



100 GROVE ST | WORCESTER, MA 01605

May 12, 2016

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

T 508-856-0321  
F 508-856-0357  
gravesengineering.com

**Subject: Trinity Avenue Pump Station – 25R Trinity Avenue  
Special Permit and Site Plan Review**

Dear Joe:

We received the following documents electronically on May 11, 2016:

- The Cover Sheet and Sheets C-2, C-3, C-6, C-7, S-5 and E-2 of plans entitled Grafton Water District, Grafton, Massachusetts, Trinity Avenue Pump Station, Contract No. 2 dated May 2015, prepared by Tata & Howard. (7 sheets)

We also received the following documents electronically on the afternoon of May 12, 2016:

- Correspondence from Tata & Howard to Mr. Joseph Laydon, Town Planner dated May 12, 2016 re: Trinity Avenue Pump Station – 25R Trinity Avenue.
- The Cover Sheet and Sheets C-2, C-3, C-6, C-7, S-5 and E-2 of plans entitled Grafton Water District, Grafton, Massachusetts, Trinity Avenue Pump Station, Contract No. 2 dated May 2015, prepared by Tata & Howard. (7 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 19, 2015; 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 "1988 Rules and Regulations for the Administration of the Town of Grafton Local Wetlands By-Law" amended July 2005 on behalf of the Conservation Commission. As part of our initial review GEI performed a reconnaissance site visit on April 11, 2016.

This letter is a follow-up to our previous review letter dated April 15, 2016. For clarity, comments from our previous letter are *italicized* and our comments to the Applicant's responses are depicted in **bold**. Previous comment numbering has been maintained.

**Our comments follow:**

**Zoning By-Law**

1. *The address of the owner/applicant (Grafton Water District) must be provided on the plans. (§1.1.3.3.3.d.1)*

**Acknowledged. The plans have been revised.**

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2. *The plans must identify the parcel's zoning district (underlying district and overlay district). (§1.1.3.3.3.d.7)*  
**Acknowledged. The plans have been revised.**
3. *The Locus Map on the Cover Sheet must have a scale and north arrow. (§1.1.3.3.3.d.8)*  
**Acknowledged. The Cover Sheet has been revised.**
4. *The following were missing from the Title Block: property owner; property address; assessor's Map/Lot number; and the professional engineer's address and phone number. The plans must be revised to include this missing information. (§1.1.3.3.3.d.9)*  
**Acknowledged. The plans have been revised.**
5. *The ownership of the abutting land parcels need to be shown on the plans. (§1.1.3.3.3.d.11)*  
**Acknowledged. The plans have been revised.**
6. *The building setbacks must be shown and labeled on the plans. (§1.1.3.3.3.d.13)*  
**Acknowledged. The building setback dimensions were added to Sheet C-2 along with a zoning setback table.**
7. *The line weights of the property and easement lines are not dark enough to be seen and instead blend with the lines showing the proposed work. The plans must be revised to make the property and easement lines legible. (§1.1.3.3.3.d.13)*  
**Acknowledged. The plans have been revised.**
8. *The proposed permanent easement on the east side of the property does not encompass the entire proposed drainage swale. It will be the applicant's responsibility to maintain the swale in perpetuity. The plans and dimensions of the permanent easement need to fully encompass the swale. (§1.1.3.3.3.d.13)*  
**Acknowledged. The plans have been revised.**
9. *The proposed temporary construction easement on the east side of the property does not encompass the entire limit of work. The limits of the temporary easement need to encompass any proposed work (e.g. placement of erosion control barriers, grading and the defined limits of work). (§1.1.3.3.3.d.13)*  
**Acknowledged. The plans have been revised.**
10. *Lot coverage calculations need to be provided and shown on the plans. (§1.1.3.3.3.d.15)*  
**Acknowledged. Sheet C-2 has been revised.**

