

COPY EXHIBIT



September 18, 2017

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30 Providence Road
Grafton, MA 01519

#64

RECEIVED

SEP 18 2017

**Subject: The Village at Institute Road
Definitive Plan Review**

**PLANNING BOARD
GRAFTON, MA**

Dear Joe:

We received the following document in our office on August 10, 2017 via e-mail:

- Correspondence from Guerriere & Halnon, Inc. to Grafton Planning Board dated August 10, 2017 re: The Village at Institute Road, Definitive Application Revised Waiver Requests.

We also received the following documents in our office on August 31, 2017:

- Correspondence from Guerriere & Halnon, Inc. to Grafton Planning Board dated August 29, 2017 re: The Village at Institute Road, Response to Definitive Plan Review.
- Plans entitled The Village at Institute Road a Conventional Subdivision in Grafton, Massachusetts dated September 16, 2016 and last revised August 25, 2017 (except Sheet 26 – August 22, 2017; Sheet 27 – August 24, 2017; and Sheet 28 – June 26, 2017), prepared by Guerriere & Halnon, Inc. for D&F Afonso Builders, Inc. (34 sheets)
- Document entitled Stormwater Report "The Village At Institute Road" Grafton, MA dated September 13, 2016 and last revised August 25, 2017, prepared by Guerriere & Halnon, Inc. for D& F Afonso Builder Corp.

We also received the following documents in our office on September 14, 2017:

- Correspondence from Guerriere & Halnon, Inc. to Grafton Planning Board dated September 13, 2017 re: The Village at Institute Road, Response to Definitive Plan Review.
- Plans entitled The Village at Institute Road a Conventional Subdivision in Grafton, Massachusetts dated September 16, 2016 and last revised September 13, 2017, prepared by Guerriere & Halnon, Inc. for D&F Afonso Builders, Inc. (34 sheets)
- Document entitled Stormwater Report "The Village At Institute Road" Grafton, MA dated September 13, 2016 and last revised August 25, 2017, prepared by Guerriere & Halnon, Inc. for D& F Afonso Builder Corp.

We also received the following document on September 18, 2017 via e-mail:

- Calculations entitled "Institute Village, MA, G&H Project W-2658" (WQV Sizing Calculations) dated September 18, 2017.

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' conformance with applicable "Rules and Regulations Governing the Subdivision of Land; Grafton, Massachusetts" revised through April 27, 2009, "Grafton Zoning By-Law" amended through May 9, 2016; Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Handbook and standard engineering practices on behalf of the Planning Board. As part of our initial review, GEI visited the site entrance on April 1, 2016.

This letter is a follow-up to our previous review letters dated November 8, 2016, March 21, 2017, June 15, 2017 and July 26, 2017. For clarity, comments from our previous letters are *italicized* and our latest comments to the design engineer's responses are depicted in **bold**. For brevity, comments previously addressed by the design engineer and acknowledged by GEI have been omitted. Previous comment numbering has been maintained.

Our comments follow:

Subdivision Rules and Regulations

1. *One waiver was requested. GEI reviewed the waiver request and the plans; we do not have technical concerns with the request to use low profile "Cape Cod" berm (§4.2.1.2) as long as vertical granite curb is used at the intersection radii and cul-de-sacs (as currently proposed) and as long as granite curb inlets are used at the catch basins (not currently proposed). We understand that the Planning Board will address any waiver requests. If this waiver is to be granted, then the plan-view sheets will need to be revised to show granite curb at the catch basins, the catch basin construction detail will need to be revised to specifically require a granite curb inlet and the "Curb Transition Detail" on Sheet 26 will need to be revised to show a non-chamfered (aka "tip-down") transition curb instead of a chamfered transition.*

March 21, 2017:

The plans were revised, but need to be further revised to be fully coordinated with the waiver requests. We don't have an issue with the waiver requests, they now propose a mix of bituminous Cape Cod berm, sloped granite edging (referred to on the plans as "sloped granite curb" and "sloped granite curbing") and vertical granite curb. The waiver requests ask for the use of Cape Cod berm at the Brooke Street cul-de-sac but Sheets 12 and 18 show a curbing line-type that is the same as vertical granite curbing at the Dylan Way cul-de-sac shown on Sheet 14. As for transitions, "tip down" stones are needed for transitions from vertical curb to Cape Cod berm and chamfered stones are required for transitions from vertical curb to sloped granite edging. Sheet 29 of the plans only proposes one type of transition stone – a "tip down" but instead of transitioning to Cape Cod berm, it proposes transitioning to sloped granite edging. The transition stone detail needs to be revised and a second transition stone construction detail needs to be provided.

