



ENGINEERING SUCCESS TOGETHER

October 15, 2014

Ms. Alison Steinfeld
Planning Director
Town of Brookline
333 Washington Street
Brookline, MA 02445

Subject: The Residences of South Brookline – Comprehensive Permit Application
Response to Abutter’s Stormwater Management and Traffic Concerns

Dear Ms. Steinfeld:

During the public hearing on September 15, 2014 many statements were made by abutters concerned with stormwater management and traffic associated with the proposed project. The first section of this letter deals with the stormwater management concerns followed by traffic. BETA offers the following responses.

STORMWATER MANAGEMENT

I. There are potential vernal pools off Beverly Road:

The Conservation Administrator, Thomas Brady, issued a memo to the Zoning Board of Appeals indicating that the wet areas observed off Beverly Road do not meet the criteria for a protected wetland resource area, as defined by the Massachusetts Wetlands Protection Act (WPA) or vernal pool as defined by the Massachusetts Natural Heritage and Endangered Species Program (NHESP).

BETA’s peer review team also included a professional wetland scientist, Lenore White of Wetland Strategies Inc. who provided the attached memo of observations made at the beginning of April, usually an ideal time to observe vernal pools. The memo indicates that no evidence of vernal pool habitat was observed in the area of the site behind the Beverly Road residences.

Conclusion: There is no WPA or NHESP defined vernal pools within proximity of the site.

II. There were errors collecting data for determining ground water elevations:

BETA acknowledged the issue of seasonal high groundwater elevation as significant to the function of the proposed stormwater management system. This was outlined in the following series of comments and responses with the Applicant’s Engineer in issued peer review letter dated September 11, 2014.

SW1. BETA1: Estimated seasonal high groundwater appears to be based upon monitoring well readings from a single day in January 2013. These readings do not account for seasonal fluctuation or preceding rainfall events (or lack thereof). Conduct test pits at storage/infiltration areas to determine high groundwater elevations via the presence of redox features. Identifying redox features is MassDEP’s primary recommended method for determining seasonal high groundwater elevations. If redox features are not present, measured groundwater elevations must be adjusted using nearby groundwater wells monitored by the USGS. *Stantec: To address concerns that monitoring well readings were based on a single day in January, 2013, additional readings were taken on April 29th, 2014. On average, it was found that groundwater elevations were approximately 10” higher in April, 2014 than they were in January, 2013. This difference in the readings did not require significant changes to the design of drainage systems on the east side of Independence Drive,*



but on the west side of Independence Drive grades were raised to provide a minimum 2' separation from the measured groundwater elevations, considered to be representative of seasonal high groundwater elevation. That data is included in Section 2.2.1 of the revised Stormwater Report.

BETA2: USGS monitoring wells indicate groundwater levels approximately at seasonal highs during the April 29th measurements. BETA concurs that the measured values are representative of seasonal high groundwater elevations in the area – issue resolved.

The second set of readings which were higher than the January readings coincided with high readings at the closest USGS continuous monitoring wells. It should also be noted that proposed systems are set a minimum of two feet higher than this observed elevation providing additional the factor of safety for extreme storm events (such as the March 2010 three day storm event). BETA is therefore comfortable with the updated data as a basis for the Applicants' design.

Conclusion: The methodology to determine high groundwater elevations is within generally acceptable practice.

III. The project will increase the volume of runoff to abutting properties:

As is standard practice, the project was analyzed to quantify the amount of stormwater runoff from the site for both the existing (current) and future (proposed) conditions. In order to do that many factors are considered, including surface materials, soils, watershed area, time of concentration, time of travel, and natural and manmade ponding (storage) areas. Massachusetts Stormwater Management Standard 2 requires that the peak rate of runoff under the proposed condition not exceed the peak rate of runoff under existing condition for the same rainfall events. The calculations included current practices for determining stormwater management runoff and indicate compliance to this standard.

Generally the most difficult variable to determine is the amount of rainfall that is absorbed into the soil and not included as runoff. As was indicated in BETA's peer review reports, the Applicant assumed a soil that provided higher infiltration rate (HSG B) under the existing condition than soils maps indicate (HSG C). This required a more conservative stormwater management design so as not to exceed this calculated runoff amount. If, as was stated at the last meeting, there are higher elevations of ledge and even less rainfall is infiltrating into the ground currently than what was modeled, the proposed system will provide that much more of an improvement to the volume of stormwater runoff to abutting residents.

The attached cross section indicates how the installation of the porous pavement parking area may reduce the amount of stormwater runoff to the abutting properties along Ashville Road. Currently the existing site is predominately a wooded/grass surface with poorly draining soils that is underlain by ledge at various depths. As was stated at the meeting, a little rain causes water flow down the site to pond in yards and basements fairly quickly, indicating that very little water is currently getting into the soil. The site area for proposed porous pavement section will be excavated to remove ledge, filled with gravel and the porous pavement section cutting off the overland flow to residences. Water will enter the pavement section and flow through the least resistant (most porous gravel) soils and not through the existing poorly draining soils between the porous pavement and abutting properties. It will flow down to the underdrain and be directed to the closed drainage system – no longer flowing to abutting properties.

