July 8, 2022

Town of Billerica
Planning Board
365 Boston Road
Billerica, Massachusetts 01821

Attn.: Ms. Isabel Tourkantonis
Director of Environmental Affairs

Kristel Bennett
Director of Health

Re: **101 Billerica Ave - Peer Review - Stormwater**

Dear Ms Tourkantonis and Ms Bennett:

BETA Group, Inc. has received a copy of documents submitted for the project entitled: **101 Billerica Ave Building 2 Billerica, MA**. This letter is provided to outline BETA's findings, comments, and recommendations.

Basis of Review

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

- Response to BETA Planning Comments letter dated June 28, 2022, from by Kelly Engineering Group, Inc.
- Response to BETA Stormwater Comments letter dated June 28, 2022, from by Kelly Engineering Group
- Response to DPW Comments letter dated June 28, 2022, from by Kelly Engineering Group, Inc.
- Response to Traffic Comments memo dated June 24, 2022, from MDM Transportation Consultants, Inc.
- Site Plan and Plans to accompany SWPPP (10 sheets) entitled ***Site Development Plans for 101 Billerica Ave., Building 2 Billerica MA***, dated May 6, 2022, revised June 28, 2022, prepared by Kelly Engineering Group, Inc., Braintree, MA
- Landscape Plans (1 sheet) entitled ***Site Development Plans for 101 Billerica Ave., Building 2 Billerica MA***, dated May 6, 2022, revised June 22, 2022, prepared by Kelly Engineering Group, Inc., Braintree, MA
- Photometric Plan entitled ***101 Billerica Ave., Building 2 Billerica MA***, including Luminaire cut sheets, dated April 26, 2022, revised June 24, 2022, prepared by U.S. Architectural Lighting & Sun Valley Lighting, Palmdale, CA
- ***Stormwater Management Report for 101 Billerica Ave., Building 2 Billerica MA***, dated May 6, 2022, with Addendum dated June 28, 2022, Operation and Maintenance Plan, and soil boring logs, prepared by Kelly Engineering Group, Inc.
- **SWPPP Plans**, dated June 28, 2022, prepared by Kelly Engineering Group Inc.

Compiled Review Letter Key

BETA reviewed this project previously and provided review comments in a letter to the Planning Board dated December 17, 2021 (*original comments in italics*). Kelly Engineering Group (KEG) and MDM Transportation Consultants (MDM) provided responses (responses in standard text). BETA's comments on the status of each are provided in this letter (***status in bold italics***).

Introduction

The 5.54± acre project site is located on the east side of Billerica Ave. Billerica, MA. The parcel is currently developed with a two two-story building (40,869 sq. ft. footprint), paved parking areas, utilities and stormwater management system.

The site is within the Industrial Zoning District. There are mapped wetland resource areas in the northwest portion of the site as well as off-site along the north and south property lines. The property is not in proximity to FEMA mapped 100-year flood zone, stormwater critical areas, estimated habitats of rare wildlife or priority habitats of rare species. Green Engineering Map 46 shows the flood area extended onto the west side of the site. NRCS soil maps indicate the presence of Urban land with no hydrologic soil group rating (HSGR).

The proposed work is within 100' of the FEMA 100-year Flood Zone and within the limits of Green Engineering Floodplain. The proposed work is also partially within the buffer zone of wetland resource areas, and therefore will require obtaining an Order of Conditions from the Billerica Conservation Commission. Stormwater management systems are subject to the MassDEP Stormwater Management Standards and the Billerica Stormwater Management Bylaw and Regulations.

The Applicant proposes to remove existing buildings and pavements to construct a 51,200± SF building with a 19,122± sq. ft. mezzanine and associated parking areas and utilities, additional landscaping, and installation of new stormwater management features.

BETA conducted a site visit on 6/3/2022 to assess existing conditions. Field conditions were found to be generally in accordance with the existing conditions plan. Comments associated with this site visit are as noted throughout this report.

Billerica Board of Health Rules & Regulations

The project is subject to the requirements of Chapters 5 and 6 of the Board of Health Regulations. Per the Stormwater Management Bylaw, Chapter 6 of the BOH Regulations applies to the project as it will disturb greater than 1 acre of land. Conformance to Chapter 6 is discussed in the Stormwater Management section below.

Building floor elevation of 125' is 2 foot or more higher than the estimated seasonal high groundwater, based on ESHGW listed on the plans throughout the Site.

