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OCT 11 2016

**PLANNING BOARD
GRAFTON, MA**

October 11, 2016

Mr. Joseph Laydon
Town Planner
Grafton Municipal Center
30 Providence Road
Grafton, MA 01519

**RE: Estates at Bull Meadow
Response to Peer Review Comments**

Dear Joe:

McCarty Engineering Inc. (MEI) is in receipt of a review letter dated July 19, 2016 prepared by Graves Engineering, Inc. relative to the Bull Meadow Estates proposed subdivision off Appaloosa Drive. They have offered comments to the Board on conformance with the Subdivision Rules & Regulations, Zoning By-Law, Stormwater Management & Hydrology Review and General Engineering Comments.

For ease of review, the Graves Comment is shown below with MEI's response provided below it in italic font.

The comments received are as follows:

Subdivision Rules & Regulations

1. Although the boundary of the development was drawn on the plans, it is difficult to distinguish the boundary from other interior and exterior lot lines. The boundary should be a heavier line type. (§3.3.3.1)

Response: The boundary has been adjusted to be more visible on the plans.

2. A north point needs to be shown on Sheet 6 and for the three viewports on Sheet 18. (§3.3.3.6)

Response: A north arrow has been added to Sheet 6 as well as the viewports on sheet 18.

3. Notice of any and all decisions, special permits (e.g.: Major Residential Special Permit), etc. must be identified on the plans, including Worcester District Registry of Deeds book and page numbers. (§3.3.3.13)

Response: Notice of all decisions, special permits, etc. has been added to the plan sheets.

4. The species of proposed street trees were not identified in the plans. (§3.3.3.20)

Response: The species for the proposed street trees are Red Maple and Cleveland Pear, which can be found in the tree planting schedule located on Sheet 8 and Sheet 9.

5. The profile for Paddock Ridge Drive shows fill greater than 6 feet between stations 12+75 and 14+60. We understand a waiver request was submitted and will be reviewed by the Planning Board. (§4.1.2.1.b)

Response: A waiver has been requested for relief from this requirement.

6. The minimum K requirement for vertical curves was not met at station 12+24 (proposed sag curve with K=27) and at station 13+81 (proposed crest curve with K=6). (§4.1.5.3)

Response: The crest curve at STA 13+81 has been revised to meet the minimum k value of 7 which corresponds to the AASHTO design k value for a 20 MPH roadway. The proposed sag curve at STA 12+24 has been revised to a k value of 28 which exceeds AASHTO's design k value for a 25 MPH roadway. See attached letter from the Transportation Consultant, Green International Affiliates, Inc. (GIA) for their response. Although GIA mentions that lengthening the crest curve to meet the town's minimum is possible, this would result in grades that would not allow the stormwater runoff to be routed to the below grade infiltration basin 2. This condition would result in a direct discharge to the wetland resource area that would exceed the peak flow rates in existing conditions, thus the project would then not meet MADEP Stormwater Management Standard #2.

7. Street lights were not shown on the plans. (§4.7.6)

Response: Proposed Street Lights have been added to the plans.

8. The three hydrants proposed along Paddock Ridge Drive between Carriage House Lane and Bridle Ridge Drive are proposed at spacing greater than the required maximum of 500 running feet. If not already done, the Planning Board may wish to solicit comments from the Fire Department and Grafton Water District relative to hydrant locations. (§4.7.7.1)

Response: The location of Hydrants has been revised to meet the Town's requirements with the exception of the pipe run between Lot 5 and the intersection of Parcel X and Bridle Ridge Drive. The distance between Hydrants is 640 feet. We will solicit a recommendation from the Grafton Fire Department and Water District.

9. Granite curb inlets are required for the catch basins. (§4.7.8.3)

Response: Granite curb inlets have been added to the detail sheet.

10. Sheet 22 proposes a reinforced concrete bound; however, granite bounds are required. The bound material and dimensions need to be revised. Additionally, on Sheet 5 two bounds are missing at the eastern drain easement. (§4.8.1)

Response: A granite bound detail has been added to the Detail Sheet. The two missing bounds will be added to the eastern drain easement on Sheet 5.

11. Concrete sidewalk needs to be shown across driveways. (§4.9.1)

Response: A waiver has been requested not to install concrete sidewalk across the proposed driveways. This design is consistent with the existing neighborhood in addition to providing a safer driveway design for snow plowing and maintenance considerations.

12. The proposed 10-foot wide trail access easement shown between Lots 11 and 12 does not meet the minimum required width of 20 feet. Also, the easement was labeled as a drain easement on Sheet 5. (§4.11.4)

Response: The proposed easement has been adjusted to the required width of 20 feet and the label has been corrected on Sheet 5.

13. A waiver was requested to allow less than the required four feet of cover over the drain line at two locations. The proposed cover is at least 2.5 feet. We don't have an issue with the waiver request as long as Class V reinforced concrete pipe is used along Carriage House Lane between DMH 6 and Infiltration Basin 1. The other location is a cross-country drain line; Class III pipe (which is commonly used) would not be unreasonable at this location. (§5.4.2.2)

Response: We agree with the above comment.

14. Retaining walls are proposed within the Paddock Ridge Drive right-of-way between stations 12+50± and 14+45± and a waiver was requested. We understand that the Town of Grafton requires retaining walls to be outside the rights-of-way. (Schedule E, Standard Cross Section Minor Street B)

Response: A waiver has been requested and we look forward to discussing this with the Planning Board.

15. The "Bituminous Concrete Pavement Detail" on Sheet 22 needs to be revised to be consistent with the "Minor Street B Standard Cross-Section" construction detail on Sheet 23 and with Grafton Subdivision Rules and Regulations. The total pavement thickness is incorrect and the gravel base needs to consist of one 12" lift of gravel.

