

June 1, 2020

Zoning Board of Appeals
Town of Grafton
30 Providence Road
Grafton, MA 01519

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**Subject: High Point Estates (Adams Road Trust)
Construction Completeness Review**

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JUN 0 4 2020
Zoning Board of Appeals

Dear Board Members:

As requested, Graves Engineering, Inc. (GEI) performed site visits through June 1, 2020 to evaluate construction completeness at the High Point Estates 40B residential subdivision located off Adams Road. During my February 21, 2020 and March 5, 2020 site visits I was accompanied by Tim Barlow of Barlow Construction. This letter addresses construction-related issues only. Review of the as-built plans, acceptance plans and legal descriptions is being addressed under separate cover.

We received the following document on May 11, 2020 via email from Patrick C. Garner Company, Inc.:

- Document entitled Inspection Report, Lot 76 dated May 9, 2020, prepared by Patrick C. Garner Company, Inc.

Lot development is not finished. It is my understanding that three lots are still to be developed, and that there is an enforcement order in place issued by the Grafton Building Department that withholds building permits for those three lots. The top course of road pavement was placed on High Point Drive and Pepperbush Court on November 23, 2016. Other finish surfaces (i.e. loam and seed, riprap, etc.) were being placed as lot development occurred.

This letter is a follow-up to our previous construction completeness review letters dated November 20, 2017, February 14, 2019, December 31, 2019 and March 11, 2020. For clarity, comments from our previous letters are *italicized* and our latest comments to the applicant's responses are depicted in **bold**. For brevity, comments previously addressed by the applicant and acknowledged by GEI have been omitted. Previous comment numbering has been maintained.

GEI initially issued a construction status letter on February 22, 2017. Our February 22, 2017 letter was prepared without the benefit of a detailed walk-through of the site. Since February 2017, progress has been made to address issues identified in that letter. The series of construction completeness letters that began on November 20, 2017 were prepared based upon a thorough investigation of the site by GEI. Grafton DPW was consulted during construction completeness review that led to the issuance of our November 20, 2017 construction completeness letter. GEI and Grafton DPW were diligent in evaluating construction completeness with the intention of providing a comprehensive analysis of their findings. However, as the applicant proceeds with executing the work described herein and completing lot development, should additional conditions be discovered that warrant action by the applicant, GEI and Grafton DPW reserve the right to revise the following list of items.

Work to be done by the applicant:

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3. *Finish the installation of street lights and street trees.*

February 14, 2019:

As of December 22, 2018, the street lights had been installed but the following street lights were still not in service: across from #65 High Point Drive, at the intersection of High Point Drive and Pepperbush Court, at the Pepperbush Court cul-de-sac and the light near #18 High Point Drive. One street tree still needs to be planted at Lot 52 once Lot 52 is developed.

December 31, 2019:

These four street lights and the street light installed by the applicant at the intersection of Adams Road and High Point Drive were not illuminated on the evening of December 19, 2019. The remaining street tree is to be planted when Lot 52 is developed.

March 11, 2020:

The applicant recently changed the lighting fixtures on the street lights within the subdivision to LED (at Grafton DPW's request to be consistent with the Town's lighting fixture changeover to LED that is underway) and the developer is awaiting the electric company to connect power the four street lights that were not yet connected. The new fixture in front of #82 High Point Drive was on during my March 5, 2020 site visit – there may be a cap on the photocell that has to be removed. Per the developer, the street light on the utility pole at the intersection of Adams Road and High Point Drive was existing prior to the subdivision being constructed. The remaining street tree is to be planted when Lot 52 is developed.

GEI visited the site on the evening of May 30, 2020 and found the eight on-site street lights and the utility pole-mounted street light at the intersection of High Point Drive and Adams Road to be illuminated. The remaining street tree is to be planted when Lot 52 is developed.

9. *An off-road catch basin was added at High Point Drive station 38+00+/- (on Lot 52). The following needs to be done: fill the settlement around the catch basin, cut the trees and brush around the catch basin in what will be the drain easement, stabilize any disturbed ground surfaces, remove roots growing through the "pick holes" inside the catch basin and seal the pick holes with mortar. Also, an easement will need to be created for the catch basin.*

February 14, 2019:

The work outside the catch basin has not been addressed yet. A silt sack was in the catch basin and work within the catch basin couldn't be confirmed. The work will be confirmed after use of the silt sack is no longer necessary.