#### **Regulations for the Administration of the Wetlands By-Law**

11. *The plans only note the perimeter layout of a compensatory flood storage area. The plans must show the proposed elevations (by topographic contours and/or spot elevations as appropriate) within the compensatory storage area. Also, there need to be calculations (and supporting plans or sketches where necessary) that show the flood plain earth fill volumes and compensatory storage volumes in vertical foot increments. (§V.B.5(a))*  
**Spot elevations were added to Sheet C-3. Compensatory storage volumes are to be submitted prior to the next Conservation Commission meeting. As such, GEI can't offer follow-up comments at this time relative to the adequacy of the compensatory storage area.**

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

**The designer responded to comments 12-15, 17 and 18 narratively and referenced a yet-to-be-submitted revised stormwater report. GEI will provide follow-up comments once we receive a copy of the revised stormwater report.**

12. *The project was not identified as a critical area in the MassDEP Checklist for Stormwater Report. In our opinion, the Checklist for Stormwater Report must be revised to indicate that the project is located in a critical area (Zone I of the new public water supply wells).*
13. *Drainage maps showing drainage basin delineations were not included with the Stormwater Report. Nevertheless we don't have an issue with the pre- and post-development drainage areas used in the Rational Method calculations for pre- and post-development peak rates of runoff. Nevertheless, if the Stormwater Report is resubmitted for any reason, the revised report needs to include pre- and post-development drainage area plans.*
14. *The calculations used to determine peak discharge rates in the pre- versus post-development conditions used the same "C" coefficient for both conditions. (The "C" coefficient represents ground cover.) The post-development "C" coefficients don't account for the driveway on the north portion of the site nor do they account for the gravel and grass ground cover on the southern portion of the site.*
15. *The submission did not include calculations that demonstrated that the post-development peak discharge rates do not exceed the pre-development peak discharge rates for the 2-year and 10-year storm event. Calculations for the 2-year and 10-year storm event must be submitted as required by Stormwater Management Standard 2.*
16. *Soil testing data was not provided to show the seasonal high groundwater elevation. GEI could not determine if the proposed elevation of the infiltration system will satisfy the minimum two-foot offset to groundwater. The bottom of the stone surrounding the chambers (elevation 287.5 feet) is lower than the nearby wetland resource area.*  
**The designer responded that due to the inability to access the site, the contractor will be required to complete a test pit under the direction of a certified soils evaluator. Confirmatory soils testing witnessed by an agent for the Planning Board would not be unreasonable.**

**However, this water supply project likely included exploratory work that generated groundwater elevation data. Until confirmatory soils testing can be accomplished, it would be prudent to utilize currently-available data for the basis of designing the subsurface recharge system. Such data should be provided in the pending revised stormwater report.**

17. *The Construction Period Stormwater Pollution Prevention Plan refers to Appendix F, however this appendix was not provided. Appendix F must be provided with the Stormwater Report.*
18. *The Long Term Pollution Prevention Plan refers to Appendix G, however this appendix was not provided. Appendix G must be provided with the Stormwater Report.*

### **General Engineering**

19. *GEI did not review the structural design of the bridge or abutments.*  
**No further comment.**
  
20. *Sheets C-1 through C-4 show a ten-foot wide bridge deck, which seems unusually narrow for the maintenance and delivery vehicles expected to need access to the site. On Sheet C-6, the “Bailey Bridge” construction detail shows the usable portion of the bridge deck being 12-1/2 feet wide, which seems to be more reasonable for the proposed use than ten feet. The applicant should consider the width needed to serve their needs and the plans revised accordingly to show a consistent deck width.*  
**Acknowledged. Sheets C-2 and C-3 were revised to show a 12-1/2 foot wide bridge deck.**
  
21. *On Sheets C-1 through C-4, the wing walls of the bridge abutments were not drawn consistent with the abutment construction detail on Sheet S-5. The wing walls were drawn at angles other than 45° to the abutment and at lengths shorter than 16 feet. The information must be consistent. If constructed at a 45° angle, the wing walls will affect the limits of work, the proposed grading and possibly the 24” water main location.*  
**Acknowledged. Sheet S-5 has been revised.**
  