Environmental Regulations (Chapter 5 of the Billerica BOH Rules and Regulations)

A portion of the project parcel is within the Green Engineering flood plain (Map 46). The Map depicts a flood plain associated with an area of wetlands on either side of Billerica Ave (Elev. 120' ± NGVD) which extends onto the southern portion of the Site. No flood zone is depicted in this area on FEMA FIRM mapping. Based on proposed grading, work within the flood plain will include small portions of the proposed southwestern site entrance and associated tree clearing.

Work within 25 feet of the flood plain includes paving and tree clearing. The proposed building appears to be greater than 100 feet from the limit of the flood plain.

B1. *Depict limit of Green Engineering Flood Plain on the plans.* KEG: The Green Engineering Flood Plain line has been added to the plans. ***BETA2: Plan revised – issue resolved***

B2. *Obtain required Administrative Determination of Applicability (§5.5.005(2)).* KEG: The proposed building does not encroach upon the floodplain. The finished floor of the proposed building is at elevation 125.0 (NAVD) which is located above the green flood plain elevation of 119.17 (NAVD). ***BETA2: Per §5.5.005(2), an administrative determination of applicability is required in the event that work or alterations is proposed within one hundred feet of floodplains or the floodway. Portions of the proposed work including but not limited to paving, tree clearing, and utility installation are within 100 feet of the green engineering flood plain. No extra effort is required, this will be addressed at the BOH meeting in conjunction with the Stormwater Permit.***

B3. Provide information on anticipated noise, odors, and waste materials anticipated from the proposed use (§5.7.001(1)). KEG: A tenant is not known however all activities will be conducted within the building, with proper disposal of materials per any regulations, and ventilation will ensure no odors. ***BETA2: BETA defers to the Board.***

STORMWATER MANAGEMENT

The stormwater management design proposes to generally retain existing flow patterns by routing stormwater runoff to an existing stormwater basin / wetland system located on the abutting lot to the south. Conveyance to the stormwater basin is provided via a new closed drainage system consisting of catch basins, drain manholes, and water quality inlets. Runoff from the building roof is proposed to be routed to a subsurface recharge system with overflow to the new closed drainage system.

Stormwater runoff from the closed drainage system is directed to two existing outfalls which convey runoff to the southern wetland system. Outfalls are located within the limit of the wetlands and riprap aprons are provided to control erosion and sedimentation.

STORMWATER MANAGEMENT REGULATIONS
(CH. 6 OF THE BILLERICA BOH RULES AND REGULATIONS)

The project proposes to disturb land in excess of once acre within the Town of Billerica. It is therefore subject to the Stormwater Management Regulations and is required to obtain a Stormwater Management Permit from the Board of Health. Compliance with these regulations is outlined below and throughout the following sections.

SW1. *Indicate the watershed basin that the project is located within and EPA's watershed and waterbody assessment and TMDL and/or impairment status of the downgradient waterbody. Indicate measures to address pollutant(s) of concern (§6.6.011(2)(b)(iv)).* KEG: The site is located in the Concord River Basin MA82A-08. This section of the Concord River Basin is not impaired. The adjacent sections MA82A-07 and MA82A-09 are category 5 and are included in the Draft Pathogen TMDL for Concord River Watershed. ***BETA2: Information provided – issue resolved.***

SW2. *Provide profile for proposed drainage trunk line (§6.6.011(2)(c)(iii)).* KEG: We respectfully request a waiver from this section to provide a profile of the proposed drainage lines. Rims, inverts, pipe sizes, and slopes are all shown on the Sewer and Drainage Plans. A majority of the trunk lines are existing to remain. ***BETA2: BETA defers to the Board regarding the proposed waiver.***

SW3. *Provide granite curb inlet for all catch basins adjacent to curbing (§6.7.009(21)).* KEG: A waiver was respectfully requested from this section in the submittal to the Board of Health. ***BETA2: BETA defers to the Board regarding the proposed waiver.***

SW4. *Revise all drainpipes to include a minimum of 2.5 feet of cover (§6.7.009(24)).* KEG: The drainage system utilizes existing drain lines that traverses the site. The drain lines have approximately a minimum of 2 feet of cover. This exceeds the minimum cover requirements from the manufacturer ADS's requirement of 1.33 feet. In addition, as outlined in the waiver request submitted to the Board of Health, existing grades limit the cover over the proposed pipes at the loading dock and proposed curb cut to Billerica Ave. A waiver was respectfully requested from this section in the submittal to the Board of Health. ***BETA2: Explanation provided. BETA has no issue but defers to the Board regarding the proposed waiver.***

SW5. *Provide grate at outfalls greater than 24" in diameter to prevent ingress (§6.7.009(26)).* KEG: A grate has been proposed at the 27" outfall. ***BETA2: Grate provided – issue resolved***

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 proposed to retain two existing outfalls which discharge runoff to wetland resource areas. Stormwater runoff from the project area will be treated by water quality inlets/units prior to discharge.

