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June 18, 2019

**PLANNING BOARD  
GRAFTON, MA**

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**Subject: Brigati Village - Proposed Multi-Family Development  
14 West Street and 41 Church Street  
Special Permit, Site Plan, Wetland Regulations and Stormwater Regulations  
Review**

Dear Joe and Conservation Commissioners:

**EXHIBIT 39**

We received the following documents on April 22, 2019:

- Sheet C3.01 of plans entitled Special Permit/Site Plan Approval for Brigati Village in Grafton, Massachusetts dated February 7, 2019, prepared by WDA Design Group showing approximate locations of test borings performed on January 2 through 3, 2019. (1 sheet)
- Test boring logs for Boring Nos. NEG-1, NEF-2 and NEG-3, prepared by Northeast Geotechnical, Inc.

We also received the following documents on May 21, 2019:

- Plans entitled Special Permit/Site Plan Approval for Brigati Village in Grafton, Massachusetts dated February 7, 2019 and revised May 17, 2019, prepared by WDA Design Group for Brigati Village, LLC. (22 sheets)
- Bound document entitled Addendum-1, Stormwater Management Report for Brigati Village, 41 Church Street, 14 & 15 West Street, Grafton, Massachusetts, 01519 dated February 7, 2019 and revised May, 2019, prepared by WDA Design Group for David W. Brossi.
- Correspondence from WDA Design Group to Grafton Planning Board dated May 20, 2019, re: "Special Permit & Site Plan Approval" with attachments.

We also received the following document on May 23, 2019:

- Correspondence from Northeast Geotechnical, Inc. to David W. Brossi dated May 15, 2019 re: Geotechnical Engineering Report, Slope Stability Evaluation – Brigati Village...

We also received the following document on May 24, 2019 via e-mail:

- Post-development hydrology computations addendum dated May 24, 2019 re: exclusion of exfiltration from Basins 1 & 2.

We also received the following document on June 17, 2019:

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- E-mail from Wayne Belec, WDA Design Group to Jeffrey Walsh, Graves Engineering, Inc. re: elimination of two proprietary stormwater treatment units.

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' conformance with applicable "Grafton Zoning By-Law" amended through October 15, 2018; Massachusetts Department of Environmental Protection (MassDEP) Stormwater Handbook 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 "Grafton Wetland Regulations" amended through May 2014 and Grafton Conservation Commission "Regulations Governing Stormwater Management" dated May 28, 2013 on behalf of the Conservation Commission. As part of our initial review, GEI visited the area near the project entrance and the Church Street area on March 14, 2019.

This letter is a follow-up to our previous review letter dated March 16, 2019. For clarity, the comments from our previous letter are *italicized* and our comments to the design engineer's responses are depicted in **bold**. Previous comment numbering has been maintained.

Our comments follow:

#### Zoning By-Law

1. *The plans must include calculations for percentage of lot coverage by pavement. (§1.3.3.3.d.15)*  
**The design engineer responded that Sheet GN1.01 was revised to address this comment but we could not find information pertaining to lot coverage by pavement. Sheet GN1.01 does contain building coverage information. Unless the Planning Board directs otherwise, the percentage of lot coverage by pavement should be provided. (§1.3.3.3.d.15)**
2. *Traffic signs and a "Brigati Village" sign are shown on the Layout and Materials Plan. A construction detail must be provided for the traffic signs. GEI understands the "Brigati Village" sign will be reviewed by the Planning Board and its staff. (§1.3.3.3.d.23)*  
**Acknowledged. Sign details have been added to Sheet C5.07.**
3. *No solid waste disposal area is shown on the plans. The design engineer should confirm that each unit will have an individual waste container. (§1.3.3.3.d.24)*  
**Acknowledged. The design engineer stated that each unit will have a roll-out waste container.**
4. *The By-Law requires "Adjacent to, and for the length of each side and rear lot line, there shall be a fifteen (15) foot wide area of landscaping." The plans propose tree clearing essentially to the side and rear lot lines near Buildings 8, 9 and 10 without any proposed plantings. (§5.2.2.3)*  
**Sheet L1.01 was revised to include plantings along the western and southern lot lines near Buildings 8 and 10. Also, the design engineer responded that they discussed landscaping with the Planning Board. In short, GEI has no issues with the proposed landscaping revisions near Buildings 8 and 10 and defers further landscaping discussion, if any, to the Planning Board.**
5. *The Zoning Bylaw states "The construction of drainage, utilities and roadways [for Multi-Family Dwellings] shall be performed in accordance with the design and construction standards of*

the Rules and Regulations Governing the Subdivision of Land in the Town of Grafton. The special permit granting authority shall have the right to waive any of such special requirements" (§5.2.2.10). Considering the anticipated (reduced) vehicle speeds, the "traffic calming" layout and existing topography, GEI does not have an issue with the proposed horizontal or vertical road layouts. However, for the record waivers should be requested for design and/or construction elements that do not comply with the Subdivision Rules and Regulations. GEI offers the following:

