefore, it is not expected that access will be replicated on the Architectural Plans. See comment response R1.

BETA: Updated Site Plans were not provided for review. Verify one-way or two-way configuration of the Ryder Street driveway.

The revised Site Layout Plan, dated April 13, 2021, has been attached to this comment response letter for review. The plan indicates egress-only at the Ryder Street driveway and restricted tenant egress at the Massachusetts Avenue West Driveway via regulatory signage and pavement markings.

The Revised Site Plan (C-301), dated April 13, 2021, provides signage suggesting vehicles departing the Site may only turn left onto Ryder Street, though bicycles and pedestrians

may travel right towards the bikeway. The one-way (ENTER) driveway from Mass Ave will be accommodated with an update to the private business signage. The connector road between Building 2 and the Workbar will be two-way, approximately 21.5 feet wide. Southbound vehicles, destined to Mass Ave, will be required to turn left towards Quinn Road. BETA notes that the proposed plan accommodates the left turn only condition by striping a LEFT TURN arrow and ONLY markings within a paver area that appears to represent a crosswalk. Recommend shifting these markings out of the crosswalk. Recommend locating "DO NOT ENTER" sign for the West Driveway on the far side of the intersection (closer to the speed bump) to clarify where restriction exists.

- T3. Garage parking aisles appear to be less than the required 24-foot width in some instances.

The developer has applied for a waiver from the Town requesting that aisle width be reduced to 23.5 feet for two-way traffic.

BETA: The vehicle maneuver drawings suggest vehicles will strike support columns or walls, and will likely require vehicles to swing into adjacent parking spaces to adequately make a parking maneuver. A waiver to reduce aisle width is not recommended. Recommend maximizing the aisle width to accommodate multiple point turns to access parking without striking other vehicles, columns, or walls.

The revised Garage Vehicle Turning Exhibit dated April 29, 2021, has been attached to this comment response letter for review. Two parking spaces have been removed from the previous plan, and compact spaces have been designated to allow for unobstructed access into parking stalls. Additionally, Building Floor Plans, dated April 22, 2021, have been attached to this comment letter and show all aisle widths a minimum of 24 feet wide. As shown, the cars can accommodate multiple point turns to access parking without striking other vehicles, columns, or walls.

Appended plans suggest the drive aisles have been widened to 24 feet and up to 27 feet 6 inches. This width better accommodates travel and parking maneuvers throughout the structure when compared to the previous plans. However, this configuration has come with the expense of reducing the length and width of some parking spaces, which are labelled as Compact. BETA notes that the use of compact spaces is discouraged as current vehicle styles and trends do not adequately fit the "compact" style. This leads to larger vehicles attempting to utilize smaller spaces which reduces the efficiency of the parking facility. See the Institute of Transportation Engineers' *Traffic Engineering Handbook, 7th Edition* for further discussion.

The updated plans further define the location of Workbar daytime and night time spaces, which are all proposed on the lower level.

- T4. Clarify that vehicles can maneuver within the parking garages, including usage of the ramp and maneuverability for parking stalls closest to the entrance at Building 4.

The turning maneuver plans have been included in the Architectural Plans which shows turning maneuver paths for the ramp and parking stalls for the parking garages. See attached.

BETA: See Response T3. Turning maneuver drawings suggest vehicles will strike support columns or walls, and will likely require vehicles to swing into adjacent parking spaces to

adequately make a parking maneuver. The tight garage will require multiple point turning maneuvers to safely access a space. This is more severe for spaces adjacent to end walls as shown on the turning sketches.

See Response 3a.

See above.

- T5. Clarify whether parking garage will be gated and how access will be managed for tenants and Workbar tenants.

The parking garage is not intended to be gated. Access will be managed by an on-site property manager. It is anticipated that all parking spaces will be numbered and that all Workbar tenants and residents will have a form of identification (such as a parking sticker or tag) designated reserved and non-reserved spaces within the garage. Resident parking spaces will be leased at market rates.

BETA: This practice will discourage some residents from owning a vehicle, thereby reducing the parking demand. Denote space numbering on the Site Plans.

The parking space numbers have been denoted on the attached Building Floor Plans.

Numbers provided, no further comment.

- T6. Clarify whether garage parking will be deeded per unit.

The parking spaces will not be deeded per unit.

See Response T5. No further response required.

- T7. Clarify which spaces will be designed for Workbar tenants. Given the tight maneuvering spaces within the garages, these spaces should be accessible for higher turnover activity.

The designated Workbar spaces will be located closest to entry of the garage.

BETA: See Response T5. Denote space numbering and designated Workbar spaces on the Site Plans.

The Workbar Parking spaces and numbers have been denoted on the attached Building Floor Plans, drawing A004.

Space numbers and locations have been provided. No further comment.

- T8. While peak Workbar activity is expected during normal business hours, it is noted that Workbar provides 24/7 access to members.

The project incorporates a shared parking plan with the Workbar owner to provide 40 Workbar parking spaces during weekday work hours and 10 Workbar parking spaces during nights and weekends in the garage.

No response required.

- T9. One accessible parking space is provided per the Site Plans within the "Short Term" parking area. This is not represented in the Architectural Plans. Zero accessible spaces are provided in the parking garages. Confirm the adequacy of the provided accessible spaces and define adequate accessible routes to both residential and the Workbar.

The "Short Term" parking space is located outside the building, so it is represented on the Site Plans. The architectural plans show accessible parking spaces within the garage. See attached.

BETA: There are two attached interior garage plans. Both show a different parking configuration. One displays the location of accessible spaces, and the other plan shows vehicle turning paths with zero accessible spaces. BETA recommends the Applicant team coordinate and provide a consistent Site Plan.

Building 4 is shown as providing two accessible spaces on each level (4 total) adjacent to the entry to Building 1 and a bank of elevators.

Building 2 is shown to have 1 accessible space adjacent to an elevator. This is acceptable, but will require an awkward move to exit the space which may not be possible/easy depending on the physical restrictions of the driver.

