

March 21, 2025

NEX-2400043.00

Ms. Elizabeth Hughes, AICP, Town Planner
Town of Concord
Planning Division
141 Keyes Road
Concord, MA 01742

SUBJECT: 275 Forest Ridge Road, Concord, MA
Site Peer Review Letter #2

Dear Ms. Hughes and Members of the Zoning Board of Appeals:

On December 2, 2024, Greenman-Pedersen, Inc. (GPI) issued a peer review letter summarizing our comments related to a review of the documents submitted to the Concord Zoning Board of Appeals for the Proposed Residences at Thoreau Comprehensive Permit Application at 275 Forest Ridge Road. Subsequently we have received copies of the following materials submitted by the applicant:

- *Multi-Family Site Development, Residences at Thoreau, 275 Forest Ridge Road, Concord, MA;* prepared by Allen & Major Associates, Inc.; dated December 20, 2023, last revised February 28, 2025.
- *Project Narrative and Drainage Report,* prepared by Allen & Major Associates, Inc.; issued December 20, 2023, revised February 28, 2025.
- *Response to Comment, 275 Forest Ridge Road, Concord, MA;* prepared by Allen & Major Associates, Inc.; dated March 3, 2025

As requested, GPI has reviewed the above materials for compliance with the applicable sections of the Town of Concord Stormwater Regulations, Concord Public Works Design & Construction Standards & Details (hereinafter CPW Standards), Town of Concord Zoning Bylaws, MassDEP Stormwater Policy and Handbook (hereinafter MA Standards), MassDEP Drinking Water Regulations, Massachusetts Guidelines for Public Water Systems, American Water Works guidelines and standards, and general engineering practice.

The following is a summary of our review of the latest documents. Our original comments are shown in normal black font, followed by the proponent's responses in **bold black**, and our follow up responses in *black italics*.

General

1. We understand that the plans that have been submitted contain the information necessary for the review of the applicant's comprehensive permit application by the Concord Zoning Board of Appeals (ZBA) and to some extent provide only preliminary information with respect to exact details of site grading, drainage, and utilities. Notwithstanding the outcome of the current review of this application by the ZBA, we recommend that prior to the issuance of a building permit that final design plans and details be submitted to the Planning Division and Public Works demonstrating compliance with the following:
 - a. Town of Concord Stormwater Regulations
 - b. Concord Public Works Design & Construction Standards & Details
 - c. Massachusetts Department of Environmental Protection Stormwater Policy and Stormwater Management Standards

Noted. No response required.
No further comment needed.
2. This project will disturb more than 1 acre of land and will require coverage under the US EPA 2022 Construction General Permit program. This includes the preparation of a Storm Water Pollution Prevention Plan (SWPPP) and the filing of a Notice of Intent with the EPA at least 14 days prior to construction.

Noted. On behalf of the applicant, A&M requests the Zoning Board of Appeals consider this as a condition of approval to provide a SWPPP and Notice of Intent with the EPA at least 14 days prior to construction.

No further comment needed.

Plans

Cover

3. While minor, we recommend that in the List of Drawings that the sheet number for Existing Conditions be changed to V-101 – V-102 to match the actual sheet numbers.

Noted. The cover sheet has been revised as suggested.

Comment addressed however, the cover lists sheet V-100, which we believe should actually be V-101.

Existing Conditions – Sheet V-102

4. This plan sheet shows several oval text labels containing numbers such as 21, 24d, 24e, etc. We recommend that the surveyor explain the meaning or intent of these labels.

These labels were used as part of identification of internal features subject to Alta title plan. For purposes of use as an existing condition to accompany the application, they have been removed and do not affect the intent of the survey.

Comment addressed.

Abbreviations & Notes – Sheet C-001

5. We recommend that General Notes note 2 be revised to say, “Groundwater Conservancy District”. Further, we recommend that the label that appears on all the plan view sheets be revised as well.

Noted. This note has been revised as suggested.

Comment addressed.

6. We recommend that Utility Notes note 5 be expanded to specify watertight joints for all HDPE drain lines as required by CPW Standard 2.3.1.2.D.4.

Noted. This note has been revised as suggested.

Comment addressed.

Abbreviations & Notes – Sheet C-002

7. Erosion and Sedimentation Control Notes 5, 9, and 20 refer to “Tubular Barriers” and “Erosion Control Berms”. The detail sheets contain only include details for silt fence and haybales as erosion control barriers. We recommend that the engineer clarify if tubular barriers and/or erosion control berms are proposed for this project and if so, show the location(s) and the Erosion control plan and provide corresponding details.

The intent is to utilize a fiber roll (tubular) barrier as a better alternative to traditional haybales. The detail has been replaced with the CPW standard detail for fiber roll.

Comment addressed.

Erosion Control Plan – Sheet C-101A

8. We recommend that the leader associated with the text along the left side of the entrance driveway that reads “Install Silt Fence and Coir Log Along Limit of Work” be adjusted to point to the actual location of those items.

Noted. The stray leader has been revised.

Comment addressed.

9. We recommend that the Legend on this plan be revised to say “Coir Log” rather than “Tubular Barrier” if that is the intended product to be installed at the locations shown.

Noted. The legend has been revised to reflect “fiber roll barrier” as noted in response 7 above.

Comment addressed.

10. We recommend that a detail for the proposed coir log be added to the plans.
The fiber roll detail has been added to the plans in place of the CPW haybale detail as noted in response 7 above.
Comment addressed.
11. We recommend that the limit of work shown on this plan be revised to include the PFES 1 and the pipe from PDMH 1.
The erosion barrier line has been revised for the inclusion of PFES 1 and PDMH 1 as noted.
Comment addressed.

Site Preparation Plan – Sheet C-102A

12. We recommend that Note 3 on this plan and on Sheet C-102B be revised to read “Refer to Sheets C-101A and C-101B for erosion control.”
Noted. The references have been updated as suggested.
Comment addressed.

