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August 9, 2012

Littleton Zoning Board of Appeals  
Zoning Board of Appeals Office, Room 303  
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**Subject: 15 Great Road Apartments 40B Project  
Initial Draft Peer Review Report**

Dear Zoning Board of Appeals Members:

We received the following documents on July 11, 2012:

- Plans entitled "Village Green Apartments" 40B Comprehensive Permit Application at 15 Great Road, Littleton, MA dated July 9, 2012, prepared by Places Associates, Inc. for Fifteen Great Road LLC. (13 sheets)
- Bound document entitled Stormwater Analysis for "Littleton Green Apartments" Comprehensive Permit Project in Littleton, Mass. Dated July 9, 2012, prepared by Places Associates, Inc. for Fifteen Great Road LLC II.

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' conformance with applicable "Littleton Board of Appeals Model Rules for the Issuance of a Comprehensive Permit", "Code of the Town of Littleton, Massachusetts, v41, Chapter 173, Zoning", "Code of the Town of Littleton, Massachusetts Chapter 249, Subdivision of Land Regulations", "Code of the Town of Littleton, Massachusetts, Chapter 171, Wetlands Protection", Massachusetts Department of Environmental Protection (MADEP) Stormwater Management Policy and standard engineering practice. As part of this review GEI visited the site with the applicant and their consulting engineer on August 2, 2012.

**Our comments follow:**

**Model Rules for the Issuance of a Comprehensive Permit**

1. An earlier version of the application package included a list of waivers dated February 16, 2012 that applied to a previous layout of the project. The waiver list must be updated as necessary to apply to the current project layout and must be submitted for review. (§4(a))
2. The tabulation of site features from the former layout must be updated to reflect the current layout. The required tabulation consists of: proposed buildings by type, size (number of bedrooms, floor area), and ground cover, and a summary showing the percentage of the tract to be occupied by buildings, by parking and other paved vehicular areas, and by open areas. The data was previously submitted partially in the narrative and partially in separate attachments. It would be helpful if the information were submitted together on a plan sheet. The tabulation must not only include the major buildings (e.g. the townhome and garden buildings) but also must include ancillary buildings. (§4(e))

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### **Chapter 173, Zoning**

3. A table summarizing the required and proposed parking must be provided in order to evaluate compliance with the parking requirements. The table must be broken down by parking areas and the buildings they serve. For example, 85 parking spaces are proposed in the area of Buildings A – D (28 parking spaces are actually proposed instead of the 35 labeled on the east side of the access road opposite Building C). The table should clarify which buildings are to be served by these parking spaces. The Zoning requirements call for two parking spaces per dwelling unit; thereby indicating that the parking area could accommodate 42 dwelling units. However, the February 16, 2012 narrative indicates there will be 106 dwelling units. (§173-32)

### **Chapter 249, Subdivision of Land Regulations**

4. Considering the Subdivision of Land Regulations as a road infrastructure design and construction guide, consideration should be given to increasing the access driveway binder thickness of interior ways from 1-1/2" to 2-1/2" as cited in the Regulations. The binder asphalt is usually the only asphalt course in place during construction activities. A thicker binder course will provide a more durable road surface during and after the construction phase of the project. (Appendix A, Lane Roads and Minor Roads)

### **Chapter 171, Wetlands Protection**

5. GEI has no issues.

### **Stormwater Management & Hydrology Review**

6. In the hydrology computations a minimum time-of-concentration of 10 minutes (0.17 hours) was used. Per TR-55 (hydrology modeling methodology), the minimum time of concentration is 6 minutes (0.1 hours). This affects the calculated peak rates of runoff and times of the peak rates of runoff. This can be addressed in the hydrology calculations to be prepared during detailed design.
7. The labels in the post-development drainage diagram need to be fully coordinated with the Post-Development Watershed Plan. For example, "Subcatcment R-AB" refers to Buildings A and B but models roof runoff from Buildings B and C, and Subcatchment R31 refers to Buildings 31 and 32 but models roof runoff from Buildings 30 and 31. Likewise, we couldn't find Subcatchment 27 on the Post-Development Watershed Plan.
8. The value of "P2" used to calculate sheet flow time-of-travel in post-development conditions is not consistent with the "P2" value used in the pre-development conditions. This has a small effect on the calculated travel time for sheet flow. The values must be consistent; this can be addressed in the hydrology calculations to be prepared during detailed design.
9. In the post-development conditions, runoff from the area east of Building 32 will discharge via a swale to the project perimeter instead of to Basin C. As such, this area can't be included in Subcatchment 301 because Subcatchment 301 discharges to Basin C. The area is not significantly large; this can be addressed in the hydrology calculations to be prepared during detailed design.

