



May 4, 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 second review of the revised plans dated April 13, 2020 from United Consultants, Inc. (UCI) for the preliminary design for the referenced project, based on the following materials:

- Response letter, “Norfolk, MA – The Preserve at Abbyville – Chapter 40B Peer Review”, dated April 13, 2020;
- Technical Supplement Drainage Calculations, The Preserve at Abbyville, revision date April 13, 2020;
- ‘The Preserve at Abbyville’, Norfolk, Massachusetts Grading and Utility Plans (3 Sheets), Lot Plans (1 Sheet), Lawrence Street Plans (2 Sheets) and Details (3 Sheets), prepared by United Consultants, Inc. revision date April 13, 2020;
- PRE/POST-Development Watershed Plans, ‘The Preserve at Abbyville”, revision date April 13, 2020;
- ‘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.

The design and our initial comments were discussed with the Applicant and design team in a teleconference on May 1, 2020.

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.
 - o 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.

UCI: Pavement is 24 feet face of berm to face of berm and there are two 1 foot wide berm curb located on each side of the roadway for a back of curb width of 26 feet.

BETA – Comment resolved.

- 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.

UCI: Agreed a waiver request is necessary, no additional comment.

BETA – Comment resolved pending disposition of waiver request.

- 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.

UCI: Agreed a waiver request is necessary, no additional comment.

BETA – Comment resolved pending disposition of waiver request.

- 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?

UCI: We anticipate the proposed condominium parcel will be created at the time of endorsement of the site plans.

BETA: Comment resolved.

- 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.

UCI: The applicant's LA will provide details of the proposed retaining wall block and will also provide pictures or similar walls.

- 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.

UCI: Agreed. The applicant will provide an updated waiver request list.

BETA: An updated waiver request list will be reviewed.

- E. *New Comment:* Additional information regarding truck turning templates was provided and reviewed. The truck turning templates indicate that a 40' emergency vehicle can adequately maneuver within the proposed roadways and also adequately turn to and from Lawrence Street.

- F. *New Comment:* Sight triangle plans were provided and reviewed. The plans indicate that sufficient stopping and intersection sight distance is available for speeds of >40 MPH. Clearing should undertaken within the area shown on the intersection sight distance plan. This plan should be included in the final plan set submitted to the Board.

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.

UCI: The existing features have been screened.

BETA: Comment resolved.

- 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.

UCI: The applicant will provide an updated waiver list which will include waiver requests for the proposed roadway geometry.

BETA: An updated waiver request list will be reviewed.

- 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.

UCI: A cut to fill analysis was completed comparing the existing grades to the proposed grades of the site. This analysis indicated that the proposed development would require approximately 23,200 CY of fill. The applicant will provide details of the additional material volumes, Blasting / ledge removal and construction routes in an updated construction management plan.

BETA: We recommend the applicant provide an updated construction management plan to the Norfolk ZBA for review. Based on discussion with the applicant's team on 5/1/2020, a CMP will be provided to the Board.

- 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.

UCI: The easement has been extended around the infiltration basin on the condominium parcel. See sheet PL-5.

BETA: Comment resolved.

- 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.

UCI: The soil testing and septic systems will be designed in accordance with Title V. Soil testing will be completed and the Norfolk Board of Health agent will be present. Septic system design for the individual lots as well as the condominium area will be completed and will be filed with the Norfolk Board of Health.

BETA: The final size and layout of the individual septic system components may potentially impact proposed lot configurations, especially in areas with specific grading requirements. Based on discussion with the Applicant's team on 5/1/2020, the septic designs will be submitted/reviewed by the Board of Health.

- 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.

UCI: Utility locations, including transformers, have been added to the plans (Sheets GU1 – GU3). Final locations to be approved by the appropriate utility companies. Planning Board Regulations section 3.3.2.17 provide for the Planning Board to be provided a copy of the utility design plan which the applicant would propose to provide to the Zoning Board of Appeals. The roadway cross sections were also revised to reflect the utility locations.

BETA: We recommend the applicant label all proposed utility lines (Drain, Water, Electric) for clarity. Based on discussion with the Applicant's team on 5/1/2020, this comment will be addressed.

- 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.

UCI: The applicant's LA will provide details of the proposed retaining walls. Wall sections were added to sheet GU-3.

BETA: BETA: The applicant has provided two wall sections through Lots 9 and 10 at 40-scale (Horizontal and Vertical). This scale does not provide sufficient detail, we recommend providing sections at a larger scale (both horizontal and vertical) for clarity. We also recommend labeling proposed top of wall elevations, showing approximate bottom of wall and footings, labeling proposed finished slopes, showing wall locations in relation to proposed houses, etc. Also, we believe the sections should be labeled "Lot 10" and "Lot 11". We note that the cross-section shown on the landscape plans shows 5 walls while the plan shows 4 walls. It appears that there is 20 feet of elevation difference on Lot 10. With 4 walls the wall height would need to be 5'. With 5 walls the height would be 4', but the overall horizontal distance would be longer which would impact the grading above the wall, potentially making it steeper than 2:1.

