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December 30, 2022

Stow Zoning Board of Appeals
Stow Town Building
380 Great Road
Stow, Massachusetts 01775

**RE: Lot 2 Harvard Road – ZBA Special Permit Application
Response to PLACES Associates 11/30/22 letter to ZBA**

Dear Board Members,

This letter is a response to a review letter to the Board from PLACES Associates dated November 30, 2022, related to stormwater impacts and mitigation of a proposed single-family dwelling at Lot 2 Harvard Road. It appears DEP Stormwater Management Standards were largely used in evaluating the stormwater design for the site, however, as PLACES states in their comments, construction of a single-family dwelling is explicitly exempt from meeting these Standards.

For clarity on design basis, demonstration of compliance of the proposed developed site with Zoning Bylaw Section 3.8.1.9 utilizing good engineering practice is the basis for our evaluation. To this end, pre-development and post-development site conditions have been evaluated for rate and volume of runoff from the site for the 2-yr, 10-yr and 100-yr, 24-hr design rainfall events. Satisfactory demonstration of compliance with 3.8.1.9 showing no increase in rate or volume of off-site runoff for the 2-yr and 10-yr, 24-hr events and no increase in rate of runoff from the site for the 100-yr, 24-hr design rainfall event.

A 2-sheet 24”x36” plan set has been added to the application in this submission to address the specific concern of site drainage mitigation and erosion control in greater detail for this site. A plot plan simply cannot show the level of detail that the added (1) Drainage & Grading Plan and (2) Erosion & Sediment Control Plan can provide and many of the comments by PLACES are addressed by adding these sheets.

With respect to specific comments in PLACES 11/30/22 review, the numbered items below correspond to the numbered comments in that review as follows:

1. We disagree that a 50-ft separation is required between the sewage leaching area and proposed drainage detention area adjacent to the driveway (no regulatory standard cited in the review), however, DEP Stormwater Management Standards policy is the presumed reference. Development of the site is not subject to DEP Stormwater Management Standards as construction of a single-family house is explicitly exempt from these standards. The regulatory setback applicable to the drainage basin is 310 CMR 15.211 (Title 5), which requires a 10-ft setback for ‘other open surface or subsurface drains’. The proposed drainage basin exceeds this minimum regulatory setback.
2. The effect of exfiltration has been eliminated from the proposed stormwater systems (both the roof drywell system and the trap rock basin), eliminating groundwater separation as a design consideration with respect to functionality. The bottom of the proposed roof drywell system is effectively at existing grade and the system is proposed to be constructed above existing grade in granular fill and underlying and surrounding crushed stone - depth and composition of native soil are not relevant design parameters in this case, only the ability of the system to provide adequate storage volume (detention) is required for proper design function, which has been provided.

With respect to the drainage basin at the driveway entrance, test hole data in the vicinity demonstrates natural soil depths of 6.0 to 7.5 feet. The elevation of the proposed trap rock basin bottom at approximately 4-ft below existing grade shows adequate soil depth in the vicinity of the basin bottom grade. No infiltration is proposed in the basin, so there is no vertical separation requirement of basin bottom to estimated seasonal high groundwater. The only design parameter of the basin for performance and function is storage volume (detention), which has been provided. Further soil investigation is not necessary with these new, more conservative design considerations.

3. Pre-development surface cover condition referenced has been revised from ‘Brush, Poor Condition, HSG B’ to ‘Brush, Fair Condition, HSG B’. Fair condition is the appropriate surface cover for this area cleared of some trees (stumps remain) and a ground surface not being fully well-established with vegetation.
4. The proposed 10” ADS culvert under the driveway directing site drainage to the trap rock basin has been moved up the driveway slightly to raise the basin inlet elevation and create free flowing conditions under all storm events (basin inlet invert is above basin peak elevation on a 100-yr design storm).

5. The trap rock basin at the driveway inlet requires some reshaping of the road shoulder to create a berm along the road shoulder between the basin and traveled way that will keep road drainage from entering the basin and ensure drainage from the site is collected and detained in the basin. The plan has been revised to show details of the road shoulder re-grading, system overflow, and additional driveway culvert to direct system overflow drainage.

With respect to the Highway Department's comments on the application with respect to the existing poor drainage conditions within Harvard Road, these concerns are beyond the purview of this application. The applicant's responsibility to address stormwater is limited to management of stormwater from the site, on the site, which has been demonstrated. Drainage deficiencies within the street right of way (beyond the site) are pre-existing conditions that are not conditions created by or exacerbated by the applicant's proposal to develop this lot. The applicant rejects the suggestion that adding a street catch basin by the southwest lot corner on Harvard Road and installing approximately 150 feet of street drain from this catch basin to an existing street catch basin to the west within Harvard Road should be the responsibility of the applicant.

6. Driveway culvert invert elevations have been revised to address this comment and HydroCAD input has been revised accordingly.
7. A site development and erosion control plan have been submitted with this transmittal to provide greater detail on construction. With respect to this comment to show a minimum of one foot of earthen cover over the proposed driveway culverts; 1-ft of cover is adequate soil cover for design loading.
8. The rain garden has been revised to be a trap rock basin functioning for stormwater detention only, with no infiltration being modeled in design. No rain garden or associated plantings are currently proposed.
9. The proposed driveway is superelevated to the upgradient side to direct driveway drainage (and all surface drainage upgradient of the driveway) to a trap rock swale that runs along the north side of the driveway, southwesterly to a 10" ADS culvert directing all upgradient surface drainage to the trap rock basin by the driveway entrance.
10. The proposed foundation drain location has been added to the plan (discharging to the driveway trap rock swale by the southeast corner of the proposed garage).
11. Calculations revised to address pre-development surface cover comment (see response #3 above).

12. Erosion and sediment control measures and details suggested in this comment have been provided on the proposed site development plan set (2 sheets) included in this transmittal.

13. Construction details suggested have been added to the proposed site development plan set (2 sheets) included in this transmittal.

The section on page 2, items 1-6 of the letter regarding PLACES recommended conditions we find perhaps a bit excessive for development of a single-family house with only ½ acre of proposed site disturbance, however, leave for the Boards' consideration.

If the Board should have any questions regarding this submission or require any additional information prior to the continuation of the public hearing, please contact our office.

Respectfully,



FORESITE Engineering Associates, Inc.
By: Scott P. Hayes, PE
Principal

cc: John Giordano
Paul Alphen, Esq.

Attachment(s)