April 22, 2021

Christian Klein, Chairman
Zoning Board of Appeals

Town of Arlington
50 Pleasant Street
Arlington, MA 02476

Re: 1165R Massachusetts Avenue - Arlington, MA
Comprehensive Permit Civil / Site Peer Review

Dear Chairman Klein:

BETA Group, Inc. (BETA) has completed a follow-up peer review of Civil and Stormwater related elements for the proposed Chapter 40B residential development located at 1165R Massachusetts Avenue in Arlington, Massachusetts. Our analysis of the civil and stormwater elements of the site plans and supporting documents for the above-referenced project are based on selected materials from the following available documents:

- Pertinent Documents/Sections of the Chapter 40B submission to the Arlington ZBA, including:
  - Section 3.2.6 – Report on Existing Condition
  - Section 3.2.10 – Recreation and Open Space Amenities
  - Section 3.2.11 – List of Requested Waivers
  - Section 3.2.13 – Impact Analysis of the Natural and Built Environment
  - Section 3.2.16 – Compliance with Master Plan
- Supplemental Site Design Information including:
  - Proposed Site Plan Documents, Proposed Residential Development, 1165R Massachusetts Avenue, Arlington, MA (16 Sheets), April 1, 2021 (Revision 6), prepared by Bohler Engineering (Development Plans);
  - L101 – Layout and Materials Plan, by Kyle Zick Landscape Architecture, dated 4/1/21
  - L102 – Planting Plan, by Kyle Zick Landscape Architecture, dated 4/1/21
  - L103 – Swale Planting Plan, by Kyle Zick Landscape Architecture, dated 3/23/21
  - Sheet 3 – Bridge Plan and Elevation, by Nitsch Engineering, dated 1/15/21
  - Drainage Report, by Bohler, revised 4/1/21
  - Response to Comments Letter from Bohler Engineering, dated April 6, 2021.
- MassDEP Stormwater Management Standards (SMS);

The following are our comments on the supplemental site development plans and supporting documents.

General

BETA's comments presented here relate to existing site conditions and the current conceptual project plans and figures available with respect to the civil / site / stormwater design associated with the Comprehensive Permit application for the proposed 1165R Massachusetts Avenue 40B housing project.

Part of this review includes an overall analysis of the existing site to confirm its suitability for the proposed project. At this preliminary phase, it is understood that the proposed site utilities such as the stormwater management system have not been fully designed and are shown preliminarily. A preliminary drainage analysis has been provided including supporting calculations.

Proposed Project

The proposed project includes construction of 130 residential units in four (4) apartment buildings along with associated access driveways, parking areas (total of 11 surface spaces) and garages, utilities, infrastructure, a Riverwalk, and stormwater management system improvements (the Project). The Project also proposes a new vehicular bridge over Mill Brook and proposes to re-route Ryder Brook. A Comprehensive Permit Application was filed with the Arlington ZBA under the M.G.L Chapter 40B provisions in June 2020.

Vehicular traffic into the Site will be from Massachusetts Avenue only, while vehicles exiting the Site can leave via Massachusetts Avenue or Ryder Street. The driveway connecting the Site to Ryder Street will only allow for one-way traffic.

Existing Conditions

The proposed Chapter 40B Residential Development is located at 1165R Massachusetts Avenue and includes two parcels that total approximately 2.3-acres of land, located between Ryder Street, Massachusetts Avenue, Quinn Road, and the historic Boston and Main Railroad (now the Minuteman Commuter Bikeway) in Arlington, Massachusetts (the Site). The Project Site is generally within an industrial/commercial area in Arlington and is bounded to the north, east, and South by Mirak Automotive Dealers and an Automotive Detailing business; and to the east by Construction/Contractor facilities and a condominium. Both Ryder Street and Forest Street (located to the west of the Project) are primarily residential neighborhoods.

