
To: Town of Brookline
Zoning Board of Appeals

From: Frank Holmes
Stantec Planning and Landscape
Architecture, PC

File: 210810271

Date: October 17, 2014

Reference: Residences of South Brookline – Response to William Varrell’s Comments

The following is offered with respect to Mr. Varrell’s comments at the ZBA hearing held on September 15, 2014, and to the letter submitted by Mr. Varrell to the ZBA on October 14, 2014. Mr. Varrell’s comments are summarized below, with our response noted:

Response to Comments Presented September 15, 2014

Pages 5-6 – Comments relate to suggestion that a vernal pool exists on the west side of the site, and that if there is a vernal pool then the area is subject to the jurisdiction of the Wetlands Protection Act.

Response – The applicant’s wetland consultant, the Town’s peer review consultant (BETA) and the Town of Brookline’s Conservation Commission agent are all on the record noting that the area in question is not a vernal pool. In addition, the area is not indicated as a potential vernal pool by the DEP.

Page 7 – Mr. Varrell suggests that at the peak rates of runoff reported in our Stormwater Report, over a 24-hour period millions of gallons of water would be generated.

Response - This slide is a gross hyperbole and is totally inconsistent with industry standards and practice. The peak rate of a storm as modelled using TR-55/TR-20 models, which HydroCAD simulates, would (and could not) ever occur over an extended 24 hour period. As he states, the peak occurs over only a few minutes, so the suggestion that 11 million gallons of water would fall on site is grossly misleading.

Page 8 – Mr. Varrell notes that the project will result in additional runoff.

Response - It is true that the project will increase the volume of runoff from the site in total, although not with respect to the drainage to abutting properties (see below). However, we note the following:

- *Mr. Varrell’s numbers are incorrect, and are approximately double the increase reported in our Stormwater Report. It is not clear whether Mr. Verrell is able to properly read and interpret the reports or whether he is intentionally exaggerating. In either case, it highlights the point that his testimony should be disregarded, as his misstatements or exaggerations are consistent.*
- *The increase in runoff volumes are to the Town’s drainage system, not to abutting residential properties.*
- *The volume of runoff (and the rate) to abutting properties along Russet Road is **reduced** in the proposed conditions.*

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- *The overall increase in volume from the site is in keeping with the state’s Stormwater Management Standards, the Town of Brookline’s standards, and generally accepted practice.*

Page 9 – Mr. Varrell suggests that the method utilized for estimating seasonal high groundwater is incorrect.

Response - Methodology for Estimated Seasonal High Groundwater determination is appropriate. Varrell’s accusation that the periods leading up to the readings taken in January, 2013 and April, 2014 were “extremely dry” is incorrect. Through April, 2014, the year to date precipitation was 28% higher than the long term average. April, 2014 rainfall was also above average.

Page 10 – Mr. Varrell suggests that the use of Stormtank chambers is inappropriate.

Response - We have reviewed the design with the Deb Colbert, PE, from Veri-tech, LLC. Veri-tech represents the proposed Stormtank product. Her response to me:

“I have been able to review your drawings and the soils reports for the above project. I feel that these systems will work very well in these locations. The Brentwood Systems, like any other underground stormwater system, needs to have a good subgrade and subbase. As you are aware, VARITECH LLC goes to every jobsite installation to ensure that the subgrade meets our requirements for an “underground structure”. We review the installation procedures with the site contractors and make sure that they mechanically compact the ¾” crushed stone which is under the system, around the perimeter of the system, and on top of the system. I do not see any area of concern for the installation of these systems.”

Page 11 – Mr. Varrell states that if Stantec’s estimate of seasonal high groundwater is incorrect, then the stormwater management system will fail.

Response – Incorrect. If seasonal high groundwater is higher than assumed, the stormwater system will not fail.

Page 12 – Mr. Varrell suggests that the porous pavement will not have a required minimum infiltration rate.