13. The limit of disturbance shown on this plan is somewhat misleading in that a significant portion of the Thoreau Club parking lot is to be reconstructed to accommodate this new development. While that work may be “performed by others” as stated on other sheets, that work is inextricably tied to the proposed residential development and should be detailed on these plans as it appears that the new work is fully designed but simply faded back and lacking any relevant labeling. Further, there are additional improvements on either side of the limit of work line (light poles, underground utilities, trees) where it is not clear if ultimately they are to remain or to be removed as part of this project.
This concern is noted. The plans were noted this way to indicate the work that would be subject to the Comprehensive Permit as issued by the Zoning Board of Appeals. The offsite work, while necessary to the project, would not be germane to the work approved under the permit. The intent was to solicit the Board of Appeals to include a permit condition that the applicant shall be required to reconstruct the existing parking lot, including modification to utility services and relocation of a septic system approved by the Concord Board of Health for use by the Thoreau Club as this work collectively is required to facilitate construction of the 237 residential units.

Notwithstanding the above, the limit of work line has been added to the plans to show the full extent of construction both on and off-site. The revised plans also include the proposed septic system relocation necessary to serve the Thoreau Club with the understanding that the septic system is subject to review and permitting by the Concord Board of Health and not the Zoning Board of Appeals. The septic plans indicate the relocation of utilities, grading, etc. that will be performed in this area.

We understand that the work associated with the modifications to the Thoreau Club parking lot falls outside the scope of the ZBA review of the comprehensive permit application and therefore appreciate the applicant’s team providing this information to the plans as it helps to provide clarity to our understanding of the overall “project”.

Additional labels have been added to clarify those items that we originally were questioning if they were to be removed or retained. Comment addressed.

14. This plan shows the water line that currently provides water to one hydrant and the “Wooden Building to be Removed” will be cut and capped. According to the Utilities Plan, that water line is not being used for the residential development, implying that it will stay in place solely to provide water to that single hydrant. We recommend that the engineer confirm that is in fact the intention and if so, revise location where that water line will be cut and capped to be just after the gate valve for the hydrant.
The intent was for the water line to serve only the fire hydrant. The water line layout is also noted on the septic plans as noted in response 13.
We appreciate the clarification. Our only remaining comment now that we see the ultimate intended final layout as illustrated on the septic plans that have been provided is that we recommend that the portion of the existing water line that falls within the Residences at Thoreau limit of work be shown as “to be removed” on this sheet.

15. There is a note on this plan that states “SMH TBR. Relocation and Coordination of Sanitary Sewer for Thoreau Club by Others.” Further, Note 7 on this plan states “The Onsite Existing Sewer and Drain Lines are to be Removed and Relocated as Shown on the Site Utility Plan. As noted in a comment to follow, no information regarding the relocation of the Thoreau Club sewer has been provided.

Please refer to response 13.

The revised plan set includes sheets showing a design for a new septic system on the Thoreau Club property. These plans address our comments. Please note that GPI has not reviewed the septic system plans (sheets C-109 and C-109A through C) as those will be reviewed by the Concord Board of Health.

Layout & Materials Plan – Sheet C-103A

16. We recommend that the applicant acknowledge that the access driveway for his project will remain private in perpetuity and that all responsibilities for maintenance will rest solely with the developer and their successors and assigns.

Noted. The applicant asserts this and expects the Board of Appeals will include a condition to the Comprehensive Permit affirming the same.

Comment addressed. We recommend that the Board of Appeals include this as a condition of approval.

17. Both the Groundwater Conservancy District regulations in the Zoning Bylaw and the MA Drinking Water Regulations 310 CMR 22.00 regulate the storage of deicing chemicals within a Zone II of a public water supply. We recommend that a note be added to the plans that there will be no outside storage of deicing chemicals within the Groundwater Conservancy District.

A note regarding outdoor storage of prohibit chemicals has been added to the Layout and Materials Plan as well as the snow management plan as suggested.

Comment addressed.

18. As stated previously, we recommend that the proposed layout and materials information related to the reconstruction of the Thoreau Club parking lot be shown on this plan to better understand the interface between the existing facility and the proposed access to the residential units.

As noted in Response 13, the intent was to depict only work subject to the Comprehensive Permit. However, the additional dimensional information has been added to the sheets as suggested for a complete understanding of the work that will take place associated with the residences.

Comment addressed.

19. The Landscape Plan set show a retaining wall and entry sign to the right of the entrance driveway. We recommend that these items be added to the site plan set of drawings. Further, we recommend that additional information regarding the entry sign be provided including size, proposed graphics, and method of illumination.

The location of the sign and decorative retaining wall are shown on the plans as suggested. An illustrative version of the entry sign is included on the detail sheet drawings. This sign image is based on a similar project by the applicant and will be subject to final detailing. The intent is to denote the size of the sign for the Zoning Board of Appeals.

A detail has been added to the detail sheet drawings (sheet C-506). We do see a symbol on sheet C-103A that appears to be the intended location for the entry sign and decorative wall however, it is not labeled.

20. We recommend that the leader for the “5’ Wide Conc. Walk” text that is to the left of the entrance driveway be adjusted to point to the actual sidewalk location.

Noted. This erroneous leader has been corrected.

Comment addressed.

21. We note that there are sign symbols on either side of the two speed tables. We recommend that information regarding these signs be added to the plans.

The signs are warning signs to the upcoming speed table. The intent is to provide a modified W17 (Speed hump) sign at least 50 feet ahead of the table.

Comment addressed.

22. While the Layout & Materials Plan sheets do not show the locations for any sidewalk curb ramps, we note that details for such are provided on the detail sheets. We recommend that prior to the issuance of a building permit that final design plans showing the locations for all proposed curb ramps be submitted to the Planning Division and Public Works for review.

Noted. As indicated by the comment, the ADA ramps are shown on the layout plan with typical construction details provided. As part of the advancement of drawings, these ramps will be further refined to ensure compliance with ADA/MAAB standards. The applicant anticipates a condition of approval from the Board to be required to provide final drawings to the Board to ensure consistency with the approved plans. The ramps will be denoted on these plans.

We find the response acceptable and recommend that the Board of Appeals include a condition of approval requiring the submittal of final site plans to the town demonstrating compliance with ADA and MA AAB requirements.