The exterior Site Plan shows one accessible space within the Short Term Parking area between Building 1 and Building 4. This is acceptable.

The Garage Vehicle Turning Exhibit and Building Floor Plans have been revised to be consistent with each other and to show the accessible designated parking spaces. The Garage Vehicle Turning exhibit also shows the vehicle turn into the accessible space in Building 2 next to the elevator.

Updated sketches provided. No further comment.

TRAFFIC IMPACT REPORT REVIEW

STUDY AREA

- T10. Forest Street is classified as a collector roadway.

The classification has been updated in the TIR.

Issue resolved.

- T11. The intersection of Massachusetts Avenue at Appleton Street and Appleton Place provides a pedestrian activated traffic signal that operates under "flash" when not activated and steady "yellow/red" with "Walk/Don't Walk" when activated. Per section 4E.06 of the MUTCD, pedestrian signal heads shall not be displayed when the vehicular traffic control signal is being operated in the flashing mode.

As described in Section 2.2 of the revised TIR, Nitsch understands the signal provides a pedestrian activated traffic signal that operates under "flash" when not activated and steady "yellow/red" with "Walk/Don't Walk" when activated. The intersection effectively operates as an unsignalized intersection. Although the traffic signal does not meet current federal regulations stated in the Manual of Uniform Traffic Control Devices (MUTCD), there is no current plan by the Town to revise the traffic signal.

No response required. It should be noted that the Arlington Select Board has convened a design review committee to study and make recommendations at this intersection.

PEDESTRIAN AND BICYCLE FACILITIES

- T12. Recommend the Applicant summarize the condition of nearby pedestrian and bicycle facilities and specify if improvements are required to safely accommodate added non-motorized traffic to/from the Site.

Section 2.1 of the initial TIR identifies pedestrian and bicycle facilities and summarizes the condition along each roadway. Specifically, the sidewalks to be used as a pedestrian path to the site, which include Massachusetts Avenue, Forest Street, and Ryder Street, are all in good to fair condition. All other bicycle facilities, including the Minuteman Commuter Bikeway and the Massachusetts Avenue bicycle pavement also appear to be in good condition.

See Response T28.

TRAFFIC COUNT DATA

- T13. The evening peak hour ATR volumes for Massachusetts Avenue could not be validated and appear low. Review and revise accordingly.

The ATR volumes presented in the report have been reviewed and verified that they match the data collection.

BETA: Comment stands. The data suggests a peak hour for Mass Ave of 5:00-6:00 PM with a volume of 1,086 (seasonally adjusted per the TIR) with 56% Eastbound.

The ATR volumes have been recalculated using a 3% seasonal adjustment increase. The ADT was calculated to be 13,127 vehicles per day; the Weekday morning peak hour (7:30am-8:30am) was calculated to be 1,051 vehicles per hour; and the Weekday evening peak hour (5:00pm-6:00pm) was calculated to be 1,084 vehicles per hour. The calculations are included in Appendix A of the revised TIR.

Issue resolved. No further comment.

- T14. Backup ATR volume sheets for Burton Road show zero volume over the course of the day. Review and provided updated sheets as appropriate.

See the attached revised ATR volume sheets for Burton Road that have been included in Appendix A of the revised TIR.

ATR volume sheets were provided. No further comment.

PARKING

- T15. It is generally assumed that the parking assessment was conducted in 2020.

That is correct. The parking assessment year has been identified in Section 3.3 of the revised TIR.

BETA: Section 3.3 does not appear to have been updated accordingly. This is not a detrimental issue.

The count dates in Section 3.3 now indicate the year to be 2020.

Issue resolved. No further comment.

- T16. Backup information for the parking assessment was not provided in the Appendix.

Further backup information has been provided in Appendix C of the revised TIR.

Backup provided. The peak period for the existing parking lot occurs during the lunch hour. No further comment.

- T17. Clarify the occupancy of the Mill Building Office Space. Existing Site Plans show the Mill Buildings to be larger than 17,000 square feet. Should the building not be fully utilized, the parking demand would be lower, suggesting a higher proportion of Workbar usage.

Through discussions with the project owner, it has been determined that the approximate 17,000 square-foot office space is fully occupied. Therefore, the parking demand calculated for the Workbar is still valid.

BETA: Revised TIR and response does not adequately address original comment. Occupied space of the Mill Building and Workbar should be identified. Workbar parking demand can be estimated as the percentage of Workbar occupied space compared to total occupied space utilizing the existing parking area. This derivation of site specific parking data can be assumed to be more representative of the site then calculations using ITE rates and mode share data. Occupancy data should match the time period when parking utilization data was collected.

The project team reevaluated the parking demand per the methodology noted above. We were able to receive the building occupancy data from the Town Assessors database which is included in Appendix I of the revised TIR. The approximate 17,000 square feet shown on the ALTA survey represents the building footing area. The "Mill Building," which comprises four sub-buildings, totals 43,307 square feet of gross floor area. However, the data indicates that only 24,545 square feet of gross floor area was occupied. The Workbar comprised 11,670 square feet of occupied gross floor area. Therefore, the occupied "Mill Building" area represents 67% of the site utilization and the Workbar represents 32% of the site utilization. This results in an increased parking demand for the "Mill Building" and a reduced parking demand for the Workbar. The previous calculations indicated the Workbar parking demand to be 23 vehicles, and the new calculations indicate the demand to be 17 vehicles.

The discussion suggests the Workbar represented approximately 30% of observed existing parking based on a comparison of occupied square footage. This methodology is acceptable. No further comment.

- T18. The text and footnote on page 16 of the TIR references *Trip Generation, 10th Edition* instead of *Parking Generation, 5th Edition*.

This reference has been updated in the revised TIR.

Issue resolved.