Response - No infiltration is assumed under the porous pavement. We have assumed, given that it will be placed in an area with rock, that no infiltration will occur, although in reality there will likely be some. Mr. Varrell does not appear to understand the design, as he is assuming that there will not be appropriate infiltration rates when in fact the design does not require any infiltration. The 100’ setback indicted from structures is from an EPA “Fact Sheet”, which is not a requirement or standard. MADEP Stormwater Handbook suggests a 20’ setback from porous pavement to foundations.

Page 13 – Mr. Varrell notes that the Stormwater Report states that infiltration will occur under the proposed porous pavement parking lot.

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Response – We acknowledge that the text of our drainage report should be revised to reflect the site specific conditions where we propose porous pavement, so as to indicate that some infiltration is expected but none is taken credit for in the calculations, and that the design does not rely on infiltration from the porous pavement.

Page 14 – Mr. Varrell suggests that infiltration rates are 1/3 of what is required.

Response – Incorrect. Infiltration rates are appropriate and within the acceptable range per MA DEP standards.

Page 15 – Mr. Varrell suggests that proposed area drains will impact existing trees to remain.

Response - Area drains will be placed to avoid trees. Piping connecting area drains is shown on drawings to go around trees to remain.

Page 16 – Mr. Varrell suggests that the presense of ledge at the ground surface at one point means that ledge is present at or just below the surface in the local area.

Response - The rock outcropping photographed could be a boulder or knob of ledge. Borings and monitoring well installations in the this area of the site resulted in various depths to refusal. Monitoring well MW5 was installed to an 8’ depth. We understand that rock removal from this area will be required.

Page 17 – Mr. Varrell suggests that porous pavement will need to be constructed 100% in solid rock, questions if check dams are to be carved into rock, suggests that water will be directed towards Russet Road, suggests that rock excavation over 8’ in depth will be required, and suggests that the porous pavement parking lot will create a “bath tub” and that water will run towards Russet Road.

Response - The porous pavement detail depicts the anticipated section where rock excavation will not be required. The checkdams are formed with soil material, they are not carved into rock. The design intent is for water to be detained in the crushed stone below the pavement, with some infiltrating and some draining out through the underdrain and discharged to the Town’s drainage system. The dams will not direct water towards Russet Road, but will promote the detention and infiltration of stormwater. We note that in the existing conditions, 100% of the area where the proposed parking lot is located drains directly to the residences along Russet Road. The proposed design will significantly reduce the rate and volume of stormwater flowing towards those residences.

Page 18 – Mr. Varrell suggests that insufficient separation to groundwater is provided.

Response - Varrell again is either misinformed or misleading the ZBA. The groundwater table in this area of the site is based on the reading taken at MW5. The depth of water

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below ground surface in this area is assumed based on that reading. The groundwater table is not a horizontally flat elevation as depicted and suggested.

Page 19 – Mr. Varrell notes that in the existing conditions there are conditions that result in little absorption of stormwater into the ground, with the majority of stormwater flowing towards Asheville Road.

Response - During the rainfall event that Mr. Varrell highlights there was likely frost in the ground or an antecedent moisture condition that did not allow typical absorption, and that may have resulted in the majority of stormwater running off of the site. In a case like that, in the existing condition, 100% of stormwater will be directed to the residence along Russet Road. Our analysis did not assume these conditions, which results in a conservative assumption that less flow is towards Asheville and therefore the limit that we are allowed to discharge is less. The proposed design will intercept stormwater from portions of the site and direct the stormwater to the stormwater system on site that connects to the Town’s collection system, reducing the amount of stormwater flowing to the abutters along Asheville and Russet Roads. In other words, our system will result in an improvement over existing conditions.

Page 20 – Mr. Varrell notes that his basement floods during significant storm events, that his sump pump runs during every storm event, and that he has some degree of water in his basement every spring.

Response - It is unfortunate that Mr. Varrell’s basement floods in the existing condition. Perhaps greater due diligence prior to acquiring his house might have been in order. The fact that his house has a basement suggests that perhaps the area is not 100% solid bedrock to the ground surface as Mr. Varrell suggests on Page 16. Is it likely that the original builder would have excavated into ledge to build a basement?