The Project Site was originally developed in the 1800s as a mill and is almost entirely degraded. It is improved by former mill buildings, parking areas, and a single-lane vehicular bridge over Mill Brook. The onsite buildings are interconnected via breezeways and have undergone additions since the original development of the property. The primary structures consist of a 4-story brick building located northeast of Mill Brook (with single-story additions to the east and south) and a 3-story frame building located southwest of Mill Brook, which is connected to the 4-story building over Mill Brook by a breezeway.

A review of the current FEMA Flood Insurance Study for Middlesex County and the existing conditions topography presented on current Project plans indicate that the 100-year floodplain Base Flood Elevation associated with Mill Brook changes significantly, dropping from Elevation 103 feet north of Ryder Street to Elevation 90 feet at the southern limit of the Project. Based on the elevations of the top of the retaining walls that contain Mill Brook, the 100-year FEMA flood is contained within those walls. The existing northern driveway, however, is located within the 500-year flood plain Zone X. FEMA Floodway is also mapped along Mill Brook.

Civil / Site / Stormwater Review Summary:

Major elements of the preliminary site design include installation of a new site drainage system and relocation of Ryder Brook. The project also proposes a reduction in overall impervious area through provision of new landscaping. The project is presented as a redevelopment project under the MassDEP Stormwater Management Standards.

Based on BETA's review of the available Project plans, documents, and publicly available information, we respectfully provide the following comments and recommendations related to the Applicant's response and supplemental information.

SITE PLANS

2. There is no emergency access drive shown around the rear of the Buildings 1, 3, and 4.
   Recommendation: The Applicant must coordinate with the Arlington Fire Department to determine if an emergency access drive is required around the rear of the main site building.

   Applicant's response: The Applicant previously met with the Fire Department during a meeting in September 2020 and confirmed that emergency vehicle access was sufficient. The applicant will continue working with the Fire Department as the project moves forward.

   BETA 1: Written confirmation from the Fire Chief regarding adequacy for emergency access should be provided to the Board.

3. The northeastern portion of access driveway to the Building 2 parking garage (to the south of the proposed building) extends into existing pervious/vegetated area. The proposed edge of pavement does not tie into the existing edge of pavement. In addition, the proposed grading in this area will direct stormwater to the southeast, toward Map 57, Block 2, Lot 16A.
   Recommendation: The Applicant should provide the proposed grading and edge of pavement around Building 2 to demonstrate that surface runoff from this area will not be directed onto the property at #1155R Mass Ave or directly into Mill Brook without treatment.

   Applicant's Response: The proposed grading replicates existing drainage patterns. The applicant has added a perimeter pea stone gravel strip as described in the MassDEP Stormwater Handbook at the edge of pavement within the project site boundaries. This is shown on the revised plans.

   BETA 1: The proposed filter strip will provide improved water quality treatment for this area. It is recommended that the proposed grading at elevation 96 be adjusted to avoid concentrated flow across the filter strip. The installation of the filter strip needs to be coordinated with proposed landscaping features in the area.

4. According to the Architect's plans, areas of porous flexible pavement are proposed for the Riverwalk
   Recommendation: The Applicant should provide a detail of the pervious pavement section for review to evaluate its functionality.

   Applicant's Response: The applicant has further evaluated the options for walkway materials along Mill Brook and currently proposes an asphalt subbase and chip and seal surface. The decision to not use pervious pavement was based on the following:

- *The impact to stormwater runoff would be negligible*
- *This path was the only pervious pavement on the project and would require mobilization of large-scale equipment (not scaled for this walkway) for maintenance*
- *Concerns of clogging of the pervious pavement over time with sediment thus eliminating the benefit*

BETA 1: Overall peak runoff from the site will be reduced due to a decrease in impervious area. Water quality improvements are proposed through the installation of a water quality treatment unit. We do not object to the removal of the pervious pavement.

5. Areas for trash collection and snow storage are not identified on the site plan.
   Recommendation: The Applicant should identify potential areas for trash collection and snow storage on the site plan to confirm that these will not conflict with other site elements.

