

August 28, 2024

Mr. Gregory Rondeau, Chairman  
Franklin Planning Board  
355 East Central Street  
Franklin, MA 02038

**Re: 6 Forge Parkway  
Site Plan Peer Review Update**

Dear Mr. Rondeau:

BETA Group, Inc. has reviewed the revised site plans for the proposed development entitled "**Site Development Plans for 6 Forge Parkway**" located in Franklin, Massachusetts. This letter is provided to inform you of our updated findings, comments, and recommendations relative to the proposed development.

### **BASIS OF REVIEW**

The following documents were received by BETA and formed the basis of the review:

- Application for Approval of a Site Plan, dated July 6, 2022, including the following attachments:
  - Form P
  - Certificate of Ownership (Quitclaim deed)
  - Certified Abutters List
- Plans (23 sheets) set entitled: **Site Development Plans for 6 Forge Parkway, Franklin, MA**, Prepared by Allen & Major Associates, Inc. Woburn, MA dated February 5, 2024, revised to August 26, 2024.
- Architectural plans (2 sheets) entitled **Forge Parkway Warehouse**, Schematic First floor Plan and Exterior Elevations prepared by PROCN and dated January 27, 2024.
- **Drainage Report, 6 Forge Parkway, Franklin, Massachusetts**, prepared by Allen & Major Associates, Inc. dated February 5, 2024, revised June 20, 2024.
- **Response to Review Comments Letters**, prepared by Allen & Major Associates, Inc., dated April 5, 2024, May 1, 2024, May 20, 2024, and August 16, 2024.
- **Waiver Letter**, prepared by Allen & Major Associates, Inc., dated March 29, 2024.

Review by BETA included the above items along with the following, as applicable:

- **Zoning Chapter 185 From the Code of the Town of Franklin**, current through October 2019
- **Zoning Map of the Town of Franklin, Massachusetts**, attested to April 30, 2019
- **Stormwater Management Chapter 153 From the Code of the Town of Franklin**, Adopted May 2, 2007, including amendments dated February 17, 2021.
- **Subdivision Regulations Chapter 300 From the Code of the Town of Franklin**, current through January 1, 2016
- **Wetlands Protection Chapter 181 From the Code of the Town of Franklin**, dated August 20, 1997
- **Town of Franklin Best Development Practices Guidebook**, dated September 2016

## Compiled Review Letter Key

BETA reviewed this project previously and provided review comments in letters to the Planning Board dated March 20, 2024, April 19, 2024, May 13, 2024, May 30, 2024, and July 10, 2024 (original/previous comments in standard text). Allen & Major Associates, Inc. (AMA) has provided responses (*responses in italics*) and this letter includes BETA's comments on the status of each (**latest status in bold**).

### INTRODUCTION

The project site includes one parcel, assessors Map 272, Lot 5, with a total area of 5.91 acres located at 6 Forge Parkway in the Town of Franklin (the "Site"). The Site is located within the Industrial District. Route 140 and the Commuter Rail Line are located along the northerly edge of the site. The lot to the east is a vacant lot which is in the Business District. The Site is not located in the Water Resource District. The existing Site is primarily a vacant parcel of land. A portion of the entrance driveway into the adjacent lot at 4 Forge Parkway is located on the parcel. There are several utility easements along the frontage and the southerly property line which are associated with the overall development and the stormwater collection system on the 2 abutting lots at 4 & 8 Forge Parkway.

Topography at the Site is generally directed east and north. A rip rap lined swale along the Route 140 Right of Way intercepts runoff from the site and directs it east towards the railroad and an area of vegetated wetlands at the northeast corner of the parcel. According to data available from MassGIS, this wetland resource area connects to Mine Brook further to the east. Based upon the topography, it appears that a portion of the site was graded and flattened in conjunction with the development of the 2 abutting lots. Grades east and north of this area are very steep. The development at 8 Forge Parkway is approximately 14-15' higher than the site with slopes down to the edge of the existing driveway into 4 Forge Parkway and the previously disturbed area. There are 3 stormwater discharge points onto the site from 8 Forge Parkway along the southerly property line. Two of these outfalls will be impacted by the proposed development. Most of the proposed development will be located within this previously disturbed area. The Site is not located within a FEMA mapped 100-year floodplain, an NHESP-mapped estimated habitat of rare or endangered species, or any other critical area. NRCS soil maps indicate the presence of Charlton-Hollis-Rock Outcrop complex with a Hydrologic Soil Group (HSG) rating of A (high infiltration potential), and Canton fine sandy loam with HSG B (medium infiltration potential).

