



LAND PLANNING, INC.

Civil Engineers • Land Surveyors • Environmental Consultants

May 18, 2016

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

RECEIVED

MAY 18 2016

**PLANNING BOARD
GRAFTON, MA**

Re: Response to peer review
Theroux Dental Complex
103 Worcester Street

Dear Mr. Laydon;

Land Planning, Inc. would like to thank Jeffrey Walsh of Graves Engineering, Inc. for his thorough review of the proposed site development at 103 Worcester Street. We have addressed each of his concerns through revisions to the documents and/or providing additional information as requested. The reviewer's original comments appear in italics, followed by Land Planning, Inc.'s response.

Zoning By-Law

- 1. The applicant's name and address are required on the plans. (§1.3.3.3.d(1) & §1.3.3.3.d(9))*

The applicant's name and address have been added to the title on all sheets.

- 2. Two lighting fixture details were provided on Sheet 7. However, the lighting fixture locations were not show on the plan-view sheets and a photometric plan was not provided. (§1.3.3.3.d(22))*

All site lighting is proposed to be provided by building mounted fixtures. A waiver of the photometric plan requirement has been requested.

- 3. The water and sewer service connections were shown, however neither of these utilities was connected to the building nor do the plans show pertinent information (e.g. pipe materials and diameters, existing and proposed sewer main and sewer service elevations). Also, the water service connection is in conflict with the subsurface infiltration system. (§1.3.3.3.d.28)*

The applicant has agreed to provide a hydrant and water main extension along a portion of Harris Street. The proposed water and sewer connections have been revised accordingly.

- 4. The two entrance driveways are proposed to be only twenty feet wide for two-way traffic. Entrance widths of 24 feet are required and are customary. (§4.2.4.1.1)*

Pavement markings and signage have been added to the easterly driveway to indicate one way traffic (enter only). The westerly driveway has been widened to 24 feet to accommodate two-way traffic.

214 Worcester Street
Grafton, MA 01536
Tel: 508-839-9526
Fax: 508-839-9528

167 Hartford Avenue
Bellingham, MA 02019
Tel: 508-966-4130
Fax: 508-966-5054

P. O. Box 644
Holden, MA 01520
Tel: 508-829-3006
Fax: 508-839-9528

1115 Main Street
Hanson, MA 02341
Tel: 781-294-4144
Fax: 781-293-4111

5. Only eight two-inch caliper trees are proposed adjacent to the parking area; ten trees are required. (§4.2.4.5)

The plan has been revised to show the required 10 trees.

Grafton's Regulations Governing Stormwater Management

6. The hydrology calculations for the ten-year and one hundred-year storm events need to be rerun with NRCC Cornell data for 24-hour (not one day) duration storm events. (§6.B.3.b)

The calculations had been run with older Cornell precipitation atlas data. The analysis has been revised using the NRCC 24 hour event data.

7. The plans' topography was presented with two-foot contour intervals instead on one-foot intervals. With the use of spot elevations, we were able to follow the proposed grading. Nonetheless, we defer to the Conservation Commission whether the use of two-foot contour intervals is acceptable for this project or if one-foot contour intervals must be provided. (§7.B.1.h)

A waiver has been requested to allow for the two-foot contour interval used.

8. A limit of work line was not provided on the plans. (§7.B.2.b)

The limit of work has been identified on the Erosion & Sedimentation Control Plan (Sheet 5).

9. An equipment and material storage area was not shown on the plans. There's only a general note to stockpile material outside of the riverfront area. (§7.B.2.f)

The stockpile and equipment storage areas have been identified on the Erosion & Sedimentation Control Plan (Sheet 5).

Regulations for the Administration of the Wetlands By-Law

10. GEI has no issues relative to the stormwater management system's compliance with these regulations.

Hydrology, Hydraulic and MassDEP Stormwater Management

11. Pipe sizing calculations (e.g. TR-55 or Rational Method calculations) were not submitted.

The hydrologic analysis has been modified to include the pipes as reaches. The pipe reaches for the 100 year storm are duplicated within the Pipe Sizing Analysis section of the Stormwater Report to facilitate review.

12. GEI reviewed the hydrology computations and found them to be in order except as noted in the following two comments.

13. We concur with the methodology used to estimate runoff to the kettle hole but disagree about the amount of off-site tributary area. The design engineer estimated that the tributary area extended southerly along Bernard Road to Clark Road and included some tributary area on house lots adjacent to Bernard Road and Clark Road. The total area (both off-site and on-site tributary area) to the kettle hole was modeled as 47,914 square feet (1.1 acres). Based upon visual observations during my reconnaissance site visit and upon topography present on Grafton's GIS Map, the off-site tributary area appears to be approximately 2.4 acres (in addition to the on-site tributary area). The curb along the west side of Bernard Road captures runoff and directs it to the kettle hole; this is not evident on Grafton's GIS Map but can be observed at the site. The off-site tributary area appears to extend southerly along Bernard Road to a high point located on #11 Bernard Road near the property line of #15 Bernard Road and extends easterly to include most of Clark Road, a portion of Stowell Road and a portion of 97 Worcester Street. The tributary area to the kettle hole needs to be re-evaluated and re-modeled accordingly.

