



March 5, 2020

Town of Norfolk – Zoning Board of Appeals
One Liberty Lane
Norfolk, MA 02056

Attn: Chris Wider - Chairman

Re: Norfolk, MA – The Preserve at Abbyville – Chapter 40B
Peer Review

Dear Mr. Wider:

BETA Group, Inc. (BETA) has completed its review of the revised plans dated December 2, 2019 from United Consultants, Inc. (UCI) for the preliminary design for the referenced project, based on the following materials:

- 'The Preserve at Abbyville', Norfolk, Massachusetts Grading and Utility Plans (3 Sheets), Lot Plans (7 Sheets), Plans & Profiles (5 Sheets) and Details (2 Sheets), prepared by United Consultants, Inc. revision date December 2, 2019.
- Additional/revised drainage information in report entitled 'Technical Supplemental Drainage Calculations for The Preserve at Abbyville, located in Norfolk, Massachusetts' dated December 2, 2019 and Pre/Post Development Watershed Maps, revision date December 2, 2019.

BETA has provided peer review letters to the Board for the Preserve at Abbyville and Abbyville Commons projects for previous design proposals. This latest submission represents a significant revision to the previous design submittals and as such, we offer the following new comments.

General

- A. The Traffic Impact Analysis estimates an ADT of 690 vehicles per day for the project roadway (Road A). In accordance with Section 4.14.6 of the Subdivision Regulations, the roadway should be classified as a Secondary Road.
 - The design proposes a 26-foot roadway (Road A) that terminates at a cul-de-sac. The proposed street width is in accordance with the Town's regulations and is appropriate for the anticipated use.
 - The proposed right of way width for the 26-foot roadway is 50 feet. Subdivision requirements specify a 60-foot right of way for secondary roads. However, the proposed 50-foot right of way is sufficient to provide the 26-foot pavement, planting strips and 5-foot sidewalk proposed for the roadway section. A waiver will be required.
 - The proposed cul-de-sac is approximately 1,900 feet long. In accordance with Section 14.14.9.1 of the Subdivision Regulations, the maximum cul-de-sac length is 500 feet. A waiver will be required.
- B. The proposed design appears to be creating a separate parcel within the entire property. Is Planning Board approval for an ANR lot required to create this parcel?

- C. There are numerous proposed retaining walls noted on the plans. The plans note that the final design is to be provided by a structural engineer. The Board should consider determining the type (material) of retaining wall that should be installed as part of their approval process.
- D. The proposed design will require waivers from local zoning and subdivision regulations, as well as other Town by-laws. These waiver requests will be evaluated as the peer review process advances.

Civil/Site

- 1) The proposed Grading and Utility sheets and the Post-Development Watershed Plan are extremely difficult and confusing to read. The existing and proposed features are all generally the same line weight and when printed together it is difficult to distinguish between the two.

Recommendation: Applicant should screen back the existing features on all of the proposed plans to improve readability.

- 2) Designated rights of way are shown for the roadways within the Preserve. This indicates the possibility that the Town could be asked to accept the streets in the future. This should be a consideration in evaluating requested waivers for roadway geometry.

Recommendation: Further discussion of any required waivers from the Subdivision standards for secondary roadways is warranted.

- 3) The proposed site grading indicates that there will be significant cuts and fills throughout the site, and based on a conversation with the applicant's designer, it is anticipated that the project will generate a significant volume of excess material.

Recommendation: The applicant should provide a cut and fill analysis for the project to demonstrate that the site generally balances. If the analysis indicates significant volume of excess material to be removed then an assessment should be provided of potential impacts. As with previous project submissions, the applicant should provide the following evaluations at a minimum:

- Effect on ground water table
- Number of construction trucks per day anticipated and the duration of the earthwork operation
- Blasting requirements/ledge removal, if any
- Construction routes and impact to the existing bridge over Bush Pond.

- 4) The proposed infiltration basin is located on portions of proposed Lots 15, 16 and the Condominium parcel. The Grading and Utility Plan (GUP) sheet 3 appears to show an easement around the basin. The Plan of Land sheets 4 and 5 appear to show only a portion of the drainage easements.

Recommendation: The limits of the entire drainage easement for the infiltration basin should be added to the Plan of Land sheets 4 and 5.

- 5) The project includes 20 single-family units and 22 duplex townhouse units for a total of 64 units. All the units will utilize subsurface disposal systems for sanitary disposal, currently shown on the GUP sheets as squares designated as "SAS Area". The single family units are proposed to have individual septic systems on each lot. A shared septic system is proposed for the townhouse units. The actual dimensions and locations will need to be confirmed through review by the Board of Health. We note

that some systems are shown in areas of significant cut which may impact the soil characteristics and corresponding size of the systems.

Recommendation: It appears that the project needs to be in conformance with the guidelines in Title V for Aggregation of Flows and Nutrient Loading as outlined in 310 CMR 15.216. As with previous submittals, the applicant should provide a hydrogeological analysis of the site development to evaluate groundwater flow, water table depth, the potential nutrient loading and any associated impacts to abutting private wells (within 400 feet of the site), wetlands or Bush Pond.

- 6) All proposed underground utilities should be shown on the GUP sheets to identify any potential conflicts. We note that the typical section shows these underground utilities.

Recommendation: The applicant should show the proposed utility locations including transformers on the GUP sheets.

