REF. NEX-2021112.00

July 6, 2021

Ms. Elizabeth Hughes, Town Planner
Town of Concord
141 Keyes Road
Concord, MA 014742

SUBJECT: 146B & 1442 Main Street – 110 & 11B Highland Street – Center & Main
Zoning Board of Appeals Special Permit – Earth Removal Review
2nd Peer Review Letter

Dear Ms. Hughes and Members of the Board:

Greenman-Pedersen, Inc. (GPI) prepared a peer review letter based upon review of the Special Permit Application for Earth Removal related to the proposed Definitive Subdivision Plan for 146B & 1442 Main Street and 110 & 11B Highland Street. The letter was issued to the Board on June 3, 2021.

GPI is in receipt of the following new documents prepared by the Applicant:

- *Response to Comments*, dated June 23, 2021, prepared by Williams Sparages
- *Table 1 – Building Heights* (included in *Response to Comments*)
- *Revised Plans*:
  - Topo Sheet 1 of 1 (Sheet 6 of 14); revised 6/23/21
  - Detail Sheet 4 of 5 (Sheet 11 of 14); revised 6/23/21
- *Email from Jeff Rhuda* (Symes Associates) to Town of Concord Staff; dated 6/25/21

GPI has prepared this second peer review letter in response to the above submitted materials. In the comments provided below, the original peer review comment numbering has been retained for ease of reference.

PEER REVIEW COMMENTS

A. GENERAL DESIGN AND PLAN REVIEW

Earthwork and Earth Removal Calculations

1. The Applicant has indicated in the response to comments that materials that are appropriate for reuse in fills and roadway base are not anticipated to be removed from the site and will be reused as appropriate

   The peer reviewer understands that quantity of materials for potential reuse may not be reasonably determined at this time until the work is in progress and materials testing can be completed. The ZBA may consider a condition which requires that the Applicant perform material testing on all site materials in surplus, to determine if the material can be reused on site rather than exported. Any 3rd party construction supervision that may be required by the ZBA should include assessment of onsite materials and the results of their testing for reuse, with a goal of reducing the total volume of material export from the site.

2. The Applicant has indicated in the response to comments that materials that are appropriate for reuse in fills and roadway base are not anticipated to be removed from the site and will be reused as appropriate

   See response to Comment #1. Additionally, in an email dated 6/25/21, the Applicant provided the quantity takeoff calculations requested by the peer reviewer. Based upon the quantities, it appears that the Applicant is assuming reuse of existing topsoil to the extent feasible, as well as reuse of all cut material in the areas of fill. GPI takes no exception to the calculations provided.

3. The Applicant has noted that when practical, combining truck trips will be done, however a majority of the export will be completed prior to structure installation, which is expected. ***GPI has no further comment.***

Design Review

4. The Applicant has responded that the roadway profiles cannot be adjusted to further reduce export of soils, due to the building height requirements of the Bylaw related to existing base elevations. The Applicant states that based upon the building height requirements of the Bylaw, raising the road profile would create a condition such that a 2-story structure with approximately 30-foot building heights could not be built. The Applicant has prepared a Table (Table 1 included in the Response to Comments and further revised July 6, 2021) which provides an analysis of this building height constraint for several lots, as well as a plan highlighting those building lots and portions of roadway which could not be modified to reduce export without exceeding the building height requirement.

   GPI reviewed the materials provided by the Applicant and concurs that substantial revisions to the roadway profile grade to reduce material export could not be achieved without exceeding the building height requirement for several lots, if residences with approximately 30-foot building heights are desired (as indicated by the Applicant).

5. See discussion in Comment #4.

Construction Considerations

6. The Applicant has clarified that the Interim Roadway Grading shown on Sheet 5 is not intended as a construction phase. Based upon the Applicant, the plan was provided to show the Planning Board the proposed grading if the house lots were not constructed. The Applicant has clarified that the intent of the construction is to complete all of the bulk earth removing including grading of house lots except for foundations, which eliminates the interim phase and therefore the additional SWPPP plan requirements requested by the peer reviewer.

   GPI has no further concerns with the SWPPP plans as shown and as further clarified by the Applicant. GPI continues to recommend that the Board consider a condition requiring third-party construction inspection for monitoring of SWPPP measures during construction given the proposed earthwork activities anticipated to occur on site.