December 31, 2019:

The settlement around the catch basin had been filled and the area around the catch basin had new grass growth. Some trees were removed, but additional trees within ten feet of the catch basin also need to be removed. The catch basin inlet grate was clogged with leaves and flooding around the catch basin has been reported. To avoid clogging, the catch basin inlet should be reconfigured as a drop inlet so that leaves can pass through the inlet.

March 11, 2020:

The inlet was changed to a drop inlet; the change is satisfactory. Additional trees had been removed. Grass seed was placed on the disturbed area; permanent grass cover will need to be established once the weather allows.

Acknowledged. The grass seed has germinated, and permanent grass cover has been established.

13. *Locate and raise to finish grade the manhole frames and covers for DMH X5, X6, X7 and X8 located adjacent to Basin 4 and cut the brush growing in the drainage easement. These covers appeared to be buried or lost in the vegetation.*

*February 14, 2019:
Not addressed yet.*

*December 31, 2019:
During construction the zigzag configuration between DMH X5 and Basin 4 was eliminated in favor of a straight pipe run to Basin 4. The pipe configuration is reasonable. The trees within the drain easement between DMH X5 and Basin 4 need to be removed.*

*March 11, 2020:
The trees were removed and grass seed was placed on the disturbed areas. Permanent grass cover will need to be established once the weather allows.
The grass cover is sparse (<50% grass cover). The area needs to be reseeded and possibly augmented (e.g. mulch placed to maintain moisture) to establish satisfactory (>70%) vegetative cover.*

17. *Fill the settlement/depression in the ground at the top of the inlet weir at the triple culverts at High Point Drive station 3+60+/- left and stabilize the ground surface.*

*February 14, 2019:
Not addressed yet.*

*December 31, 2019:
Acknowledged. The settlement had been filled and the disturbed area was stabilized.*

*March 11, 2020:
Concern had been raised by others about the use of riprap for stabilization. The riprap was removed, the existing grades were re-established, and grass seed and turf matting were placed for stabilization. Permanent grass cover will need to be established once the weather allows.*

The grass germinated. However, the pond had overflowed to the culverts and washed away some of the soil, leaving rock/riprap that appeared to be stable. On June 1, 2020, the area above the concrete weir appeared to be reasonably stabilized and the water level in the pond was still high (about ready to spill over toward the culverts). Earlier flow conditions had caused some of the turf matting to wash toward the inlet ends of the culvert. The loose turf matting needs to be removed. A photograph is presented below.



Area above the concrete weir at the inlet end of the triple culverts.

20. *The trail on Lots 55 and 56 is too steep perpendicular to the direction of travel and has a boulder retaining wall in the way near High Point Drive. At the rear of Lots 55 and 56, a pedestrian must walk down (or up) a boulder retaining wall that is approximately four feet high. On the property line of Lots 69 and 70, there is a stone retaining wall approximately 3.5 feet high approximately 100 feet long that appears to run along the center of the trail easement. GEI suggests that the developer and GEI walk the trails with the appropriate approving authority(ies) to determine if there are unacceptable impediments relative to use of the trails.*

February 14, 2019:

GEI understands that the developer discussed this issue with the Zoning Board of Appeals and that the developer was to submit a plan of proposed trail modifications prior to their implementation. No modifications have been made to the trails and GEI is not aware of any plans having been submitted.

December 31, 2019:

The developer constructed a trail crossing at the rear of Lots 55 and 56 without first submitting a plan of proposed trail modifications prior to their implementation. At a minimum, the riprap trail surface is unsuitable. GEI is not aware of modifications having been made to the other trails. Again, the developer is to submit a plan of proposed trail modifications prior to their implementation.

The portions of the trail at the front of Lot 55 and on the open space behind Lot 55 were reconstructed with ramps consisting of riprap in-filled with smaller stone. I found these

portions of the trail to be easier to use than they were in their former condition. GEI defers final approval of the trail system to the Zoning Board of Appeals.

22. *Permanently stabilize all disturbed surfaces and where grass is to be utilized for stabilization and establish vigorous mature grass growth. For example, limited areas within the right of ways haven't yet received loam and seed placement, the Cape Cod berm along the right side of Pepperbush Court needs to be backed-up with loam and seeded from High Point Drive to the catch basin at station 1+91, and sediment deposited in the right-of-way from Lot 27 development needs to be removed and the area permanently stabilized.*

February 14, 2019:

The berm along Pepperbush Court has been stabilized with loam and seed. A retaining wall was constructed at Lot 27 and the steep slope above the retaining wall was stabilized with riprap. The disturbed area up-gradient of the riprap consisted of bare soil as of December 14, 2018. Erosion from Lot 48 (an undeveloped lot) is being deposited on the northeast corner of the access way for Basin 4. In short, permanent stabilization is a work in progress as lot development occurs. Any ongoing erosion needs to be addressed as soon as possible on a temporary basis until permanent stabilization can be achieved.

