

December 28, 2022

Leicester Planning Board
Town of Leicester
3 Washburn Square
Leicester, Massachusetts 01524

Re: Definitive Subdivision Plan
1355 Main Street

To the Board:

We are in receipt of the following plan in association with the above referenced project:

- Plans entitled “Definitive Subdivision Plan, 1355 Main Street in Leicester, Massachusetts, November 30, 2022”, sheets 1 through 6, dated Nov 30, 2022 without revision date, by Hannigan Engineering, Inc.
- Letter addressed to Alaa M. Abusalah, Town Planner, dated November 30, 2022, providing a project narrative, requests for waivers, Definitive Subdivision Plan Application and Emergency Vehicle Turning Maneuver.
- A bound package entitled Drainage Analysis for Definitive Subdivision, ZP Batter Devco, LLC”, dated November 30, 2022, prepared by Hannigan Engineering, Inc. of Leominster

We have performed a review of the submitted plans for conformance with the Leicester Subdivision Rules and Regulations, and appropriate sections of the current Town of Leicester Zoning By-Laws. As is customary, we have not reviewed for completeness.

The Engineer has requested waivers of the following subdivision requirements. Our comments follow, *in italics*:

1. §V.A.4, b, Dead End Streets. Waiver requested to permit a T-turnaround in lieu of the required cul-de-sac.

A cul-de-sac allows emergency apparatus to reverse direction without need of backing. The T-turnaround requires a three-point turn to reverse direction, but requires much less impervious asphalt area. This office has no objection to the use of a T-turnaround on this small project, however it is recommended that Leicester Planning Board seek input from Leicester Police, Fire and Highway Departments.

2. §VI.B.1, Storm Drainage System. Waiver requested to permit HDPE drainage lines in lieu of reinforced concrete pipe.

The use of HDPE pipe as drainage culvert has been permitted and even requested by Leicester Highway Department in the past. This product is long-lived and performs well, if correctly designed and installed. We do not object to this requested waiver.

A waiver should specify double wall HDPE pipe, with smooth interior.

3. §VI.G, Sidewalks. Waiver requested from requirement for sidewalks.

We defer to Leicester Planning Board on this non engineering-related waiver request.

4. §VI.J, Curbing. Waiver requested from requirement for granite gutter inlets at catch basins.

The Board may wish to seek input from Leicester Highway Department on this requested waiver; in the past LHD has requested that granite gutter inlets not be installed, due to problems with snow plowing operations. We do not object to this requested waiver.

5. §VI.R.3, Pavement Width, Industrial Subdivisions. Waiver requested to permit reduction of pavement width to 20 feet, from required width of 36 feet.
6. §VI.R.4, Berm Radii, Industrial Subdivisions. Waiver requested to permit reduction of the radius of curvature of berm at the entrance to Main Street of 20 feet in lieu of required 50 feet.

§VI.R.3 and §VI.R.4 pertain to road geometry required to accommodate vehicles using the roadway, and entering and departing the subdivision. As a public road which services an industrial subdivision, the road should be capable of accommodating tractor-trailers or other large vehicles.

There is a safety concern for larger vehicles departing the project and entering Main Street, particularly in the southbound direction. Vehicles must be able to make the swing onto Main Street without crossing the centerline. If the width of the proposed road and/or the rounding of the curb are so narrow that trucks are unable to make the turn onto Main Street without crossing into the opposite travel lane, a serious safety hazard will exist. The Engineer must submit diagrams documenting the turning maneuvers for large vehicles, including tractor-trailers. It is the opinion of this office that a municipal road should safely accommodate

large vehicles, irrespective of what type of vehicle might be expected to use the subdivision.

7. §VI.K. Grading of Slopes. Waiver requested to permit embankment sideslopes of 1.5:1 in lieu of required 3:1 sideslopes.

The proposed sideslopes of 1.5:1 risk slope stability problems, but that concern is further complicated because the plans require building embankment soils to an exceptional height of 46 feet in some areas. These factors together create conditions which warrant assessment by a qualified geotechnical engineer. We do not recommend a conditional approval of this waiver. It is likely that a geotechnical engineering assessment will require construction controls and possible design features that ensure stability.

This concern was identified in our Preliminary Subdivision Plan review letter dated May 23, 2022.

8. §VI.R.7, Pavement Markings. Waiver requested of requirements for pavement markings.

We do not object to waiving pavement markings on this short section of roadway.

Our comments follow:

1. Regarding plan contents:
 - a.) Plans should propose a street name (REF: §IV, 2, d)
 - b.) Plan of Land should identify the material and dimensional requirements of bounds. (REF: §VI, H, “Monuments”)
 - c.) Each sheet of the plans should include a signature block, for signing by Planning Board members. (REF: §IV, 2, i)
2. Domestic water will be supplied to each lot by services extended from water mains on Main Street, across the highway from the site. As a result, no water main is proposed within the subdivision, and no fire hydrants will exist onsite. The nearest hydrant is located on Main Street, across the road from the site. In the event of a fire onsite, firefighting operations will require laying hoses across Main Street, impeding traffic and firefighting operations. Leicester Planning Board may wish to seek input from Leicester Fire Department.
3. Plans call for guardrail around the T-turnaround at the end of Road A, but not along the straight sections of the road. Massachusetts Department of Transportation publishes a warrant for the installation of guardrail, which requires guardrail installation on almost all roadways with embankment sideslopes steeper than 3:1. The Engineer must evaluate the requirement for guardrail on all sections of Road A, and specify guardrail accordingly.

4. On the Emergency Vehicle Turning Maneuver diagrams provided, the blue lines overlap berm in several locations. The blue lines are not defined, but may depict vehicle “overhang” and not actual tire paths. Engineer should clarify.
5. Plans call for timber guardrail, an attractive product but which has a shorter life than conventional steel guardrail. Leicester Planning Board may wish to require steel guardrail, which will likely provide many more years of service than timber.

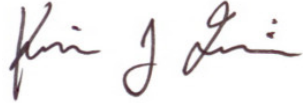
Drainage and Hydrology

6. Plans should require a concrete manway to the cleanout opening in the stormwater chamber gallery, to permit inspection and maintenance activities. Manway should have a traffic rated manhole frame and cover at the surface.
7. Rainfall figures applied in the Hydrology analysis do not appear to be based on current NOAA rainfall statistics. The following 24 hour storm data is recommended:
 - a.) 2 year: 3.13 inches
 - b.) 10 year: 4.85 inches
 - c.) 50 year: 6.72 inches
 - d.) 100 year: 7.59 inches
8. Plans must specify that the stormwater chambers be constructed so as to sustain HS-20 wheel loads.
9. A 4 inch diameter underdrain is called out beneath the base of the chamber gallery. The gallery is a BMP designed to infiltrate treated stormwater back into the ground; an underdrain defeats the purpose of recharging stormwater. The drain could be equipped with a hand-operated valve in manhole UGS#1B, to permit draining water in the event of a malfunction.
10. Engineer must document that the Hydroworks stormwater treatment unit has sufficient capacity to meet the requirement for removal of 80% total suspended solids at all flow rates.
11. Plans should include a detail for the straw wattle/silt fence erosion controls.

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December 27, 2022
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Please feel free to call, should members have questions.

Sincerely,
QUINN ENGINEERING, INC.

A handwritten signature in black ink, appearing to read "Kevin J. Quinn". The signature is written in a cursive, flowing style.

Kevin J. Quinn, P.E.
President