The project proposes to construct a 35,250± sq. ft. warehouse facility with loading docks and a ramp at the rear of the site. The building will be divided into two separate tenants. 2,000 sq. ft. of office space will be provided for each tenant in the front of the building. Access into the site will be a shared driveway with 4 Forge Parkway for 270± feet. The 2 existing access driveways into the parking lot at 4 Forge Parkway will be maintained with a single-entry point to the proposed structure beyond the 2<sup>nd</sup> access point. Parking will be provided along the front and northwest corner of the building. Driveway access will be provided around the entire building, with the pavement area at the rear of the building dedicated to truck movement for access to the ramp and 4 loading docks. Utilities including gas, sewer, and electric will be brought in from Forge Parkway and/or stubs that were provided for future development. Water will be brought in from an easement and main at 8 Forge Parkway. Stormwater management is proposed via a new subsurface infiltration system at the rear of the building and a smaller subsurface system at the start of the driveway. Associated landscaping will be provided primarily along the front of the building and the entrance driveway. A precast concrete block retaining wall ranging in height from 3-7', will be installed along the southerly edge of the development to support the slope down from the parking at 8 Forge Parkway. A similar type of wall will be installed at the northwest corner of the development adjacent to

the RTE 140 Right of Way, which will support the grades associated with the development to a height of 3-7'. No lighting is shown on the site plans.

## **FINDINGS, COMMENTS, AND RECOMMENDATIONS**

### **GENERAL**

- G1. The locus map identifies the wrong lot and should be corrected. It appears to show 25 Forge Parkway as the locus.

*AMA: The locus map on the cover sheet has been updated as requested.*

**BETA2: Locus map revised. Issue resolved.**

### **ZONING**

The Site is located within the Industrial Zoning District. Lots surrounding the site are also located in the Industrial Zoning District except for the vacant lot to the east, which is located in the Business Zone. The proposed development is to construct a 35,000+ sq. ft. warehouse office, which is an allowed use in the Industrial zone.

### **SCHEDULE OF LOT, AREA, FRONTAGE, YARD, AND HEIGHT REQUIREMENTS (§185 ATTACHMENT 9)**

The existing lot meets the requirements for lot area, depth, frontage, and width, although it incorrectly notes the width as 46'. A Zoning Schedule for the proposed conditions is shown on Sheet C-102.

- Z1. As previously noted, the lot width in the table should be changed to reflect the definition under the bylaws. In addition, the circle should also be shown on the plan.

*AMA: The lot width has been updated as requested and the circle is shown on the plan, see sheet C-102.*

**BETA2: Plan revised. Issue resolved.**

- Z2. Based upon the presence of the office space, a Special permit from the Planning Board is required in accordance with the bylaws.

*AMA: The office space in the proposed building is in support of the industrial use and is not a separate tenant space. The proposed project will not increase the estimated water consumption over 15,000 gallons per day. We therefore believe that a Special Permit is not required.*

**BETA2: Information provided. Issue resolved.**

- Z3. The table indicates that the maximum building height and stories are to be determined. The architectural plans indicate that the building height will be 29'-6", however they do not note the number of stories. These figures should be on the table.

*AMA: The building height and number of stories has been added to the table as requested.*

**BETA2: Plan revised. Issue resolved.**

### **PARKING, LOADING AND DRIVEWAY REQUIREMENTS (§185-21)**

As previously noted, access to the Site will be a common driveway from Forge Parkway which will be shared with the existing use at 4 Forge Parkway. The 2 existing openings into the 4 Forge Parkway site will be maintained and the access into the site will be a 24' wide continued access driveway into the

development. Loading docks and an access ramp into the building will be provided at the rear of the building for each tenant.

Parking requirements defined by the Zoning Bylaw are for office and Warehouse Uses, 1 space is required per 400 sq. ft. of gross floor area; for Warehouse use 1 space is required per 1,000 sq. ft. of gross floor area. The areas provided in the parking requirement summary result in a total required parking space count of 42 spaces. 51 spaces are provided on site.

- P1. Correct the table to indicate that 51 standard spaces are provided not 49.

*AMA: The Off-Street Parking and Loading Summary Table indicates that there are 51 parking spaces, 48 standard and 3 accessible.*

**BETA2: Plan revised. Issue resolved.**

- P2. The entrance driveway is approximately 500' long before it gets to the site development. In addition, there is only one way entrance driveway. BETA recommends that the access driveway alignment be forwarded to the fire department for their review.

*AMA: The fire department has reviewed the site plan and provided their comments.*

**BETA2: BETA defers to the Fire Department. No further comment.**

- P3. The lot line between 4 & 6 Forge Parkway is in the middle of the existing access driveway. The existing conditions plan does indicate that there are any easements on the parcel which indicate that either party has access and utility rights. BETA recommends that easements associated with this driveway and utilities be shown on the plans.

*AMA: The existing conditions have been updated to show the "Common Driveway" easement as recorded in Bk 14286 Pg 223 of the Norfolk Registry of Deeds.*

**BETA2: Plan revised. Issue resolved.**

- P4. Just before the driveway enters the site development area, the rip rap slope on the left side will extend off the property. Note 15 on sheet C-103 indicates that A temporary Easement may be required. BETA recommends that the designer document the ability to obtain the easement from the abutter for this construction.