SW6. *Provide riprap aprons at outfall discharge point to control erosion. Include calculations for sizing of riprap aprons. (Length, width, riprap depth, and riprap D50).* KEG: Flared end sections of the outfalls are located on the wetland line. Construction of riprap aprons would occur in bordering vegetated wetlands. To minimize impacts to wetlands, riprap aprons are not proposed. Existing conditions at these outlets are improved with the reduction of flow. ***BETA2: It is the Conservation Commission's practice of relocating existing outfalls out of wetland resource areas. Revise plan accordingly.***

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 reduction in impervious area and minor changes to site hydrology. Stormwater runoff will further be mitigated via a new subsurface recharge system. Calculations indicate a decrease in peak discharge rate and runoff volume to all watersheds.

SW7. *Expand limit of watershed to include the proposed entrance at Billerica Ave.* KEG: Portions of Billerica Ave drains to onsite wetlands. The existing and proposed watersheds have been revised to include portions of Billerica Ave. ***BETA2: Plan revised – issue resolved.***

SW8. *Review western/northwestern limit of pre-development Watershed 1. Based on survey and field visit, existing parking lot runoff that is not capture by nearby inlets will flow overland towards Wetland B.* *KEG: The existing and proposed watersheds to Billerica Ave. have been revised to flow to Wetland B.* ***BETA2: Plan and model revised – issue resolved.***

SW9. *Provide flowpaths on watershed plans. Review time of concentration calculation for watersheds 2 and 3.* KEG: The time of concentrations for watersheds 2 and 3 has been revised. ***BETA2: Plan revised – issue resolved.***

SW10. *Provide detail for trench drain.* KEG: Trench drain detail has been added to the revised site development plans. ***BETA2: Detail provided – issue resolved.***

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 modifications is predominantly Deerfield Sandy Loam with HSGR A (high infiltration) and Urban Land with no assigned HSGR.

Recharge is proposed via a new subsurface infiltration system which will capture runoff from proposed roof drains. As the project is a redevelopment and proposes a net reduction in impervious area, an improvement in groundwater recharge compared to pre-development conditions is anticipated.

Per the Town of Billerica Board of Health Rules and Regulations, a redevelopment project tis required to retain the volume of runoff equal to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped Site. The required volume is approximately 11,500 cubic feet. Hydraflow calculations have been provided to demonstrate that the subsurface infiltration system will provide the required recharge volume.

SW11. *Conduct soil tests at the location of the proposed recharge system. Soil tests must be conducted by a registered Professional Engineer or Massachusetts Soil Evaluator (6.7.009.(12)).* KEG: The site is currently occupied by a tenant. Borings have been completed by the geotechnical engineer and submitted herewith. The boring locations are shown on Sheet 6. The infiltration system has been sited with 2' separation to groundwater. Given the site is occupied the applicant is agreeable to conducting test pits to confirm the boring results during construction as recommended in SW12. ***BETA2: Four boring logs have been provided with the revised submission. One soil boring, SH-3, was conducted within 50' of the proposed recharge system. This log indicates groundwater at 4.5' below grade and probably bedrock at 6.5' below grade. Soil characteristics are identified as sand.***

BETA recommends a condition requiring test pits to be conducted in the footprint of the proposed infiltration system prior to construction.

SW12. *Recommend a condition that an agent of the town observe native soils after excavation for subsurface system to confirm design assumptions.* KEG: This can be placed as a condition. ***BETA2: Include Condition.***

SW13. *Clarify model used for calculation of provided recharge volume.* KEG: The required recharge volume has been achieved by recharging the proposed roof runoff by taking credit for the infiltration volume which will be recharged into the ground prior to spilling over the baffle, as well as the storage volume of the chambers. These volumes are represented in the hydrographs and pond reports in Attachment C of the Stormwater Management Report dated May 6, 2022. ***BETA2: Information provided – issue resolved.***

SW14. *Provide information from subsurface system manufacturer to determine required setback from building foundation.* KEG: The manufacturer does not have a required setback to building foundation. According to MassDEP Stormwater Handbook, recharge systems shall be setback a minimum of 10' from building foundations. Cultec systems have been installed at the 10' setback on numerous occasions. KEG has reached out to Cultec and they have verified that 10' is their minimum. ***BETA2: Information provided – issue resolved.***

SW15. *Revise subsurface recharge system to correctly identify the number of proposed units (9 rows of 7 chambers).* KEG: The plans have been corrected. ***BETA2: Plan revised – issue resolved.***

TOTAL SUSPENDED SOLIDS (STANDARD NUMBER 4): *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids (TSS)*. The project includes treatment of pavement areas via proprietary water quality units. In some areas, treatment will be supplemented by deep sump catch basins. The resulting TSS removal rate are listed as between 89% and 94%.