Conclusion: The project will not solve all existing flooding issues however abutting properties will not be adversely impacted by stormwater runoff from this project.

IV. The StormTank System is not a proven technology

There are many stormwater management systems available today. BETA does not typically review the success rate of individual systems, but after a brief investigation could not find significant information on the failure rate of the StormTank system. Generally in order to obtain the manufacturer's warranty to cover the system, the system needs to be designed, installed and maintained in accordance with the manufacturer's specifications. The owner will spend a significant amount of money on these systems, will own and maintain them and will want them to last more than a year.

Conclusion: The proposed system will need to be installed according to the manufacturer's specifications.

V. Porous pavement systems have a 75% failure rate

The EPA fact sheet referenced by the abutter at the meeting was issued in 1999. The statement included from the fact sheet read:

"Traditionally, porous pavement sites have had a high failure rate – approximately 75 percent. Failure has been attributed to poor design, inadequate construction techniques, soils with low permeability, heavy vehicular traffic, resurfacing with nonporous pavement materials."

In the last 15 years, there have been many studies completed, and much advancement in the design, installation and maintenance practices. The University of New Hampshire has studied and provided the standards for porous pavement including the ideal specification for the pavement design section. There are now acceptable design modifications, for instance the installation of subdrains, for areas with poor soils. Contractors are more capable and experienced in site preparation and construction today. Vehicular traffic is not expected to be high. In the operations and maintenance plan for this project, the Applicant included the requirement that if the pavement required repairs the owner was to "replace it in kind."

Although BETA is unaware of the data or individual circumstances that influenced EPA's statement, if the current practices for the design, installation and maintenance are adhered to the rate of failure is significantly lower than 75%.

Conclusion: If properly installed and maintained the failure rate for porous pavement is substantially less than 75%.

TRAFFIC

I. Safety to Pedestrians

The abutters raised pedestrian safety on Independence Drive was not adequately addressed by this project. In addition, a pedestrian connection was not provided from the project site to the Hynes Field and playground located on the south side of the VFW Parkway.

Pedestrians and bicycles safety improvements were provided as part of the project mitigations. For example, along Independence Drive three crosswalks are being improved. To further enhance the safety of these crosswalks, pedestrian activated flashing signal system was proposed at two locations (Thornton Road and East Site Driveway). In addition, crosswalks with "textured pavement" or "brick pavers" were also proposed as an added features to enhance the visibility of the crosswalks and to provide a traffic calming effect. For safety purposes, curb extension or bump outs were also proposed to reduce the length of the crosswalk (reduce walk time) and to provide better visibility for pedestrians. Bicycle lanes are also proposed on Independence Drives to provide safety for bicycles. Travel lane reduction was also considered to reduce

vehicle speed by narrowing travel lane and reducing the existing four lane cross section roadway and providing a traffic calming effect within the Independence Drive corridor. On-street parking will be maintained to meet the need for parking demand within the neighborhood and businesses.

Regarding the Hynes Field and playground that is located on the south side of the VFW Parkway, currently this section of the VFY Parkway is a four-lane divided arterial. It is separated by a wide median with dense tree line. A direct pedestrian connection from the proposed site to the playground is beyond the scope of this project. Such a request will need to be discussed with DCR.

Conclusion: The project has adequately addressed pedestrians, bicycle and vehicular safety on Independence Drive.

II. Traffic and Parking Issues

On-site roadway traffic circulation and on-street parking concerns were raised by the abutters. The on-site roadway system and parking accommodations are designed according to industry standards that also meet safety requirements. As required, during the design phase, on-street parking restriction along certain section of the site circulation roadway system could be implemented. We also want to note that prior to finalizing the plans, the proponent is required to submit the design plans to the Town Engineering department for review and final approval.

Conclusion: The project has adequately addressed Traffic and Parking issues.

III. Beverly Road

An example of emergency vehicles trying to maneuver on Beverly Road was hindered by vehicles parked on the street creating a narrow roadway and an unsafe condition was presented at the public meeting. Beverly Road operating as an alternating one-way travel pattern during the winter months due to snow embankment was also mentioned as a safety concern. The abutter indicated that similar conditions could occur on the proposed site circulation roadway system and the proposed project will be further impact Beverly Street.

As requested by BETA, the proponent has collected additional traffic data on Beverly Road. The proponent has analyzed Beverly Road and determined that the proposed site related trip generated on Beverly Street is small (4 to 5 vehicle trips). Therefore, Beverly Road will be able to handle the additional site generated trips in the winter months.