Lastly, the "Catch Basin Detail" construction detail (Sheet 30) must be revised to specifically require a granite curb inlet instead of vertical granite curbing.

June 15, 2017:

No plan revisions were made to address this comment.

Sheets 12 – 16 show the curb/berm materials and their locations. The plans propose the following:

- Vertical granite curb at intersection radii and catch basins,
- Vertical granite curb at the Dylan Way cul-de-sac (the cul-de-sac nearest the vernal pool located off Institute Road),
- Cape Cod berm at the Brooke Street cul-de-sac (the cul-de-sac nearest the rear vernal pool/isolated wetland),
- A mix of sloped granite edging (the plans referred to it as "slope granite curb") and bituminous Cape Cod berm on Brooke Street and Dylan Way,
- Bituminous Cape Cod berm for the full length of Audrina Lane.

We understand that the Planning Board will address the waiver request. We also understand that concerns were raised during the Conservation Commission hearings relative to potential impediments to wildlife movement due to the type of curb/berm proposed, especially near the two vernal pools. We understand that the Conservation Commission and/or its staff will also provide input relative to the type(s) of curb/berm and their locations.

Finally, the transition stone and catch basin construction details (now on Sheets 30 and 31, respectively) were satisfactorily revised.

16. *The Subdivision Rules and Regulations require street lights at all intersection and every three hundred (300) feet. The plans currently show street lights at the intersections and cul-de-sacs but not at every three hundred (300) feet. We understand that the applicant will have to coordinate the final street light locations with the Grafton Board of Selectmen. (§4.7.6)*

March 21, 2017

The design engineer responded that the street light locations will be coordinated with appropriate authority.

No further comment necessary.

19. *The plans show that Parcel C is dedicated to be an access/walkway path, with a proposed slope of approximately 25%. The slope of the access/walkway path must be revised. The pathway must have a slope equal to or less than eight (8) percent. (§4.10.4)*

March 21, 2017:

The Engineer revised the grading for the access/walkway path to Parcel C, however the slope still exceeds eight (8) percent and proposes a 2H:1V slope at the upper end of the path. Sheet 24 shows a note requesting a waiver from the slope requirement, however this is the only reference to such a waiver request. If the Engineer wishes to request a waiver from this requirement, they should address it within the waiver request letter, and in our opinion the 2H:1V slope should be revised to be similar to the grade elsewhere on the path.

June 15, 2017:

No plan revisions were made to address this comment and GEI is not aware of the status of any waiver requests.

July 26, 2017:

The walking path profile is now located on Sheet 25; please refer to the left profile on Sheet 25 for the walking trail. The right profile is along the route of the drainage pipe. The walking trail is proposed with a 12% slope. Although the design engineer responded that the 2:1 slope has been adjusted to be consistent with the rest of the path, the profile still shows a 2:1 slope at station 0+20+/- . This minor revision of the profile could be addressed prior to plan endorsement.

Acknowledged. The walking trail profile was revised to eliminate the 2:1 slope.

20. The Engineer must revise the drainage pipe design to provide at least four (4) feet of cover over all drain pipes or provide Class V RCP pipe on the full length of drain lines that have less than four feet of cover anywhere along the line. Based on the plan and profile sheets, GEI estimated that the drainage pipe has less than four (4) feet of cover at the following locations: Audrina Lane Sta 4+80 to Sta. 8+35; Brooke Street Sta. 0+05 to Sta. 0+45 and Sta. 16+60 to Sta. 18+85; Dylan Way Sta. 0+00 to Sta. 2+15. (§5.4.2.2)

March 21, 2017:

This comment was not addressed in its entirety. The proposed drainage system has been revised, however a minimum of four (4) feet of cover was not provided over all of the drain pipes nor do the plans note that Class V RCP pipe is to be used at all of the shallow cover locations. Based on the plan and profile sheets, GEI estimated that the drainage pipe has less than four (4) feet of cover at the following locations: Brooke Street Sta. 17+75 to Sta. 18+68; Dylan Way from CB-30 to DMH-7 and from CB-31 to DMH-7; and on the cross-country drain line from Sta. 2+75 to Sta. 3+84.