- a. The minimum centerline radius of a minor street must be 100 feet. The centerline radii of Drive "A" at Station ±5+00 and Drive "B" at Station 0+50 are ±75 feet. (SRR §4.1.3.2)
- b. The tangent length at Station 0+75+/- is less than 150 feet. (SRR §4.1.3.3)
- c. The maximum centerline grade for streets must not exceed 4%. Approximately 400 feet of roadway is proposed with a grade of 7%. (SRR §4.1.5.2)
- d. A minimum K-value of 28 must be used for crest curves and 35 for sag curves. The plans propose a crest K-value of 14 and a sag K-value of 33. (SRR §4.1.5.3)
- e. Dead end streets may not be longer than 500 feet. The proposed roadways extend ±800 feet into the site from an existing dead end street. (SRR §4.1.6.3)
- f. Dead end streets must have a circular turnaround with a radius of 100 feet. (SRR §4.1.6.7)

**Acknowledged. Waivers have been requested for the above-listed items.**

6. On Sheet C5.05, the "Typical Roadway Section" construction detail needs to be revised to propose 2-3/4" of binder asphalt instead of 2". GEI understands that waiver requests for roadway material thicknesses are not typically approved. (SRR §5.2.2.2.b)

**Acknowledged. The "Typical Roadway Section" construction detail has been revised to propose 2-3/4" of binder asphalt.**

7. The outlet pipe from the subsurface detention system at the northwest corner of the site will create a concentrated stormwater discharge onto the abutter's property and toward a garage (the garage isn't shown on the plans) located on that property where no such concentrated discharge exists. An alternative discharge point needs to be chosen. Unless another discharge point is available, it may be warranted to connect to the drainage system in Church Street if this is acceptable to the Grafton Highway Department. (SRR §4.6.1)

**The plans were revised to include a level spreader at the property line. Even with the level spreader, the stormwater discharge from the subsurface detention system will create a concentrated discharge point. GEI stands by its recommendation that an alternative to discharging stormwater at this location needs to be provided.**

#### **Grafton Regulations Governing Stormwater Management**

8. GEI has no issues relative to compliance with the Grafton Stormwater Management Regulations except as noted in the following comment.  
**No further comment necessary.**
9. The 18" diameter outlet pipe (D-25) of Basin 1 is proposed too steep at a slope of 20.3%. The pipe slope needs to be revised (drop manholes may be needed) to limit the water velocity to ten feet per second. Likewise, the slopes of pipes D-13 and D-30 are too steep. (§6.B.3.d)  
**Acknowledged. The plans were revised to propose a series of drop manholes with the last run of pipe being at a slope of 0.91%, albeit the other pipes are still are steeper than**

desired (8 – 11%). Considering the relatively low anticipated flows (up to 4.5 cfs during a 100-year storm event) and the shallow slope on the last runoff pipe, in GEI's opinion the revised outlet pipe and manhole configuration between the outlet control structure and the flared end section's discharge point is not unreasonable.

#### Grafton Wetland Regulations

10. *GEI has no issues relative to compliance with the Grafton Wetland Regulations except as noted in the following two comments.*  
**No further comment necessary.**
11. *Fences are not proposed at the open stormwater basins. (§V.B.5.(h)3)*  
**Acknowledged. No fences are proposed; GEI understands that the design engineer has met with the Conservation Commission and discussed this issue.**
12. *The plans do not identify where proprietary stormwater treatment units are proposed. The Stormwater Management Report indicates that proprietary treatment units are proposed in the treatment trains containing infiltration BMPs. Eighty percent TSS removal must be achieved before stormwater enters the infiltration BMPs. (§V.B.5.(h)10)*  
**Acknowledged. The plans have been revised to identify which structures are proposed as proprietary treatment units. By way of an e-mail dated June 17, 2019, the design engineer indicated their intention to eliminate two proprietary treatment units. The elimination of these treatment units may not be unreasonable; GEI reserves rendering an opinion until the formal request and supporting information are submitted.**

#### Hydrology & MassDEP Stormwater Management Review

13. *GEI reviewed the hydrology computations and found them to be in order except as noted in the following five comments.*  
**No further comment necessary.**
14. *The time of concentration path for subcatchment EDA-101 has a length of 119 feet in the HydroCAD model but has a scaled length of 700 feet. The information must be consistent.*  
**Acknowledged. The Stormwater Management Report has been revised to list the time of concentration path as 740 feet.**
15. *The HydroCAD model of Basin 1 includes a 10' wide weir at elevation 452.0, but the plans indicate the weir elevation is 452.6 with a scaled width of less than 10 feet. The information must be consistent. The weir information for Basin 2 is also inconsistent.*  
**Acknowledged. The Stormwater Management Report has been revised to be consistent with the plans.**
16. *The outlet pipe of OCS-2 is identified as 449.90 on the construction detail, but it is modelled at elevation 452.0. The information must be consistent.*  
**Acknowledged. The Stormwater Management Report has been revised to model the 18" outlet at 449.90.**
17. *The HydroCAD model of Pond DB-4 includes an extra foot of drain stone over the top of the stone envelope of the StormTech chambers. It is not apparent that this extra stone is specified on the plans or construction details. It appears this layer of stone is necessary for containing the 100-year storm. The information must be consistent.*