- 7) Applicant proposes extensive retaining walls along the east side of the project site in Lots 9-12. These walls appear to be 4-ft in height and are staggered to create a buildable area within these lots along the subdivision roadway. A note on GUP sheet 3 states "final retaining wall design to be completed by a structural engineer).

Recommendation: The applicant should provide a standard retaining wall detail. Given the need for both extensive grading and the construction of retaining walls, the applicant should also provide a section through Lots 10 and 11 demonstrating the PRE/POST grading conditions.

- 8) Proposed grading behind lots 5, 6, 8-11 show 2:1 sideslopes. Section 4.15 of the Subdivision regulations allow for a maximum of 3:1 slopes. Retaining walls are proposed on these lots.

Recommendation: Consider modifying the slope and retaining wall height to achieve a 3:1 slope. This will also help promote vegetative growth and reduce the potential for erosion.

- 9) The driveways for the single family units are long enough to provide parking for several cars. This will reduce/eliminate the need for on-street parking.

- 10) The driveways for the townhouse units appear to provide parking for two cars per unit. An additional 10 visitor spaces are provided. This parking appears adequate to reduce/eliminate the need for on-street parking.

- 11) The townhouse units should be numbered on the plan for reference purposes.

- 12) Section 4.14.9 of the subdivision regulations requires that cul-de-sacs have a 15-foot diameter planted center island. The plans do not show a center island.

Recommendation: Include a center island as required or request a waiver.

- 13) No pavement radii are shown on the plans at the intersection with Lawrence Street, the intersections with the condominium roadway or the cul-de-sac. The information should be provided to confirm that large vehicles and emergency vehicles can properly maneuver.

Recommendation: Provide roadway layout plans.

- 14) Based on the proposed grading It appears that ledge removal may be required behind the condominiums at station 4+00 left. The proposed sideslope appears to be 2:1.

Recommendation: Confirm if blasting is proposed for removal of the ledge and provide approximate volume of rock excavation.

15) The plans should show the location and type of proposed erosion controls.

16) Designated snow storage areas should be shown, particularly for the condominium parcel.

Drainage Report & Stormwater Management Design

17) In the HydroCAD model included in the Stormwater Report, Pipe Reach 56 from DMH 56 to the sediment forebay is modeled as a 24-inch pipe. On the Grading and Utility Plan (GUP) Sheet 3 of 3, the pipe is labeled as 30 inch.

Recommendation: The Applicant should verify the correct pipe size and invert elevations for pipe reach 56 and confirm the rim elevation of DMH 56.

18) The Applicant has modeled the proposed Infiltration Basin with the only control discharge outlet being exfiltration. The Applicant has used an exfiltration rate of 20 in/hr, which was agreed upon with BETA during earlier peer reviews of previous stormwater submittals.

Recommendation: As this is a significant revision to previously submitted project designs, the Applicant should provide all backup stormwater related data including data previously submitted with earlier designs so that the stormwater report for this submittal can stand alone from any others.

19) The Pre-Development Watershed Plan does not appear to include the site entrance roadway area from Lawrence Street. Also, it appears that the total site area analyzed under existing conditions does not equal the total area analyzed under proposed conditions.

Recommendation: The applicant should revise the PRE/POST Development Watershed Plans to accurately reflect the site area analyzed in the stormwater report. Also, the total site area analyzed under PRE/POST Development conditions should be confirmed.

20) Appendix F – Sediment Forebay sizing.

Recommendation: The applicant should review the forebay sizing calcs to confirm their accuracy.

21) The Applicant appears to have utilized HydroCAD to model the proposed roadway drainage system. Each catch basin (CB) was modeled as a contributing catchment area and the drainage pipes modeled as pipe reaches. From Sta 0+0 at Lawrence Street to Sta 19+50, the proposed roadway features a consistent downward gradient and all of the proposed CBs along this roadway will function as CBs on grade. It is unlikely the CBs will capture 100% of the runoff directed to each of them from their catchment areas, so bypass flow will continue along the roadway gutter line until it reaches the end of the cul-de-sac. HydroCAD is not effective at determining bypass flow.

Recommendation: The applicant should analyze the proposed drainage system and determine the amount of bypass flow for each inlet CB and what impacts that may have on the structures at the end of the drainage system. The applicant should also provide a legible catchment area plan delineating the catchment areas for each proposed CB.

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22) TSS Removal Worksheet: The applicant has taken separate credit for sediment forebay treatment (25%) and infiltration basin treatment (80%). The 80% TSS removal credit for infiltration basins already includes the sediment forebay credit.

Recommendation: The applicant should revise the TSS Removal worksheet and remove the separate credit taken for the sediment forebay.

23) Standard 3 Recharge to Groundwater: The applicant proposes to recharge all of the proposed site-generated stormwater runoff in the proposed infiltration basin. The applicant has not provided a required recharge volume calculation based on the amount of proposed impervious area.

Recommendation: The applicant should provide a required recharge volume calculation to confirm compliance with Standard 3.

24) Standard 5 – Higher Potential Pollutant Loads: The applicant's response to standard 5 is that a SWPPP will be provided prior to construction.

Recommendation: A residential subdivision development is not considered a site subject to higher potential pollutant loads, providing a SWPPP is not applicable to this standard.

If you have questions about any of the preceding comments, please feel free to contact me at (401) 333-2382.

Very truly yours,

BETA Group, Inc.



William P. McGrath, P.E.

Senior Associate

cc: Amy Brady – Norfolk Zoning Clerk

Tom DiPlacido