*AMA: The alignment of the driveway has been modified slightly so as to reduce the need for an offsite temporary construction easement.*

**BETA2: Plan revised to remove offsite grading. Issue resolved.**

- P5. In accordance with §185-21.C(5) of the bylaws, "Parking lots for 20 or more cars shall contain or be bordered within five feet by at least one tree per 10 parking spaces,...." For the proposed 51 spaces this would equate to 6 trees. The Landscaping Plan on Sheet L-101 shows 18 trees around the front parking lot and entrance driveway.

*AMA: No response required.*

**BETA2: No further comment.**

- P6. The existing driveway has been modified/widened to better accommodate trucks entering the site. While encroachment into the opposing travel lane has been eliminated at the intersection, it remains beyond the first entrance into the 4 Forge Parkway property. Also, WB-67 trucks entering the site will need to traverse the sidewalk that is proposed through the mountable island,

creating a safety issue for pedestrians. Recommend replacing the mountable island with a hatched area of pavement and evaluating if a median can be provided for pedestrian refuge due to the increased crossing distance. A high visibility crosswalk should be provided. Additional modification to the limits of the modified driveway should be evaluated to determine if truck encroachments into the opposing travel lane can be further reduced. Turning movements for trucks exiting the site must also be provided.

AMA3: An updated truck turning plan has been submitted and is based upon discussions with BETA. Additionally, an additional sheet has been added to illustrate the exiting movements of the trucks.

BETA4: Plans have been revised to minimize encroachment for entering vehicles, show a high visibility crosswalk, show revised driveway limits so trucks don't traverse the sidewalk, and exiting movements have been provided. Turning movements for the exiting WB-67 design vehicle show significant encroachment into the opposing travel lane in the site driveway as well as Forge Parkway for a right-hand turn. Left-hand turning movements, which are not anticipated to be frequent, are shown traversing the raised median on Forge Parkway. As currently designed, the proposed driveway is not adequate to accommodate the WB-67 design vehicle.

AMA4: Updated truck turning plans have been submitted and are based upon discussions with BETA. The northern side of the existing driveway has been increased further to allow for additional clearances for truck movements. Based upon the updated plans, all truck movements, both ingress and egress do not impact the clear path of travel for cars in the opposing movements.

**BETA5: The plans have been revised to show no encroachment of truck turning movements into opposing travel lanes or turning lanes. The driveway has been widened to accommodate truck turns and a yellow painted median island at the driveway is provided to separate directions of traffic and for trucks to use to make a turn. Issue resolved.**

- P7. Confirm the limits of the existing median island and location of light pole in front of the site on Forge Parkway. Aerial and street views do not appear to match with the configuration depicted on the plans.

AMA3: The median lines were taken from town GIS information, which was out of date. They have been updated as requested.

**BETA4: Plan revised. Issue resolved.**

- P8. Clarify if the proposed sidewalk and driveway modifications on the 4 Forge Parkway property require additional easements or rights of entry to be completed.

AMA3: Based upon existing agreements, there are no new easements or rights of entry required for this work. Once construction commences, it will be coordinated directly with the operators of the hotel property.

**BETA4: Information provided. BETA notes this is a private property matter. No further comment.**

## **SIDEWALKS (§185-28)**

No public sidewalks are proposed under this project. There are sidewalks across the frontage on Forge Parkway. A concrete sidewalk is proposed across the front of the building to access the front doorway

entrances into the building. No other sidewalks are proposed to provide pedestrian access around the building or out to Forge Parkway.

### **CURBING (§185-29)**

- C1. Based upon the site plans, the entirety of the parking lot, including the access drive and loading dock areas will have vertical precast concrete curbing.

*AMA: No response required.*

**BETA2: No further comment.**

### **SITE PLAN AND DESIGN REVIEW (§185-31)**

The project has been submitted for Site Plan Review and is required to conform to the requirements of this section. There is no proposed site lighting shown on any of the site plans or architectural plans.

- SP1. There are 2 preliminary architectural plans included in the submission including all 4 elevations and a floor plan.

*AMA: No response required.*

**BETA2: No further comment.**

- SP2. There is no site lighting identified or shown on the plans. In accordance with §185-31, C(3)(l), A photometric plan with sufficient illuminance values, to determine compliance with §185-31.1C(4)(e) is required.

*AMA: A photometric plan has been provided as requested.*

**BETA2:** A photometric plan has and shows light spillage onto the adjacent 4 Forge Parkway and 8 Forge Parkway properties. Revise lighting design to eliminate/minimize spillage.

*AMA2: An updated photometric plan has been provided minimizing the spillage over the property line.*

**BETA3: Plan revised. BETA defers to the Town regarding the remaining minor light spillage.**

- SP3. Plans should indicate if any signs are being proposed and provide a detail if applicable.

*AMA: A sign has been illustrated on the site plans including an anticipated sign. A formal sign permit application will be filed upon approval of the site plans by the sign installer.*

**BETA2: Information provided. No further comment.**

- SP4. In accordance with §185-31, C(4) Review criteria. The Planning Board shall approve a site plan only upon its determination...