- T19. The parking observations were conducted at different times on different days. The Legacy at Arlington Place (lowest ratio, 0.34) was conducted on a Saturday throughout the morning and mid-day hours, while the Arlington 360 (highest ratio, 0.76) was conducted in the mid-day hours on a weekday. The ITE *Parking Generation* rate for bedrooms is 0.75 on weekdays and 0.77 on weekends. This is more consistent with that observed at the Arlington 360 complex.

The ITE Parking Generation rate is an average based on national studies and, therefore, should be used only as a guideline. To understand the local parking utilization for this specific use, a detailed parking study was deemed necessary. Therefore, the average parking utilization of 0.55 spaces per bedroom calculated from all three comparable housing developments (The Legacy at Arlington Center, Brigham Square Apartments, and Arlington 360) was used to justify the parking demand at the 1165R Mass Ave Apartments development. The following is a summary of when we collected applicable data.

- *Brigham Square Apartments at 30 Mill Street on Wednesday, January 29, 2020 from 6:00 AM to 8:00 AM and 12:00 to 2:00 PM, on Thursday January 30, 2020 from 6:00 PM to 8:00 PM, and on Saturday, February 1, 2020 from 9:00 AM to 11:00 AM.*
- *Arlington 360 at 4205 Symmes Circle on Thursday, January 30, 2020 from 12:00 PM to 2:00 PM; and*
- *The Legacy at Arlington Center at 438 Massachusetts Avenue on Saturday, February 1, 2020 from 9:00 AM to 2:00 PM.*

To obtain the peak parking demand at the other developments in addition to our own on-site observations, the management companies were contacted to obtain parking information, including the total number of spaces provided and the number of spaces reserved. As shown in Table 4 of the TIR, the Brigham Square Apartments is most representative of the proposed development, as it is similarly located in proximity to Massachusetts Avenue and the Minuteman Commuter Bikeway and has a similar number of bedrooms. Although the parking utilization for the Brigham Square Apartments is also directly in line with the average, it was necessary to show that we studied other developments as well.

BETA: Further clarification is necessary regarding BETA's comment, along with additional commentary based on revised TIR and Appendix.

1. Utilization rates collected at different times of day do not adequately predict peak parking utilization. A meaningful average cannot be calculated from data collected at different times of day.
2. Times of day for Arlington 360 and The Legacy at Arlington Center do not match backup materials, which state that parking lot security restrictions prevented collection of complete counts. Clarify how peak utilization rates were determined for these sites – was peak utilization manually confirmed, or provided by facility management? What time of day was said utilization collected?
3. Table 4 is included in a section of the TIR discussing mid-day parking demand in order to develop a conclusion on the relationship between mid-day residential parking demand and the need to provide dedicated spaces for Workbar tenants. As such, the summary should review data from comparable sites during the mid-day period. Mid-day data is provided for Brigham Square apartments, which shows a mid-day peak of 71 spaces occupied, for a rate of 0.61 spaces/unit or 0.40 spaces/bedroom.
4. See response T32 for further discussion on peak residential parking demand.

To address the parking concerns, the team took an additional three-step process to confirm the parking utilizations used in the previous TIR. Knowing that we were not able to conduct individual counts at Arlington 360, we received updated parking utilization data from Greystar, the building's management company. The data, included in Appendix C, is consistent with our initial findings in February 2020.

To obtain the time-of-day parking utilization for the Legacy, the management company was able to have the parking counts recounted internally for the following dates and times:

- *Saturday, April 17, 2021 from 9:00am to 11:00am*
- *Tuesday, April 20, 2021 from 6:00am to 8:00am, 12:00pm-2:00pm, 6:00pm-8:00pm, and 11:00pm-1:00am (Wednesday)*

The information from Legacy was used to obtain the peak parking utilization as well as the utilization reduction during the Weekday mid-day period.

To confirm the peak utilization to the Brigham Square Apartments from the previous TIR, we conducted an additional night count on Tuesday, April 20, 2021 from 11:00pm-1:00am (Wednesday). As expected, the peak utilization obtained from the Wednesday morning counts represents the peak throughout the day. The Weekday night counts were slightly less than the Weekday morning, so the peak utilization used in the previous calculations was used for the revised calculations.

As a result of the new data collection, it was found that the peak utilization for all the developments is consistent with the data from February 2020:

- *Arlington 360: 0.73 spaces/bedroom*
- *Brigham Square Apartments: 0.55 spaces/bedroom*
- *The Legacy: 0.40 spaces/bedroom*

This yields an average peak utilization of 0.56 spaces/bedroom. Therefore, this utilization was used to obtain the anticipated peak demand for the 1165R Mass Ave Apartments; 105 vehicles. The previous report calculated 103 vehicles.

To obtain the parking utilization reduction during the Weekday mid-day and Saturday mid-morning, we now used the two sources for time-of-day data (The Legacy and Brigham). We used the average of the new datasets and found the utilization reduction is consistent with the previous calculations; 18% reduction during the Weekday mid-day and 10% reduction during the Saturday mid-morning.

To calculate the total required spaces in combination with the Workbar, we used the same methodology as done for the previous TIR, except we used BETA's requirement for estimating the Workbar spaces. The 18% Weekday mid-day parking utilization reduction was applied to the number of required apartment spaces and added to the calculated Workbar parking demand, yielding a total parking demand of 103 vehicles (107 vehicles in previous report). During the Saturday mid-morning, the calculated parking demand based on a 10% reduction is 96 vehicles (95 in previous report). When adding the required 40 Workbar parking spaces during the Weekday mid-day to the apartments' demand, 126 parking spaces will be required. Adding the 10 Workbar parking spaces to the Saturday mid-morning demand, 105 parking spaces will be required. The revised parking garage layouts for Buildings 2 and 4 which provide 122 parking spaces in addition to the 12 surface parking spaces will be sufficient to meet the anticipated demand. Parking data calculations are provided in Appendix C.