The project is required to treat the 1.0-inch water quality volume (See Standard 5). Water quality volume is provided via the proposed proprietary units in excess of what is required. A Long-Term Pollution Prevention Plan has been provided as part of the Operation and Maintenance Plan.

SW16. *Provide calculations for provided phosphorus and nitrogen removal rates.* KEG: Phosphorus removal calculations have been added to the revised Stormwater Management Report. The stormwater management system provides 50% phosphorus removal as well as recharge 0.8 inch of runoff volume in the proposed subsurface recharge system. Nitrogen removal is not regulated in Chapter 6 Stormwater Management Regulations, nor the State Standards. Constructed wetlands achieve 20% to 55% nitrogen removal. The project is limiting lawn surfaces with use of natural vegetation which will further reduce nitrogen. ***BETA2: Calculations provided – issue resolved.***

SW17. *Recommend removing credit for street sweepings for TSS worksheets. A street sweeping program must meet strict requirements as outlined in the MA Stormwater Handbook to qualify for this credit.* KEG: The TSS removal worksheet has been revised to remove street sweeping. ***BETA2: Worksheet revised – issue resolved.***

SW18. *Provide required 44% pretreatment for the existing catch basins that will direct stormwater runoff to DMH-5 and the proposed subsurface infiltration system.* KEG: The subsurface infiltration system is designed to only infiltrate clean roof runoff. Runoff is controlled via the outlet control structure. Stormwater from dmh-5 will bypass the infiltration system. ***BETA2: Design intent clarified – 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 considered a LUHPPL under the definition of a parking lot with high intensity uses (1,000 vehicles trips per day or greater) and is required to comply with this section. A Spill Prevention and Control Plan has been provided with the Stormwater Management Report.

SW19. *Revise narrative to identify the Site as a LUHPPL.* KEG: The site is not a LUHPPL. The NPDES Multi-Sector Industrial General Permit does not cover the land use nor does the proposed light manufacturing use does not fall under category ii heavy manufacturing (chemical plants petroleum refineries, etc.). The site does not generate 1,000 vehicle trips per day. ***BETA2: Upon further review, the >1,000 vehicle trips per day referenced in the Traffic Study are distributed amongst the business center as a whole, rather than the Site. Issue resolved.***

SW20. *Provide measures for emergency shut-off and spill containment prior to discharge to the detention basin or the subsurface system.* KEG: Spill prevention response and containment measures are provided in the Stormwater Management System Operation and Maintenance Plan. In an emergency, outlets will be plugged so that hazardous material do not enter resource areas. ***BETA2: Information provided – issue resolved.***

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 in a critical area – **standard not applicable**.

REDEVELOPMENT (STANDARD NUMBER 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable.* The project is considered a redevelopment. Certain standards may be met only to the maximum extent practicable.

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 including silt sack and silt sock.

SW21. *Provide Stormwater Pollution Prevention Plan (SWPPP) (§6.6.013(1)).* KEG: Attached is the Plan to Accompany SWPPP. At this time a contractor is unknown. Full SWPPP will be prepared once contractor and site contractor are selected. ***BETA2: BETA recommends a condition that requires a copy of the signed SWPPP be submitted prior to the preconstruction meeting.***

SW22. *Provide estimate of total area expected to be cleared or disturbed by excavation, grading, or other construction activities (6.6.013(3)(c)).* KEG: The estimated land disturbance area is 5.0 acres. ***BETA2: Information provided – issue resolved.***

SW23. *Provide location and implementation schedule for temporary and permanent seeding, vegetative controls, and other stabilization measures (6.6.013.(3)(m)).* KEG: See Plan to Accompany SWPPP. A full comprehensive SWPPP document will be provided to the Town and BETA for review prior to construction once a contractor and site contractor are selected. ***BETA2: See S21***

SW24. *Provide description of construction and waste materials expected to be stored on-site (§6.6.013(3)(n)).* KEG: A full comprehensive SWPPP document will be provided to the Town and BETA for review prior to construction once a contractor and site contractor are selected. ***BETA2: See SW21.***

SW25. *Provide construction tracking pad at all site entrances.* KEG: See Plan to Accompany SWPPP. 2 Construction gates are shown. ***BETA2: Plan revised – issue resolved.***