23. There is a notation at the top of the page, above the sheet match line that says, "Chain Link Fence". It is not clear if this is the entire notation and this text does not appear on Sheet C-103B, which is where we would expect to see it. We recommend that this be corrected.

The location of the text has been corrected. The text is to denote a chain link fence around the natural depression that is being created by the grading as this area will see some collection of runoff water from the woodland area and grass slopes.

Comment addressed.

Layout & Materials Plan – Sheet C-103B

24. We recommend that the leader for the "Transformer and Switch Gear with Bollards" and "Dog Park, See Landscape Plans" be adjusted to point to the correct locations.

Noted. This erroneous leader has been corrected.

Comment addressed.

25. The Landscape Plan set show a tot lot next to the dog park. We recommend that this be shown on the site plan set of drawings. Further we recommend that additional information be provided to the ZBA either on the plans or in narrative form outlining the intended amenities within the tot lot i.e., surfacing, lighting, fencing, etc. Our initial observation on the location of the tot lot prompts questions about security and safety as it is located behind a garage building limiting visibility from other areas on the property. We would encourage the project applicant to see if the tot lot could be relocated to a more visible and centrally located area on the property.

The location of the tot lot/playground has been revised on drawings and is more centrally located between the buildings in a highly visible location to improve safety and security. The final detailing of the amenities including the surfacing material, playground equipment, border edging, play surface treatment, etc. shall be shown on the final plans prior to construction, but the applicant anticipates some lighting to be provided in this location that may include light poles or lighted bollards.

We recommend that the Board of Appeals include as a condition of approval that final plans be provided to the town detailing the improvements to be provided throughout the amenity area.

26. We recommend that accommodations for bicycle parking be shown or annotated on the plans.

An exterior bike rack has been provided at the amenity area. Indoor bicycle storage is provided within each building and is designated on the architectural drawings.

We see what appears to be the bike rack at the amenity area however it is not labeled.

27. There is a 124.4' dimension line pointing to nothing near the wastewater treatment building. We recommend that this dimension be removed and that a dimension to the closest corner of the proposed building be added.

Noted. The erroneous label has been removed. A corrected label depicting the wastewater treatment plant building being 123.8' from the rear property line has been added. Please note that the wastewater building, tank storage, and fields are shown schematically and are subject to change based on final permitting through MassDEP and issuance of a groundwater discharge permit. The final configuration shall be shown on the final plans.

Comment addressed.

28. There is a label in front of the 8-bay garage behind Building B that reads “5’ Wide Conc. Walk”. We recommend that the label be changed to say “8’ Wide Crosswalk” as we believe it is intended to read.
Noted. The erroneous label has been corrected.
The crosswalk has been labeled however, with the changes to the layout the crosswalk does not provide a connection to anything. We recommend that this crosswalk be removed.

Layout & Materials Plan – Sheet C-103C

29. In the “Off-Street Parking Summary - Lot 5F2” table, it states that 7 ADA spaces are provided. Upon review of the plans, it appears that 9 ADA spaces are intended to be provided. As stated previously, we recommend that all changes to the Thoreau Club parking areas be shown on these plans including the type and dimensions of parking stalls. Further, we recommend that the number and percentage of proposed compact parking spaces be included in the parking summary table.
The table has been updated to reflect a total parking count of 307 spaces for the Thoreau Club, post construction. This includes 9 ada spaces, 27 compact spaces (as converted) and 271 standard width spaces. This exceeds the zoning required parking of 288 spaces. The parking shown is intended to provide a net zero loss of parking for the club which currently exceeds zoning. The compact spaces accounts of 8.8% of the total parking.
Comment addressed.

Grading & Drainage Plan – Sheet C-104A

30. We recommend that the applicant acknowledge that the maintenance of the drainage system be the sole responsibility of the developer and their successors and assigns in perpetuity.
The applicant affirms this statement and expects a condition of any permit issued by the Zoning Board of Appeals will reiterate this requirement.
Comment addressed. We recommend that the Board of Appeals include as a condition of approval a requirement that the Long Term Operations and Maintenance Plan (LTOMP) be recorded on the property at the Middlesex South Registry of Deeds and that the LTOMP inspections reports be submitted to CPW Engineering annually.
31. This sheet shows proposed retaining walls in two areas with a typical detail included on Sheet C-503. We recommend that prior to issuance of a building permit that design drawings of these retaining walls prepared by a MA licensed geotechnical or structural engineer be provided to Concord Public Works and the Building Department for review. Further, we recommend that these walls be evaluated for the need of guardrail or protective fencing for fall protection as may be required by applicable local and State codes.
Noted. The retaining walls are shown schematically on the current plans. Final design will be subject to performance by a structural engineer and review under a building permit if exceeding four feet in height. Similarly, fall protection will be noted. It is anticipated that the retaining wall along the main site driveway will be provided a wood guard rail given its adjacency to vehicle parking. The two remaining walls will not be subject to pedestrian or vehicular access and fall protection will be based on landscaping, existing or supplemented at the top of each wall.
Comment addressed.
32. For the proposed retaining wall between the driveway to the residential units and the reconstructed parking area for the Thoreau Club we recommend that top and bottom of wall elevations be added to the plan.
Noted. Wall elevations have been added to the plan.
Comment addressed.
33. This plan shows three new drainage structures along the proposed edge of the parking lot. We recommend that structure rims and inverts along with pipe data (size, slope) be added to the plans.
The structure data is provided on the revised plans as suggested.
Comment addressed.
34. There is a label that reads “Prop. Stone Check Dam Every 100-ft” however the stone check dam detail on Sheet C-501 specifies a spacing based on the toe of the uphill check dam being equal in elevation to the top of the downhill check dam. We recommend that the engineer revise the plan to match the detail.

The stone check dam spacing has been revised to reflect the elevation constraints provided in the detail.

We recommend that the design engineer review both the swale section that is called out on the plans and the stone check dam detail. The plan calls for the swale to have a minimum depth of 1.25' (15"). Section A in the detail shows a check dam height of 3' but the "View Looking Upstream" shows a depth at the center of the check dam to be 6" below the top of the swale, with the detail showing a swale depth of 24".