The revised TIR discusses parking data obtained in April 2021 which includes observations in the overnight hours. Overnight parking was generally counted/observed to be 100 vehicles for the Brigham Square and Legacy at Arlington Center. Peak overnight parking for Arlington 360 was reported as 175 spaces by the Greystar management company. Backup information suggests the 175 spaces are the total number of reserved spaces for the complex (not including townhouses). All three of the similar sites reportedly charge a fee for on-site parking, which varies for garage or surface (uncovered) facilities. The peak parking demand ratio, an average of the three sites, was calculated at 0.56 spaces per bedroom. This is 0.01 higher than the previous TIR. Time-of-day parking observations at the Brigham Square and Legacy complexes were used to evaluate the percentage drop in parking demand, when compared to peak overnight, due to residents leaving for work or other trips during the day. The TIR found that Weekday mid-day demand is approximately 18% lower (7% at Legacy, 28% at Brigham Square) than peak Weekday overnight; and

Saturday mid-morning is 10% lower (6% at Legacy, 14% at Brigham Square) than peak Weekday overnight.

The above parking evaluation suggests the Project site requires approximately 105 parking spaces for residential use (overnight). In addition, the Project has contracted 40 spaces for Workbar use on weekdays and 10 spaces for Workbar use overnight and on weekends. This suggests the Site requires at least 115 parking spaces overnight. During the day, residential parking demand decreases and Workbar demand increases, representing approximately 126 total spaces on weekdays and 105 spaces on weekends. The Project Site Plan proposes 135 parking spaces, including 126 indoor (garage) and 9 surface spaces.

BETA finds the above methodology to be reasonable.

- T20. BETA generally concurs that parking demand would be lower with adequate connections to the commuter bikeway and the MBTA.

No Response Required

BETA: As noted in the Arlington Transportation Advisory Committee's memorandum dated March 11, 2021, the MBTA has proposed service cuts to the area which include reduced MBTA bus service along Massachusetts Avenue. This will increase the desire for on-site parking.

The service cuts are related to the pandemic. In Boston.com/news, there is an article from March 5, 2021 titled "MBTA reduction in service effective March 14 due to COVID." There is a Boston Globe article titled "Service will be cut due to pandemic," which was published on December 14, 2020. On March 29, 2021 Boston.com/news ran an article "MBTA Moving to restore pandemic induced service cuts." As such, the cuts are inapplicable to this project as there will be approximately 18-24 months before completion, and MBTA service is expected to have returned to normal by then.

No further comment. MBTA has committed to maintaining and restoring service, and it is reasonable to assume that service cuts will not have a measurable impact at occupancy of the project site.

SAFETY EVALUATION

- T21. The TIR summarized crash data for 2018 and 2019, year which were not "closed" by MassDOT. This suggests that the data may not be complete. As of writing this letter, 2018 data is now finalized ("closed"). Typically, it is recommended to summarize the three most recent "closed" years.

Nitsch has reviewed and summarized "closed" crash data for the most recent three years for 2016 to 2018. The crash numbers and rates have been adjusted accordingly in the revised TIR and are considerably less than previously reported.

The crash data updates are acceptable. No further comment.

- T22. BETA ran crash summaries for the study area intersections and found crash totals to be inconsistent from those presented in the TIR. Crash data backup was not provided in the TIR Appendix for reference. Recommend providing backup in the Appendix to support the table.

Nitsch has found that the previous collected data has duplicate entries making the total number of crashes much higher than expected. As also mentioned in T21, the "closed" crash data was used in the revised TIR. There are 8 total number crashes presented in the revised

TIR as compared to 34 reported in the previous TIR. The new crash data, rates, and diagrams are presented in Appendix D of the revised TIR.

The crash data updates are acceptable. No further comment.

- T23. As noted in Comment T22, it is expected that the crash history for Forest Street at Ryder Street/Peirce Street is overstated and not representative of existing conditions. Reevaluate and revise as appropriate.

Nitsch has reviewed the crash rate for all intersections, including Forest Street at Ryder Street/Peirce Street, which was higher due to the duplicate crashes. Nitsch has corrected the crash rate from 1.59 to 0.13 crashes per MEV.

The crash rate updates are acceptable. No further comment.

- T24. The notes for Table 6 of the TIR are not representative of the text and data presented in the TIR and Table.

A total of 8 crashes were reported within the study area from 2016 to 2018. There were no reported crashes at the intersections of Massachusetts Avenue and Quinn Road, Mirak Innovation Park West Driveway and Quin Access Road, and Ryder Street and Mirak Innovation Park Ryder Street Driveway during the study period. In terms of severity, one (1) crash in the study area reported personal injury, four (4) crashes are reported as property damage only, and there were no crashes with fatalities. Angle and sideswipe crashes were the most frequent type of crash with a total of 3 crashes each, and of the remaining crashes, 2 were rear-end crash. No crashes involving pedestrians or bicycles were reported. Twenty-five percent of all crashes in the study area occurred during peak hours, and 25% of all crashes occurred under wet/icy conditions. Nitsch also updated the Table 6 notes that used to say, "Based on 3-year crash history from MassDOT, 2014-2016" to "Based on 3-year crash history from MassDOT, 2016-2018" and "Based on latest MassDOT crash data queried June 2018" to "Based on latest MassDOT crash data website."

BETA: The Crash Data section has been updated.

BETA notes that the Table 6 Note "c" has not been fully updated in accordance with the response to comment. It still references "June 2018" which is not reasonable for this project.

The reference has been changed.

Issue resolved.

SIGNAL WARRANT ANALYSIS

- T25. While the Project may not significantly increase traffic volumes through these intersections, activity will increase when accounting for increased vehicle, pedestrian, and bicycle travel to/from the Site. Recommend the Applicant offer safety related recommendations to improve conditions.

As noted in Section 4.2 of the revised TIR, the Proponent recognizes safety is an issue through the study intersections. However, they do not intend to provide infrastructure improvements, as the project will not significantly impact the roadway network. Since the initial submission of the TIR in July 2020, the Town has been working with a traffic consultant to conduct a Road Safety Audit to evaluate the intersections and determine the most appropriate mitigation measures.