June 15, 2017:

Although the drainage pipe between DMH-15 and DMH-16 was revised for another reason, no plan revisions were made to address this comment. Please note that the drainage pipes between Brooke Street station 18+35 and the headwall that discharges to the forebay have less than four feet of cover in addition to the other locations previously noted above.

July 26, 2017:

Sheet 16 was revised to show Class V RCP between DMH-12 (Sta. 10+40) and DMH-16 (Sta. 18+68). However, the Plan View Basin Detail on Sheet 31 also needs to be revised to specify Class V RCP for pipes between DMH-16 (Brooke Street Sta. 18+68) and the headwall that discharges to the forebay.

Acknowledged. The Plan View Basin Detail on Sheet 31 was revised to call for Class V RCP between the Stormceptor manhole in the cul-de-sac and the headwall.

Hydrology & Stormwater Management Review

Hydrology & Stormwater Management Review comments were previously addressed.

General Engineering Comments

36. The plans show a sidewalk beginning at the intersection of Audrina Lane and Institute Road, extending southerly along Institute Road and terminating north of the existing

vernal pool. Consideration should be given to extending the sidewalk southerly along Institute Road from the currently proposed terminus to the intersection of Brooke Street to provide pedestrian access along Institute Road. Use of this section of Institute Road by pedestrians will be inevitable once the project is developed. In our opinion, the width of the pavement on Institute Road and the horizontal alignment of the road warrant that pedestrians should be separated from vehicular traffic. Please refer to Condition C6a of the Decision for Major Residential Permit MSRP 2014-10.

March 21, 2017

The Engineer responded that the area was reviewed in the field with the Conservation Commission Agent and it was determined that a sidewalk could not be constructed in the vernal pool area due to the impacts to the vernal pool. Potential alternatives to placing fill in or adjacent to the vernal pool could be explored (e.g. bridging the sidewalk over the vernal pool using a grated (or similar) decking material or locating the sidewalk on the opposite side of the street). We defer further consideration of this issue to the Planning Board and the Conservation Commission.

June 15, 2017

The plans were revised to proposed a pedestrian route along Institute Road between Audrina Lane and Brooke Street. The pedestrian improvements can best be viewed on Sheet 26. (Please note that on Sheet 26, Brooke Street was inadvertently labeled "Audrina Lane".) The concept of these improvements appears to strike a compromise relative to the separation of pedestrians and vehicles, potential impacts to the vernal pool, and maintaining the Institute Road drainage paths. GEI offers two recommendations: the pedestrian walkway should be a minimum of four feet wide (a three-foot width is proposed on the east side of Institute Road) and tactile plates must be provided at each end of the two crosswalks.

Acknowledged. The plans were revised such that the pedestrian walkway width was increased from three feet to four feet, tactile warning plates were added where pedestrians will leave the sidewalk, the walkway on the east side of Institute Road was extended southerly approximately 200 feet and was routed around a large tree on the east side of Institute Road, a rumble strip with reflectors was added between the vehicle lane and the walkway, and reflectorized bollards were added in the vicinity of the tree that is being retained.

General Comments

58. GEI did not review the design of the sewer pump station or the sewer main design. We understand that the Grafton Sewer Commission will review the subdivision's sewer design.
No further comment.
59. GEI has not reviewed the plans with respect to the water main design. We understand that the Grafton Water District will review the subdivision's water design.
No further comment.

Additional Comments, March 21, 2017

61. Sheets 11 and 13 show proposed drainage lines, catch basins, and manholes throughout the wooded property to the north of Lots 17 through 23. These drainage elements are not part of the project; they appear to be left over from project design

and drafting. Also, on Sheet 8, just south of the proposed sewer pump station easement and above the isolated wetlands there is a bearing and distance that do not relate to a property line. These drainage elements, bearing and distance need to be removed from the plan set.

June 15, 2017:

On Sheets 11 and 13, the drainage lines, catch basins and manholes previously shown have been removed. On Sheet 8, the bearing and distance that do not relate to the property line are still shown. The bearing and distance need to be removed from Sheet 8.

Acknowledged. The bearing and distance were deleted.

