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May 5, 2015

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**RECEIVED**

**MAY 13 2015**

**Subject: Gristmill Village  
Definitive Plan and Stormwater Review**

**PLANNING BOARD  
GRAFTON, MA**

Dear Joe:

We received the following documents on April 6, 2015:

- Correspondence from Grafton Conservation Commission to Town Departments dated March 13, 2015 re: "Hearing of the Conservation Commission" with attachments.
- Plans entitled "Gristmill Village" Definitive Plan, Conventional Development, Grafton, Massachusetts 01519 dated March 13, 2015, prepared by J.M. Grenier Associates Inc. for Casa Builders & Developers Corp. (17 sheets)
- Bound document entitled Stormwater Management Report, "Gristmill Village" Definitive Plan, Conventional Development, Grafton, Massachusetts dated March 13, 2015, prepared by J.M. Grenier Associates, Inc. for Casa Builders & Developers Corp.
- Bound document entitled Stormwater Pollution Prevention Plan (SWPPP) dated March 13, 2015, prepared by J.M. Grenier Associates, Inc. for Casa Builders & Developers Corp.

We also received the following documents on April 21, 2015:

- Plan entitled Tree Plan, "Gristmill Village" Definitive Plan, Conventional Development, Grafton, Massachusetts 01519 dated April 10, 2015, prepared by J.M. Grenier Associates Inc. for Casa Builders & Developers Corp. (1 sheet)
- Plan entitled Proof Plan, "Gristmill Village" Definitive Plan, Conventional Development, Grafton, Massachusetts 01519 dated April 10, 2015, prepared by J.M. Grenier Associates Inc. for Casa Builders & Developers Corp. (1 sheet)

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' conformance with applicable "Grafton Zoning By-Law" amended through October 14, 2013; "Rules and Regulations Governing the Subdivision of Land, Grafton, Massachusetts" revised through April 27, 2009; Massachusetts Department of Environmental Protection (MADEP) Stormwater Management Policy and standard engineering practices on behalf of the Planning Board. GEI has also been requested to review and comment on the documents' conformance with applicable Conservation Commission "Regulations Governing Stormwater Management" dated May 2013 on behalf of the Conservation Commission.

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**Our comments follow:**

**Subdivision Rules & Regulations**

1. The applicant has requested a waiver to allow a dead end street and its extensions to exceed 500 feet in length. A waiver was previously requested from this requirement. The request was denied in a Planning Board decision filed on May 21, 2014. It is our understanding that the Planning Board will address waiver requests. (§4.1.6.3)
2. Sheets 2 and 3 of 17 were not stamped by a Registered Professional Engineer or Land Surveyor. (§3.3.2.2)
3. The plans propose 22-foot wide roads, which are the width required for a "Minor Street-C". Based upon ITE trip generation rates for single-family dwellings, the development would be expected to generate less than 250 vehicle trips per day. However, based on our experience at a project elsewhere in Grafton a 22-foot wide through road can be difficult to maneuver around a parked vehicle or opposing vehicle if snow is present along the road. The Board may wish to consider requiring a "Minor Street-B" width of 26 feet for better maneuverability. In a Planning Board decision filed May 21, 2014, it is noted that the Fire Department stated their preference for a 24 foot or 28 foot wide street to accommodate emergency vehicles. (§4.1.4.2)
4. The applicant has requested a waiver to allow less than seven feet six inches (7' 6") of cover over sewer pipes. The minimum proposed cover over a sewer pipe is five feet two inches (5' 2"). This shallower depth will occur in the vicinity of SMH 2 in Pleasant Street at the intersection of Millstone Drive. The depth of cover was affected by the elevation of the terminal end of the existing sewer main and the existing topography along Pleasant Street and as such, we have no issue with the waiver request. It is our understanding that the Planning Board will address waiver requests. (§5.3.2)
5. The applicant has requested a waiver to allow less than four feet of cover over drain pipes. The minimum proposed cover over a drain pipe is two feet two inches (2' 2") at Millstone Drive station 0+00 ±. Class V RCP should be used if four feet of cover cannot be provided. It is our understanding that the Planning Board will address waiver requests. (§5.4.2.2)
6. Cape Cod Berm is proposed on Greystone Drive, which has a centerline grade of 2.5%. Vertical Granite Curb must be placed along any roadway that exceeds 2%. In our opinion, as an alternative, consideration could be given to placing vertical granite curb at the radii and cul-de-sacs, and sloped granite edging along both Greystone Drive and Millstone Drive. (§4.2.1.2.b)
7. The two catch basin construction details on Sheet 16 of 17 need to be revised to include granite curb inlets. (§4.7.8.3)
8. Concrete sidewalks must be provided across driveways. (§4.9.1)
9. The "Typical Trench Section" construction detail on Sheet 16 of 17 must specify that to a point two feet over the pipe, no stones larger than three inches in greatest dimension shall be used. (§5.3.1.3.e)