No response required.

FUTURE NO-BUILD TRAFFIC CONDITIONS

- T26. Figure 5 (2025-No-Build Peak Hour Volumes) of the TIR was found to have misrepresented volumes for some turning movements. In one intersection, volumes decreased when compared to the existing conditions. These discrepancies are not expected to dramatically change the conclusions of the report.

After thorough review of both Figure 3 (2020 Existing Peak Hour Volume) and Figure 5 (2025 No-Build Peak Hour Volume), Nitsch found the discrepancy at the intersection of Peirce Street, Ryder Street, Forest Street, and Driveway, and we have rectified the volume. As noted, the changes are minor and do not significantly change the traffic analysis presented in the initial TIR.

Figures updated. No further comment.

PROPOSED FUTURE CONDITIONS

- T27. Site access is to be provided via Quinn Road and the access road between Quinn Road and the site. Although these roadways exist today, they essentially serve as local access to abutting businesses, including Mirak Chevrolet, DeVito Funeral Home, and service facilities for Mirak Chevrolet and Mirak Hyundai. The Mirak Chevrolet dealership has head-in parking along the building with direct entry from Quinn Road. Provide commentary on how additional site-generated traffic will impact access and operations to Mirak Chevrolet and DeVito Funeral Home, and whether additional measures are necessary to accommodate, restrict, and/or delineate parking along Quinn Road serving both abutting businesses.

Given the low volume of site-generated traffic, especially during the midday hours, access and operations for the abutting businesses will not be significantly impacted. During the weekday midday hours when the abutting business are expected to be at a peak, the new development is expected to generate on average 35 vehicles per hour, or approximately 1 vehicle every 2 minutes. This is not deemed to be a significant amount of traffic affecting access or operations on-site and off-site. Furthermore, adequate wayfinding signage will be provided directing Workbar vehicles to the designated parking areas, and residents will be under a contractual agreement stating that parking will be allowed only within the designated parking garages.

Provide proposed signage and any recommended revitalization (repaving, striping, sidewalk, etc.) to Quinn Road and the surrounding driveways to reduce the amount of vehicle, pedestrian, and bicycle conflicts.

See response R28a.

PEDESTRIAN AND BICYCLE ACCOMMODATIONS

- T28. See Comment T12. Off-site multimodal improvements should be considered to promote connectivity to Mass Ave and to the Minuteman Commuter Bikeway.

Adequate connections to the pedestrian and bicycle pathways currently exist. Further, sufficient on-site bicycle parking is provided at the project, and a robust Transportation Demand Management Program will be implemented to promote more use of bicycles and help reduce the single occupancy vehicles for short distance commutes.

BETA: We disagree with the assessment that “adequate” connections currently exist. The Mirak Innovation Park West Driveway and Quinn Road are effectively parking lot driveways

and do not provide any pedestrian or bicycle accommodations, which would require pedestrians and bicycles to travel with traffic and motor vehicle parking maneuvers. The Mirak Innovation Park West Driveway features a utility pole, located within the travel way. This pole should be relocated. Ryder Street also serves on-street parking and off-street parking for abutting uses. A short section of sidewalk is provided south of the Site Driveway, but no accommodation is provided north to the bikeway. This would also require pedestrians and bicycles to walk/ride in the travel way and avoid parking maneuvers. As Ryder Street is a private way south of the Project to Massachusetts Avenue, consider repaving or supporting maintenance efforts to improve conditions along this roadway.

The Mirak Innovation Park entrance on Massachusetts Avenue (hereinafter referred to as the "Massachusetts Avenue Entrance") has been used as one of the ingress and egress points from the Property for more than fifty years. The Massachusetts Avenue Entrance is too narrow (20' wide) and too steep (grades up to 12%) to provide pedestrian or bicycle access to the Property. Moreover, the Massachusetts Avenue Entrance is encumbered by a recorded easement, which grants the abutting properties rights of ingress and egress, preventing the narrowing of the easement for installation of a sidewalk even if such installation were feasible.

As confirmed by the Town Engineer, Quinn Road is, in fact, a public way and is one of three existing vehicular connections to the Property. The Quinn Road connector driveway is owned by others, but the proponent has access rights from the Property to Quinn Road.

The Applicant has proposed three adequate connections for vehicle traffic to the Property. The Massachusetts Avenue Entrance would be ingress only for residents, Quinn Road would be used for ingress and egress, and Ryder Street access to the Property would be egress-only for residents. The Massachusetts Avenue Entrance and the Quinn Road connector driveway are both vehicle driveways and not well suited for pedestrians and bicycles. On the other hand, the Ryder Street connector is proposed to be improved with new accessible pedestrian and bicycle pathways connecting to the existing sidewalk at Ryder Street, with additional improvements proposed by the Proponent, that connects to larger sidewalk networks at Forest Street, Massachusetts Avenue, and beyond.

Based upon multiple meetings with the neighborhood group, the Applicant is proposing extensive improvements to the south of the Ryder Street exit of the Property, including (a) repaving the existing paved surface from the Ryder Street exit of the Property to Forest Street; (b) reconstructing the existing sidewalk from the Ryder Street exit of the Property to Forest Street to create an accessible connection, including new crosswalks and wheel chair ramps at the 9 Ryder Street driveway curb cut; (c) the insertion of a new crosswalk and wheelchair ramps at Ryder and Forest Streets; and (d) a speed table on Ryder Street at the intersection with the Ryder Street exit driveway.

The Applicant does not have any rights with respect to the private way on Ryder Street from the Ryder Street exit to the Minuteman Commuter Bikeway. Any improvements to that segment of Ryder Street should be required of the abutting property owners at 15 Ryder Street, 33 Ryder Street, and the other commercial businesses that use the private right-of-way for vehicular access.

