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March 25, 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 February 22, 2020.

The following are the comments and our responses.

1. The applicant is requesting a waiver from the minimum allowable storm drain pipe diameter of 15 inches. The proposed drainage design consists of 12-inch diameter pipes in multiple locations. If the applicant is committed to ongoing inspection and maintenance, and adequately maintains the drainage system to prevent clogging, we do not anticipate an adverse effect on the proposed drainage system or the use of the site, and take no exception to this waiver.

Response: No comment

2. The proposed drainage design consists of storm drain lines with less than 36 inches of cover. We recommend that the applicant revise the proposed system to meet the minimum depth of cover for 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).

Response: We are requesting a waiver for this requirement. Please see attached waiver document.

3. We recommend 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.

Response: Test pit information will be obtained in April.

4. Drawing C-2. The proposed stormwater pond's outlet control structure discharges to an existing stone wall. It appears that the existing stone wall could limit the discharge and impact hydraulic capabilities of the stormwater outlet. We recommend that the applicant clarify what the proposed condition is at the outlet, and whether nor not the stonewall will be modified in this location.

Response: The plan has been revised indicating removal of a portion of the stonewall.

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5. Drawings C-2, C-3. We recommend that the applicant show the proposed location of all erosioncontrols including the stabilized construction entrance, silt fence, and stone check dams.

Response: Erosion control measures have been added to the Grading plan.

6. We recommend that the applicant add a detail for erosion control matting, and indicate that it is installed on all slopes greater than 3:1. Additionally, we recommend that the plans show the locations of the proposed matting.

Response: Erosion control matting detail has been provided. Matting is proposed for the interior of the pond.

7. Drawing C-2, Grading and Drainage Plan. We recommend that the applicant label existing contours for the entire plan so that the proposed grading at the pond area can be evaluated in comparison to existing ground elevations.

Response: Contours have been labeled in the area of the detention basin.

8. Drawing C-2. The invert out elevation for proposed Catch Basin 1 on the plan appears to be incorrect, as it is above the inverts in and does not match the profile elevations or the HydroCAD model. We recommend that the applicant revise the plans to indicate the correct invert out elevation.

Response: The invert elevation has been corrected.

9. Drawing C-2. No emergency spillway detail was provided for the stormwater pond. We recommend that the applicant provide detail and define an emergency spillway on the plan view sheets.

Response: Emergency spillway has been added.

10. Drawings C-2, C-3. We recommend that the applicant provide a top-of-berm line around the proposed drainage pond that is at least 6 feet in width, and define this dimension in both the plan and profile views.

Response: Top of berm line has been added and dimensioned as 6 feet.

11. We recommend that the applicant provide a Typical Drainage Trench Detail that meets the requirements of Town of Barrington Site Plan Review Regulations Section 4.7.7.

Response: Trench detail has been provided.

12. Sheet D-2, Details. We recommend that the Catch Basin and Drain Manhole detail is revised to provide a minimum sump depth of 4 feet, to better capture coarse sediments and debris from the runoff intercepted by the structure.

Response: the sump detail has been revised to 4 feet.

13. Sheet D-2, Details. Grassed Swale Detail. We recommend that the applicant add a note to the detail that specifies maximum side slopes of 3H:1V to reduce the likelihood of erosion.
Thank you for your time and consideration in this matter. Please contact me is you have additional comments.

Response: The detail has been revised to a max slope of 3:1

14. Sheet D-2, Outlet Structure # 1 Detail.
a. The front view detail shows a 2" diameter orifice at invert 295.50 that appears to be blocked by the aluminum plate slot. We recommend that the applicant revise this detail to show an unobstructed orifice.

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b. We recommend that the applicant provide dimensions for the thickness of the structure's walls, and label the structure's horizontal opening at the top on the detail so that the dimensions modeled in HydroCAD can be confirmed.