(b) Reasonable use is made of building location, grading, and vegetation to reduce visibility of structures, parking area, outside storage, or other outdoor service areas (e.g., waste removal) from public views.

Based upon the 2021 Aerial imagery available it is difficult to determine if the vegetation along Route 140 is sufficient to screen the loading docks from view from the roadway. In addition, because of the steep grades to the floor of the valley from the loading docks area will be covered in riprap without any vegetation. BETA recommends that the applicant provide additional information to the Board to allow that determination to be made.

*AMA: Based on available aerial and street view imagery, it appears that a substantial vegetated berm exists and will separate and screen the development from Route 140. See Images 1 and 2 below. [Note: Images excluded for brevity]*

**BETA2:** Some screening will be provided by the berm and vegetation to remain; however, BETA notes this will be limited to vegetation located within the roadway right-of-way as vegetation on the lot will generally be cleared in this area. BETA recommends for the applicant to discuss this issue with the Board.

*AMA2: As requested by the board, several cross sections were provided to show the extents of the existing vegetation and that the project is not visible from the road.*

**BETA3: BETA defers to the Town on this issue. No further comment.**

## UTILITIES

Each of the structures will be provided with new service connections to the utilities in East Central Street for sewer, water, and stormwater. Electricity and communication will be connected overhead. Detailed review of utilities is anticipated to be provided by the DPW and Fire Chief, as applicable.

## STORMWATER MANAGEMENT

The overall impervious surface coverage across the site will be approximately 103,000 sq. ft. and overall site disturbance will exceed 1.0 acre and it is therefore subject to the stormwater by law. Two proposed subsurface infiltration systems will be provided on site to treat and infiltrate the runoff from the site. The first system will be located north of the access driveway at its starting point at the edge of the existing driveway into 4 Forge Parkway parking lot. It will treat and infiltrate the runoff from the first 75' of the entrance driveway. The 2<sup>nd</sup> will be located behind the building and will infiltrate and treat the runoff from the remainder of the proposed development.

### STORMWATER MANAGEMENT REGULATIONS (CHAPTER 153)

The project proposes to disturb land in excess of one acre within the Town of Franklin. It is therefore subject to the Stormwater Management Regulations. The project is also required to comply with the Town of Franklin Best Development Practices Guidebook (BDPG). Compliance with these regulations is outlined below and throughout the following sections.

### SUBDIVISION REGULATIONS - STORMWATER MANAGEMENT REGULATIONS (§300-11)

Additional requirements for stormwater management are outlined in §300-11 of the Town of Franklin Subdivision Regulations.

SW1. The applicant has proposed the use of PVC and HDPE pipe for the stormwater collection system. In accordance with §300-11.B(2.a) the pipe should be RCP.

*AMA: The applicant respectfully requests a waiver to the requirement to use reinforced concrete pipe (RCP). Form R is included herewith.*

**BETA2: A waiver request has been provided. BETA defers to the Town.**

### MASSDEP STORMWATER STANDARDS

The project is subject to the Massachusetts Stormwater Standards as outlined by MassDEP. Compliance with these standards is outlined below:

**NO UNTREATED STORMWATER (STANDARD NUMBER 1):** *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.* The project proposes two new outfalls at the rear of the parcel. The first is a new outfall from the proposed stormwater improvements. The second is a new outfall which will collect the 2 existing outfalls along the southerly property line and redirect this flow to the rear of the parcel.

SW2. Runoff from a portion of the existing access driveway flows to the Forge Parkway system. The calculations should address the issue of compliance with the standards for this portion of the site.

AMA: *The project does not impact the flows to Forge Parkway. Providing calculations for the runoff to Forge Parkway would show no change and seems unnecessary.*

BETA2: Although this portion of the site driveway is outside the proposed limits of construction, the applicant should evaluate if a practicable improvement can be made for the approximate 3,000 sq. ft. of impervious area that currently appears to drain untreated to the Forge Parkway drainage system, such as catch basin inlet filters or hoods.

AMA2: *Runoff is captured by two existing catch basins in the driveway prior to flowing to Forge Parkway. Both existing catch basins are already fitted with hoods.*

BETA3: Information provided. No further comment.

BETA4: The design has been revised and now includes new impervious area being directed to the Forge Parkway system. The calculations should address the issue of compliance with the Standards for this portion of the site. Also, indicate the disposition of the existing inlet stone on Forge Parkway that will be within the limits of the mountable curb island.

AMA3: The new rumble strip is composed of cobble stones and is not considered impervious.

**BETA5: Island material revised. Issue resolved.**

SW3. There are 2 outfalls along the southerly property line that discharge onto the parcel from 8 Forge Parkway onto the proposed development area. Each of these discharge points are located within easements on the subject parcel. The design proposes to pipe this flow to the east and discharge to a point on the easterly slope below the fill line. Each of these discharge points currently flows through an existing stormwater feature and/or an area that will qualify them for LID credits. Accordingly, collecting this runoff and piping it directly to a discharge will result in an untreated discharge point. The treatment and infiltration provided for these 2 existing discharge points must be maintained by the proposed design.