   Applicant's response: Trash storage will be maintained within the building. Small trash containers will periodically be brought outside from a storage area within the garage for pickup as needed. Additionally, snow storage areas are shown on the revised plans and are limited to the immediate curb lines where possible, but the majority of snow will need to be removed from the site when it impedes facility operations. A note has been added to the plans indicating this.

   BETA 1: No further comment at this time.

6. No erosion controls or sediment controls are shown on the site plans and no details have been provided.
   Recommendation: An erosion control limits should be shown on the site plans for review and erosion control details should be provided.

   Applicant's response: A Sediment & Erosion control plan, including appropriate details, is provided with the revised plans.

   BETA 1: A Soil Erosion and Sediment control Plan has been included with the revised plan set. The erosion controls as shown appear adequate for the proposed construction. The sediment controls should be coordinated with requirements included in any Conservation Commission approvals.

7. Standard details including catch basins (CB), manholes, tree filter boxes, utility trench, etc. should be added to the site plans.

   Applicant's response: Standard details are provided on the revised plans.

   BETA 1: Details have been provided. A detail for the installation of drain pipe through Mill Brook wall should be provided. It is suggested that the top course shown of the Pavement Section Detail be increased to 1 ½".

8. The sidewalk and driveway grading adjacent to the west side of Building 2 should be reviewed. The plans show the road grade at 6.6% and the sidewalk grade at maximum of 5%. This could result in significant elevation difference between the road and sidewalk.

Applicant's response: The driveway grade of 6.6% cannot be changed due to existing conditions and because of this, the adjacent sidewalk will need to be at the same grade. The note referring to maintaining a maximum sidewalk slope of 5% has been removed from that area of the revised plans.

BETA 1: The revised grading approach is acceptable.

9. The Plans depict Building 2 being set farther back from the Bank of Mill Brook (as compared to the existing building location). The plans do not specify how the area between the Brook and the building will be stabilized following construction.

   Recommendation: This area could be vegetated with native shade tolerant plants that will provide cover and/or perch habitat for bird species.

   Applicant's response: Plantings have been added between Building 2 and Mill Brook that are native and shade tolerant as shown on the revised plans.

   BETA 1: Plantings have been added. We are reviewing the appropriateness of proposed species.

FLOOD PLAIN

10. Based on the proposed Project layout, it is unknown if construction requires filling within the 100-year floodplain. Sufficient details have not been provided to determine if the work associated with construction of the new vehicular bridge over Mill Brook requires filling below the Base Flood elevation (94 feet). Compensatory storage is required on a 1:1 (per foot) basis by the Mass Wetlands Protection Act (310 CMR 10.57) and on a 2:1 basis by the Arlington Wetlands Bylaw if fill is proposed below the floodplain elevation.
    Recommendation: The Applicant should provide preliminary bridge elevation plans that depict the proposed bridge structure in relation to the floodplain elevation to confirm the Project will not result in fill of the 100-year floodplain.

    Applicant's response: The proposed bridge will be built upon the existing channel walls. The proposed bridge structure will be above the FEMA 100-year floodplain elevation and therefore there will be no impact to nor filling of the 100-year floodplain. Design plans for the new bridge are attached for reference.

    BETA 1: The bridge plan submitted shows a proposed deck slab built on the existing walls. It appears this type of construction will avoid impacts to the floodplain however no elevations are provided on the plan. As the design develops revised plans should be submitted showing proposed elevations including the bottom of deck elevation and the floodplain elevation, The extent of work required to the existing walls should be further detailed.

STORMWATER

11. The Applicant submitted a drainage report for the project prepared by Bohler in March 2021. The report includes a project narrative, an evaluation of Stormwater Management Standards and supporting calculations and documentation. A revised Drainage and Grading Plan dated March 10, 2021 was submitted on March 18, 2021.

12. The proposed design results in a net decrease in impervious area as compared to predevelopment conditions. Based on the reduction in impervious area there is a reduction in overall peak flow and volume from the Site.

