



October 13, 2022

Mr. Bill Warner, AICP
Town Planner
Town of Haddam
30 Field Park Drive
Haddam CT 06438

Re: Proposed Retail Development
Killingworth Road (Route 81)
MPA Realty Associates, Inc.
Engineering Review
NLJ # 0425-0075

Dear Mr. Warner:

As requested, we have reviewed the following information for the subject project:

- Item 1: Set of twenty-six drawings titled "Land Development Plans Issued For Local Approval, Proposed Retail Development, Killingworth Road, Haddam, Connecticut", including sheets CV-1, DM-1, SP-1, TT-1, GD-1, SU-1, SS-1, SS-2, SD-1, EC-1, EC-2, EC-3, LL-1, LL-2, DN-1, DN-2, DN-3, DN-4, DN-5, DN-6, DN-7 and DN-8, dated September 21, 2022, prepared by BL Companies; also including "ALTA/NSPS Land Title Survey", dated March 17, 2022, prepared by Dufour Surveying, LLC; "Exterior Photometric Lighting Layout", dated September 9, 2022, prepared by Stones River Electric; and, "Proposed Elevations", dated September 9, 2022, prepared by BKA Architects.
- Item 2: Document titled "Stormwater Management Report for the proposed Development Lots 7, 8 & 9 Killingworth Road, Haddam, CT", dated September 16, 2022, prepared by BL Companies.
- Item 3: Document titled "Site Plan Approval and Inland Wetlands Permit Applications For the Proposed: Retail Development Located at: Killingworth Road, Haddam, Connecticut", dated September 16, 2022, prepared by BL Companies.

In addition to reviewing the above noted items, we have also made a site inspection.

We have the following comments:

1. We have the following comments regarding the proposed storm water management system design:
 - A. For the basin located on the north side of the building (Pond P1), the model indicates the primary outlet device to be a 15-inch diameter pipe that is 20-feet in length with an inlet elevation of 555.0 and mitered to the slope. While this pipe would presumably connect to YD-1, it is not shown as such on the drawings. In addition, a 20-foot section of pipe would extend out well into the basin beyond the slope.

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- B. As noted above, while the primary outlet pipe from Pond P1 that would connect to YD-1 is 15-inches in diameter, the outlet pipe from YD-1 is 12-inches in diameter. Calculations should be provided confirming that the 12-inch diameter pipe has sufficient hydraulic capacity to convey the 100-year design storm to the subsurface infiltration system (Pond P2). Calculations should also be provided for the outlet pipes from the subsurface infiltration system.
- C. While in the model, the drainage area (PDA-110) to Pond P1 includes the entire area east of the proposed building, this is not reflected as such on the grading plan.
- D. With the 100-year water surface elevation in Pond P1 at elevation 557.88 and a high point to the east of the building at elevation 558.1 and at the northwest corner of the building at elevation 558.39, there is only 0.22-feet of freeboard to the east and 0.51 feet to the northwest. Consideration should be given to increasing the freeboard to one foot minimum.
- E. While the model for the subsurface infiltration system indicates that there is no inflow from Pond P1 for the 2-year and 10-year storm events, the model for Pond P1 indicates peak water surface elevations to be 1.46-feet and 2.43-feet respectively above the outlet pipe invert elevation, which would indicate that an overflow occurs.
- F. The hydrograph for DP-1 should show both inflow hydrographs for Pond P2 and PDA-100 to show the timing offsets.
- G. With the 10-year water surface elevation in stormwater infiltration system at elevation 553.36, a backwater condition will occur in the pipe from CB-1 with the bottom one third of the pipe submerged. Confirmation should be provided that this pipe will have sufficient hydraulic capacity given this condition. In addition, the Conveyance Modeling Results CB-1 Storm is identified to have an invert elevation of 551 as compared to 553 on the drawings.
- H. While the Stormwater Management Report and the Inland Wetlands Permit Application state that a hydrodynamic separator has been provided, the location of this unit should be shown on the drawings.
- I. Test pit information should be provided for both Pond 1 and Pond 2 to confirm that subsurface conditions are suitable (depth to groundwater and ledge) with regard to the separation distances recommended in the 2004 Connecticut Stormwater Quality Manual. In addition, permeability



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testing should be conducted to confirm that the infiltration rate used in the model is no more than one half of the field measured rate to provide for the recommended safety factor.

- J. The storage volume in the subsurface infiltration system galleys includes the bottom 1.5-feet of the overall 4-foot height that is below the outlet pipe elevation. As such, for the increase in surface runoff from successive storm events to be attenuated, this volume must fully infiltrate into the surrounding soil structure. Base on the allowable infiltrate rate noted in the preceding comment, the time to infiltrate this volume should be determined.
 - K. The southern end of the infiltration system will be located within a fill section with the galleys located from 4-feet to 10-feet from the top of fill slope. This close proximity raises a concern with the potential for failure of the fill slope.
 - L. A typical detail should be provided for the proposed infiltration system galleys.
 - M. The location of the level spreader at the outlet from the subsurface infiltration system will result in stormwater being discharged across what appears to be a maintained lawn area associated with the adjacent property at 968 Killingworth Road. After flowing across this lawn area, runoff will be intercepted by a recently constructed level swale with an earth berm adjacent to the existing pond. Runoff intercepted by this swale discharges through narrow notches in the earth berm where some erosion has already occurred. In this regard we would recommend that the level spreader be located as far to the east as possible so that it discharges across the natural draw represented by the existing 549 contour and through a grass filter strip to the northern most end of the pond.
 - N. Rights-to-discharge across the aforementioned lawn area and into the existing pond should be maintained, or obtained, as the case may be.
2. We would recommend that the rip rap at the roof downspouts located on the north side of the building be extended down to the toe of the basin slopes.
 3. We have the following comments regarding sediment and erosion control:
 - A. The erosion control blanket on the southern fill slope should be extended further to the west to include slopes that are steeper than 3H:1V.