B. GEOTECHNICAL AND HYDROGEOLOGICAL REVIEW

Subsurface Conditions and Performed Subsurface Explorations

Geotechnical Recommendation No. 1

The Applicant has agreed in the comment responses to provide the Town of Concord with a Global Slope Stability performed by a registered professional engineer licensed in the Commonwealth of Massachusetts confirming the stability of the cut slopes on lots 1-5 & 13 prior to foundation excavation. The Board may wish to consider this a condition of approval.

HYDROGEOLOGICAL IMPACT ON GROUNDWATER LEVELS DUE TO THE EXCAVATIONS

Geotechnical Recommendation No. 2

The Applicant has agreed in the comment responses to provide the test borings and groundwater monitoring wells as described in the recommendations. The Board may wish to consider this a condition of approval.

Construction Considerations

Geotechnical Recommendation No. 3

The Applicant has agreed in the comment responses to the recommendations provided by the peer reviewer. The Board may wish to consider the recommendations as conditions of approval.

Geotechnical Recommendation No. 4

- Prior to placing any fill, the proposed raise-in-grade areas should be stripped of existing topsoil/vegetation, unsuitable materials, and other existing structures. Thereafter, the subgrade should be proof-compacted with at least six passes of a vibratory drum roller compactor with a minimum static drum weight of 10,000 pounds.

  The Applicant has agreed to this recommendation.

- Fill material meeting the gradation requirements for Gravel Borrow (MassDOT M1.03.0 Type b) should be used as raise-in-grade fill below the proposed dwelling footprints, roadways, and other structures including the zone of influence. The fill material should be compacted to at least 95 percent of the maximum dry density as determined by Modified Proctor Tests (ASTM D-1557, Method C). The zone of influence is defined as that area within a line projecting outward and downward from the outside edges of the proposed structure or roadway at a one horizontal to one vertical (1H:1V) slope. Loose lift thicknesses of the fill should be placed no greater than 12 inches.

  The Applicant has agreed to this recommendation.

- Protect subgrades from frost at all times during construction. Fill should not be placed over frozen soil.

  The Applicant has agreed to this recommendation below the roadway and building footprints.

- Raise-in-grade fill material placed within proposed landscaped areas should meet the gradation requirements for Ordinary Borrow (MassDOT M1.01.0) or Gravel Borrow (MassDOT M1.03.0 Type a) and should be compacted to at least 90 percent of the maximum dry density as determined by Modified Proctor Tests (ASTM D-1557, Method C).

  The Applicant has noted that that this requirement in the peer reviewer's recommendation is not an earth removal bylaw decision and is not found in the subdivision control law. The peer reviewer agrees, and notes that the provided comment for placing raise-in-grade fill in landscaped areas is only a recommendation based on general acceptable best practices for areas of proposed developments. The peer reviewer concurs that this recommendation is not a standard from the Subdivision Rules & Regulation, and it is up to the Contractor and/or the Town to adopt and implement this recommendation. The Board may wish to consider this recommendation as a condition of approval.

Additional Geotechnical Comments:

1. Test pits TP 17-1 through TP 17-32 are not shown on Attachment D – Sheet 6 of 14 and should be added.

   The Applicant has added the Test Pits to the revised Plan Sheet 6 of 14. The peer reviewer has no further comments on this.

2. The elevation of test pit TP 17-22 is listed on Attachment D - Sheet 11 of 14 as 160.6. However, based on the existing contour lines shown on Sheet 6 of 14, the elevation is approximately at El. 155. The designer should review and revise, if necessary.

   The Applicant has revised Plan Sheet 11 of 14 to clarify the test hole surface elevation of 155.6. The peer reviewer has no further comments on this.

3. The ESHGW on Attachment D – Sheet 11 of 14 for test pit TP 17-20 is listed at "below 169.5". Based on the test pit log, we suspect that it should read "below 159.5".

   The Applicant has revised plan Sheet 11 of 14 to reflect "below 159.5".

GPI and Nobis are appreciative of the opportunity to assist the Town of Concord with the review of this Application. Should you have any questions, or require additional information, please contact Lindsey DiTonno directly at 978-570-2997 or by e-mail at ldditonno@gpinet.com.

Sincerely,

GREENMAN–PEDERSEN, INC.

Lindsey DiTonno, PE
GPI Project Manager