AMA: *Additional research was conducted to investigate the topography on site, in the vicinity of the two discharge pipes described above. It was found that a swale exists on site that conveys the stormwater from the existing discharge pipes towards the rear of the site. The stormwater model has been updated to include times of concentration given this new information and an updated report is provided with this letter. Subsequently, since these discharges are existing and the means of conveyance is simply changed from an open channel to a closed pipe network, they would not be considered a "new discharge" point.*

BETA2: The HydroCAD model has been revised to account for this existing swale. BETA completed a site observation during a storm event and observed the swale to vary in cross-section, depth, and slope. Due to variations in topography there also appears to be hump on the east side of the swale that acts as a weir, thereby restricting flows from the upper reaches and promoting

infiltration over 400+ feet of pervious surfaces. The designer should evaluate options to maintain existing treatment.

*AMA2: Although it is noted by the reviewer that the existing swale varies, the swale modeled in HydroCAD is representative of the average conditions along the length of the existing conveyance course, both in width and cross section. Based upon the survey data and a comparison of published LIDAR elevation data (both current 2021 & historic 2011), the design intent of the swale was for conveyance to the east side of the property and not as a means of impedance to facilitate infiltration. In the proposed condition, stormwater from this offsite flow is attenuated utilizing an extensive stone apron then conveyed through more than 200 feet for wooded vegetation, which a wooded buffer is a means of treatment.*

**BETA3:** The pipe flow is anticipated to provide less treatment than in the existing conditions and will not provide any opportunity for infiltration. The designer should consider a modification, such as revising the new conveyance pipe to be perforated with stone bedding beneath to maintain the existing condition. The designer should also review grading downstream of the discharge. A portion of the stone will be located parallel to the proposed contours and proposed grading will create a channel of concentrated flow.

*AMA3: Converting a portion of the conveyance pipeline to perforated is not feasible due to its proximity to the proposed retaining wall on the downgradient slope. The introduction of additional infiltration directly behind a retaining wall should be avoided. Please note that the proposed infiltration for the project does exceed the requirements for both the development site and the contributing area associated with this conveyance pipeline. Please refer to updated "Groundwater Recharge" calculations. Additionally, the proposed riprap apron has been re-aligned slightly to be more perpendicular to the existing contour lines and will dissipate the energy of the stormwater eliminating the potential for concentrated flow.*

**BETA4: Information provided indicating the provided recharge volume is in excess of that required for the new impervious area and is anticipated to be adequate to replace any infiltration lost in the existing swale. Issue resolved.**

- SW4. Since there will be vehicular access into the building, floor drains will be required and connected with the existing municipal sanitary sewer collection system. This flow will need to flow through an oil water separator prior to discharge into the system. It should be shown on the plan and a detail provided.

*AMA: An oil water separator has been added to the Utilities Plan, sheet C-104, as requested.*

**BETA2:** Plan revised. Provide detail for oil/water separator.

*AMA2: The requested details were provided on sheet C-507.*

**BETA3: Information provided. Issue resolved.**

**POST-DEVELOPMENT PEAK DISCHARGE RATES (STANDARD NUMBER 2):** Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. The project proposes a net increase in impervious area and changes to site hydrology. Stormwater runoff will be mitigated via 2 new subsurface infiltration BMPs. Calculations indicate a decrease in peak discharge rate to all design points.

- SW5. The existing discharge culverts coming from the south have not been included in the overall analysis. By routing these 2 discharge points directly to the wetlands at the northeast corner of

the parcel (DP 3) the design will decrease the Tc for this flow. The change in peak flow rates associated with this routing should be accounted for in the design. The calculations provided only document that the capacity of the proposed culvert will be greater than the 2 existing tributary culverts.

*AMA: As mentioned above, the stormwater model has been updated to include the runoff from these two discharge pipes and an updated report is provided with this letter.*

**BETA2:** Model revised. Adjust the Tc flow path for subcatchments A-1 and B-2 to extend to design point SP-3 to reflect the change from flow through a grassed swale to flow through an HDPE pipe. Update time of concentration. A minimum Tc of 6 minutes should be utilized if necessary. Also, update the post-development HydroCAD model to use a cover type of "roof" for the A-1 and B-2 buildings, rather than "grass."

*AMA2: The Tc flow path for both A-1 and B-2 are set to 8 minutes to represent the flow through the internal roof drainage system of the building. The flow path is adjusted through the downstream reach to account for the reduction in path of travel.*

**BETA3:** The 8 minutes TC flow path represents the time needed for stormwater runoff to reach the offsite catch basin but does not account for the additional travel time to SP-3. This travel time should include flow through a swale (existing) or pipe (proposed) followed by shallow concentrated flow down the hillside to the wetland boundary.

The model has been revised to utilize an impervious cover type for the building roofs.