10. The "Precast Concrete Drain Manhole" construction detail on Sheet 16 of 17 must specify steel reinforced copolymer polypropylene plastic steps. (§5.4.1.5)
11. The "Precast Concrete Drain Manhole" construction detail on Sheet 16 of 17 needs to include an invert channel. (§5.4.1.6)
12. Sheet 8 proposes a single tree species, Pin Oak, for the subdivision. We defer to the Planning Board if a single species is acceptable or if two or more species are required. (§5.10.1)

### **Zoning By-Law**

13. GEI has no issues relative to compliance with Grafton Zoning By-Laws.

### **Grafton's Regulations Governing Stormwater Management**

14. The hydrology computations submitted were not based upon "Cornell Data" precipitation amounts. The website <http://precip.eas.cornell.edu> can be used to obtain rainfall data for the Grafton area. The rainfall data must be for a 24-hour storm event. (§6.B.3.b)
15. The Stormwater Management Plan must include a cost estimate for operation and maintenance. (§7.A)
16. The plan shows existing and proposed topography at two-foot contour intervals. One-foot contour intervals are required. Considering the topography at this site, we have no issue with the use of two-foot contour intervals. We defer to the Conservation Commission if two-foot contour intervals are acceptable. (§7.B.1.h)
17. A limit of work line must be shown on the plans. (§7.B.2.b)
18. On site locations to be used for storage materials, wastes, vehicles, equipment and soil must be included on the plans. (§7.B.2.f)
19. Description of structural practices to divert flows from exposed soils must be included on the plans. (§7.B.2.i)

### **Hydrology & MADEP Stormwater Management**

20. GEI reviewed the hydrology computations and found them to be in order except as noted below.
21. The pre- and post-development hydrology computations were prepared based upon a single analysis point for the entire subdivision. However, in our opinion there are three distinct stormwater points where pre- and post-development data need to be analyzed independently: west toward Barbara Jean Street, south toward Grist Mill Road and southeast toward Pleasant Street. Although the computations submitted show that peak runoff rates would be attenuated for the site as a whole, the three analysis points need to be analyzed independently.
22. The 24" grate of the outlet control structure is proposed on the plans as a horizontal grate at elevation 332. The hydrology computations model the outlet as a vertical grate at

elevation 331.50. The hydrology computations need to be revised to be consistent with the plans.

23. Soil testing has not yet been performed at the Subsurface Recharge System, which is located on an easement on an abutting lot. Based upon data collected elsewhere at the site, the design of the Subsurface Recharge System does not appear to be unreasonable. Nevertheless, confirmatory soil testing will be necessary prior to the start of recharge system construction.
24. Calculations for the sizing of rip rap aprons were not provided.

### **General Engineering**

25. A distribution system needs to be designed for the Subsurface Recharge System. The pipe from the water quality inlet abruptly terminates at the edge of the recharge system.
26. A drain manhole should not have any turns with angles greater than 90°. DMH 8 (see Sheet 14) in Gristmill Road needs to be revised.
27. Access to the stormwater basin needs to be revised. Access from the drainage easement on Lots 3 and 4 is blocked by a split rail fence. No gate is proposed.
28. The proposed water main and sewer line in Pleasant Street are in conflict at station 4+43, which is the intersection with Millstone Drive. See Sheet 12 of 17. The utilities must be revised so that they are not in conflict.
29. Handicapped ramps are required at the terminal end of sidewalks. An ADA compliant handicapped ramp needs to be included at each cul-de-sac of Greystone Drive.
30. A street light on the northeast end of Greystone Drive will block access to Snow Easement #2. The street light needs to be relocated.
31. The gravel base depth is inconsistent between the "Typical Roadway Section" and the "Standard Bituminous Concrete Pavement" construction details. Both details specify a sufficient gravel depth (a twelve inch depth is required by Subdivision Rules & Regulations §5.2.1.6.a), however the information must be consistent. The MassDOT specification number for gravel (M1.03.0 Type B) must be included on the plans.
32. The erosion control barrier shown on Sheet 15 of 17 should be extended approximately 250 feet to the southeast along both sides of Millstone Drive to Pleasant Street.
33. The "Precast Concrete Drain Manhole" construction detail on Sheet 16 of 17 specifies a LeBaron LK120 frame and cover. The LK 120 is a frame and grate with parallel bars. The detail must be revised to a LK110A frame and cover.
34. The "Precast Concrete Catch Basin" and "Flat Top Catch Basin" construction details on Sheet 16 of 17 specify L202 hoods. The hoods must be "The Eliminator" or "The Snout", either has been accepted for use in Grafton.

**General Comments**

35. We defer to the Planning Board if the cover sheet must also include suitable space for endorsement by the Planning Board and the requisite notes (e.g. certificate of no appeal, note about a recorded covenant, reference to a major residential special permit and "Deeds of Easements to be Recorded Herewith") that were presented on the other plan sheets.

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.  
Vice President

cc: Grafton Conservation Commission  
John Grenier, P.E; J.M. Grenier Associates, Inc.