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Dec 6th 2024

Attorney Jeffery Miller Esq.
35 Harvard Street
Suite 311
Worcester, MA 01609

Subject: Slope Stabilization Analysis & Recommendation
Site Address: **17 Montclair Drive, Worcester MA**

Attorney Miller:

I have reviewed the comments of the City of Worcester and offer the following response:

- Your engineer should recommend specific permanent stabilization methods and temporary erosion control measures and those should be reflected on the plans submitted.

I have revisited the site on several occasions and monitored the slope for stability. The grass and vegetative growth has consistently progressed and has now reached 100% vegetative cover. The slope in my opinion is sufficiently stable. I do not recommend any physical work at this time.

- See the area which appears to reflect regrading on the abutting property (property lines in yellow, regrading circled in blue); you must confirm with the property owner effected on how they would like to see this encroachment resolved (e.g., I would expect them to request that you remove the fill). You have not filed for permission to fill this property and would be required to obtain consent from that neighbor on your application to leave that fill in place. We will want to understand how this area will be altered at the end of the project.

No comment on this item – Not an Engineering issue

- Please talk to your neighbors to hear and address their concerns (their comments are re-attached to this email).

No comment on this item – Not an Engineering issue

- Please provide us with the list of products proposed. Provide the specifications for the product recommended in the 5/2 letter from P.E. Santora. Clarify who will conduct monitoring after rain events.

Based on recent inspections and the current existing conditions, I have revised my recommendations to be reduced to monitor only. No additional work is recommended at this time. Monitoring intervals should be reduced to bi yearly and after any rainfall event in excess of 4 in 24 hrs.

- We need updated plans showing any existing/proposed vegetation (including locations where vegetation was removed, if any) and temporary and permanent erosion control and stabilization methods. Our concern with the trees is their health if their trunks have been partially/fully buried and the options to remove fill surrounding the trees to allow them to be maintained.

A revised plan has been submitted. Trees that have been potentially impacted appear to remain healthy.

- Provide information regarding the source of the fill (location/address it was sourced from and that use).

Fill was provided by Luciano Barretto from NES Landscaping Inc. Fill has been imported from a virgin source and is reported to be an S1 type similar soil free of debris and deleterious materials. A visual inspection of the fill confirms this contention to the extent practical.

- Updated plans should also include plans for irrigation to ensure any vegetation succeeds and monitoring/removal of invasive plants to avoid their establishment.
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Recent inspections indicate the native grasses are thriving and there is no emergence of invasive species at this time. Future monitoring will include a visual check for invasive species.

- Native plants and seed mixes that are better at stormwater absorption, such as a "wild-life conservation seed mix" are preferred for use where possible.

Recent inspections indicate that native grasses are thriving.

- We'd recommend that you consider planting trees above the slope is recommended as it could help with absorption of runoff.

The applicant is not opposed to planting trees above the slope and would accept this as a condition of approval.

- The board has recently requested compaction results for another similar project that seeks to leave fill in place, or that depicts how the newly placed soil is proposed to be compacted. If a study was done on this, please send it to us. If not please describe how fill was or will be compacted.
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Compaction testing was not performed. Compaction testing would require a sieve and proctor to be performed prior to the work. On interviewing Luciano Barretto, The field methods performed included tracking over the fill with tracked equipment of sufficient to compact the soils. A rule of thumb for landscape areas indicate a goal of 90% compaction compared to the dry unit weight. In my experience this level of compaction can easily be achieved by the methods used by the contractor. Additionally, the soil has been subject to approximately 2 years of rainfall events. During these rainfall events the soils have become fully saturated and during subsequent dry periods the soils have completely drained and consolidated. Settlement of soil can be achieved by either mechanical efforts (the driving of air voids out of the soil by compaction) or by consolidation.

Consolidation settlement is the draining of water from the voids. Consolidation settlement occurs over time and will result in 100% compaction in the final condition. Soils in New England will drain and consolidate in periods measured in weeks and months and will achieve 100% density in one year. As a result it is my opinion that the soils used for fill at the site are stable and consolidated and area at or above 95% maximum density.

- We need a copy of the engineers updated recommendations in order to review and ensure that they're appropriate for the site.

No Comment needed, See above

- The products used need to be appropriate for the proposed steepness of the final slope.

No Comment needed, See above

Please feel free to contact me with any questions or directions.

Sincerely,

Mark Santora, PE #40167