*AMA3: In general, the Tc calculation should end at the next node in the routing diagram. So if you use a separate reach to model the swale, you should not include the reach as a Tc segment. The Tc flow path for both A-1 and B-2 are set to 8 minutes to represent the flow through the internal roof drainage system of the building. The conveyance pipeline represented by node 1P, DMH-8, DMH-9 & DHM-10 is the next node in succession after the Subcatchments A-1 & B-2. The flow path for the above-mentioned area is adjusted through the downstream reach (Reach R1) to account for the reduction in path of travel from the new outfall to the wetland system. The same methodology was utilized in the existing conditions watershed analysis.*

**BETA4: Information provided. No further comment.**

**RECHARGE TO GROUNDWATER (STANDARD NUMBER 3):** *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable.* NRCS soil maps indicate that soil in the area of proposed infiltration system is Charlton-Hollis-Rock complex with a Hydrologic Soil Group (HSG) rating of A (high infiltration potential) and a Canton fine sandy loam with a Hydrologic Soil Group (HSG) rating of B (Moderately high infiltration potential). The proposed subsurface infiltration system will provide the static storage volume required for all the impervious surfaces on site.

SW6. The existing impervious surfaces at the front of the site which will continue to flow into the Forge Parkway System should not be excluded from the overall recharge requirement.

*AMA: Although the flow characteristics remain unchanged, the area described above has been added to the recharge requirement calculation, as requested and indicates that the previously provided infiltration is sufficient to meet the criteria.*

**BETA2: Calculations revised. Issue resolved.**

- SW7. The 2 existing discharge culverts from the southerly parcel each discharge to a potential infiltration area. Directly routing this flow to the rear of the parcel will bypass this potential. This should be addressed in the report.

*AMA: As mentioned above, through additional investigations, it was determined that these two existing culverts are directed to the rear of the site via an open channel and not to an infiltration practice as the comment states. The stormwater model has been updated to include the runoff from these two discharge pipes and an updated report is provided with this letter.*

**BETA2: Refer to Comment SW3.**

- SW8. Based upon the size of Infiltration system 2, in accordance with the stormwater standards, 2 additional test pits within the limits of the system are required.

*AMA: The stormwater manual requires one test pit per 5,000 square feet of basin area. The infiltration system has a footprint of 7,871 square feet meaning that 2 test pits are required. Test pit "GEO-TP-5" was conducted in the footprint of the practice and test pits "GEO-TP-3" and "GEO-TP-4" were both conducted within 15-20 feet of the practice. We respectfully request that the advancement of additional confirmatory tests pits prior to the start of construction be made a condition of approval.*

**BETA2:** The Standards require a minimum of three test pits for each infiltration basin. Only one of the conducted test pits was located within the basin footprint and has an associated seasonal high groundwater elevation (2.75' below the proposed system bottom). TP-3 was terminated at a depth of six feet due to refusal. In consideration of the critical nature of this system to the site development, additional test pits should be performed within the footprint of the basin.

*AMA2: The requirement for test pits for infiltration basins is to conduct the "borings or test pits in the layer where infiltration is proposed". As four test pits (TP-2 thru TP-5) and five borings (GEO-1 thru GEO-5) were all advanced into or past the layer where infiltration is proposed, it is our professional opinion that the minimum exploration has been met. Contrary to the review comment, there was no ledge encountered within TP-3 nor any of the test pits conducted on the parcel and that refusal within TP-3 was likely a boulder, unable to be moved by the small backhoe on site conducting the exploration and presumed to be movable during full excavation activity on site during construction.*

**BETA3:** As previously noted, limited explorations have been conducted within the footprint of the basin. Comment remains.

*AMA3: Additional test pits are scheduled to be conducted next week. We believe there is a high level of probability that the test results will be consistent with the remainder of the site. Accordingly, in the event the Board is satisfied on all other matters, we do respectfully ask the Board to consider making the submission of the final test pit results a condition of approval with the caveat that if the test results do vary significantly the applicant will comply with BETA Group, Inc.'s recommended course of action.*

**BETA4:** BETA recommends for the designer to provide a verbal or preliminary update on the results of the test pits at the next hearing. BETA does not object to the requirement for test pits to be completed as a condition of approval; however, if the Board chooses to include this condition BETA recommends that test pits are completed prior to plan endorsement.

*AMA4: The additional test pits have been added to the updated plans. Based on these new test pits there was a slight modification required for the small bio-retention area near the hotel driveway.*

**BETA5:** New test pits conducted within the limits of Infiltration System 2 indicate estimated seasonal high groundwater at elevations 265.3 (TP-102, weeping) and 266.9 (TP-103, redox). Revise the system, which currently has a proposed bottom of stone elevation of 266.0, to provide a minimum of 2 feet of separation to groundwater.