Grading & Drainage Plan – Sheet C-104B

35. This plan shows a fence around the infiltration basin on the Thoreau Club property. We recommend that provisions for access to that basin for inspections and maintenance in accordance with CPW Standard Detail DR-11 and the MA Stormwater Handbook be added to the plans.

This area is created by the confluence of several natural slopes and the shoulder runoff of the graded site driveway where water will collect similar to what is occurring in the pre-developed condition as well as on the north side of the site. It is A&M's opinion that an access path around this area is not necessary as it mimics pre-development conditions. The fence is being provided given the introduction of residents in this area for general safety. As noted in response 30, the applicant will be responsible for addressing any maintenance that may be needed.

We recognize the need for a fence around this area for the reason cited in A&M's response. Our comment above is really to understand how future access to the area to perform the maintenance outlined in the Operation and Maintenance Summary Table will occur given that there is no clearly identifiable way shown on the plan to get to the infiltration basin and drywells. We recommend that prior to construction that additional details regarding this matter be provided.

36. Within that same infiltration basin there are three proposed drywells. We recommend that a detail for those structures be added to the plans.

A structure detail has been added as suggested.

We note that an "Infiltration Pipe Detail" has been added to sheet C-505. If this is the "drywell" to be used, we recommend that either the reference on sheet C-104B be revised or the name for the detail be revised so that the same term is used in both locations.

37. The MA Stormwater Standards prohibit the infiltration of roof runoff from metal roofs within a Zone II. We recommend that the applicant confirm that all buildings within the Groundwater Conservancy District will have non-metal roofs.

This is confirmed. No metal roofs are proposed.

Comment addressed.

38. We recommend that the applicant provide a narrative explaining how this project does or does not comply with MA Drinking Water Regulations 310 CMR 22.00, which generally prohibits "the removal of soil, loam, sand, gravel and any other mineral substances within four feet of the historical high groundwater table elevation" within a Zone II of a public water supply.

310 CMR 22 allows for removal under the provision that the material is either replaced within 45 days or associated with the installation of foundations:

"the removal of soil, loam, sand, gravel or any other mineral substances within four feet of the historical high groundwater table elevation (as determined from monitoring wells and historical water table fluctuation data compiled by the United States Geological Survey), unless the substances removed are redeposited within 45 days of removal on site to achieve a final grading greater than four feet above the historical high water mark, and except for excavations for the construction of building foundations or the installation of utility works, or wetland restoration work conducted in accordance with a valid Order of Condition issued pursuant to M.G.L. c. 131, § 40;"

In the case of the area referenced, an onsite soil test pit conducted by A&M noted as TP-1 did not have a confirmed water table to a depth of excavation of approximately 10 feet as observed by the Board of Health. The test pit was conducted at a ground elevation of 170 resulting in a water table at least below elevation 160. The area being excavated will be limited to 167 which allows for the

separation to be maintained also accounting for variability to the topography and where the soil test pit was conducted.

The comment was not specific to the infiltration basin, it was made with respect to all excavation within the groundwater conservancy district. The area near the wastewater treatment plant requires the removal of approximately 20 feet of soil and currently there is no information that we have seen that demonstrates that the final grade in that area will be greater than four feet above the historical high water mark.

39. This sheet shows the locations of several test pits however no test pit logs have been provided. In accordance with CPW Standard 2.2.3.E.5., we recommend that test pit information logged by a Massachusetts Registered Soil Evaluator and witnessed by the Town be provided for each stormwater infiltration practice.
Soil test pits were conducted by the project geotechnical engineer, Haley Aldrich. The test pits noted on the plans have been included as sheet C-104D. These test pits were not witnessed by the Town at to the extent necessary, the applicant would request a waiver from this requirement as they were performed by a professional firm and noted as such. Soil test pits TP-1 through TP-6 were conducted by A&M and were witnessed by an agent of the Board of Health but were conducted for use in the septic system design though the verification of soils and water table remain applicable for drainage design. The test pits were conducted by a Massachusetts Spoil Evaluator and Professional Engineer. The test pits conducted by Haley Aldrich are fairly consistent across the site showing variable depths of fill over sand and no evidence of water to depths of 7 to 8 feet. The six test pits conducted by A&M generally yielded the same information. This has been reviewed with CPW Engineering and their recommendation is that the Board of Appeals include as a condition of approval a requirement that CPW Engineering inspect the bottom of excavation for each stormwater infiltration system prior to backfill/installation of system.
40. We recommend that prior to the issuance of a building permit that final design plans showing detailed grading at all accessible parking spaces and along all accessible routes, including to the building entrances, demonstrating compliance with Federal ADA and MA AAB regulations be submitted to the Planning Division and Public Works for review.
Noted. This is an acceptable condition should the Board agree with the consultant's recommendation. Our recommendation to the Board of Appeals under Comment 22 will cover this.
41. We recommend that prior to the issuance of a building permit that final design plans showing more detail for the subsurface infiltration system, including connections from the on-site structures to the chambers and inspection port locations, be submitted to the Planning Division's peer review consultant and Public Works for review.
Noted. This is an acceptable condition should the Board agree with the consultant's recommendation as the final connections cannot be confirmed until the building design is advanced. Should the Board agree with this condition that a peer review consultant review the information, A&M suggests that GPI be retained to perform this function as they will already have familiarity with the project and can affirm the continuity of design that GPI is currently recommending. We find this response acceptable and if requested, we would be willing to peer review the final design drawings and details for the subsurface infiltration system.
42. The subsurface infiltration system south of Building A contains an isolator row over 220' in length. In consideration of providing access for future maintenance, we recommend the engineer evaluate if additional structure(s) are warranted.
An additional inline manhole has been added that can facilitate inspection and maintenance. The final layout will be subject to a detailed cut sheet provided by the manufacturer inclusive of all inverts and measurements. Comment addressed.
43. Catch basins PCB 19A & PCB 19B are located within the footprint of the subsurface systems but are routed through pipes to additional structures prior to entering the systems. We recommend the engineer evaluate if these can be routed similar to PCB 17A & PCB14A. If the routing does not change, we recommend the engineer review the pipes from PCB 19A & PCB 19B to ensure no conflicts with the chambers.
PCB 19A and 19B were routed in this fashion to provide a unified water quality structure and then enter the subsurface drainage system at the isolator row on the southerly side of the layout. A&M

does prefer to keep this layout in place for these reasons. The pipes do not appear to conflict with the chambers, but A&M will confirm this on final layout and coordination with the manufacturer.
Comment addressed subject to the submittal of final plans to the town for review prior to construction.

