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October 11, 2016

Shrewsbury Zoning Board of Appeals
c/o Shrewsbury Office of Planning and Economic Development
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Shrewsbury, MA 01545

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**Subject: The Pointe at Hills Farm, 440 and 556 Hartford Turnpike
40B Comprehensive Permit
Preliminary Plan Review**

Dear Zoning Board of Appeals Members:

We received the following documents on September 30, 2016:

- Plans entitled Site Plans-Comprehensive Permit for The Pointe at Hills Farm in Shrewsbury, Massachusetts (Worcester County) dated November 6, 2015 and last revised September 20, 2016, prepared by Waterman Design Associates, Inc. for Smart Growth Design, LLC. (20 sheets)

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' conformance with applicable "Zoning ByLaw of the Town of Shrewsbury, Massachusetts" adopted June 19, 1967 and amended through May 20, 2015; Massachusetts Department of Environmental Protection (MADEP) Stormwater Management Policy and standard engineering practices. As part of our initial review GEI visited the site on January 20, 2016.

This letter is a follow-up to our previous review letters dated January 22, 2016 and July 21, 2016. For clarity, comments from our previous letters are *italicized* and our latest comments to the design engineer's responses are depicted in **bold**. For brevity, comments previously addressed by the design engineer and acknowledged by GEI have been omitted. Previous comment numbering has been maintained.

Our comments follow:

Zoning By-Law

Zoning By-Law comments were previously addressed.

Rules Relative to the Submission and Review of a Comprehensive Permit Application

- GEI has no issues relative to compliance with these rules.*
No further comment

Rules and Regulations Governing Special Permits & Site Plan Review

- GEI has no issues relative to compliance with these rules and regulations.*
No further comment.

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Subdivision Rules and Regulations

8. *Not applicable. The driveways within the project will not become public ways.*
No further comment.

Hydrology, Hydraulic Calculations & Stormwater Management Policy

11. *GEI reviewed the hydrology computations. We found the computations to be in order except as noted in the following two comments.*
The revised hydrology computations are in order.
15. *GEI reviewed the plans and supporting documents for compliance with MADEP Stormwater Standards in the context of a preliminary plan submittal. Documentation for compliance with certain standards (peak rate attenuation, groundwater recharge and water quality) that pertain to project viability were reviewed whereas other Standards (e.g. construction-phase erosion controls, long-term operation and maintenance plans and illicit discharge statements) apply to the preparation of construction documents. The following four comments pertain to project viability.*
Additional information (i.e. a draft Stormwater Pollution Prevention Plan to address the project's construction phase, a long-term operation and maintenance plan and an illicit discharge statement) was included in the revised Stormwater Management Report. Specific concerns or issues are discussed below.
18. *In Phase II, Stormwater Basin DB-304 was designed with vertical retaining walls surrounding it. Even though the shorter retaining walls are proposed to be 2.4 feet high, the basin should have slopes for egress from the basin for both persons and for animals. Furthermore, the taller retaining wall on the north side of the basin will prohibit maintenance access to the basin.*

July 21, 2016:

Sheet C-2.02 was revised to include a "critter and access ramp" on the southeast side of the detention basin. The ramp addresses access/egress by persons from the basin to the base of the retaining wall along the parking lot (this wall will be approximately six feet high). The issue of equipment access from the parking lot to the stormwater basin for maintenance of the basin has not been addressed. Finally, the issue of animal egress from the basin should be addressed as part of the Notice of Intent filing with the Shrewsbury Conservation Commission.

Acknowledged. Sheets C2.01 and C2.02 were revised to provide an access ramp from the parking area to the stormwater basin, and animal egress is being addressed as part of the Notice of Intent filing.

19. *Sheet C1.02 of the plans proposes a new drain pipe to convey stormwater across Stoney Hill Road. During my site visit, I viewed the accumulation of ice on the Stoney Hill Road sidewalk about ten to twenty feet north of the proposed pipe location. This ice was a result of stormwater runoff from the site. In short, the concept of collecting stormwater before it enters the Stoney Hill Road right-of-way doesn't seem unreasonable. However, further consideration of this proposal is warranted. The applicant should elaborate about the ability to obtain permission from the land owner(s) on the southwest side of Stoney Hill Road to install a new pipe and its discharge. Also, the design engineer should provide adequate information to demonstrate that negative*

impacts downstream of this new discharge point will not occur. Finally, the location of the new drainage pipe's inlet and the drainage system's detailed design will have to be addressed. This level of detail could be done during the preparation of construction plans if the project goes forward.