*AMA5: TP-102, TP-103 and TP-104 have been shown on the plans based upon field survey information and the surface elevation are representative of this. Based upon comparison of the frimpter analysis of the conducted test pits without redox features and weeping only, the data was not consistent with information gathered from other test pits which exhibited redox features. For Infiltration System 2 you have two good data points from Redox features that show adequate separation of the system. We understand that should conditions change in the field during construction that alternate measures may be warranted.*

**BETA6:** Based upon the test pits with identified redox features, adequate separation to groundwater will be provided. With the understanding that subsurface soil conditions will be observed during construction and that the engineer of record recognizes that differing site conditions may require redesign of the system, BETA has no further comment.

SW9. There is no test pit data for proposed infiltration system 1 at the 4 Forge Parkway entrance driveway. The bottom of the stone beneath the chambers will be set at Elevation 271.50. This elevation is 2.5' lower than the existing stormwater basin at the rear of the 4 Forge Parkway site. The nearest test pit TP-8 encountered ledge and groundwater at 13'. The plans state that test pits will be conducted at the time of construction. However, BETA recommends that a test pit be conducted during the design phase to ensure that the design can be implemented, since the design options for this location are limited by space constraints.

*AMA: Contrary to the review comment, there was no ledge encountered within TP-8 nor any of the test pits conducted on the parcel. As there was no redoximorphic features indicated in TP-8 and seepage was observed to be 13' from the surface (@Elev 266.7+/-) which is approximately 4.8 feet below the bottom of this stormwater basin, it is unlikely that the soil conditions will contradict those found at TP-8. We respectfully request that the advancement of additional confirmatory tests pits prior to the start of construction be made a condition of approval.*

**BETA2:** BETA concurs there was no ledge encountered in TP-8; however, it was located approximately 150 feet from the proposed infiltration system. A test pit within the system footprint should be conducted during the design phase.

*AMA2: As there was no redoximorphic features indicated in TP-8 and seepage was observed to be 13' from the surface (@Elev 266.7+/-) which is approximately 4.8 feet below the bottom of this stormwater basin, it is unlikely that the soil conditions will contradict those found at TP-8. Additionally, the requirement for test pits for infiltration basins is to conduct the "borings or test pits in the layer where infiltration is proposed". As there were a total of 13 tests (borings & test pits) all of which were all advanced into or past the layer where infiltration is proposed, we respectfully request that the advancement of additional confirmatory tests pits prior to the start of construction be made a condition of approval.*

BETA3: BETA recommends for test pits to be conducted during the design phase. Comment remains.

AMA3: *Additional test pits are scheduled to be conducted next week. We believe there is a high level of probability that the test results will be consistent with the remainder of the site. Accordingly, in the event the Board is satisfied on all other matters, we do respectfully ask the Board to consider making the submission of the final test pit results a condition of approval with the caveat that if the test results do vary significantly the applicant will comply with BETA Group, Inc.'s recommended course of action.*

BETA4: Refer to comment SW8.

AMA4: A&M Response: See response to SW8.

BETA5: Test Pit TP-101 indicates that groundwater was encountered at elevation 271.3 with no redox features noted. Additional information (e.g. frimpter analysis or well data) should be provided to support that the observed groundwater elevation is representative of the estimated seasonal high. BETA notes that no groundwater was encountered at the elevation of the redox features identified in TP-103.

AMA5: Based upon comparison of the frimpter analysis of the conducted test pits without redox features and weeping only, the data was not consistent with information gathered from other test pits which exhibited redox features. Based upon this comparison, it is our professional opinion that the weeping encountered within the test pits is consistent with water level elevations throughout the site and should be utilized to determine the ESHWT.

**BETA6: With the understanding that subsurface soil conditions will be observed during construction and that the engineer of record recognizes that differing site conditions may require redesign of the system, BETA has no further comment.**

SW10. The fill slope along the northerly edge of Infiltration system 2 is greater than 3:1 as it extends from the crest at elevation 273.0± to a low point at Elevation 241.0 at the northeast corner. For grades steeper than 2:1, the designer is proposing a riprap covered slope. The design has proposed an impermeable liner along the down gradient edge of the system. However as noted the liner will only extend as deep as the excavation limits associated with system installation. Based upon the elevation BETA recommends that the system be setback a minimum of 50' from the slopes greater than 3:1.

AMA: *The current design has the bottom of the excavation (El 265.75) which more than 25' from the 3:1 slope area. Additionally, the plans have been updated to extend the impermeable barrier down to an elevation of 260.0 which is the lowest point of naturally occurring soils within the system. It is our professional opinion that between these two measures, there is a highly unlikely chance that there will be any seepage into the slope areas from the infiltration system.*

**BETA2: Measures provided. Issue resolved.**

SW11. At the northeast corner of Infiltration System 1, there will be a need for approximately 6' of fill below the lower stone layer. In addition, there is approximately 3' of fill above the original A & B horizon soils which must be removed. The detail for the system should be modified to identify the limits of excavation and specify the backfill material.