44. We recommend the engineer review the subsurface system inverts for isolator row and manifold piping. Typically, the manifold is designed as a 'top' connection to the chamber endcaps to ensure all incoming runoff will enter the isolator rows until the elevation in the system exceeds the isolator row capacity. As designed, there is less than a 1-inch difference in invert between the isolator row and manifold inverts which would allow incoming runoff to enter all rows equally.
The manifold elevations have been reviewed at adjusted to ensure the directional flow toward the isolator row prior to the main field. By way of example, PDMH 13 will discharge at elevation 172.53 toward the isolator row with the manifold discharge occurring at 173.03. This will be fully detailed as part of the final drawings and manufacturer's design.
Comment addressed.

Grading & Drainage Plan – Sheet C-104C

45. Several proposed pipes have less than 3' of cover as required by CPW Standards 2.3.1.2.A.1 and 2.3.1.2.D. We recommend the design engineer revise the design to meet this standard or if it cannot be met, provide justification for the design as proposed.
A&M has used less than 3 feet of cover in a few instances on site, primarily located at the entry structures to the drainage network. This was done to control the depth of the resulting infiltration field and stormwater basins. The pipe material is capable of cover depths as shallow as 1 foot based on manufacturer's design. The project as noted elsewhere herein will remain private in perpetuity and be the applicant's responsibility for maintenance. To the extent that the Board require, the applicant would request that a waiver from CPW standard 2.3.1.2.A.1 and 2.3.1.2.D be granted.
It appears that some revisions were made to increase the depth of cover where possible. We agree that there are only a few instances where the depth of cover is less than 3 feet and, in those instances, it appears that at least two feet of cover is provided. Comment addressed with the understanding that the design engineer shall not deviate from the pipe manufacturer's recommendations related to minimum pipe cover.
46. We recommend that the existing catch basin in the entrance driveway be added to the Drain Structure Table so that the proposed rim elevation is provided.
Noted. ECB-A has been added as suggested.
Comment addressed.

Utilities Plan – Sheet C-105

47. This sheet shows a new water main connected to the existing 12" water main in the Thoreau Club driveway and looping around the two new residential buildings. While internally the water main is looped, there is no ability to provide drinking water or fire protection to the 237 residential units if a break were to occur in the first 750 feet of water main in the access driveway. We recommend that the applicant work with Concord Public Works Water & Sewer Division to identify a second connection to an existing water main to provide a true looped water system to maintain water quality within the system and ensure the delivery of safe drinking water to the residential units.
This concern is noted and the applicant will work with the Public Works Department on resolutions. Alternative connections are limited in that the project is surrounded by conservation lands that may not provide permissive rights to cross and the Black Birch residential development which may not be available to the project.
We recommend that the Board of Appeals include as a condition of approval a requirement that the applicant continue to work with Concord Public Works to address their concerns. GPI has no further comments to offer on this matter.

Utilities Plan – Sheet C-105A

48. As previously mentioned, there is an existing water line just east of the entrance driveway that is being shown on another sheet as being cut and capped, implying that the remainder is to remain in place and feed a single hydrant. We recommend that the engineer confirm that this is the intention.

The intent is for reuse to provide the service hydrant. If the Concord Fire Department determines they would not need that hydrant, then the water service would be eliminated entirely.

Comment addressed.

49. No information is provided as to how the sewer from the Thoreau Club will be connected to the new proposed sewer within the residential development. We recommend that this essential information be added to the plans.

The Thoreau Club and the residential development will be separate in their handling of wastewater. The residential development will seek a groundwater discharge permit through MassDEP for waste handling while a replacement septic system shall be provided for the Thoreau Club. The repair septic system will be located below the reconstructed parking lot at the front of the site. The system design plans have been added into the revised set to confirm for the Board that adequate wastewater provisions are provided. The septic will be subject to local review by the Concord Board of Health.

The Thoreau Club septic system will be constructed and brought online before the existing treatment works connections are severed. The residential development treatment works system shall be constructed and approved for use prior to a request for occupancy. In the event the treatment works is delayed, adequate wastewater handling alternatives shall be provided.

The information provided on the septic plans that are now included in the plan set addresses our comments.

Utilities Plan – Sheet C-105B

50. This sheet shows the proposed locations for a Waste Water Treatment Building, a Waste Water Handling Tank Area, and a Proposed Waste Water Leaching Field however, no design information is provided. We note that the first two items are located wholly or partially within the Groundwater Conservancy District. We recommend that design information be provided for review as the proper design and function of this private wastewater plant is essential to the protection of public health and the environment. We do note that the new proposed wastewater leach field is located completely outside the Groundwater Conservancy District, which is something that is supported by the Concord Public Works Water & Sewer Division.

This comment is noted. The design and permitting of the treatment works is being addressed by the project team's wastewater consultant, Fuss and O'Neill (F&O). F&O are currently working with MassDEP on the preparation of a scope of work for the hydrogeologic evaluation of the property as a pre-cursor to the formal design. Until this is complete, the design information is limited, and should the Board design this additional information, A&M requests the Board consider a condition of an approval that the Board be provided a copy with the design documents once approved by MassDEP while recognizing that MassDEP is the sole approving authority for the treatment works. As GPI note, the wastewater building and tanks are located in the Groundwater Conservancy District but the leaching fields are not as required by MassDEP. The tanks will be required to be watertight and come with appropriate conditions by MassDEP to preserve the interests of the Conservancy District.

As suggested in this response, we recommend that the Board of Appeals include as a condition of approval that a copy of all approvals related to the wastewater treatment works for this project be provided to the town prior to obtaining a building permit.

51. We recommend that the locations on each building where the domestic and fire protection water lines will be entering be shown on this sheet. Concord Public Works Water and Sewer Division is requesting that the fire protection system mechanical room have access from the outside of the building and be equipped with a Knox Box for Fire Department and Water Department access.