Based on discussion with the Applicant's team on 5/1/2020, alternate grading concepts will be reviewed to determine the most viable approach. We believe that a feasible concept can be developed that addresses the concerns noted.

- 8) Proposed grading behind lots 5, 6, 8-11 show 2:1 side slopes. 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.

UCI: The wall heights have been limited to 4 feet for aesthetics and to minimize the installation of safety fencing. The applicant's LA will provide details for the stabilization of the 2 to 1 slopes.

BETA: See comment 7.

- 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.

UCI: Agreed. No additional comment.

BETA: Comment resolved.

- 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.

UCI: Agreed. No additional comment.

BETA: Comment resolved.

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

UCI: The townhouse unit numbers have been added to the site plans.

BETA: Comment resolved.

- 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.

UCI: A 15 foot diameter center island has been added. See sheet GU-3.

BETA: Comment resolved.

- 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.

UCI: The curb radii have been added at all intersection and the cul-de-sac.

BETA: Comment resolved.

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

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

UCI: This area has been revised with two building being removed from the area. The proposed grading has been revised to a 2 to 1 slope. It is anticipated that minimal ledge removal will be necessary. See sheet GU-2 for revised grading. See sheets GU-1 and GU-3 for silt fence limit of work locations.

BETA: Comment resolved.

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

UCI: The limit of work label has been revised to include the silt fence label. See sheets GU-1 and GU-3. A silt fence detail has been added to sheet CD-2.

BETA: Comment resolved.

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

UCI: We anticipate the roadway to be plowed with windrows on each side. Snow from the driveways will be located adjacent to the driveways. Snow storage areas, if required, have been labeled for the condominium area. See sheets GU-2 and GU-3.

BETA: Comment resolved.

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 elevation of DMH 56.

UCI: The pipe label was revised on sheet GU-3. The rim elevation of DMH 56 was revised. See sheet GU-3.

BETA: Comment resolved.

- 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.

UCI: Appendix I and J have been added to the latest report. The Soil Logs and Permeability test Results (Appendix I) and the USDA Soils Information (Appendix J) were taken from the report dated May, 2017.

BETA: The applicant has provided an updated stormwater report, comment resolved.

- 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.

UCI: The south portion of the site was evaluated and added to the pre-development analysis (S2, S3, S4 and S5) were added. Refer to Appendix A for a description of these area and the post-development analysis provisions. The site developments areas were revised. Refer to appendix A for a description of the increase in size of the post-development area.

BETA: Please provide the PRE-Development watershed plans with the existing topography and Time of Concentration (Tc) flowpaths delineated for review. Based on discussion with the Applicant's team on 5/1/2020 additional information was provided on 5/4/2020 and reviewed. We have some concern with the time of concentration flow path delineation. We are coordinating with the Applicant's engineer to resolve this. We do not believe that it will require significant alteration to the design of the stormwater basin.

- 20) Appendix F – Sediment Forebay sizing.

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

UCI: The sediment forebay sizing calculations will be revised. See Appendix F.

BETA: Comment resolved.

- 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.

UCI: We have revised the catch basin grates in roadway area where the slope is 4 percent or above. Cascading grates area proposed see (Subdivision Regs sections 5.3.1 and 5.3.3.1) and the catch basin list has been added to sheet CD-1. All catch basins will have granite throat stones. See detail and not on sheet GU-2. The manufacturer's flow efficiency curve for the cascade grate has been provided.

(Separate PDF). The document includes 2%, 6% and 10% grades. The flow capture is approximately 96% for the 2% and 6% roadway and capture percentage increases as the flow rate increases. A pdf of the manufacturer's flow efficiency curve will be provided.

BETA: We recommend labeling the proposed double grate catch basins as "DCB XX" on the GU plans for clarity. Based on discussion with the Applicant's team on 5/1/2020, this comment will be addressed.

- 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.

UCI: The TSS removal calculations have been revised. See Appendix E.

BETA: The applicant should remove the sediment forebay credit from the TSS removal worksheet as that is included in the 80% removal credit for the infiltration basin. Based on discussion with the Applicant's team on 5/1/2020 additional information was provided on 5/4/2020. This information was reviewed and is acceptable.

Comment resolved.

- 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.

UCI: We will add a recharge volume calculation to the stormwater report. The design does indicate that post-development runoff volume will be less than the pre-development runoff volume. See Standard Number 3 in Appendix A.

BETA: The applicant has provided the recharge volume calculation, comment resolved.

- 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.

UCI: The response to Standard Number 5 in Appendix A has been revised.

BETA: Comment resolved.

Chris Wider - Chairman
May 4, 2020
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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