13. The project proposes to relocate Ryder Brook into a 30" diameter pipe. The Brook currently discharges to Mill Brook through a 24" diameter pipe. Due to the complexities of the watershed draining to the existing 24" pipe, the analysis uses the maximum capacity of the 24" pipe as the design flow for the relocated Brook. This is a reasonable approach, provided that there is no history of flooding on the Site.
    Recommendation: The Applicant should confirm that there is no history of flooding on the Site associated with Ryder Brook.

    Applicant's response: With routine maintenance, the long-term owner of the property is not aware of any flooding that periodically occurs within Ryder Brook. The existing Ryder Brook channel is approximately 1.5 feet deep with a narrow bottom and drains to a headwall where it is conveyed to Mill Brook through a 24-inch concrete pipe. The proposed relocated channel will have a bottom width of 2-3 feet and a minimum depth of four feet, resulting in more than a doubling of capacity. The relocated channel will lead to a headwall where it will discharge through a 30" pipe that provides twice the capacity of the existing 24" pipe. Given this, the likelihood of any potential flooding will be greatly reduced. An Operation & Maintenance Plan is also included within the enclosed Drainage Report and provides recommended maintenance procedures for the Ryder Brook drainage swale. In addition, a low point is provided at the southeast corner of proposed Building #4, which would provide relief from flooding in the event that water in the relocated swale becomes backed up.

    BETA 1: Since there is no documented historic flooding related to the existing 24" Ryder Brook pipe, the assumption of flow through the proposed 30" pipe and open channel is appropriate for the analysis. No further comment at this time.

14. Only a qualitative analysis of the relocated Ryder Brook conduit has been provided. Calculations are required to demonstrate that the pipe for the relocated brook is adequately sized to prevent surcharging.
    Recommendation: Provide calculations for routing the 100-year storm through the proposed 30" pipe and open channel. The calculations should include the capacity of the proposed channel at the proposed headwall, evaluation of inlet control at the headwall and evaluation of the hydraulic grade line through the 30" pipe system. Potential tailwater affects at the discharge to Mill Brook should be considered.

    Applicant's response: The capacity of the existing 24-inch pipe is 26 cubic feet per second (CFS) and this flow was used as the 100-year base flow for the proposed relocated swale and headwall. When adding flows from areas on the site that drain to the proposed 30-inch pipe to this base flow, the total flow is 34 CFS. The minimum capacity of the proposed 30-inch pipe is 56 CFS and is therefore adequate to convey the 100-year flow. Additionally, the 100-year flow hydraulic grade analysis using the FEMA 100-year flood elevation of 94.5 feet as the tailwater elevation is included in Appendix F of the revised drainage report.

BETA1: The revised design of the Ryder Brook relocation including lengthening the open channel reduces concerns about surcharging within the 30" pipe. Localized flow from the site is now directed through a separate pipe system and directed through a water quality unit. The analysis as revised appropriately reflects that the proposed system is adequate for the site.

15. The analysis in the drainage report uses NOAA 14 rainfall data. As required by Arlington Wetland Protection Bylaw (Article 8) and Regulations for Wetland Protection (June 4, 2015), NOAA 14+ rainfall data should be utilized.

    Recommendation: Revise the drainage analysis utilizing NOAA 14+ rainfall data.

    Applicant's response: The enclosed drainage calculations are revised to utilize NOAA 14+ rainfall data.

    BETA 1: Rainfall data has been updated. No further comment.

16. The drainage report includes an analysis of the proposed pipe conveyance system but does not appear to account for roof runoff from the proposed buildings.

    Recommendation: Revise the drainage analysis to include the roof areas of the proposed buildings and show proposed discharge points from the roofs.

    Applicant's response: The drainage analysis is revised to include the roof areas.

    BETA 1: The analysis has been updated and appropriately reflects runoff from the roof areas. It is noted that a new 15" outfall is proposed into Mill Brook for the roofs from Buildings 1 & 3. A new 12" outfall is proposed into Mill Brook for the roof from Building 2. Confirmation should be provided demonstrating that runoff from these new outfalls is clean and does not require treatment.

