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Mr. Jay Szklut
Planning and Economic Development Manager
Town of Belmont
Zoning Board of Appeals
19 Moore Street
Belmont, MA 02478

Subject: The Residences at Acorn Park
Chapter 40B – Comprehensive Permit
Belmont, Massachusetts

Dear Mr. Szklut:

Fay, Spofford & Thorndike (FST) is pleased to submit this supplemental letter report to address civil/sitework and stormwatwer management elements of the subject project. A previous letter report was prepared by FST and submitted to the Board on April 27, 2006. A response to that report was prepared by Rizzo Associates (Rizzo), dated May 4, 2006, and was submitted by Rizzo to the Board.

Subsequent to the earlier letters, the project has been revised to address comments received by the Applicant. Our review at this time reflects our comments on the revised plans and the supportive materials submitted to FST for review. Such materials were provided by Rizzo on behalf of the Applicant, AP Cambridge Partners II, LLC, and include the following:

- Appendix A, "Stormwater Management Calculations", submitted June 8, 2006.
- Appendix B, "Seasonal High Groundwater Calculations", submitted June 8, 2006.
- Appendix C, "FEMA 100-Year Floodplain Maps", submitted June 8, 2006.
- "Residences at Acorn Park", Site Development Plan set (20 Sheets), revised June 8, 2006.

FST comments pertaining to wastewater, and comments offered by Wetlands and Wildlife, Inc. (WWI), our environmental subconsultant, are offered to the Board as separate letters.

Consistent with our earlier review, the Comprehensive Permit submittal was reviewed for conformance with the Massachusetts Housing Partnership (MHP) *Local 40B Review and Decision Guidelines*, Town of Belmont's Zoning Bylaws and generally accepted engineering practice. We offer the following comments regarding "The Residences at Acorn Park" Comprehensive Permit submittal for the Board's consideration.

Site Area

The proposed project consist of five (5) buildings, with a total of two hundred ninety-nine (299) multi-family units, surface and underground parking facilities, landscaping, open space, pool area and associated utilities all situated on a 15.6 acre parcel of land. A small portion of the land (approximately 2.7 acres) is located in the City of Cambridge. The remaining 9.73 acres of the development is located within the Town of Belmont "Belmont Uplands" Zoning District, with approximately 625 feet of frontage on Acorn Park Drive (Private) and approximately 307 feet of frontage on Frontage Road (Public). The project site is primarily a wooded area located within the Mystic River Basin Watershed. Surface runoff from the site is tributary to the Little River and Little Pond water bodies. As shown on the site development plan, the proposed development will be serviced by municipal water and sewer

General Civil Review

Based on our review of the submitted materials, FST offers the following comments and recommendations on the remaining general civil issues.

1. Sight Distance - FST concurs with Rizzo's response which states the measured sight lines approaching the site driveway intersections along Acorn Drive and for motorists existing the site were found to meet or exceed the *minimum sight distance requirements* for the appropriate design speed along Acorn park Drive. We do note however the measured sight distance at the North Site Driveway looking to the north is less than the *desirable intersection sight distance.* We also recommend the measured sight distances be added to the plans to ensure that any clearing and grading needed to achieve the minimum sight distance is clearly identified on the plans.
2. Fire Truck Turning Movements - To further clarify the fire truck turning movements, FST recommends the maximum swept path with an appropriate vehicle interval be added to sheet C-13.
3. Proposed Sidewalk - We again note that no sidewalks are currently shown within the front entrance parking lot areas associated with Building Nos. A and E. As stated in the response by Rizzo, the sidewalk along the west side of Acorn Park Drive will be pervious (i.e., stone dust). FST questions if the proposed stone dust surface treatment is in compliance with the Federal Americans with Disabilities Act (ADA) and the Massachusetts Architectural Access Board (AAB) requirements. We recommend a solid surface be considered at this location, and recommend this issue be addressed by the applicant with the Board.

Stormwater Management Review

Based on our review of the submitted materials for stormwater management facilities, we offer the following comments and recommendations. Our comments are listed in order of priority and importance, with comments 1 through 7 being of highest priority, comments 8 through 11 being of moderate priority, and comments 12 through 19 being of lower priority.

1. We note, as listed on Sheet C-2 of the plan set, that the proposed project exceeds the maximum gross floor area, maximum impervious area, and maximum outside parking spaces requirements, and fails to meet the minimum side yard setback, minimum rear

yard setback, minimum front yard setback, and the minimum open space requirements, according to Section 6B, Belmont Uplands District, of Belmont's zoning by-laws.

2. For existing conditions, an n-value of 0.40 (wooded, light underbrush) was used in HydroCAD to calculate the time of concentration for the four subcatchment areas. For proposed conditions, the n-value has been increased to 0.80 (wooded, dense underbrush) to calculate the times of concentration for subcatchments 9S and 10S. We question why the n-value was increased when these areas will remain largely unchanged under proposed conditions. Based on our field observations, we question whether these areas can be classified as "wooded, dense underbrush" representative of a 0.80 n-value. Further, our experience and information previously received from workshops conducted by the U.S. Soils Conservation Service (SCS), currently the Natural Resources Conservation Service (NRCS) pertaining to use of the referenced methodologies, suggests that an n-value of 0.80 only applies to areas of the western U.S. Accordingly, we recommend a proposed conditions n-value of no greater than 0.40 be used within the submitted calculations.

3. The percolation rate for TP-3, which is located in the vicinity of Infiltration Chamber 3, is listed as 0.33 min/in in Appendix B and on Sheet C-10. However, a percolation rate of 2 min/in was used for the calculation of the exfiltration rate, which in turn was used in the HydroCAD calculations for Infiltration Chamber 3. The Applicant needs to resolve this inconsistency and modify the HydroCAD calculations as necessary.