Response: The orifice has been revised. notes have been added to the detail to clarify a 40inch x 40 inch top opening.

15. Drainage Analysis. We recommend 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).

Response: We are going to submit a waiver for this requirement and are proposing a sedimentation trap in the form of V2B1 by shea concrete in lieu of the sedimentation forebay. Details on in the plan set. We are proposing deep sump catch basins which is in compliance with NDHES with the exception that they flow from one to another.

16. Drainage Analysis. We recommend that the applicant revise the HydroCAD model to use the Dynamic Storage-Indication Method so that the overall watershed be analyzed in a dynamic manner so that the pond nodes may respond to potential tailwater effects.

Response: The Hydrocadd model has been revised.

17. Drainage Analysis. No riprap outlet sizing calculations were provided. We recommend that the applicant provide riprap sizing to accommodate the 50-year event in accordance with Site Plan Review Regulations Section 4.7.2(9).

Response: Rip Rap calculations have been provided

18. Drainage Analysis. We recommend that the applicant provide the HydroCAD modeling node summary information for the design storm event (50 years) to confirm that the proposed stormwater pipes meet the minimum velocity of 2 feet per second in accordance with Site Plan Review Regulations Section 4.7.7(1) and the maximum velocity of 10 feet per second in accordance with Site Plan Review Regulations Section 4.7.7(2).

Response: The node summary has been provided.

19. Drainage Analysis. More than one of the modeled pipes have an incorrect manning's 'n' value of 0.010 (PVC). We recommend that the applicant revise the modeling to use a manning's 'n' value of 0.013 (HDPE) for all of the proposed stormwater pipes.

Response: The pipe manning's values have been corrected.

20. Drainage Analysis. CB-6 invert out in model is 306.67. The plans indicate an invert of 306.77. We recommend that the applicant address the discrepancy.

Response: The invert has been corrected to 306.67.

21. Drainage Analysis. The proposed drainage design shows an increase in peak discharge in post development conditions in the 2- and 5-year storm events. We recommend that the applicant revise the proposed stormwater design so that the project results in no increase in peak discharge

Response: There is a slight increase in the 2 year event. The pond outlet is a 2" diameter outlet, going smaller than this will provide a maintenance issue with clogging. The increase is very slight.

22. Drainage Analysis. We recommend that the applicant revise the HydroCAD model to provide a minimum Time of Concentration (TOC) value of 6 minutes for each subcatchment.

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Response: minimum values for TOC is now 6 minutes.

23. Drainage Analysis. The NRCS soil survey report included does not appear to include all soil types for the site. We recommend that the applicant include the soil survey for all soil types within the drainage area modeled.

Response: all soil types have now been added.

24. Drainage Analysis. We recommend that the applicant provide an inspection and maintenance (I&M) plan for the proposed stormwater devices.

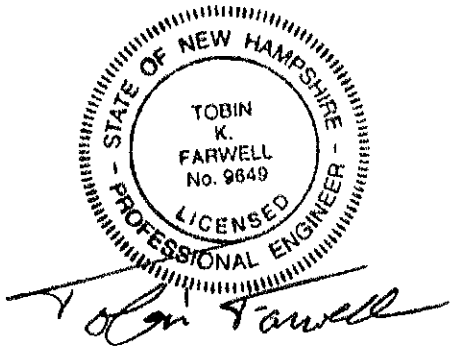
Response: We are providing an OM plan for your review.

25. Drainage Analysis. The proposed detention pond's peak surface elevation is 298.52' in the 50-year storm event. The proposed top of berm elevation is 299.1', resulting in an estimated freeboard of 0.58 feet. We recommend that the applicant revise the proposed design so that the stormwater pond has at least 1 foot of freeboard in the 50-year storm event.

Response: The top of the detention pond has been revised to provide 1 foot of freeboard.

Sincerely,

FARWELL ENGINEERING SERVICES, LLC



Tobin Farwell, P.E.
Principal

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