AMA: *A note has been added to the infiltration system detail explaining the requirement to remove the existing fill below the system, as requested.*

**BETA2:** A note has been provided on Sheet C-504 indicating that buried fill material in the subgrade will be removed and replaced with native soils. Provide note identifying requirements for backfill material to be placed between the system bottom elevation and the existing ground surface. Backfill material must meet or exceed the hydraulic conductivity utilized in the HydroCAD model. Based upon data obtained in conjunction with comment SW8, BETA recommends for a simple cross-section detail to be provided to assist the contractor during construction.

**AMA2:** A cross-section showing the area in question has been added to sheet C-107, as requested. It is noted on the section, and on the detail on sheet C-504, that once the fill material is removed it shall be replaced with dense-graded crushed stone (Massachusetts department of transportation [MassDOT] item M2.01.7), or gravel borrow (MassDOT item M1.03.0 type b).

**BETA3:** Sheet C-107 does not appear to be included in the revised submission dated May 1, 2024. Well graded materials such as gravel borrow and dense grade are not anticipated to provide the same hydraulic conductivity as the native materials. Consider an alternative material such as sand borrow.

**AMA3:** A cross-section showing the area in question has been added to sheet C-107, as requested. It is noted on the section, and on the detail on sheet C-504, that once the fill material is removed it shall be replaced with in situ material and compacted per the geotechnical engineer's recommendations. Should import materials within this area be required, it shall meet the gradation of MassDOT item M1.04.1.

**BETA4:** Cross-section provided and acceptable replacement material specified. Issue resolved.

**TOTAL SUSPENDED SOLIDS (STANDARD NUMBER 4):** For new development, stormwater management systems must be designed to remove 80% (90% per Town Bylaw) of the annual load of Total Suspended Solids (TSS).

The project is required to treat the 1.0-inch water quality volume per Town Bylaws. The proposed infiltration systems will provide the static storage needed to comply with the standards and the bylaws. Pretreatment for the primary system at the rear of the parcel will be through deep sump catch basins, proprietary separators, and an isolator row prior to infiltration. The treatment and infiltration facility at the front of the parcel will utilize a proprietary inlet control and a rain garden as pretreatment prior to infiltration.

SW12. The impervious surface area tributary to CB 1 is greater than 0.25 acres. In accordance with Volume 2, Chapter 2 of the standards, the impervious surface area tributary to a deep sump catch basin should be less than 0.25 acres. BETA recommends that this design be modified to meet the criteria.

**AMA:** Catch basin CB-1 is proposed to be a double grate structure, with a 5' diameter, which increases its inlet capacity and storage capacity. The impervious area directed to CB-1 is approximately 13,000 square feet which is appropriate for a double grate catch basin.

**BETA2:** The proposed water quality unit and isolator row will provide adequate pretreatment. No further comment.

SW13. The TSS removal rate for the proprietary separator should be limited to 45% which reflect actual rates achieved as documented by the EPA.

**AMA:** Although this is not an accurate statement as these systems have provided data that indicates, their systems exceed 80% TSS removal and also have received NJCAT supporting those

*claim, the calculations have been updated to limit the TSS removal rate to 45%. Updated calculations have been provided.*

**BETA2: Calculations revised. Issue resolved.**

**HIGHER POTENTIAL POLLUTANT LOADS (STANDARD NUMBER 5):** *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads (LUHPPLs) require the use of specific stormwater management BMPs. The project is not considered a LUHPPL – not applicable.*

**CRITICAL AREAS (STANDARD NUMBER 6):** *Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas. The project is not located within a critical area – not applicable.*

**REDEVELOPMENT (STANDARD NUMBER 7):** *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. The Site has been designed to meet the standards without considering the redevelopment issues associated with the site.*

**EROSION AND SEDIMENT CONTROLS (STANDARD NUMBER 8):** *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities. As the project proposes to disturb greater than one acre of land, it will be required to file a Notice of Intent with EPA and develop a Stormwater Pollution Prevention Plan (SWPPP). Erosion control measures are depicted on the plans include silt fence, inlet protection, stabilized construction entrance, dust control, and designated stockpile area.*

SW14. The applicant is reminded that a Stormwater permit from the Franklin DPW is required based upon the size of the disturbance.

*AMA: Understood.*

**BETA2: No further comment.**

**OPERATIONS/MAINTENANCE PLAN (STANDARD NUMBER 9):** *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed. A Stormwater Operation and Maintenance Manual was provided with the Stormwater Management Report.*

SW15. There is a list of Supplemental Information noted on page 25 of the drainage report. Each of these items should be attached directly to the O & M manual for the site and issued as a single document.

*AMA: The intent is to attach the items described above and issue it as a single document.*

**BETA2: Information provided. Issue resolved.**

**ILLICIT DISCHARGES (STANDARD NUMBER 10):** *All illicit discharges to the stormwater management system are prohibited. A signed Illicit Discharge Compliance Statement was provided with the submission.*

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

Mr. Gregory Rondeau, Chairman

August 28, 2024

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Very truly yours,  
BETA Group, Inc.



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Senior Project Manager



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cc: Amy Love, Planner