December 31, 2019:

Except for establishing permanent vegetative cover at the three undeveloped lots, there are no known issues associated with establishing permanent stabilization.

March 11, 2020:

Areas of recent work had been loamed and seeded where needed. Permanent grass cover will need to be established once the weather allows.

Except as specifically noted herein, permanent vegetative cover appeared to be in order. Except for establishing permanent vegetative cover at the three undeveloped lots, GEI is not aware of issues associated with establishing permanent stabilization.

24. *After sediment is removed from the inlet to Basin 2, the up-gradient drainage lines that discharge to the basin need to be jet-cleaned. The pipe from the nearby-swale to Basin 2 needs to be cleaned and the drain lines from DMH I (adjacent to High Point Drive) to DMH H-1 (next to Basin 2) and from DMH H-1 to Basin 2 will need to be cleaned. The pipes in DMH H-1 are ¾ full of sediment.*

February 14, 2019:

This appears to have been addressed, but GEI could not confirm cleaning of the drain line between DMH I and DMH H-1. The invert of DMH H-1, the drain line from DMH H-1 to Basin 2 and the pipe between the nearby swale and Basin 2 had been cleaned.

Per my discussion with Mr. Barlow, the drain line will be cleaned, if it needs cleaning, concurrent with the upcoming spring cleaning of the catch basins and the cleaning of this drain line will be confirmed by me and him when we confirm the catch basin cleaning.

26. *Remove erosion control barriers (e.g. silt fence at Basin 2) wherever erosion control barriers are no longer needed.*

February 14, 2019:

This will have to be addressed as areas are permanently stabilized. Silt fence is still in place at Basin 2.

December 31, 2019:

The removal of erosion control barriers has not been confirmed yet.

Per my discussion with the developer, the erosion control barriers have been removed except where needed – at Basin 4 and at the uncompleted house lots. I did not check the entire site, but I didn't see any unnecessary erosion control barriers in place at the sections of the site that I visited on February 21, 2020 and March 5, 2020.

27. *Stabilize areas up-gradient of Lot 76 (existing house), remove deposited sediment on and near Lot 76 and permanently stabilize disturbed and/or un-stabilized areas. Stormwater runoff that flows toward Lot 76 needs to be directed around the south side of the pool house.*

February 14, 2019:

This has not been addressed yet. GEI understands that an enforcement order was issued by the Grafton Building Department. GEI has recently been assisting the Building Department with review of plans proposing modifications to address this issue.

December 31, 2019:

Areas upgradient of Lot 76 have been stabilized. Plans proposing drainage modifications on Lot 76 have been submitted and reviewed. Work to address sediment removal on Lot 76 and drainage modifications on Lot 76 has not been executed.

The developer's consultant issued the document entitled Inspection Report, Lot 76. GEI reviewed the report. During my June 1, 2020 site visit, I did not observe anything that contradicts the statement at the last bullet-item on page 1 that states "Swale shows no sign of scouring; interceptor culverts are full of leaves, which would not be the case if stormwater entered the culverts." Likewise, I observed loose leaf litter at the short sections of silt fence immediately down-gradient of the culverts, again indicating an absence of flow since the leaves were deposited (presumably in the fall of 2019). However, I can neither confirm nor refute the first bullet-item in the Conclusion that states "The completed stabilization of lots that are up-gradient of Lot 76 (Lots 52 through 58) has ended all overland flow from typical storms." The leaf litter may have indicated little or no flow since the leaf litter was deposited, but there could be conditions (e.g. rainfall onto frozen ground with snow cover) that could perhaps generate flow during a "typical storm" as defined in the report. Nevertheless, I don't disagree with the report in that the fully vegetated upgradient tributary area has a positive impact by reducing the amount of runoff generated compared to that area being under construction or recently constructed and having poorly-vegetated ground cover.

28. *Obtain a Certificate of Compliance and record it at the Worcester District Registry of Deeds for any Order(s) of Conditions issued by the Grafton Conservation Commission for construction of the roads or road-related infrastructure.*

December 31, 2019:

GEI understands that the applicant requested a Certificate of Compliance. Some of the required work cited herein is also applicable to the project's Order of Conditions.