We inspected the Bernard Road neighborhood area during a recent rainfall and agree that additional areas are contributing runoff to the kettle hole. We have revised the analysis to include the additional tributary area.

14. In the post-development hydrology computations, the modeling of the subsurface infiltration system is not consistent with the plans. The computations modeled an overall system size of approximately 40 feet by 60 feet with 64 chambers but the plans show a system that is only 27.5 feet wide with enough room for five rows of chambers instead of eight rows. Also, the chambers were drawn at about 38 inches on center instead of 58 inches on center as presented on the "Infiltration Systems- Cross Section" construction detail on Sheet 8. The plans and hydrology computations need to be consistent.

The system had been incorrectly drafted with smaller chambers. The system has been revised to agree with the calculations.

15. Compliance with MassDEP Stormwater Handbook is reasonable except as noted in the following three comments.

16. A Stormceptor Model STC 900 proprietary stormwater treatment unit is proposed. The concept is reasonable, but supporting documents need to be submitted to demonstrate that the unit was adequately sized and that the required water quality volume will be treated. MassDEP requires calculations to convert required water quality volume to a discharge rate for sizing flow-based proprietary treatment units.

Sizing calculations have been provided for the Stormceptor. The discharge rate for the Stormceptor was calculated per the procedure outlined within the DEP's "Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices". The discharge rate was entered into the manufacturers sizing program as a water quality objective.

17. Sediment barrier was provided along Worcester Street at the northeast section of the site. Sediment barriers are also necessary along the remainder of Worcester Street (135+/- feet) and along Harris Street (60+/- feet and 70+/- feet) downgradient of the work areas.

Additional sediment barriers have been added as recommended.

18. A stabilized construction entrance needs to be shown on Sheet 5 and a construction detail needs to be provided.

The construction entrance has been shown on the Erosion & Sedimentation Control Plan (Sheet 5), and a detail has been provided.

19. Soil testing was performed at the site and showed the soils to be conducive to stormwater recharge. Due to plan revisions, the proposed subsurface infiltration system is no longer proposed at the testing locations. Confirmatory soil testing will need to be done. Considering the availability of data for soil testing already performed and the favorable soil and groundwater conditions, the Planning Board (and/or Conservation Commission) may wish to address confirmatory soil testing as a condition of approval.

We agree that a condition of approval requiring an additional soil test prior to the installation of the infiltration system is warranted.

General Engineering

20. The proposed earth cut near the intersection of Harris Street and Worcester Street is a benefit to drivers exiting Harris Street in that sight distance to the north will be significantly improved.

21. At the western parking area, there needs to be a vehicle maneuvering area at the dumpster location to allow vehicles leaving the two northern-most parking spaces to maneuver without conflicting with the fence at the dumpster.

A turning area has been provided next to the dumpster.

22. At catch basin CB-1, the pipe invert is only 2.0 feet below the rim. There isn't enough room to accommodate the pipe diameter, pipe wall thickness, basin flat top (typically eight inches thick), brick and the catch basin frame.

The error in the outlet elevation at CB-1 has been corrected. The outlet is now shown to be 4.0 feet below the rim.

23. Catch basin CB-2 should be moved farther onto the site so that it is located completely outside the Harris Street roadway.

The catch basin has been relocated as suggested.

24. On Sheet 8, the "Precast Concrete Drain Manhole" construction detail should have ladder rungs.

The detail has been revised to show the ladder rungs.

General Comments

25. General Note 2 on Sheet 3 contradicts notes on the left side of Sheets 2 - 5. Lower elevations of the site are located within the 100-year flood plain.

The note has been clarified to state that the limits of work are not located within the 100 year flood plain.

26. On Sheet 6, the tree and shrub quantities in the Landscape Legend are inconsistent with the numbers of trees and shrubs shown in plan-view.

The tree and shrub quantities have been revised to match the plan.

27. The scale bar (1"=100') on Sheet 1 is incorrect.

The graphic scale has been changed to 1"=40' on the cover sheet.

28. There are notes on Sheet 3 that appear to be associated with a former version of the plan and need to be deleted or revised as appropriate: "one-way enter sign," dimensions in the parking area of "16.0" and "35.8" and the leader note for replacing four inches of loam and seed at the existing concrete slab.

The extraneous information has been removed from the plan.

29. In the "Schedule of Drainage Structures" on Sheet 4, the "Description of Structure" for FE- 1 and FE-2 are transposed.

The "Schedule of Drainage Structures" has been revised.

Please contact our office if you have any questions or require additional information.

Sincerely,

Land Planning, Inc.



Norman G. Hill, P.E., P.L.S.

President

