

Markey & Rubin, Inc.
Civil Engineering
360 Massachusetts Ave Ste.202
Acton, MA 01720

July 8, 2015

Corey York, P.L.S.
Town Engineer / Director of Public Works
472 Main St.
Acton, MA 01720

**RE: Review of 456 Massachusetts Ave/143 Prospect Street - Definitive
Subdivision Plan – Jaime’s Way & Thomas Drive**

Dear Mr. York:

In reviewing the comments from your department on the Definitive Subdivision plans for the project referenced above, I have added some additional information and made some minor corrections as discussed below. Please see revised Drainage Report, dated 7/8/2015.

8. *There are minor discrepancies between the drainage report and the calculations:*
- a. *46,587 SF of woods in subcatchment 3S, 46,596 in the report (existing conditions)*
 - b. *2,784 SF of woods in subcatchment 1S, 2,785 in the report (existing conditions)*

These discrepancies are corrected in the revised calculations. In reviewing the data throughout, other minor errors were also noted and the retention pond on 143 Prospect Street is revised in size (see revised Proposed Drainage Sketch).

9. *The drainage report only provided HydroCAD drainage calculations for the 2-year storm. The applicant should provide the calculations for the 10- and 100-year storms. For all storm events, the infiltration rate should be shown in the HydroCAD calculations. The current calculations only provide a flow rate of 0.01 cfs at the detention ponds, rather than an infiltration rate (inch/hour) therefore we can't verify if the applicant is using a proper rate for the soil type.*

All the storms are now included in the drainage report. The 0.01 cfs is calculated from using a 1.02 in/hr (Rawls Rates for B soils) multiplied by the area of the pond bottom.

	Bot. Area	Inf. Rate
Pond 1	284	0.01
Pond 2	458	0.01

HydroCAD rounds to the nearest two decimal place.

10. *The applicant has not addressed Section 4.3.6.2 of the Zoning Bylaw regarding Watershed Recharge which states:*

Watershed Recharge – The amount of annual precipitation being captured and recharged to the groundwater on site shall not be reduced due to development related surface runoff from the site when compared to pre-development conditions. Where a

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Special Permit or Subdivision Approval is required the Special Permit Granting Authority or the Planning Board shall require a hydrologic budget or water balance calculation for the site, showing pre- and post-development conditions, prepared by a Massachusetts Registered Professional Engineering experienced in hydrogeology. This Section shall also apply in Zone 4.

Water balance calculations should be provided which illustrates the annual volume of recharge in the pre-development and post-development conditions. This volume should not decrease in post-development.

The amount of impervious area increases from 8,734 SF in the pre-development condition (House, Walkway and Pavement) to 24,097 SF in post-development. The drainage calculations show a decrease in the volume of runoff from post- to pre-development for all watersheds except subcatchment 3, which shows an increase. Reducing runoff alone for a single storm event does not necessarily equate to an annual increase in infiltration.

Water Balance Calculations have been added to the Drainage Report - see Section 2.

11. The applicant provided a soil map which shows two soil types: 103B-Charlton-Hollis-Rock outcrop (103B) and 656-Udorthents-Urban land complex (656). For soil 103B, the applicant classified the soil as a Class B soil, which is true for areas without shallow bedrock. In these areas, the Middlesex Soil Survey classifies this as a Class D soil:

Hydrologic group: Charlton-B, Hollis-D, Rock Outcrop-D

The Charlton soil has only slight limitations for septic tank absorption fields, but the Hollis soils have severe limitations because of their shallow depth to bedrock. Intensive onsite investigations may be necessary to find suitable locations for the systems.

We recommend test pits be done in the areas proposed for the detention basins to ensure the shallow bedrock is avoided. Generally we accept test pit logs for septic systems when we evaluate suitability for stormwater detention basins however this subdivision is connecting to the sewer system therefore test pits were not done.

Soil tests were done by this office on July 7, 2015 and the results are included in the Drainage Report - see Appendices. The tests were done in the location of the retention ponds as shown on revised Proposed Drainage Sketch which is included in the Drainage Report. The test on the first pond (pond on 456 Mass. Ave.) had possible refusal at 4'-6", but no signs of seasonal high water. At worst there is a two foot cut into existing grade, so that I believe is acceptable. For the second pond, the seasonal high water is at 3'-0" and with a cut into existing grade approximately one foot, this too I believe is satisfactory.

I hope that I have responded to your satisfaction regarding the corrections to calculations and additional information. I am trying to clear up any loose ends prior to the public hearing with the Planning Board on July 21, 2015 so if you do have any further questions or concerns, please feel free to contact me directly.

Regards,

Markev & Rubin, Inc.



Ian Rubin, P.E.