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November 20, 2015

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Grafton, MA 01519

PLANNING BOARD
GRAFTON, MA

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

Dear Joe:

We received the following documents on November 18, 2015:

- Transmittal letter from J.M. Grenier Associates, Inc. to Graves Engineering, Inc., undated.
- Plans entitled "Gristmill Village" Definitive Plan, Conventional Development, Grafton, Massachusetts 01519 dated March 13, 2015 and last revised November 17, 2015, prepared by J.M. Grenier Associates, Inc. for Casa Builders & Developers Corp. (17 sheets)

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.

This letter is a follow-up to our previous review letters dated May 5, 2015 and July 27, 2015 and is also a follow-up to our e-mail correspondence of August 25, 2015. For clarity, comments from our previous letters and e-mail are *italicized* and our latest comments to the applicant's responses are depicted in **bold**. Previous comment numbering has been maintained.

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)*
No further comment required.
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*

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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 road can make it difficult to maneuver around a parked vehicle or opposing vehicle if snow is present along the sides of 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)

July 27, 2015:

No further comment required.

Acknowledged. The plans were revised to propose a 24-foot wide road.

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)

No further comment required.

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)

July 27, 2015:

A waiver request has been submitted to allow bituminous Cape Cod berm along all roadways except at the intersection of Millstone Drive and Pleasant Street (where vertical granite curb is proposed). GEI understands that waiver requests will be addressed by the Planning Board.

The waiver request and plans were revised to proposed sloped granite edging along the roadways except at intersection radii and catch basins where vertical granite curb and vertical curb inlets are proposed. GEI has no issue with this latest proposal; the materials are consistent with many other projects. Again, we understand that waiver requests will be addressed by the Planning Board.

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)

July 27, 2015:

The plans have been updated to include two types of tree species (Cleveland pear & White pine). We understand that the proposed street trees will be reviewed by the Planning Board or its staff.

No further comment.

Zoning By-Law

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

No further comment.

Grafton's Regulations Governing Stormwater Management

15. *The Stormwater Management Plan must include a cost estimate for operation and maintenance. (§7.A)*

Although the design engineer replied that a cost estimate has now been provided as part of the Operation and Maintenance Plan, we could not find the cost estimate. A cost estimate will need to be added to the project documents.

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)*

No further comment required.

Hydrology & MADEP Stormwater Management

20. *GEI reviewed the hydrology computations and found them to be in order except as noted below.*

July 27, 2015:

The revised hydrology computations are generally in order. There are two minor issues with modeling of the detention basin outlet. The outlet control structure consists of a grate and an outlet pipe for which only the grate was modeled. The first issue is that pipe's capacity is more restrictive than the grate, therefore the pipe should be included in the model. This revision will decrease the calculated peak discharge rate with minimal effect on the elevation to which water would be impounded in the basin. Secondly, for the record the grate should be modeled as rectangular instead of circular; nevertheless the capacity of the grate/pipe's outlet structure will be governed by the pipe so this revision will have no effect on the calculated discharge rates.

For the record, the calculations should be revised and submitted. If acceptable to the Board, this could be addressed as a condition.

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.*

July 27, 2015:

No further comment.

See Comment #38 below.

General Engineering

General Engineering comments were previously addressed.

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.

No further comment.

August 25, 2015 E-mail Comments

36. Per MassDEP's Stormwater Handbook, an infiltration facility needs to be at least 100 feet from a well. I estimated that as proposed the setback is about 88 feet from the abutter's well.

Acknowledged. The layout of the subsurface infiltration system was revised.

37. Per MassDEP's Stormwater Handbook, an infiltration facility needs to be at least 50 feet from a septic system's soil absorption system. The plan proposes a setback of 31 feet.

The design engineer responded that existing septic system is to be removed. It appears that the intention is to remove the existing septic system and connect the dwelling at #96 Pleasant Street to the new sanitary sewer system. However, the only note that we could find was on the existing conditions plan (Sheet 2) and referred to removal of the septic system. In our opinion, the plans should be clearer by providing a note on the utility plan (Sheet 9) that the dwelling is to be connected to the sanitary sewer system and that the existing septic system is to be removed in accordance with Title V requirements.

38. Considering the rock that we observed at test pit TP-1 (Millstone Drive station 2+50+/-), I recommend doing soil testing as part of the design process. I suggest two test holes.

The subsurface infiltration system is to be located in a new easement that will be created as part of the definitive plan. Therefore, it seems reasonable to require the testing after plan endorsement but prior to the start of construction so that the soil testing can occur within the easement. If the soil testing does not fully support the current design of the infiltration system, then design revisions could be necessary.

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.