With respect to the utility pole within the Massachusetts Avenue Entrance, the Applicant investigated relocating the pole and discussed relocation with the utility company. Power service for the new residential project will be provided from Ryder Street, not via the

Massachusetts Avenue Entrance. The existing utility pole on the Massachusetts Avenue Entrance is owned by the utility company and provides power and data services to the abutting property owners. The relocation is not feasible for the following reasons: (a) the pole would need to be moved by the utility company and located on another property owner's property; (b) relocation of the pole would trigger the need to move connecting utility poles servicing businesses on the Quinn Road connector and the Massachusetts Avenue Entrance, as well as relocation of poles on Massachusetts Avenue to meet current utility company standard; and (c) the costs associated with the reworking and relocation of the poles would be substantial, would not address the power needs for the project, would render the project economically unfeasible if imposed on the project, and presumably would not be a cost the abutters would consider incurring.

BETA finds the offsite mitigation related to roadway paving and sidewalk reconstruction to be appropriate. While it is understood that much of the existing site constraints are existing conditions, the proposed travel characteristics of the site are changing. The proposed project plan will involve residents coming and going at any hour, plausibly returning overnight. Any existing obstruction within the travel roadway that cannot be moved should be protected and lit such that motorists can maneuver around them without hazard.

For bicycle access, the response states that the Ryder Street connector "is proposed to be improved with new accessible pedestrian and bicycle pathways". It is unclear from the April 30th site plan how bicycle access is accommodated on this connector driveway.

TRIP GENERATION

- T29. Backup calculations for Trip Generation were not appended for reference. Calculations for the Office use appear to utilize the "Peak Hour of Generator" which generates a larger number of trips than the "Peak Hour of Adjacent Street." This represents a larger existing credit for proposed trips; recommend using "Peak Hour of Adjacent Street". The calculations for housing trip generation could not be verified. Provide calculation backup for review.

The trip generation calculations for the office were calculated using the "Peak Hour of the Adjacent Street." The trip generation rates for LUC 710 – General Office Building are similar when comparing "Peak Hour of Generator" and "Peak Hour of Adjacent Street." Therefore, we see how there was a misunderstanding. The ITE trip generation worksheets are provided in Appendix F for the revised TIR.

Review of the backup information shows the Applicant estimated the number of generated "Person" trips, which represents a larger number than the estimated "Vehicle" trips. This is expected as "Person" trips include all other modes in addition to driving, walking, bicycling, transit, etc. Since the Applicant's Traffic Impact Report assumed a vehicle occupancy rate of 1.0 persons per vehicle, this methodology is conservative. No further comment.

MODE SHARE

- T30. Suggest using Census Tract data for application of mode share to determine vehicle trips. Census data is more recent than the 2015 Master Plan and suggests a 7% increase in car trips when compared to the TIR.

Nitsch has reviewed the 2019 Census Tract data as a source of overall mode share within the project region. However, an appropriate adjustment still has to be made to account for the

proximity to the Minuteman Bikeway and public transit. The Census Tract data and the project specific mode-share are as follows:

Mode	Master Plan	TIR	Census Tract 3566.01	Revised TIR
Car	72%	67%	74%	69%
Transit	17%	19%	21%	21%
Bike	2%	5%	1%	3%
Walk	3%	3%	2%	2%
Taxi	1%	1%	0%	1%
Work From Home	5%	5%	2%	4%

BETA: The intention of the Census Tract information is to provide hyperlocal mode splits more consistent with the evaluated region/neighborhood. The Census Tract data should already represent the presence of the bike path and its effect on commuting to/from the MBTA station or other area uses. The Revised TIR decreased the Census Tract “Car” percentage by 5% and subsequently increased the Bike (2%), Taxi (1%), and Work From Home (2%) percentages. Increasing Taxi and Work From Home decrease the personal vehicle trips, but does not account for the “proximity of public transit and the bikeway.”

It should be noted that Census mode share data is based on the mode used for the longest distance on a trip. As a result, a trip where a resident uses their car to drive to Alewife and take the Red Line would be reported as a transit trip. Provide an assessment of this potential for increased car trips.

Although the methodology used in the previous TIR of applying slight mode adjustment based on proximity to commuting accommodation (i.e. bike trails, public transit stops, etc.) is an acceptable means of estimating, the mode splits were recalculated to match the Census Tract 3566.01 data per BETA’s required methodology.

An adjustment to the trip generation for the existing “Mill Building” was made based on the occupied gross floor area, as noted in R17a. This resulted in a larger credit taken for the existing use. Therefore, the net trip generation reported in the previous TIR is higher, thereby providing a more conservative analysis. However, the traffic capacity analysis was reconducted with the lower trip generation, and the results are presented in the revised TIR.

The updated TIR revised the existing trip generation of the “Mill Building” office space given the larger square footage. This resulted in a lower “net” number of “new” trips associated with the Project. The Revised TIR applied the Census Tract mode split to the revised Trip Generation. Trips were assigned to the roadway network based on distributions defined in the previous TIR. It was noted that this methodology results in a slightly lower increase in vehicle trips when compared to the previous TIR. The slightly reduced trip generation was found to represent a nominal decrease (1 second per vehicle) in overall delays and queues when compared to the previous TIR. As a result, the operational conclusions defined in the previous TIR are still valid. This updated methodology is acceptable. No further comment.

TRIP ASSIGNMENT

T31. Clarify one-way or two-way operation of site driveways. See comments T1 and T2.

The future site access for tenants of the Workbar and apartments is as follows:

- *Mirak Innovation Park west driveway will be ingress only;*
- *Ryder Street south driveway will be egress only; and*
- *Quinn Road will be two-way.*

This is represented on the Site Access Diagram (Figure 6). Access and operations will remain as existing for the abutters.

BETA: Recommend site access and circulation signage and markings be displayed on the Site Plan. Figure 6 shows two way “abutter site access” via the Mirak Innovation Park west driveway; clarify how resident access will be restricted while abutter access is allowed.