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- B. Since the temporary sediment trap is proposed within an area where the placement of fill in excess of 5-feet is proposed, consideration should be given to shifting this within the adjacent lawn area to the south, if this option is available, before conveyance of this area to the adjacent property owner.
 - C. Perpendicular wings of silt fence should be placed at intervals of approximately 100-feet along the main run of silt fence wherever it slopes downhill so as to periodically trap sediment and avoid the transport of sediment along the silt fence to the low point.
4. Bearings and distances should be provided along the new lot line and a Boundary Line Adjustment Map prepared.
5. We have the following comments regarding site lighting:
 - A. While the Typical Luminaire Mounting Detail shows the pole height to be 20-feet, the catalog cuts provided with the application indicate that 25-foot-high poles are to be provided. Section 14.4.10 in the Zoning Regulations provides further guidance regarding lighting fixture heights.
 - B. While a catalog cut was provided for an LED "Semi-cutoff" Wall Pack, it is not clear where these are proposed to be used. If these are to be exterior lighting fixtures, we would question if they meet the requirements in section 14.4.10 in the Zoning Regulations which requires shielded sharp cutoff fixtures on the horizontal plane.
6. We have the following comments regarding site landscaping:
 - A. As required in Section 14.4.17C in the Zoning Regulations, perimeter landscape trees must have a minimum 3-inch caliper and a minimum 10-foot height.
 - B. As required in Section 14.4.17D in the Zoning Regulations, the front landscaped strip on the lot should have a minimum width of 20-feet.
7. As required in Section 21.11 in the Zoning Regulations, all sidewalks must have a minimum width of 4-feet.



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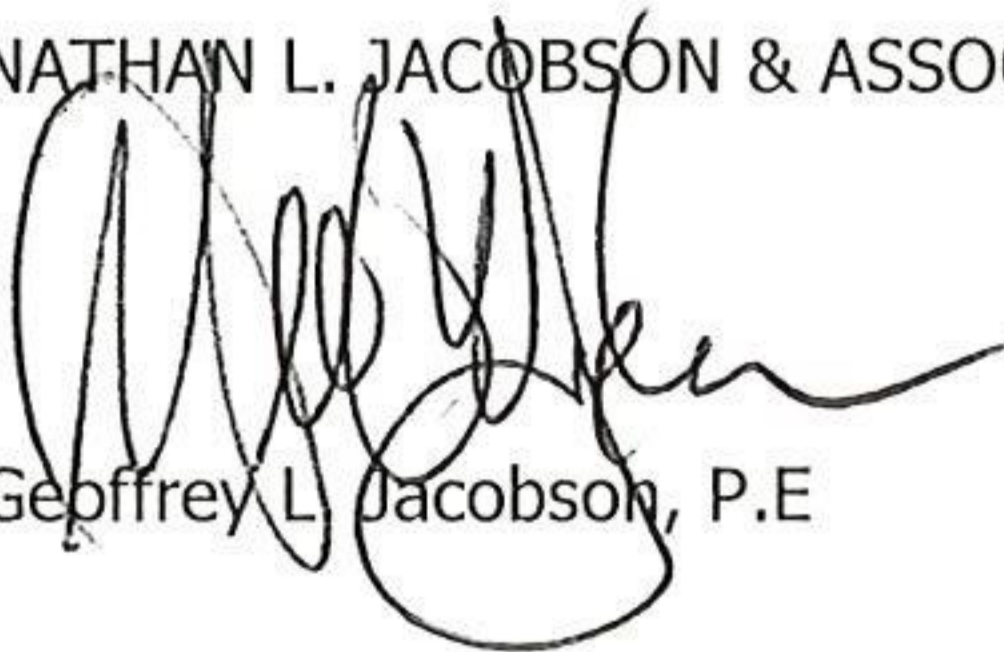
8. We have the following miscellaneous comments:
 - A. A Site location Map including all of the required information in Section 14.2.3D.5 in the Zoning Regulations should be shown on the drawings.
 - B. The Commission signature block as required in Section 14.2.3J and K in the Zoning Regulations should be provided on the drawings.
 - C. Figure 1 and Figure 2 in the Inland Wetlands Permit Applications document are for an unrelated project located in another town.
9. The plans will require review and approval from the Connecticut Department of Transportation District 2 office for all proposed construction located with the Route 81 right-of-way, including the proposed curb cut and grading.

We have not reviewed drawing sheets SS-1 or SS-2 which fall within the authority of the Connecticut River Area Health District or drawing sheet SD-1 which falls within the authority of the Connecticut Department of Transportation.

Should you have any questions, please feel free to contact me.

Very truly yours,

NATHAN L. JACOBSON & ASSOCIATES, INC.



Geoffrey L. Jacobson, P.E

cc: Bob McGarry