Response: "Bituminous Concrete Pavement Detail" has been revised to be consistent with "Minor Street B Standard Cross-Section".

Zoning By-Law

1. Lot 6 has a frontage of 139.98 feet which does not meet the minimum 140-foot requirement. (§3.2.3.2)

Response: The frontage on Lot 6 has been adjusted to meet the minimum 140-foot requirement.

Stormwater Management & Hydrology

1. Access to Infiltration Basins 1 and 2 needs to be revised. The minimum top-of-berm berm width needs to be ten feet and the access grade can't exceed 20%. The tops of the berms are proposed to be approximately seven feet wide and the grade at Infiltration Basin 2 is approximately 33% (3H:1V).

Response: The drainage design has been revised to meet the minimum top of berm widths and required access grades at Infiltration Basins 1-4.

2. Calculations must be provided to demonstrate the infiltration forebay size in Infiltration Basins 1 and 2 comply with DEP Stormwater Management Guidelines.

Response: Sediment forebay sizing calculations have been provided for Proposed Infiltration Basins 1-4.

3. The two infiltration basins will only have approximately 0.8 feet of freeboard as measured between the 100-year peak water surface elevation and the top of the berms; at least one foot of freeboard needs to be provided.

Response: Greater than 1 foot of freeboard is now provided at the Infiltration basins.

4. The plans should clearly show that the sides of the riprap spillways and down-gradient aprons are to also be lined with riprap in order to avoid erosion along the spillways' edges.

Response: The Emergency Spillway Detail shows the limit of riprap required in the infiltration basins.

5. The riprap spillway elevations need to be labeled at Infiltration Basins 1 and 2.

Response: Riprap spillway elevations have been labeled at Infiltration Basins 1-4.

6. Soil testing has not yet been performed at Infiltration Basin 2 to demonstrate compliance with MassDEP's required two-foot offset to seasonal high groundwater. Based upon the soil testing data that was submitted (for fifteen building lots and Infiltration Basin 1), the proposed elevation for Infiltration Basin 2 does not appear to be unreasonable. Nevertheless, soil testing will have to be performed at infiltration Basin 2.

Response: Soil Testing will be performed once Planning and Conservation accept the proposed design.

7. The Area 2A label on the Existing Conditions Watershed Plan should be removed. This label applies to the proposed conditions.

Response: The Existing Conditions Watershed Plan has been revised.

8. There is an unlabeled area shown on the Proposed Conditions Watershed Plan in front of Subcatchment Lot 13.

Response: The Proposed Conditions Watershed Plan has been revised. There is no longer an unlabeled watershed area.

9. It is necessary to provide appropriately-sized riprap aprons at drainage system discharge points. Additionally, supporting calculations relative to the apron dimensions and riprap stone size must be submitted.

Response: Rip Rap apron sizing calculations have been provided in the drainage analysis.

10. Sheet 10 refers to an infiltration basin while Sheet 12 refers to the same structure as a detention basin. The labels on the plans should be consistent and should follow MassDEP nomenclature.

Response: The plans reflect Infiltration basins.

General Engineering Comments

1. On Sheet 21, the floor fill in the precast drain manhole construction detail needs to have a channel as opposed to being a planar surface.

Response: The drain manhole detail has been revised accordingly.

2. Guardrails and pedestrian barriers (e.g. chain link fences) need to be provided at the tops of the retaining walls.

Response: 4" Black Vinyl Chain Link Fence is proposed at the top of the retaining walls.

General Comments

1. We understand that the Planning Board or its staff will review any impact reports.

Response: We agree with the above comment.

2. We understand that the Grafton Water District will review the proposed water utility infrastructure.

Response: We agree with the above comment.

3. We are not aware if a meeting has occurred with Town staff/departments to address the configuration of the existing Appaloosa Drive cul-de-sac. At issue is whether the cul-de-sac should remain as is, be configured with an island or reconfigured as a through road. (MRSP 2014-8, Condition C3)

Response: We look forward to the recommendation of the Town Departments as to the desired layout of the existing cul-de-sac on Appaloosa Drive. Once a cooperative decision is made the layout will be reflected on the site plans.

4. The cover sheet specifies the site as being in zoning district R4. This should be corrected to R40.

Response: The zoning district has been corrected to R40.

5. It is recommended for clarity that the existing conditions plans (Sheets 1 and 2) be revised so the underlying gray existing conditions lines are black.

Response: Sheets 1 and 2 has been revised so the underlying gray is now black and more visible.

6. The layout plan identifies roads by road name while the profile plans identify roads with a letter. Road identification should be consistent.

Response: The profile plans have been modified to identify the roads by name.

7. Prior to plan endorsement, all sheets of the plan set, including the cover sheet, must include the statement "See Sheet ___ for Planning Board Conditions of Approval", and the conditions must be inscribed on said sheet.

Response: The above statement has been added to all sheets.

8. The design engineer should be aware that the town has local wetland regulations and stormwater regulations that are administered by the Conservation Commission. GEI has not reviewed the submittal for compliance with those regulations.

Response: We agree with the above comment.

We trust that the responses provided above satisfactorily address the comments raised by Graves Engineering, Inc. We will prepare a revised set of Conventional and Flexible Plans and forward them to the Town for review.

Please feel free to contact me with any questions.

Sincerely,



Brian Marchetti, PE
Vice President

CC: Project File
Gordon Lewis-Bull Meadow LLC.
Applicant
Jeff Walsh, PE - Graves Engineering, Inc.

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