17. No analysis is provided for the proposed 30" pipe within the driveway that will discharge to Mill Brook. This pipe collects runoff from several proposed drainage areas as well as the flow from the relocated Ryder Brook.
    Recommendation: Provide analysis of the proposed 30" pipe in the driveway including flow from CB-1, CB-2, YD-1, TD-1 and TD-2.

    Applicant's response: The drainage analysis is revised to include flows from the inlets to the 30" pipe.

    BETA 1: The storm drain system has been revised. A separate system collects site drainage from the paved areas and directs it to a water quality unit prior to connecting to the proposed 30" pipe. The revised analysis appropriately reflects this revision.

18. The drainage report notes that a water quality unit will be provided to address removal of TSS. The plans do not show the location of the water quality unit.
    Recommendation: Show the location of the water quality unit and the connections to the proposed drainage system.

Applicant's response: The location of the water quality unit and connections to the unit is shown on the revised plans.

BETA 1: The revised drainage design includes the proposed water quality unit to treat runoff from the paved areas. No further response at this time.

19. The proposed development includes parking in garages within the buildings. No information is provided on floor drains within the garages. It is assumed that the floor drains will connect to the sanitary sewer system.
Recommendation: Show garage floor drain connections.

Applicant's response: Garage floor drains will be connected to the sanitary sewer system. Connections will be shown on the architectural plans to be included with the building permit.

BETA 1: Architectural plans should be submitted to the Board to confirm the location of floor drain connections.

20. No drainage control is shown at southeast corner of Building 2 or along the driveway to the west of Building 2. The pavement appears to drain directly to the Bank of the River.
Recommendation: Consider incorporating a water quality structure to treat runoff from this area.

Applicant's response: It is not feasible to provide a structural water quality unit between the pavement and Mill Brook channel wall so the applicant has added a perimeter peastone gravel strip as described in the MassDEP Stormwater Handbook, to provide water quality treatment at the edge of pavement within the project site boundaries. A low point is proposed downstream of the perimeter gravel strip for further collection of sediment. A detail of the perimeter peastone gravel trench has been added to the plans.

BETA 1: The proposed filter strip will provide improved water quality treatment for this area. The installation of the filter strip needs to be coordinated with proposed landscaping features in the area. Maintenance requirements for the filter strip should be included in the O & M plan.

21. Sheet L101 of the Architectural plan set shows "Bio-swale plantings" in the proposed swale for relocated Ryder Brook north of Building 4. Is a bio-swale proposed for this area?

Applicant's response: A bio-swale is not being proposed for the relocated Ryder Brook. A bio-swale relies on vegetative growth on the bottom of the swale and is most effective when the water within the swale is traveling slowly or can be detained in small pools. These types of swales are generally used for small, lightly developed drainage areas and also include planting media within the bottom of the swale. The proposed relocated swale for the subject project will provide a small amount of sediment removal within the voids of the proposed stone channel bottom, however it is designed to convey water through and out of the site as quickly as possible. Native vegetation will be planted on the side slopes for habitat enhancement, and although it may provide very limited water quality treatment, it is not intended to function as a bio-swale.

Details of the alignment, grading and proposed plantings of the relocated Ryder Brook have been provided within the revised plans.

BETA 1: It is agreed that the Ryder Brook relocation will perform better as a conveyance system. The extended open swale section will reduce the potential for surcharging within the system.

22. Three area/yard drains proposed, and one CB are proposed within the vegetated area north of Building 4, and two CBs are proposed within the Road/parking area. Also, a trash rack is proposed at the entrance to the 30" pipe for the relocated Ryder Brook. No details are proposed on CBs or yard/area drains.
    Recommendation: Provide details for the proposed drainage structures and trash rack.

    Applicant's response: Details of the drainage structures and trash rack are provided within the revised plans.