Signage will not be provided at the Massachusetts Avenue west driveway entrance as abutters will still have full access maintained. However, as shown on Figure 6 of the revised TIR and the Site Plan, wayfinding and regulatory signage will be placed at key locations to direct residents and Workbar tenants to the correct access/egress points. The existing monument ID sign at the end of the West Driveway (at Massachusetts Avenue) will be modified to display resident and Workbar entry only. Furthermore, upon signing a tenant lease agreement or Workbar membership, the user will be given a site circulation diagram along with documentation indicating that they will be penalized if the designated site circulation is not adhered to. An on-site transportation coordination will be present and responsible for maintaining compliance.

Response noted. See comment T2 regarding access-related parking and signage.

PARKING GENERATION

- T32. The 0.55 spaces per bedroom rate presented in Section 3.3 of the TIR does not definitely represent peak parking utilization of the three nearby complexes. Only one (Brigham Square Apartments) was counted at night, with the count ending at 8:00 PM. A count to determine peak parking utilization should be conducted during the late night or overnight hours. Recommend counting after 10:00 PM on a day other than Friday or Saturday. Demand rates should also consider if there are any vacant apartments at the comparable sites during the data collection period.

Brigham Square Apartments was the only complex that had attainable data during all count periods: weekday morning, midday, and evening, and Saturday mid-morning. In addition to our own on-site observations, the complex management companies provided the number of reserved and non-reserved spaces occupied on record. The apartment mix, peak utilization, and total parking lot spaces information obtained from the management companies was used to derive the project parking demand for comparable use. The apartment complexes chosen for the study are ones of similar size and proximity to public transit. At the time of the counts, vacancy rates for the developments ranged from 0-3%.

BETA: The intention of the comment relates to peak parking demand observed in the overnight hours when the majority of residents/tenants can be expected to be home and sleeping with vehicles parked on-site. As the residential component will be the primary land use, it will consume the most parking. It is expected that parking demand will be lower during the day as residents leave for their workplace. It is possible that the nearby sites were less utilized during the day but overfilled during the night time, suggesting a higher

parking ratio for this development. It is essential to compare sites during the known peak utilization period.

See Response 19a. New data was obtained from the Apartment Complexes, including additional Weekday night counts (11:00pm-1:00am). As expected, the new data and counts are consistent with the data reported in the previous TIR.

See Response T19.

- T33. Assuming an ITE Parking Generation based on Dwelling Units, the estimated parking demand would be 170 parking spaces. This is more consistent with that of the zoning by-laws. The by-laws do allow for a reduction in parking, provided adequate measures are provided to reduce personal vehicle reliance.

ITE Parking Generation calculates demand ratios based on national studies for similar uses of similar size. However, it was determined by the project team that the zoning code and ITE over-represent what will be required for this site, which is why we conducted the robust parking utilization study. The study concluded that the maximum required parking for the development is 107 parking spaces. The proponent is seeking a waiver from the municipal standards for parking ratios.

BETA: BETA concurs that utilizing similar local sites is an accepted industry practice for determining projected parking demand. See Response T32.

See responses R19a and R32a.

Noted in previous comment.

- T34. Clarify the derivation of the 85% factor applied to weekday mid-day parking occupancy in Table 12.

Based on our own on-site observations in addition to the information provided by the property management companies, it was originally calculated that the weekday midday parking occupancy represented 85% of the parking occupancy. Upon further review of the data, a more accurate representation of the weekday midday occupancy is 82% of the peak occupancy. Therefore the 82% now shown in Table 12 represents the percentage of peak occupancy during the weekday midday period. Parking occupancy calculations have been included in Appendix C of the revised TIR.

BETA: The parking information obtained at the Brigham Square Apartments showed a peak weekday parking demand of 99 vehicles at 6:30 AM (65% of the 153-space parking lot). This was compared with the maximum weekend parking demand of 85 vehicles at 9:00 AM (46% of the 153-space parking lot) and the maximum weekday midday demand of 71 vehicles at 12:30 PM (56% of the 153-space parking lot). This found the weekday midday peak has 18% less demand, and the weekend has 9% less demand. than the larger weekday peak at 6:30 AM. At issue is whether the 99 vehicles in the early weekday morning accurately represents peak demand, see Response T32. It is expected that peak demand would be higher in the overnight hours. A peak parking demand of 65% seems unreasonable and suggests that the nearby apartment complex provides over 50 parking spaces that are unused. Peak parking rates should be reviewed for all three comparable sites to verify the relation between mid-day and peak demand.

See response R19a. New data was obtained for all three developments, and, as expected the peak utilization is consistent with the data used in the previous TIR.

Noted in previous comment.

- T35. The peak parking rate for Arlington 360 was determined as 0.76 spaces per bedroom during a weekday mid-day. Application of this rate to the Project Site would result in a weekday mid-day demand of 142 spaces for residents alone, before considering the 40 spaces to be designated for Workbar tenants, which would result in a need for 182 parking spaces. Provide commentary clarifying why demand characteristics of the Project Site will differ from those of Arlington 360 or other comparable sites. Even at a rate of 0.55 spaces per bedroom during mid-day hours, the 103 space demand stated in the TIR plus the 40 spaces designated for Workbar results in a net deficit of 7 spaces.

As shown in Table 4 of the TIR, the Brigham Square Apartments is most representative of the proposed development, as it similarly located in proximity to Massachusetts Avenue and the Minuteman Commuter Bikeway and has a similar number of bedrooms. In addition, the Project parking garage will function the same as the Brigham Square Apartments garage; a shared lot with reserved and non-reserved parking. Therefore, utilizing the 0.55 spaces per bedroom would most accurately model the anticipated parking utilization for the 1165R Mass Ave Apartments. Note, the 0.55 spaces per bedroom is the calculated average rate for all apartment complexes but is also the exact rate calculated for the Brigham Square Apartments.