Noted. The service rooms and connections are provided on the site and architectural plans and have exterior door access. A Knox box can be provided if the Fire Department requires.

Comment addressed.

52. We recommend that prior to submission of final plans as part of the building permit process that the engineer review the layout of the proposed utilities and where possible revise to eliminate or reduce pipe crossings and to verify vertical clearances between utilities at crossings. Two specific areas that we believe should be looked at are at the east end of the entrance driveway where it connects to the driveway/parking loop around the buildings where drain line crosses between and through three water gates and near the northeast corner on Building B where a drain line, water line, and underground electric/communications lines all cross at a single point.

Notes. A&M will review in detail all crossings as the drawings advance. This will include coordination with Concord Municipal Light and Power on the electrical routing, duct banks, and equipment to confirm minimal crossings.

Comment addressed.

Snow Storage Plan – Sheet C-106B

53. Both the Groundwater Conservancy District regulations in the Zoning Bylaw and the MA Drinking Water Regulations 310 CMR 22.00 regulate snow storage within a Zone II of a public water supply. This sheet shows proposed snow storage locations in the Groundwater Conservancy District as being limited to only snow from the adjacent driveways and parking areas within the Zone II. A larger snow storage area is shown on the north side of the site where it appears snow will be hauled to and dumped is located completely outside the Zone II. We note that this complies with local and State regulations.

Noted. No response required.

No further comment needed.

Lighting Plan – Sheet C-108A

54. It is not clear on this sheet or from the Site Preparation Plan if one or more of the existing pole lights between the proposed driveway and the reconstructed Thoreau Club parking lot are to remain. Further, no information has been provided regarding any proposed lighting in the Thoreau Club parking lot. We recommend that this information be added to the plans.

The intent is for the three light standards along the boundary of the parking lot and the driveway to remain. These will be further reviewed as the project progresses as the existing light poles are older wooden posts with shoebox fixtures that may benefit from an upgrade. The poles are noted as to be “verified in field” on the ability for reuse.

Schematic light pole locations for the Thoreau Club parking lot have also been added to the revised plans.

Comment addressed.

Details - Sheet C-501

55. We recommend that CPW Standard Detail EC-10, Fiber Roll Detail, be added to the plans.

Noted. This detail has been added and has replaced the haybale erosion barrier detail.

Comment addressed.

56. This sheet includes a detail for a “Temporary Stone Check Dam Placed in Swale”. It would appear from the Grading & Drainage Plan that the check dams are intended to be permanent. We recommend that the engineer provide clarification.

Noted. The intent is for the check dams to remain. “Temporary” has been removed from the detail title.

Comment addressed.

Details - Sheet C-503

57. The “ADA and Standard Parking Striping” detail shows 8’ wide ADA spaces and an 8’ wide access aisle. On the Layout & Materials plan these all appear to be 9’ wide. We recommend that the engineer provide clarification.

The layout plan relies upon a space width of 9' at this preliminary stage to account for all parking whether it be standard or accessible. The detail indicates that each shall (or van aisle) shall be a minimum of 8 feet in clear width in order to comply with ADA regulations. Final spacing and measurement of the ADA spaces shall be coordinated with the final door locations of the buildings and memorialized on the final plans.

Comment addressed.

Details - Sheet C-504

58. This sheet includes a "Block Drainage Structure Detail". We recommend that the location(s) for this structure be identified or remove the detail if it is not relevant to this project.

The block structure detail is applicable to the insertion of manhole PDMH C onto the existing drainage line from the Thoreau Club parking Lot.

Comment addressed.

Details - Sheet C-505

59. We recommend that the "Typical Grassed Swale Detail" be revised to specify a minimum bottom width of 2 feet in accordance with CPW Standard 2.2.4.F.2. Further, we recommend that the proposed grading shown on Sheet C-104A be revised to reflect this increased width.

Noted. The detail and grading plan have been revised accordingly.

Comment addressed.

60. We recommend the "Flared End Section with Rip Rap" detail be replaced with CPW Standard Details DR-10 and DR-10A.

The details have been added as suggested. Reference has been added that the standard details depict headwalls that would not be applicable to this project.

Comment addressed.

61. The snout oil & debris trap detail contains a callout for Nyloplast inline drainage structure which does not appear applicable to this project.

Noted. The erroneous label has been removed.

Comment addressed.

Details - Sheet C-508

62. We recommend the Stormtech SC-740 detail be revised to show geotextile fabric between the bottom stone and the subsoil in accordance with CPW Standard 2.3.1.4.D.1.

A&M includes the underlying filter fabric on the isolator row detail but prefers not to include it under the main system. In the event the fabric becomes clogged/fouled it leads to a more rapid failure of the system. We'd respectfully request that no fabric be used. If necessary, a waiver to 2.3.1.4.D.1 can be added to the waiver request list.

With the inclusion of deep sump catch basins, water quality units, and isolator rows prior to runoff entering the main portion of the systems, the amount of sediment entering the system should be negligible. We find the request to eliminate the geotextile fabric acceptable provided that the final shall not deviate from the manufacturer's recommendations related to system design.

Project Narrative and Drainage Report

Section 2.0 – Existing Conditions

63. Under Section 2.2, the total lot is reported as 30.05 acres, we believe this should be 33.05 acres.

Noted. The areas have been reconciled.

Comment addressed.

64. Section 2.4 refers to test pits performed though as previously noted, we do not find any test pit logs included in the report.

Noted. Test pits have been added as sheet C-104D as noted prior.

Comment addressed.

Section 3.0 – Proposed Conditions

65. Section 3.1 of the narrative states that spaces for electric vehicle charging will be provided at initial occupancy. We recommend that the location(s) for those space be identified on the plans.

Concord has adopted the specialized energy code dictating the requirement for 20% of spaces to be wired for electric vehicle charging. The plans have been revised to include notation of spaces in areas distributed around the site. The spaces are shown schematically and the applicant reserves the right to revise the space locations during final design of the project. Final plans for the project shall include the positions of the EV spaces.

Comment addressed.