64. The design plans show that a proprietary treatment device (Stormceptor) for TSS removal is now proposed and as such the Engineer must provide backup calculations to demonstrate that the device was adequately sized (i.e. calculations in accordance with MassDEP's "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing..." Also, TARP and/or MASTEP Performance Evaluation data must be submitted to support the proposed TSS removal efficiency.

June 15, 2017:

No information was submitted to address this comment.

July 26, 2017:

Performance evaluation data was provided for the treatment unit in the Basin #1 drainage system, however calculations in accordance with MassDEP's "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing..." were not submitted. It appears that the proposed STC 2400 proprietary treatment unit is appropriate for the Basin #1 system. For the record, calculations prepared in accordance with MassDEP's "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices" must be submitted. As for the treatment unit that serves Basin #2, supporting information needs to be submitted, the model number needs to be provided on Sheet 32 (as was done on Sheet 31 for the other treatment unit) and it needs to be confirmed whether the construction detail for a STC 900 treatment unit on Sheet 31 is applicable to this project.

Acknowledged. Calculations were submitted in accordance with MassDEP's "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing..."; the calculations are in order. Supporting information for the STC #900 treatment unit at Basin #2 was submitted; this information is also in order.

71. The Engineer must provide a TSS worksheet for the water quality treatment train (Subcatchment DA #1P) which demonstrates that eighty percent TSS is removed.

June 15, 2017:

No information was submitted to address this comment.

July 26, 2017:

A TSS worksheet was submitted. However, the TSS removal calculations took credit separately for TSS removal by the sediment forebay (25%) and water quality swale (70%). Per MassDEP Stormwater Handbook (Vol. 1, Ch. 1, Pg.11, Note 17 and Vol.

2, Ch. 2, Pg. 77), the combination of the sediment forebay and water quality swale are eligible for 70% TSS removal credit. The 70% removal credit results in the entire treatment train having a TSS removal rate of only 77.5% whereas 80% is required. Additional TSS removal must be achieved for this treatment train.

Acknowledged. The plans and stormwater documentation were revised to include a manhole with a deep sump (similar in performance to a catch basin). This BMP is eligible for 25% TSS removal credit; the revised treatment train satisfies the 80% TSS removal requirement.

73. A proprietary stormwater treatment unit is proposed at the Basin #1 forebay area. This unit will require maintenance by a (heavy) vacuum truck. The treatment unit needs to be located adjacent to the roadway for ease of maintenance access.

June 15, 2017:

The plans were not revised to address this comment. The proprietary stormwater treatment units currently proposed at Basin #1 and Basin #2 need to be relocated to be adjacent to a street for ease of maintenance.

July 26, 2017:

The treatment unit for Basin #2 was relocated to be adjacent to the street; the location is satisfactory. However, the treatment unit for Basin #1 was relocated but is still 70 feet from a street. This unit needs to be relocated so that it can be serviced without a vacuum truck having to leave the road.

Acknowledged. Per Sheet 31, the Basin #1 treatment unit was relocated into the Brooke Street cul-de-sac.

Additional Comments, June 15, 2017

78. Upon further review, on Sheet 17 the rim elevation for catch basin CB#13 is only 2.00 feet above its outlet pipe's invert elevation. There will not be enough elevation difference to accommodate the pipe's diameter and wall thickness, the thickness of the catch basin's flat-top and the height of the catch basin's frame. We calculated that the elevation difference needs to be at least 2.50 feet.

July 26, 2017:

The plan (now Sheet 18) was revised; the pipe elevations were lowered to address the comment. However, there are two typographic errors that need to be corrected – the new elevations at Headwall B1 are off by 100 feet.

Acknowledged. The typographic errors were corrected.

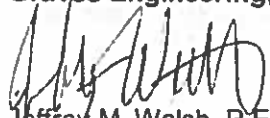
Additional Comments, July 26, 2017

81. The latest version of the Stormwater Report (revised June 26, 2017) contains obsolete pre-development and post-development hydrology (HydroCAD) calculations. These calculations have a "printed" date of February 1, 2017 and we confirmed that they have since been superseded. For the record, the final Stormwater Report must contain the latest version of the hydrology calculations.

Acknowledged. The correct HydroCAD calculations (with "printed" dates of September 11, 2017 and September 13, 2017) were included in the Stormwater Report (last revised August 25, 2017) that we received on September 14, 2017.

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: Peter Lavoie; Guerriere & Halnon, Inc.
Normand Gamache, PLS; Guerriere & Halnon, Inc.