10. On the Post-Development Watershed Plan, lines need to be added to separate Subcatchments 401 and 404, and Subcatchments 444 from 456. This can be addressed in the hydrology calculations to be prepared during detailed design.
11. In post-development conditions Pond 250 (a recharge system) will surcharge during storms more intense than a two-year storm. The recharge system must be revised during detailed design so it doesn't surcharge.
12. In post-development conditions Pond RC-30 (a recharge system) will surcharge during a 100-year storm event. The design must be revised during detailed design so it doesn't surcharge.
13. The hydrology calculations indicate the open basins will function, but design revisions for some of the basins will be necessary during detailed design. The open basins must be designed so that the emergency spillways and the peak water surfaces during a 100-year storm event are each at least one-foot below the top of the basin's berm so that adequate freeboard is provided.
14. The hydrology computations and stormwater management documents are preliminary and will be revised as the project moves forward to detailed design. The preliminary information submitted indicates that the stormwater management scenario being developed for the project can reasonably be expected to support the proposed project once final design revisions are made.

#### **General Engineering Comments**

15. Vertical profiles of the interior ways were not included in the plan set. Based upon our review of the proposed topographic contours, vertical alignment of the interior ways does not seem to be unreasonable. However, vertical profiles must be included in the construction plan set to allow for detailed review of pertinent features such as vertical curves and leveling areas at intersections.
16. The plans propose driveways at the townhomes as short as approximately eighteen feet as measured from the road (e.g. at Buildings 19, 20, 23, 24, 26, 28). The plans propose one garage parking space for each townhome, so households with two vehicles must also rely on driveway parking. We are concerned that some of the driveways are too short for longer vehicles, and the possibility exists for a vehicle parked in a driveway to protrude into the travel lane or onto a sidewalk. As defined by Massachusetts Department of Transportation in their Project Development and Design Guide, a passenger vehicle is nineteen feet long. A vehicle would have to be parked very close to a garage door in order for the vehicle not to encroach on a travel lane or a sidewalk, if encroachment can even be avoided. It has been our experience that a minimum driveway length of twenty-two feet typically works well for townhomes. Alternatively, the plans could provide "extra" parking spaces scattered throughout the site to allow persons with a longer vehicle an alternative place to park within a reasonable walking distance of their dwelling.
17. The plans propose four "extra" parking spaces between Buildings 17 and 18. We feel this is a good concept; the "extra" parking spaces could provide parking off the interior ways for households with more than two vehicles and/or gatherings at the dwelling units.

Consideration should be given to adding additional "extra" parking areas dispersed throughout the project to discourage parking on the interior ways. For example, "extra" parking could be considered near Buildings 4, 7 & 13, 14 and in the area of Buildings 24 – 28.

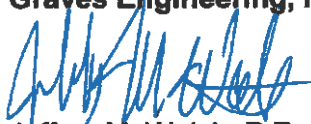
18. "Off-street" parking rather than perpendicular parking should be provided for the recycling center to avoid conflicts between vehicles backing out of the parking spaces and vehicles using the project entrance/exit.
19. Cape Cod berm is proposed along the road. For better protection of pedestrians, a vertical curb must be used instead of Cape Cod berm in areas where a sidewalk is adjacent to an interior way.
20. The plans show the water main truncating at the access road to Grist Mill and in Great Road. The plans must note whether the water main will be connected to the existing water main in one or both locations. It would be prudent to create a looped water system.
21. The plans only show three fire hydrants on Sheet 5 and none on Sheet 4. The proposed number of fire hydrants appears to be inadequate. The design engineer should solicit the Fire Department and Littleton Water Department relative to the number and locations of fire hydrants.
22. On Sheets 4 and 5, the text associated utility line-types is too small to read. The text must be enlarged.
23. Based upon the information submitted to date, the size of the conceptual wastewater disposal area does not appear to be unreasonable. The wastewater design flow will exceed 10,000 gallons per day; therefore the applicant will have to apply to Massachusetts Department of Environmental Protection for a groundwater discharge permit. The wastewater disposal system design will certainly be refined as the permitting process proceeds.

#### **General Comments**

24. The recycling, maintenance and wastewater treatment buildings must be labeled on Sheets 3, 4 and 5.

We trust this letter addresses your review requirements. Feel free to contact this office if you have any questions or comments.

Very truly yours,  
**Graves Engineering, Inc.**



Jeffrey M. Walsh, P.E.  
Project Manager