Page 21 – Mr. Varrell suggests that 10’ of rock excavation will be required to install CB4, and that installation of proposed drainage system will require “deep cuts blasted into the rock”.

Response – Mr. Varrell’s numbers are again incorrect. Installation of CB4 will not require 10’ of rock excavation. We estimate that approximately 5’-6’ of ledge excavation may be required to install the CB sump. At this location, we anticipate minimal (less than 12”) rock excavation will be required for the pipe installation, based on the refusal depth at boring C15.

Page 22 – Mr. Varrell suggests that the existing site has not been adequately studied, that the proposed mitigation methods are not typical, and that the designer has made clear mistakes.

Response - The site has been adequately studied. There is history of success with the proposed stormwater management features employed in our design. The ZBA’s peer review has concurred that our design meets all applicable industry standards. In general, Mr. Verrill’s presentations (oral and written) do not pass the lowest possible acceptable industry standards, and are instead inflammatory and unfounded.

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Response to Comments Included in Letter Dated October 14, 2014

Comment: The Use of Stormceptors

Response: Proprietary water quality structures such as Stormceptors are commonly used as an effective best management practice, and as a component of stormwater management systems. For the RSB project nine Stormceptors will be used, seven of which will pretreat stormwater prior to discharge to subsurface storage/infiltration, and one which will treat a small area (approximately 2,200 square feet) of impervious area, and one that will treat stormwater that currently discharges to the Town's drainage system without any treatment. In that last case, the Stormceptor is improving and existing condition. All proposed Stormceptors have been designed in accordance with the Massachusetts Department of Environmental Protection Wetlands Program's "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices". This methodology was developed to provide guidance for the proper design of proprietary separators, and has been followed for this project.

Comment: The Porous Pavement Storage Capacity if Not Correct

Response: Mr. Varrell's markup of our Porous Asphalt Pavement Profile is incorrect. The elevations included in our Stormwater Report are consistent with the profile, and the storage capacity reported in our Stormwater Report is accurate and correct. CHR fully intends to construct the porous pavement to the dimensions described in the plans and details provided to the ZBA, and, the storage that is described in the report will be provided. A copy of our profile, with the elevations correctly labelled, is attached for reference.

Comment: Substorage Basin No. 4B will not work

Response: The most recent calculations provided to the ZBA and to BETA for review include a 2" orifice at the bottom of the storage to ensure that the system drains between storms. There is nothing dangerous about the 6" outlet pipe. This system receives and detains clean roof water, and there is little risk of the pipe becoming clogged. There is not a chance the water temporarily detained in this system will freeze. Subsurface detention of stormwater is a common practice, and freezing of water in these types of systems is not a concern.

Comment: The Vernal Pool investigation was incomplete.

Response: Refer to our response above to comments made by Mr. Varrell on Page 5-6 of the Powerpoint slideshow he presented on September 15, 2014.

Comment: The Estimated Seasonal High Groundwater used by Stantec is wrong

Response: Refer to our response above to comments made by Mr. Varrell on Page 9 of the Powerpoint slideshow he presented on September 15, 2014. We further note that the

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“dire warnings” cited by Mr. Varrell are related to the consequences of incorrect estimation of seasonal high groundwater during the design of septic systems. The issues cited by Mr. Varrell related to back up of sewage in homes, threats to public health, obnoxious odors, the risk of bacterial and viral diseases, etc. have absolutely no bearing on this project, which is served by the Town of Brookline’s municipal sewer system.

While Mr. Verrill will no doubt attempt to introduce new “evidence” in an attempt to buttress his positions, we hope that this response will assist the ZBA in its deliberations, and which reports and review are deserving of credits.

STANTEC PLANNING AND LANDSCAPE ARCHITECTURE, PC



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Attachment: Porous Asphalt Pavement Profile

c. Matthew Crowley, BETA
Marc Levin, Chestnut Hill Realty
Steven Schwartz, Goulston and Storrs