SW26. *Provide measures to prevent sedimentation into open excavations for subsurface infiltration systems during construction.* KEG: See Plan to Accompany SWPPP. Sediment Fence is provided around subsurface recharge system. ***BETA2: Measures provided – issue resolved.***

SW27. *Provide inspection and maintenance requirements for temporary erosion controls.* KEG: Specific inspection and maintenance requirements for erosion control measures will be detailed in the full SWPPP which will be provided to the Town and BETA for review prior to construction once a contractor and site contractor are selected. ***BETA2: See SW21***

SW28. *Revise construction sequencing plan to exclude information that is not relevant to this project.* KEG: See Plan to Accompany SWPPP. This will be refined once a contractor is selected. ***BETA2: Plan revised – issue resolved.***

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.

SW29. *The Operations and Maintenance Plan shall be recorded with the Middlesex Northern Registry of Deeds prior to the issuance of a Certificate of Compliance with the Board of Health (BOH 6.6.012(2)(b)).* KEG: Acknowledged. This can be placed as a condition. ***BETA2: Include condition.***

SW30. *Clearly indicate with person(s) or entity will be responsible for operation and maintenance and financing of maintenance and emergency repairs (BOH 6.6.012(2)(c)).* KEG: The entity responsible for the operations and maintenance of the site is listed in the O&M plan. ***BETA2: Plan revised – issue resolved***

SW31. *Indicate party responsible for maintenance of existing outfalls. If the owner is the responsible party, provide maintenance of these outfalls in the O&M Plan and include easements as necessary for access.* KEG: Outfall maintenance has been added to the O&M Plan. The owner is the responsible party. ***BETA2: Plan revised – issue resolved.***

SW32. *Provide signature of owner on the Maintenance Agreement (6.6.012(2)(c)(vi)).* KEG: Operation and Maintenance cover page has been signed by the owner. ***BETA2: Signature provided – issue resolved***

SW33. *Revise BMP Location Map to reference the existing stormwater basin.* KEG: The BMP Location map has been revised. ***BETA2: Map revised – 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 – **complies with standard**.

WETLAND RESOURCE AREAS

Wetland resources areas, delineated by Ecotec, Inc, are depicted on the Site Plans and include vegetated wetlands.

No work is proposed within the limits of wetland resource areas. Proposed work within the 100-foot wetland buffer zone includes portions of the parking lot/driveways, installation of underground utilities, and landscaping.

Erosion controls are shown on the plans to contain sedimentation for the work area.

Stormwater management improvements are proposed to mitigate peak rate of runoff and provide water quality treatments of stormwater runoff from the site (see above).

W1. *Include a note prohibiting stockpiles of material within the buffer zone of wetlands.* KEG: A note has been added to the SWPPP. ***BETA2: Note provided – issue resolved***

W2. *BETA notes that the project will require a Variance from the Billerica Wetlands Protection Bylaw for proposed work within the fifty' No Alteration Zone associated with the removal of some pavement and for a proposed driveway.* KEG: An additional 5 parking spaces within the 50' Buffer Zone is proposed to be removed. Compact spaces were added, and pavement pulled back where possible. The lot was previously developed with extensive development into the 50' buffer zone and closer. A substantial amount of imperious area has been pulled back from the resource area and a variance has been requested from the Commission. ***BETA2: Variance requested. BETA defers to the Commission.***

SUMMARY

Provided the Applicant addressed minor plan changes noted in SW6, the project is designed to meet the Board of Health Flood Plain and Stormwater Management Regulations as well as MassDEP Stormwater Management Standards.

RECOMMENDED CONDITIONS

Based on the above review, BETA recommends the following special conditions be included in the decision.

C1. ***Provide soil tests within footprint of proposed infiltration system prior to installation (SW11)***

C2. ***Soil conditions in the area of the proposed infiltration basin are to be observed by an agent of the Town following excavation to subgrade elevation to verify soil conditions (SW12).***

C3. ***Provide copies of the SWPPP, Notice of Intent, and EPA letter of approval (§6.6.013(1)) per NPDES General Permit for Storm Water Discharges from Construction Sites including all requirements of (§6.6.013) prior to preconstruction meeting - (SW21).***

C4. ***Signed Operations and Maintenance Plan and Maintenance Agreement shall be recorded with the Middlesex Northern Registry of Deeds prior to the issuance of a Certificate of Compliance with the Board of Health (SW29)***

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

Very truly yours,
BETA Group, Inc.

Stephen Borgatti, PE, MENG
Project Engineer

Philip F Paradis, Jr., PE,
Associate

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