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April 12, 2021

Barrington Planning Board
Attn: Ms. Marcia Gasses
333 Calef Highway
PO Box 660
Barrington, NH 03825

**Re: Barrington Shores
Tax Map 121 Lot 28
FES #2021**

Dear Ms. Irvine:

Farwell Engineering Services, LLC (FES) is pleased to submit this letter on behalf of Mr. Todd Green of Barrington Shores. This is in response to plan review letter by DuBois and King (DK) dated April 2, 2021.

The following are the comments and our responses.

1. The applicant is requesting a waiver from the minimum allowable cover of storm drain lines of 36 inches from the top of pipe to finished grade as required by Site Plan Review Regulations 4.7.7(3), in "cross-country" locations outside of road areas subject to vehicle loading. We do not anticipate an adverse effect on the proposed drainage system or use of the site, and take no exception to this waiver.

Response: No comment

2. In our previous letter, we recommended that the applicant provide test pit information within the vicinity of the proposed stormwater pond to confirm that the proposed storage is above the seasonal high water table, that meets the test pit recommended frequency defined in the NH Stormwater Manual Volume 2. The applicant has stated in their response that they will conduct test pits in April. We recommend that this information is provided in order for us to complete our engineering review of the stormwater design.

Response: Test pit information is attached. Test pit 1 had an ESHWT of 39" test pit 2 had and ESHWT of 36". The high side water table is elevation $299 - (39/12) = 295.75$. The low side water table = $295 - (36/12) = 292.0$ The average water table = 293.88. The bottom of the basin = 295.1. The average separation to the seasonal high water table = 1.23 feet this is greater than 1 ft required.

3. The applicant is proposing side slopes at the proposed stormwater detention pond that are 2 feet horizontal for every one 1 ft vertical (2H:1V). We recommend that the applicant revise the proposed side slope design to be 2.5H:1V or flatter, as recommended in the NH stormwater Manual.

Response: The manual does allow for up to 2:1 (Env Wr 403.02) The embankment slopes shall be no steeper than 2.5 horizontal to 1 vertical unless a specific design for a steeper slope shows that the embankment is stable and capable of being safely maintained;. Given that the outside of the embankment is 3:1 with a 6 foot top of berm width the bank is stable. The berm is approximately 4 feet high and can be maintained with hand held trimmers.

4. Drawing C-2. The emergency spillway elevation defined on the plans appears to be incorrect, as the elevation is less than the invert out of the primary outlet of the detention pond. We recommend that the applicant correct the outlet elevation of the emergency spillway throughout the plan set.

Response: The elevation has been corrected to 299.0.

5. Drainage Analysis. In our previous letter, we recommended that the applicant provide water quality treatment facilities (pretreatment and treatment) that meet the requirements of NHDES standards (AOT) in accordance with Town of Barrington Site Plan Review Regulations Section 4.7.2(10). The applicant has submitted a waiver stating that *"the site has limited space in this area to provide a sedimentation forebay as required by NHDES. We are proposing a stormwater filtration system by Shea Concrete V2B1."* The proposed proprietary stormwater filtration system appears to be an acceptable alternative to the sediment forebay. However, in order to complete our review of the proposed drainage system, we recommend that the applicant provide the standard AOT stormwater water quality volume worksheet calculations that show adequate sizing for the pretreatment and treatment proposed, and that the applicant specifically identify the proposed size of the proposed V2B1 filtration device to confirm it meets the water quality sizing requirements.

Response: The detail sheet D-3 has an arrow pointing to the V2B1 Model 4 which can treat from 1.3- 2.0 acres of impervious surface. The Aot worksheet for the infiltration basin has been provided. The WQV for the basin is 1340 cf. The lowest outlet of the basin has been modified to 295.60 to be above this elevation. The hydrocadd analysis has been revised to include exfiltration at the rate of 6 inches per hour based on the percolation rate of 10 min/inch.

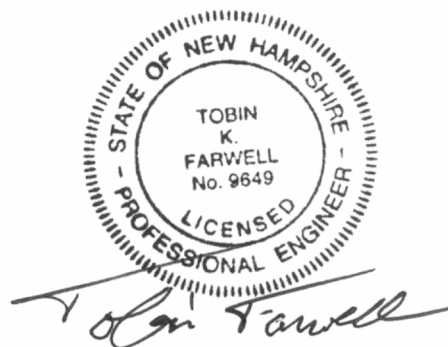
6. Drainage Analysis. No riprap outlet sizing calculations were provided. The applicant has stated that they provided the outlet sizing in the resubmission, however it was not included in the resubmission. We recommend that the applicant provide a complete drainage analysis submission with all attachments and narratives included.

Response: the rip rap calcs are provided.

If the following changes are acceptable a complete revised drainage study and revised plans will be provided.

Sincerely,

FARWELL ENGINEERING SERVICES, LLC



Tobin Farwell, P.E.
Principal