66. Section 3.1 of the narrative states that trash and recycling will be handled internally to each building with pickup by a private hauling company. We recommend that additional information about this be provided. Will barrels or carts be stored inside the building and brought out or wheeled out for pickup and if so, where are those locations? Will trash trucks actually enter the building?

This has been reviewed with the Zoning Board of Appeals. Trash chutes are provided within each building that collect refuse in a dedicated trash room on the first floor. During trash retrieval, carts are rolled out through building roll up doors on the east side of the building where they are emptied by truck and then returned to the building. No parking areas are designated at each building to ensure there are no conflicts. Trucks will not enter the buildings.

Comment addressed.

67. Section 3.2 notes that Watersheds P-4 and P-5 are not changed in the proposed condition and are therefore not reanalyzed. We recommend the limits of the study area be adjusted to only include areas impacted by the project. This is further addressed in a comment below.

The study limits have been modified as suggested. Please refer to the revised documents attached hereto.

Watersheds P-4 and P-5 are now included in both the existing and proposed HydroCAD analysis. Comment addressed.

68. Section 3.4 contains a description that pipe sizing calculations are “performed for a 25-year storm event and analyzed for effects during the 100-year event”, and calculation inputs listed below refer to the 25-year storm in parenthesis. We recommend references to the 25-year storm be removed and the calculations be performed for the 100-year storm as required by CPW Standard 2.2.1.F.

Calculations for both the 25-year and 100-year pipe sizing are provided.

Comment addressed.

69. Section 3.6 of the narrative provides some level of detail regarding the private on-site wastewater treatment facility, which will require review and approval by MassDEP through the issuance of a Groundwater Discharge Permit and that final plans are being/will be prepared by Fuss & O’Neill. We continue to recommend that additional information be provided at this time to understand how public health and environmental concerns typically associated with wastewater treatment facilities are being met.

The applicant continues to work through its subconsultant, Fuss & O’Neill to develop the site testing Scope of Work for approval by MassDEP. Once approved, the formal testing will take place and the design work can advance further. The applicant will provide routine updates to the Board of Health as additional information is prepared. As discussed with the Zoning Board of Appeals, the refinements to the proposed septic field locations have been made throughout the permitting process with the Board to minimize the scope of construction and preserve trees as much as feasible.

The revised plans do provide information on the new septic system that will service the existing Thoreau Club facility, information that we did not have previously. The revised plans also show a schematic layout for the septic system / treatment plant to serve the new residential development. This along with our understanding of the planning, testing, design effort, and administrative review required to get to a final design for the on-site wastewater treatment, we have no further comments on this matter.

Section 4.0 – Stormwater Management

70. As a general comment, CPW Standard 2.2.1.A. lists among other things permeable surfaces, Low impact Development (LID) techniques, and related Best Management Practices (BMPs) as means for providing on-site stormwater management. Historically, the Town has asked project applicants to consider employing LID measures to the maximum extent feasible. We recommend that the applicant explore opportunities for LID measures such as permeable pavement and treebox filters for this project or provide explanation for why these are not part of the current design. Podium parking as the Planning Board has discussed could significantly reduce the amount of impervious cover on the parcel and in turn, the associated drainage structures, pipe, and underground chamber system.

The applicant has formally responded to the Zoning Board of Appeals on the financial infeasibility of developing podium parking for this site. The revised site plans provide surface-based parking and detached garages.

As outlined with the Board, the development of the site was to consolidate the project into as minimal a footprint as feasible. The varied existing topography around the requires necessary transition grading to blend the proposed and existing sites together and don't lend themselves to the use of low impact development rain gardens, etc. A&M has used naturally low point depressions and graded swales where practical to address stormwater.

We note and can appreciate the challenges related to the existing topography throughout the site and we agree that providing rain gardens specifically would increase the footprint of the project which is not desirable. We have also met with the applicant's representatives and have heard them express reluctance to use porous pavement due to their concern over maintenance and long-term function. We have no further comment on this matter.

71. Within the description for Standard 3, we recommend the impervious surface table be filled in to include areas within each HSG.

Noted. The table has been revised as suggested.

Comment addressed.

72. In the report the cumulative volume for recharge is claimed as 67,281 cubic feet, but we find the total volume stored within HydroCAD model to be 92,470 cubic feet. We recommend the engineer provide clarification or additional information.

The as-revised volume of 70,927 cubic feet is limited to elevation 175.50.

After reviewing the HydroCAD it is still not clear where the 70,927 cubic foot number comes from however, the subsurface system alone provides more than the required recharge volume. We have no further comments on this matter.

73. The drawdown calculation utilizes a rate of 8.27 in/hr which is the Rawls Rate for sand, while the NRCS soil mapping information provided identifies Hinckley loamy sand, which has a Rawls Rate of 2.41 inches per hour. We recommend the engineer provide test pit logs to justify the rate used.

This is noted. The onsite review had rapidly infiltrating soils based on the sands and gravels present that, in A&M's opinion, justify the use of the higher Rawl's rate value.

The test pit logs provided identify underlying soils as sand. Comment addressed.

74. We recommend an additional TSS removal calculation be shown for the runoff captured by catch basins within the westerly portion of the driveway to Forest Ridge Road.

The additional TSS calculation has been added to the report as suggested.

Comment addressed.

75. On the Checklist for Stormwater Report, we recommend the subsurface infiltration and water quality structure be removed from the LID Measures. 310 CMR 10.04 defines Low Impact Development Techniques as "innovative stormwater management systems that are modeled after natural hydrologic features", which these are not.

Noted. The checklist is revised.

Comment addressed.