February 14, 2019:

GEI defers to the Conservation Commission concerning the issuance of a Certificate of Compliance.

Per a letter issued by the Grafton Conservation Commission on May 1, 2020, the Commission voted to issue a Certificate of Compliance for DEP # 164-602 / WP #449. GEI is not aware if the certificate(s) have been recorded at the Worcester District Registry of Deeds, as required.

29. *The catch basins were cleaned in or about December 2016. The developer is responsible for continued road and road-related infrastructure maintenance (e.g. catch basin cleaning, street sweeping, stormwater basin maintenance) and repairs until the roads are accepted as public ways.*

No further comment necessary.

30. *The developer should be aware that the Grafton Subdivision Rules and Regulations have specific requirements relative to Determination of Completeness for subdivision projects. This process differs from and occurs in advance of soliciting the Town to accept the road and road-related infrastructure. If not already done, the developer should make himself aware of the Determination of Completeness process and should direct any questions to the Zoning Board of Appeals, the Board having permitting and administration jurisdiction for 40B projects.*

No further comment necessary.

Additional Comments, February 14, 2019

31. *As observed during periods of cold weather, groundwater and/or stormwater seepages (i.e. slow steady prolonged flow) that are discharging to sidewalks and the road are freezing, causing ice formation and slippery conditions. The seepages need to be addressed to eliminate the ice formation. GEI observed such conditions on the sidewalk in front of 80 High Point Drive (adjacent to Arrowwood Court) and on the sidewalk on the down-gradient side of the 3 Pepperbush Court driveway. A subdrain was installed along the south side of Arrowwood Court; groundwater seepage was occurring on the north side of Arrowwood Court even after the subdrain was installed. GEI has also been advised of seepage from Lot 27 (48 High Point Drive) that impacted Myrtle Court and High Point Drive but I did not observe that seepage and icing condition firsthand.*

December 31, 2019:

No seepage was observed on December 19, 2019 or December 24, 2019. The situation will continue to be monitored during the winter of 2019 – 2020.

The site was checked periodically during the winter of 2019-2020 and the formation of ice was not observed; albeit there was little snowfall this winter. Mr. Barlow felt that the source of water to the High Point Drive sidewalk was not groundwater but was surface water (e.g. stormwater runoff or snow melt) that was captured in the riprap that is present along the north side of Arrowwood Court and passed out of the riprap and onto the ground surface where the riprap ends at the High Point Drive sidewalk. I don't dispute that this could be the situation.

I was informed that between my site visits of February 21, 2020 and March 5, 2020, the developer performed mitigating measures on the north side of Arrowwood Court adjacent to the High Point Drive sidewalk. It was reported to me that this area was excavated until the end of a perforated pipe that crosses Arrowwood Court was found. The pipe was reported to have been installed when the subdrain along the south side of Arrowwood Court was installed. As explained to me, after the pipe and its bedding stone were found, the cap was left intact on the end of the pipe and the excavation was backfilled with crushed stone (small riprap) to the ground surface, thereby creating a

hydraulic connection between the location at which water entered onto the High Point sidewalk and the catch basin in High Point Drive where the subdrain discharges.

The intention to capture water from the north side of Arrowwood Court and convey it via pipe to the catch basin in High Point Drive is reasonable. However, I can neither confirm nor reject that this mitigation will address the water seepage and icing conditions that were observed almost a year ago. Time will tell if the mitigation works.

I will suggest that a test could be performed to simulate the seepage conditions and to better understand whether a hydraulic connection now exists between the point of seepage and the High Point Drive catch basin. This test alone should not be considered confirmation that the mitigation is adequate. The test would require the developer to obtain approval to connect to a fire hydrant. Using a hose, water could be discharged to the Arrowwood Court pavement such that it flows to the north side of Arrowwood Court. The potential for water to discharge onto the High Point Drive sidewalk could be monitored and the flow into the catch basin via the subdrain could be measured to differentiate the test flow from the existing subdrain flow generated along the south side of Arrowwood Court. If such a test is to be performed, it should be witnessed by me and by a representative of Grafton DPW. Even if such a test is conducted, the Town would be best served by monitoring the area during winter conditions similar to those conditions experienced about a year ago.

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: Robert Berger, Grafton Building Inspector
Christopher McGoldrick, Grafton Town Planner
Grafton Conservation Commission
Brian Szczurko, Grafton Engineering Department
Paul Cournoyer, Grafton DPW
Peter Hingorani, Adams Road Company
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