22. *On Sheet C-3, a proposed 292 topographic contour is shown at the northern abutment between the abutment and the eastern wing wall. The top of both the abutment and the wing wall will be higher than elevation 292; the contour needs to be revised. Also in this area, the proposed 294 and 296 topographic contours tie into what appear to be bridge members or retaining walls along the side of the road; the structures along the road need to be identified.*  
**Acknowledged. Sheet C-3 has been revised.**
  
23. *On Sheet C-3, the layout of the proposed 292 topographic contour at the gravel turnaround area needs to be re-evaluated by the design engineer and revised. The contour was drawn to connect to the west side of the bridge abutment. Instead the contour needs to connect to the right side of the abutment.*  
**Acknowledged. Sheet C-3 has been revised.**
  
24. *On Sheets C-3 and C-4 there are several leaders that don’t point to the correct components, such as: “limit of pump station work”; “24x6 hyd tee...”; “1” polyethene tubing...”; and “24” DI water main”. The plans must be revised to have all leaders point to the correct components.*  
**Acknowledged. The leaders on Sheet C-3 have been revised.**
  
25. *The dimensions of the chambers shown on the “Underground Drainage Basin” construction detail on Sheet C-6 are inconsistent with the Cultec chamber information provided in the Stormwater Report. The information in the two documents must be consistent.*  
**Acknowledged. Sheet C-6 has been revised.**
  
26. *The width dimension shown on the Gravel Access Road detail on Sheet C-7 is not consistent with what was shown on Sheets C-1 through C-4. Likewise, Note 17 on Sheet C-4 states that the access road will be 12 feet wide. The information on the plans must be consistent.*

**Acknowledged.** The plans have been revised to consistently show a driveway width of 12-1/2 feet.

27. *The following construction details are missing from the plan set: swale detail and check dam detail.*

**Acknowledged.** Sheet C-7 has been revised.

28. *Based upon the proposed topographic contours, a swale with a “V” cross section is proposed. This type of cross section is prone to erosion at the channel invert and therefore should be avoided. A cross section with a flat bottom or a parabolic cross section would be satisfactory.*

**Acknowledged.** The plans have been revised to show a parabolic cross section.

29. *There are 1H:1V slopes along the east and west sides of the access driveway. The slopes must be suitably stabilized (e.g. turf reinforcement matting) if grass is proposed. The plans need to specify the extents and type of stabilization to be provided.*

**Acknowledged.** Note 2, added to Sheet C-3, addresses erosion control blankets.

30. *The proposed slope shown on the Road Profile on Sheet C-3 does not match the proposed contours shown on the layout view. The plans must be revised so that the contours and slopes on the layout and profile views are consistent. The plan view shows a slope of approximately 14% between the proposed 306 and 308 topographic contours but the profile shows a slope of 10%.*

**Acknowledged.** The plans have been revised to show a consistent slope.

31. *The driveway grading at the intersection of Trinity Avenue needs to be revised to keep stormwater runoff in the gutter from entering the site via the new driveway.*

**Acknowledged.** A spot elevation was added to Sheet C-3.

32. *To prevent sediment from entering Trinity Avenue, a stabilized construction entrance needs to be installed and maintained at the site entrance until the driveway pavement is placed.*

**Per the designer’s response letter Sheet C-2 was revised, but we couldn’t find the revision on the plan sheet.**

33. *The existing utility pole at the project entrance will need to be moved from the center of the proposed driveway. The plans should note that the utility pole must be moved.*

**Acknowledged.** The plans have been revised.

#### **Conservation Commission-Related Issues**

34. *After the wells are constructed, a pumping test is to be performed on the new wells. The Conservation Commission may wish to inquire where the water from the pumping test will be discharged and what measures will be in place to protect the resource areas.*

**Acknowledged.** The designer responded that the production wells were constructed in 2013 and a pumping test is not proposed as part of this construction project.

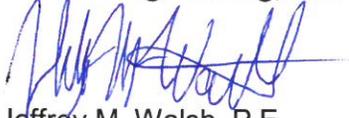
35. *On the north side of the site, the riprap apron encroaches into the wetland resource area and should be moved to stay outside of resource area.*

**Acknowledged.** The plans have been revised.

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  
Matthew S. Barry, Tata & Howard  
Matthew Pearson, Grafton Water District