4. The calculations submitted by the Applicant, with the possible exception of Infiltration Chamber 3, indicate that the proposed stormwater management systems appear to be feasible. However, the Applicant has not submitted for our review a map delineating the catchment areas for the catch basins. We recommend as part of the final design process the Applicant prepare and submit a catch basin area catchment map for review.

5. In Section 6.3.6, Operation and Maintenance Plan, the schedule for inspection and maintenance after construction describes maintenance activities that will be performed for the detention/infiltration system. In addition to the maintenance measures outlined in the text, we recommend a monitoring program be established beyond the first year to ensure long-term proper function of these systems.

6. The following comments pertain to the infiltration/detention chambers:

   a. For DMH 8 and 11, the elevation of the orifice is lower than the elevation of the outlet pipe. We request the Applicant provide an explanation why this atypical configuration was used.

   b. On Sheet C-10, the detail for the riser installation does not specify the diameter of the riser. The Applicant needs to provide this information so that we can verify that manned entry into the infiltration/detention systems will be possible.

   c. The locations of the clean-outs for the infiltration/detention systems are not shown on Sheet C-3. We request the Applicant provide these details on the sheet.

   d. We recommend the installation of a clean-out at the location where the pipe from the grit chamber ties into the infiltration/detention system so that observations of sediment build-up and maintenance activities can be performed.

e. We request the Applicant provide the size and type of grate that is proposed for the risers, and whether that grate is adequate for H-20 loadings, particularly for those grates that are located in the parking lots.

f. We request the Applicant provide documentation from the pipe manufacturer stating that the riser installations will be adequate for H-20 loadings.

7. On Sheet C-2, the Applicant has indicated snow storage areas, and Section 6.3.6, Operation and Maintenance Plan, addresses snow removal and storage. However, we request the Applicant provide assumptions and/or calculations that demonstrate that the snow storage areas indicated on the plans will be adequate, given the significant amount of impervious area. The Stormwater Management Report is not clear when or if snow will be removed from the site. A concern is that the snow piles at the garage entrance/exit for Buildings A and E will become too high and block the line of sight for vehicles pulling out of the garage.

8. Sheet C-3 shows trench drains at the entrances/exits of the garages, but details of the trench drain were not provided. We request the Applicant provide these details for our review.

9. The package submitted by the Applicant was not complete in the submission of detailed calculations for the closed drainage systems. For final design, we recommend submittal of calculations to demonstrate system adequacy inclusive of, but not necessarily limited to; gutter flow capacity, width of gutter flow spread, inlet capacity / percent interception versus percent bypass for the selected inlet grate configurations, and a hydraulic grade line determination.

10. The HydroCAD model assumes that flows for the 100-year storm event are conveyed to the detention/infiltration systems. The Applicant needs to provide supporting documentation that the closed drainage systems are capable of conveying this flow, even if the pipes are operating above full flow capacity, but not surcharging the drain manholes and catch basins.

11. In HydroCAD, the length of pipe from DMH8 to FES3 is 8 feet. We note that this length of pipe is listed on Worksheet 1 as 26 feet and similarly scales to 26 feet on Sheet C-3.

12. The soil numbers listed in Section 6.1.1, Site Characteristics, of the Stormwater Management Report are not consistent with the soils numbers in Figure 0, but the Hydrologic Soil Groups for the project site are correct. The Applicant needs to revise the text to be consistent with Figure 0.

13. In Section 6.3.5, Erosion and Sedimentation Controls, the text in the second bullet refers to a detention basin, which is no longer proposed for this project. The Applicant needs to revise the text accordingly.

14. In Section 6.3.6, Operation and Maintenance Plan, the schedule for inspection and maintenance during construction describes maintenance activities that will be performed for the detention basins. Because, these basins are no longer proposed, the Applicant needs to revise the text accordingly.

15. In Section 6.3.7, Floodplain, the text indicates that portions of three buildings will impact the 100-year floodplain. Review of Figure 4 indicates that only two buildings will impact the 100-year floodplain. The Applicant needs to resolve this inconsistency.

16. On Sheet C-3, the roof leader for Building B is mislabeled as "RL-C"; it should be "RL-B".
17. On Sheet C-3, the Drain Manhole Schedule indicates that DMH-14 is connected to FES-2, which is incorrect; the manhole connects to FES-1.
18. We note that the TSS removal calculation for the infiltration/detention systems achieves a removal rate of 85%, while the TSS removal rate for the grass filter strip is 73%, which is less than the required 80%. However, using a weighted average, the Applicant calculates an overall removal rate of 83%.
19. On Sheet C-1, the test pits are shown in gray. We recommend revising the plan to show the test pits in black to make the plan easier to read.

Wetland Resource Areas

FST retained the services of Mr. Marshall Dennis of Wetlands and Wildlife, Inc. (WWI) to prepare a wetland resource evaluation report. His supplemental report will be submitted to the Board as a stand alone letter.

We trust the information presented herein is responsive to your request for civil/sitework peer review services for the subject project. We appreciate the opportunity to provide these services to the Belmont Zoning Board of Appeals and will present a summary of our findings at the June 28, 2006 meeting. Please feel free to contact me by email to schapman@fstinc.comT, or by telephone call to 781-221-1270, should you desire additional information or wish to discuss any aspect of this letter prior to the meeting.

Very truly yours,

FAY, SPOFFORD & TORNDIKE

By

Stephen A. Chapman

Stephen A. Chapman, P.E.

Vice President

Cc: (via email)
Mr. David Albrecht / Rizzo Associates
Mr. Marshall Dennis / Wetlands and Wildlife, Inc.

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