July 21, 2016:

The design engineer reported that the applicant has obtained an easement from the downstream property owner to install the drainage improvement. Sheet C1.02 was revised to include additional work at the drainage pipe inlet and outlet. Based upon observations of ice formation and water flow in January 2016 (water flowed from the wetland area in the vicinity of Wetland Flag H), consideration should be given to excavating a shallow depression to direct runoff from this area to the depression around Catch Basin 29. Finally, the engineer has not addressed the potential for negative impacts downstream of the proposed discharge point.

Sheet C1.02 was revised to include a depression to direct runoff to catch Basin 29 and Sheet C1.03 was revised to include a new drain manhole (DMH 100). A riprap depression is proposed at the pipe's outlet and there is a receiving water (bordering vegetated wetland) down-gradient of the discharge point. We don't have an issue with the concept of this proposed drainage system configuration, however we have not received any response or additional information pertaining to the potential for negative impacts downstream of the proposed discharge point.

21. *The concept of perimeter erosion controls was shown on Sheets C1.02 and C2.02. If the project is approved, the Board may wish to consider a condition of approval that requires the applicant to prepare a more detailed erosion control plan during the preparation of construction plans.*

This issue will be addressed in greater detail during review of the Notice of Intent filing.

General Engineering Comments

24. *The proposed 498 contour at the southeast radius of the Phase II project exit to Stoney Hill Road needs to tie into the existing 498 contour at the edge of the Stoney Hill Road pavement. As currently drawn, the location of the proposed 498 contour at the curb line represents a curb instead of a smooth transition from the driveway to Stoney Hill Road.*

July 21, 2016:

The proposed 498 contour was eliminated. During the preparation of construction plans, the engineer should add a proposed 498 contour that ties into the existing 498 contour at the curb line.

Acknowledged. The proposed 498 contour on Sheet C2.02 was revised.

25. *We defer to the Town of Shrewsbury whether fences should be provided around the stormwater facilities to deter access to these facilities. If fences are to be required, they should either be shown on the preliminary plans or addressed as a condition in the Comprehensive Permit.*

No further comment.

26. *We understand that the Shrewsbury Water Department and its consultant will review the proposed water utilities and will address the availability of water. Likewise, we*

understand that the Shrewsbury Sewer Water Department and its consultant will review the proposed sewer utilities and will address the availability of sewer capacity.

No further comment.

27. *The plans propose fire hydrants located throughout the site. If not already done, the Applicant should solicit input from the Fire Department and Water Department relative to the proposed number and locations of the fire hydrants.*

No further comment. GEI is not aware if the fire hydrant locations on these revised plans have been reviewed by the Fire and Water Departments.

30. *The retaining wall at the Phase I stormwater basin will have to be designed to withstand periodic inundation. Retaining wall structural designs are typically addressed prior to the start of construction.*

No further comment.

General Comments

33. *For both phases of the project, the "Zoning Summary Tables" include the requirements for the Route 20 Overlay District. This information should also be included within the permit application section labeled; "Section 9 List of Exceptions wavier requests."*

The "Zoning Summary Tables" on Sheets C1.01 and C2.02 were revised to include the Route 20 Overlay District. GEI did not receive an updated List of Exceptions.

Additional Comments

35. *A construction detail for subsurface infiltration system INF-107 needs to be provided on Sheet C3.03.*

Acknowledged. A construction detail for infiltration system INF-107 was added to Sheet C3.00.

36. *The modeling of INF-202 does not correlate with the construction detail of INF-202 on Sheet C3.03 (specifically the primary outlet elevation and the storage volume at elevation 439.75). The engineer must revise either the HydroCAD calculations or the construction detail of INF-202.*

Acknowledged. The construction detail on Sheet C3.03 was revised.

37. *The slope of the "tot lot" is proposed to be 3H:1V between elevations 514 and 516, and 2H:1V between elevations 516 and 518. These slopes cover about 1/3 of the "tot lot" area. These slopes are too steep for playground equipment or a play area and should be revised.*

Acknowledged. The grading on Sheet C2.02 was revised such that the proposed 3H:1V and 2H:1V slopes were eliminated.

We trust this letter addresses your review requirements. Feel free to contact this office if you have any questions or comments.

Very truly yours,
Graves Engineering, Inc.



Jeffrey M. Walsh, P.E.
Vice President