    BETA 1: No further comment.

23. Three trench drains are proposed:
    a. At entrance of garage for Building 4.
    b. At toe of the driveway slope, just downgradient of the Proposed Bridge over Mill Brook.
    c. Within bicycle parking/site entrance area between Buildings 1 and 4.

    No details are provided on the proposed trench drains.
    Recommendation: Provide details for the proposed trench drains.

    Applicant's response: Details of the trench drains are provided within the revised plans.

    BETA 1: No further comment.

UTILITIES

24. The Utility Plan (Sheet C-501) and Grading and Drainage Plan (Sheet C-401) show the proposed sewer/water/drainage utilities schematically with no materials specified. In addition, no size for the utilities are depicted except the sewer and only select elevations are specified.
    Recommendation: We recommend the Applicant coordinate with the Arlington Public Works Department regarding all proposed site utility connections to the public utilities in Ryder Street and Massachusetts Avenue to confirm that the connections are appropriate and comply with Town of Arlington construction standards.

    Applicant's response: The applicant will coordinate all utility connections with Arlington Public Works as necessary to ensure they comply with their standards.

    BETA 1: Final plans showing the utility connections should be submitted to the Board.

25. The Existing Conditions Plan shows an existing onsite sewer line and easement located immediately east of Mill Brook. The proposed Project appears to require relocation of a segment of the sewer line near the proposed bridge.
    Recommendation: Details of the sewer relocation including pipe material, manholes, pipe lengths and slopes should be provided to confirm that the proposed relocation will function appropriately.

Applicant's response: The sewer pipe belongs to the MRWA and is not being relocated. The applicant will work with the MRWA for permitting of proposed connections to the sewer main.

BETA 1: Final plans showing the sewer connection should be submitted to the Board.

26. The Existing Conditions Plan shows the 24-inch culvert that carries Ryder Brook to its confluence with Mill Brook. The Plans do not describe whether this culvert will be abandoned or removed.
Recommendation: The Applicant should describe how this culvert will be handled curing construction of the proposed Project.

Applicant's response: The existing 24" pipe will remain in place until the drainage swale relocation and 30" pipe have been constructed. The 30" pipe will use the same discharge point as the 24" pipe at the Mill Brook channel wall, and the transition from 24" to 30" at that point will be scheduled during a forecasted period of dry weather. After the 30" pipe is operational, the 24" pipe will be removed. The demolition plan has been revised to note this.

BETA 1: The approach is reasonable pending any conditions from Conservation Commission approvals. No further comment at this time.

CONSTRUCTION

27. The proposed Project as currently shown appears to require import of a significant amount of material during construction. The adjacent neighborhoods are thickly settled with narrow streets and on-street parking which may present challenges for large construction vehicles traveling to/from the project site.
Recommendation: We recommend the Applicant provide a preliminary/draft Construction Management Plan that would identify anticipated number of truck trips, potential truck routes, onsite staging and material laydown areas, hours of operation, etc.

Applicant's response: A Construction Management Plan will be provided to the Board for review.

BETA 1: The CMP will be reviewed once it is submitted

Conclusion:

The proposed stormwater management system has been revised since the previous review. The stormwater management approach still relies on the Project's classification as a redevelopment Project under MassDEP Stormwater Management Regulations. This requires that the stormwater standards be satisfied to the maximum extent practicable. The design relies on an overall reduction in impervious area on the site and minimal stormwater BMPs. The primary drainage infrastructure includes a series of area drains, trench drains, and catch basins. Water quality treatment is proposed through a proprietary water quality unit.

The revised design and analysis provide improved operation of the proposed Ryder Brook relocation and site drainage. In addition to the upgraded 30" outfall to replace the existing 24" outfall to Mill Brook, two

new outfalls are proposed. The Applicant should document that these outfalls receive clean runoff and no water quality treatment is required.

If you have questions about any of these comments, please feel free to contact us at any time. Thank you.

Very truly yours,
BETA Group, Inc.

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cc:

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