**Not addressed. The HydroCAD model for Pond DB-4 under the storage description for Volume #3 is modeling a 1.00' high lift of stone that is not called for on the plans.**

18. *The HydroCAD model of Pond DB-4 includes three outlet orifices. There is only one outlet pipe shown from this system on the plans. The lowest outlet orifice is 0.5 feet below the bottom of the stone envelope. The information must be consistent.*

**Acknowledged. A construction detail has been added to Sheet C5.04 that show the outlets.**

19. *Compliance with MassDEP Stormwater Handbook is reasonable.*  
**No further comment necessary.**

20. *The scale of the post-development hydrology plan is mislabeled as 1"=40' and should be corrected to 1"=100'.*

**Acknowledged. The post-development hydrology plan scale has been revised to be 1"=150'.**

21. *The rim and invert elevations for structures DMH-11 and DMH-14 are not listed on the Structure Tables on profile Sheet C3.04, and their connecting pipes are also not listed. These structures and pipes must be listed, and it would be helpful if the plan viewports on the profiles could be expanded to include them.*

**Acknowledged. The plans have been revised to include this information.**

#### **General Engineering**

22. *On the Erosion and Sediment Control Plan, there is an "ECB" note and leader south of the loam stockpile that don't to point to any proposed ECBs; the note and leader should be moved or deleted.*

**Not addressed. It appears that the leader and note "ECB Wattles & Silt Check Dam with Crushed Stone (Typ)" needs to be repositioned.**

23. *The plans appear to show a proposed water connection at the intersection of West Street and Church Street, but this is not evident on the profile; proposed water utilities begin at Station 0+00 which is ±310 feet from the intersection. The location of the water main connection needs to be clarified. Whereas the existing water main is only six-inch diameter, it would be prudent to upgrade to a larger diameter water main.*

**Acknowledged. Sheet C3.03 has been revised to show the location of the water connection. The plans also include a note that states the 6" water main shall be replaced with an 8" water main.**

24. *Top-of-wall and bottom-of-wall elevations should be provided for the retaining walls proposed in the eastern basin and west of Building 4.*

**Acknowledged. Top-of-wall and bottom-of-wall elevations have been provided on Sheet C3.02.**

25. *Subsurface stormwater systems DB-4, INF-1 (A) and INF-1 (B) need to be labeled on Sheet C3.02.*

**Acknowledged. The subsurface stormwater systems have been labeled on Sheet C3.02.**

26. *Pipe invert elevations need to be provided on the plans for the stormwater basins' discharge pipes (i.e. FES-5, FES-6 and FES-7).*

**Acknowledged.** The invert elevations have been provided on the plans.

27. *The drainage pipe is identified as HDPE on the profile sheets, but Utility Note 6 on the General Notes and Legend Sheet states that all drainage pipe must be RCP (reinforced concrete pipe). The information must be consistent.*

**Acknowledged.** The note has been revised to state that all pipe must be HDPE unless otherwise noted.

28. *Catch basin 5 must be shown on the profiles.*

**Acknowledged.** CB-5 has been shown on Sheet C3.05.

29. *On Sheet C3.02, drafting of the proposed and former emergency spillway's riprap swale needs to be finalized. A leader note and breaks in the proposed topographic contours are associated with the former swale location.*

**Acknowledged.** Sheet C3.02 has been revised to finalize the location of the emergency spillway's riprap swale.

30. *The Planting Plan does not identify the trees labelled "QP" in the Plant Schedule.*

**Acknowledged.** QP has been identified in the Plant Schedule.

31. *The construction detail of the spillway specifies a channel width of "10' or 30'", but the scaled dimensions of the channels on the plans are  $\pm 5$  feet. The information must be consistent.*

**Acknowledged.** The detail has been revised to specify a channel width of four feet.

32. *For durability, the two courses of bituminous pavement on the sidewalk construction detail should be increased from 1" to 1-1/2".*

**Acknowledged.** The detail has been revised.

33. *A construction detail was provided for a mortared fieldstone retaining wall. The location of this type of wall is not apparent on the plans; only CMU walls and a free-standing field stone wall are shown.*

**Acknowledged.** The detail for the mortared fieldstone retaining wall has been removed.

### **General Comments**

34. *A Traffic Study was included with this submission. GEI understands that this study will be reviewed by others.*

**No further comment necessary.**

35. *There is only one fire hydrant proposed on site at the end of Drive "B" and one existing hydrant near the project entrance. It would be prudent to also propose a hydrant on Drive "A" near the intersection of Drive "B". GEI understands the Grafton Fire Department will review the plans relative to fire protection.*

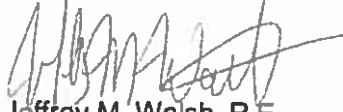
**Acknowledged.** Upon further review, a hydrant is proposed at Drive "A" station 4+55+/- left. GEI understands that hydrant locations will be reviewed by the Grafton Fire Department and Grafton Water District.

36. *GEI understands that the Grafton Water District will review proposed water utilities and the Grafton Sewer Department will review proposed sewer utilities.*

**No further comment 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.  
Principal

cc: Wayne Belec; WDA Design Group