76. On the Checklist for Stormwater Report, Standard 5, we recommend the boxes for “The NPDES Multi-Sector General Permit does not cover the land use” and “All exposure has not been eliminated...” be checked.
Noted. The checklist is revised.
*Comment partially addressed. We recommend the box for “All exposure has **not** been eliminated...” be checked as the areas of high intensity use are in this case exposed to precipitation.*
77. The existing HydroCAD rainfall events used are NRCC 24-hr with curve ‘D’. We recommend these storm events be revised to Type III 24-hour as was used in the proposed HydroCAD and as required by CPW Standard 2.2.1.D.
Noted. The storm type has been revised.
Comment addressed.
78. The existing and proposed HydroCAD analyses include several subcatchments with a Direct Entry time of concentration of 6.0 minutes however, the Tc lines shown on the watershed plans suggest that some may in fact be longer than 6 minutes. We recommend that the engineer use a calculated Tc value for any subcatchment where it is greater than 6 minutes.
Noted. The times of concentrations have been revised to reflect the calculated values.
Comment addressed.
79. The existing HydroCAD model includes hydrographs which are still discharging near the peak runoff rate at the maximum time of 24 hours. We recommend the storm time increment be increased to capture the entire hydrograph. This will likely result in changes to the runoff volumes reported in the design point summary tables in Section 3.
The calculation time span has been increased to 72 hours to capture the full volumes. The runoff volumes have been adjusted accordingly.
Comment addressed.
80. In the existing HydroCAD, Pond 3P includes a Discarded outlet with a rate of 2.41 *cfs* at all elevations. We recommend the engineer correct this to reflect 2.41 *inches per hour*, which is the Rawls Rate for loamy sand.
Noted. This value has been corrected to 2.41 inches per hour.
Comment addressed.
81. The proposed HydroCAD total area is listed as 32.437 acres which does not match the 37.812 acre study area used in the existing HydroCAD. The total areas need to match to provide a true comparison between the pre- and post-development model.
The areas have been reconciled and reflect a value of 37.9 acres under existing and proposed conditions.
Comment addressed.
82. In the proposed HydroCAD, Subcatchment P-8B includes a Tc calculation which differs from the calculation in existing Subcatchment E-8 though a large majority of those segments along the Tc path are unchanged. For consistency, we recommend the engineer revise the calculations to be the same within undisturbed areas.
The time of concentration has been revised as noted.
Comment addressed.
83. In the proposed HydroCAD, several subcatchments include shallow concentrated flow time calculations for “unpaved surfaces”. We recommend that these be revised to either “grass” or “woodland” as these appear to be more appropriate.
Noted. The shallow concentrated flow paths have been revised to reflect the grass or woodland condition.
Comment addressed.
84. In the proposed HydroCAD, we note that an infiltration rate of 8.27 in/hr is used in several ponds which is the Rawls Rate for sand. We recommend the engineer provide test pit logs to justify the rate used.
Noted. Please see response 73 above.
Comment addressed.

85. In the proposed HydroCAD, Pond 4P includes a Discarded outlet with a rate of 2.41 *cfs* at all elevations. We recommend the engineer correct this to reflect 2.41 *inches per hour*, which is the the Rawls Rate for loamy sand.
Noted. This value has been corrected to 2.41 inches per hour.
Comment addressed.
86. In the proposed HydroCAD, several ponds indicate a total inflow volume greater than the total outflow volume, suggesting that the entire storm hydrograph is not captured in the 0.00-24.00 hour time span analyzed. We recommend the time span be increased to capture all volumes.
The calculation time span has been increased to 72 hours to capture the full volumes.
Comment addressed.
87. We recommend that the drawing title for Sheet O&M-1 be revised. Currently it states Proposed Watershed Plan.
The title has been corrected to “Operation & Maintenance Plan”.
Comment addressed.
88. We recommend that the Operations & Maintenance Plan narrative be expanded to require that operations and maintenance inspection reports be maintained for at least the last three years and that copies of the reports from the preceding year be submitted to CPW Engineering annually.
Noted. This condition has been corrected under section 1.2 of the report.
Comment addressed.
89. The figure contained in the Operation & Maintenance Plan includes a callout for the existing infiltration basin in the woods north of the new entrance driveway. We recommend that the O&M Plan clarify if maintenance of this area will become the responsibility of the residential development or if it will remain the responsibility of the Thoreau Club. Further, we recommend that the location for access to this infiltration basin and to the infiltration basin opposite the south side of Building A be identified on this plan in accordance with the Checklist for Stormwater Report, Standard 9.
The responsibility for maintenance of this area will be determined through preparation of a Reciprocal Easement and Use agreement as the project advances. Both projects rely upon this area for stormwater management and the fair share responsibility will need to be addressed as part of closing documents.
We appreciate the clarification of the intent for future maintenance responsibility. Regardless of who is the responsible party and as stated in Comment 35, we recommend that prior to construction that additional details be provided to help whoever is performing the required maintenance identify a means to get the necessary equipment to these stormwater BMP's.
90. On the Existing Watershed Plan, we do not find Tc paths shown for E-5, E-6, or E-7. We recommend that these be added.
The time of concentration flow paths for the referenced watersheds have been included.
Comment addressed.
91. On the Existing & Proposed Watershed Plans, several subcatchments include off-site contributing areas, however, the associated Tc flow paths begin at the property line. We recommend the engineer evaluate the time of concentration paths for the longest time regardless of if these begin on or off-site.
The offsite time of concentration lines have been revised as noted.
Comment addressed.
92. We recommend the Tc path for P-8B be shown similar to that for E-8 within undisturbed areas.
The time of concentration paths between existing and proposed have been reconciled.
Comment addressed.
93. We recommend a Rational Method Divide Plan corresponding to the pipe sizing analysis be added to the report in accordance with CPW Standard 2.2.3.D.

The individual sub-catchment areas are noted on the Proposed Watershed Plans. A table has been added to sheet PWS-1 depicting the areas and cover types to each catch basin. A minimum time of concentration was used for each catchment area.

Comment addressed.

New Comments

Based on the revisions made to the plans, we offer the following new comments.

94. On Site Preparation Plan Sheets C-102A and C-102B, the layer for the proposed EV charging areas is inadvertently shown. We recommend that these be removed from these sheets.

95. On Grading & Drainage Plan C-104B, we recommend that labels be added for the pipe connections to the subsurface infiltration system on either side of PDMH 17A.

CPW Engineering has reviewed these comments and is in agreement. They have stated that they reserve the right to comment on future submittals related to any new or previously submitted information provided to the Town for review.

Should you have any questions or require additional information, please contact me directly at (603) 374-7912 or by email to djordan@gpinet.com.

Sincerely,

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