The on-site roadway system and parking accommodations are designed according to industry standards that also meet safety requirements. According to the proponent, the Town fire department had reviewed and approved the proposed roadway layout plans. The proponent has also committed to an aggressive snow removal plan to prevent the unsafe conditions described on Beverly Street.

Conclusion: The project has adequately addressed safety and operational concerns on the proposed site circulation roadway system and Beverly Street will be able to handle the additional site generated trips.

IV. South Street/VFW Parkway Intersection

The abutter has indicated that the South Street and VFW Parkway intersection is a major intersection and it was not included in the analysis. As requested by BETA, the proponent has collected additional data on

South Street. Two intersections (Independence Drive and Asheville at South Street) were included in the analysis. The analysis results revealed that there were no change in the Level of Services (LOS B and C) at these two intersections for both the AM and PM peak commuting periods between the No-Build and Build conditions.

Furthermore, based on the existing observed documented traffic distributions, approximately 35% (33 vehicle trips) of the site traffic would be destined for VFW Parkway. Of the 35%, approximately 30% head west of VFW Parkway and the remaining 5% (5 to 6 vehicle trips) head east via the intersection of South Street and VFW Parkway intersection. Due to the small (5%) vehicle trips that will use the South Street/VFW Parkway intersection, this intersection will not have any adverse impact as a result of this project. Therefore the scope of the study does not need to include the South Street and VFW Parkway intersection in assessing additional traffic impacts.

Conclusion: Due to the small site related vehicle trips that will use the South Street/VFW Parkway intersection, the scope of the study does not need to include this intersection in assessing additional traffic impacts.

Pease do not hesitate to contact the undersigned if you have any questions in regards to this review.

Very truly yours,
BETA Group, Inc.

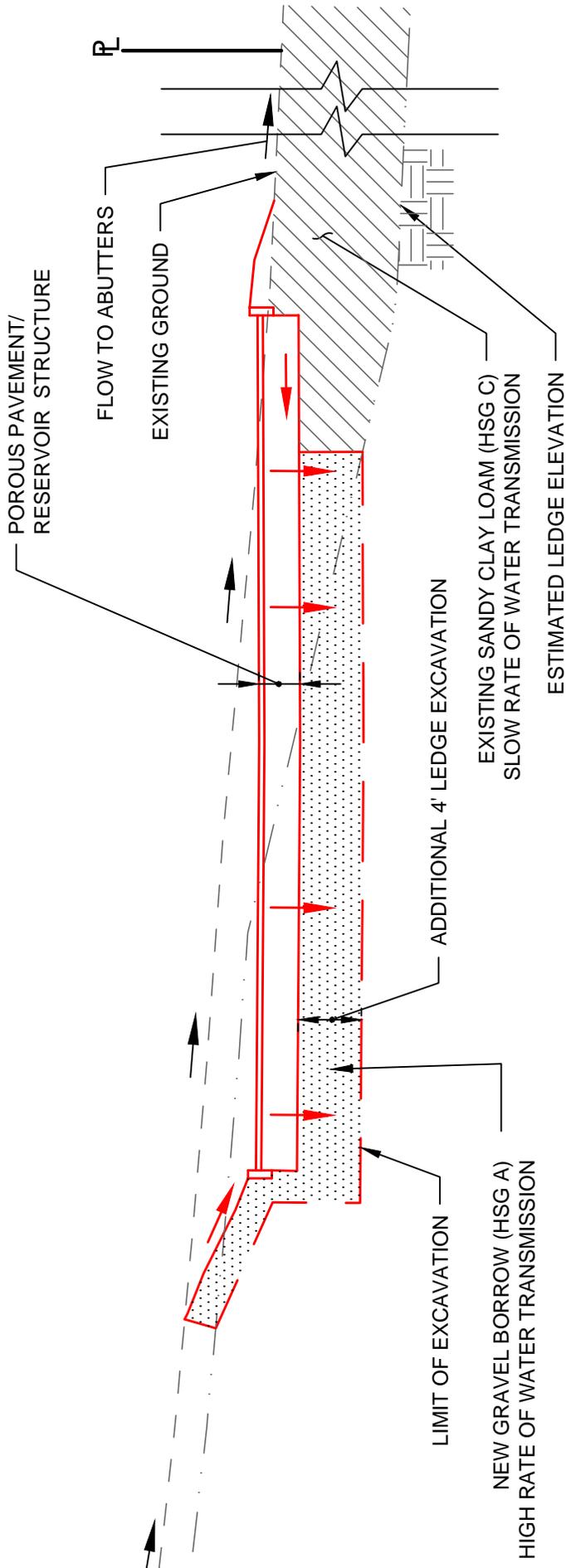


Philip F Paradis, Jr., PE
Senior Project Manager

Kien Ho
Vice President



Matthew J. Crowley, PE
Project Engineer



POROUS ASPHALT PAVEMENT SECTION (STA.2+00)

SCALE: 1" = 10'