BETA: Backup parking information suggests a parking study was only performed for the Brigham Square Apartments which recorded parking demand (parked vehicles) in half hour intervals during the above mentioned time periods. The other two apartment complexes could not be observed due to security reasons. The parking demand reported for these complexes were obtained from Management which includes one peak demand number. It is unclear when this peak demand actually occurred and what it includes. While it can be assumed that the Brigham Square Apartments are an adequate representation, it would be helpful to have adequate data for all three comparable sites. See Response T32.

See response R19a. New data was taken for all three developments, but, as noted, only time-of-day data was able to be obtained for the Brigham Square Apartments and The Legacy. Therefore, the peak utilization was calculated based on the averages for all three developments; the utilization reduction during the mid-day and Saturday mid-morning was calculated based on the Brigham Square Apartments and the Legacy. The parking data is included in Appendix C of the revised TIR.

Clarifying information provided. No further comment.

CONSTRUCTION MANAGEMENT

- T36. A construction management plan should be provided for review.

A Construction Management Plan will be provided by the Project in later phases of the project permitting.

BETA: The Plan should be provided for Town and BETA review. It is important to consider the traffic impact of construction vehicles.

A Construction Management Plan will be provided for review and approval by the Town of Arlington prior to the commencement of construction.

Plan to be reviewed.

TRAFFIC OPERATIONS

- T37. Recommend these calibrations stay consistent for all conditions (existing, no-build, and build) to accurately represent the change in delays and queues as a reflection of changing volume.

Nitsch has revised the Synchro analysis and updated the critical gap times where applicable.

Issue Resolved.

- T38. Verify how the delays and LOS were combined for the five-legged intersections. It is expected that the delays were summed among common movements, though the reported values in Table 14, Table 15, and Table 16 do not match those reported in the Appendix. This is more specific to the morning peak hour analysis.

Given the limitations in the Synchro 10 traffic modelling software, a five-legged, unsignalized intersection is not possible to model as a single intersection. Therefore, the two five-legged intersections were each modeled as two smaller, separate intersections (nodes) and combined.

For each of the five-legged intersections, we determined a logical grouping to model the two nodes. At the intersection of Massachusetts Avenue and Appleton Street/Appleton Place/Commercial Driveway, we modeled Appleton Street and Appleton Place separately from the two legs of Massachusetts Avenue and the Commercial Driveway, with a short, imaginary roadway segment connecting them. Likewise, at the intersection of Massachusetts Avenue and Forest Street/Burton Street/Mirak Innovation Park West Driveway, we modeled the west leg of Massachusetts Avenue, Forest Street, and Burton St separately from the east leg of Massachusetts Avenue and Mirak Innovation Park West Driveway, with a short roadway segment connecting them, mimicking the actual layout.

Each movement across the overall intersection requires a movement at one or both of the nodes. To calculate the average delay for each approach across the full intersection, we performed the following steps:

- 1. Multiply the average delay on Approach A from the Synchro output for the associated node by the number of vehicles on Approach A, which gives the total delay on Approach A attributable to movements at only that one node.*
- 2. For the overall movements on Approach A that involve the other node, multiply the average delay on the associated approach at the other node by the number of vehicles making those movements from Approach A, which gives the total delay on Approach A attributable to movements at the other node.*
- 3. Add the two total delay numbers together to get the total delay on Approach A through the full intersection.*
- 4. Divide the total delay on Approach A through the full intersection by the number of vehicles on Approach A to get the average delay per vehicle on the approach.*

The calculations are included in Appendix G of the revised TIR.

BETA reviewed the above discussion and the calculation tables in the Appendix. The described methodology is acceptable. No further comment.

- T39. The reported Operations Summary Tables were found to vary slightly from results presented in the Appendix. The discrepancies are unclear, but generally do not affect the conclusions as reported.

Nitsch has reviewed the discrepancies. These were the result of the five-legged calculation methodology explained in T38. The calculations to obtain the results are in Appendix G of the revised TIR.

BETA: For all AM Peak Hour analysis conditions, the southbound Commercial Driveway at Mass Ave and Appleton Street should be reported as LOS A as there is no existing or proposed volume for this driveway during the AM Peak Hour.

The capacity analysis tables have been adjusted accordingly.

Issue resolved.

- T40. There are two missing 2025 Build Analysis worksheets in the Appendix. Provide for reference.

The worksheets are included in Appendix G of the revised TIR.

Worksheets were provided in Appendix H. No further comment.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

The Project is intended to provide on-site supply of transit information as well as develop a TDM plan in accordance with the Town. The following are proposed examples of TDM measures:

- Provide Orientation Packets to tenants and residents
- Provide interior and exterior bicycle storage, and repair workstations
- Explore electric vehicle charging stations
- Explore providing shared car service (e.g. zipcar)
- Establish a transportation coordinator
- Develop a Project website to disseminate information
- Develop a Transportation Monitoring Program to evaluate the TDM's effectiveness

BETA supports the development of a successful TDM. Coordination should be provided with the Town regarding implementation.

GENERAL COMMENTS

- T41. A sight distance evaluation should be provided.

As all site driveways are to remain at the existing locations, a sight distance evaluation was not deemed necessary for this report.

BETA: Use of existing roadways does not guarantee adequate sight distance. Existing sight distance should be evaluated. As part of the Site Design, explore methods to maximize sight lines.

A sight distance evaluation was conducted at each driveway. It was calculated that the stopping sight distance is adequate for both eastbound and westbound traffic at the Massachusetts Avenue driveway. Sight distance is limited to the west of the Ryder Street Driveway, therefore traffic calming measures are proposed by way of a speed table on Ryder Street at the driveway to reduce speed.

Sight distance West along Ryder Street is limited primarily due to the intersection of Forest Street (150 feet from the driveway) and existing on-street parking.

The proposed Speed Table is not shown on the Site Layout Plan. A speed bump is proposed for the Mass Ave Driveway at Quinn Road Connector.

The Sight Distance description of the revised TIR appears to reference an unrelated Site.

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

Very truly yours,
BETA Group, Inc.



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