

THOMPSON-LISTON
ASSOCIATES, INC.



*Professional Engineers Professional Land Surveyors
Erosion Control Specialists*

51 Main Street, Post Office Box 570
Boylston, Massachusetts 01505-0570
Telephone 505-869-6151 FAX 505-869-6842
www.thompsonliston.com

April 18, 2016

Sargon Hanna, Chairman
Grafton Planning Board
30 Providence Road
Grafton, Massachusetts 01519

Re: Preliminary Subdivision filing for
Land at 88 Adams Road, Grafton, Massachusetts
Assessor's map 32 parcel 10

Dear Mr. Hanna:

Enclosed are 5 sets each of full sized copies of two different revised Preliminary Subdivision plans along with 12 sets of reduced size copies. These Plans were revised pursuant to the review letter from Jeff Walsh of Graves Engineering dated March 18, 2016 and the discussion at the Board's hearing on March 28, 2016.

One set of plans, dated 15 April 2016, is a Preliminary Subdivision with a conventional design adhering to the normal subdivision rules and Zoning Bylaw requirements. The other is dated 14 April 2016 and is a Flexible Development utilizing smaller lot sizes to allow the preservation of open space.

I would like to take this opportunity to explain how the Plans were revised to address Mr. Walsh's review letter. The form that this response will take is that I will repeat each of his comments in italicized text and respond in normal text.

Zoning By-Law

Flexible Development Plans

1. *Proposed dwellings on Lots 1 and 12 were shown within the 50-foot buffer area as measured from adjacent tracts of land. (§5.3.6.h)*

These proposed dwelling have been moved to be more than 50 feet from adjacent tracts of land. This can be seen on sheets G3 and G6.

2. *The Common Land appears to contain well in excess of the minimum required amount of upland. At least 40% of the project land must be Common Land, of which at least 50% must be upland for a minimum upland area of 14.38 acres. We estimated that the Common Land consists of approximately 42.3 acres of upland. (§5.3.7)*

This is correct. The total site area is now 69.98 acres after conceding a parcel at the northerly end of the site and straddling the Town Line to an abutter. Open Space Parcel A has an area of 36.31 acres including 30.98 acres of upland. Open Space Parcel B has an area of 8.88

acres including 7.79 acres of upland. Total upland area within the two proposed open space parcels is 38.77 acres or 55.4% of the site.

- 3. It is our understanding that grading associated with lot development must occur on the lots and not within the adjacent Common Land. We ask for the Planning Board's input about whether our understanding is correct. Grading for lot development was proposed in certain areas of Common Land, e.g. the development of Lots 2, 3, 4, 5, 10, 15, 16, 17, 21, 22, 23, 27 and 30. Some of the grading noted herein is associated with dwelling construction whereas the remainder of the grading is associated with septic system construction. (§5.3.11.b)*

Through a combination of revising lot grading and moving lot lines we have revised the plans to contain all the cited lot grading within the lots.

Grading for the indicated lots did extend off into the adjacent open space parcels. To rectify that, we made all these lots larger.

- 4. On Sheets L3 and G3, the open space located west of Lot 1 closes to a point at the Road A sideline, thus prohibiting access to the western portion of Open Space Parcel B. Also, the wetland and retaining wall located east of Lot 2 will inhibit access to Open Space Parcel B. Consideration should be given to creating access to the western-most portion of Open Space B at a width of 40 feet. (§5.3.11.c)*

The suggested change was made and can be seen on sheets L3 and G3.

- 5. On Sheets L3 and G3, the open space located south of Lot 3 narrows to approximately 37 feet. A minimum width of 40 feet is required. (§5.3.11.c)*

This side and rear lot lines of Lot 3 have been revised to maintain a 40 foot width of open space and to contain lot grading with the boundary of that lot. This can be seen on sheets L3 and G3. However, it's not clear that the Zoning Bylaw requires that open space parcels never be less than 40 feet width at any point. Access off proposed or existing rights of way must be at least 40 feet wide.

- 6. On Sheets L6 and G6, the open space areas east of Lots 12 and 13 narrow to about 15 to 17 feet in width within the Town of Grafton. We defer to the Planning Board whether what appears to be contiguous open space in Westborough can be utilized along with the Grafton open space to provide the required 40-foot wide access to the open spaces located in Grafton south of Lot 12 and north of Lot 13. (§5.3.11.c)*

As noted in the response to the previous item, section 5.3.11.c of the Zoning Bylaw clearly requires that access to open space parcels off rights of way be at least 40 feet wide. There does not appear to be a requirement that open space parcels never be less than 40 feet wide. However this width will be achieved if proposed open space parcels on the adjacent development in Westborough are considered.

Subdivision Rules & Regulations

Both Conventional and Flexible Development Plans

7. *The locus needs to have a north arrow. (§3.2.3.1)*

A north arrow has been added to the title sheet on both the Conventional and Flexible Plans.

8. *On the Key Sheets, it would be helpful to include the lot numbers and open space parcel letters. Also, the scale bars are incorrect (1"=40' was provided instead of 1"=150'). (§3.2.3.1)*

The lot numbers and parcel letters have been added to the Key Sheets as suggested and the scale bars corrected.

9. *The approximate location of easement lines (e.g. drainage easements or retaining wall easements) were not shown on the plans. (§3.2.3.4 & §3.2.4.1.n)*

Drainage and retaining wall easements have been added to both sets of plans, as suggested.

10. *The project is to be served by public water located in Adams Road. As such, the plans need to include a general description of the connection to be made to the existing water system. (§3.2.4.1.f)*

A note indicating that the connection to the existing water main will be made with a tapping sleeve in accordance with Grafton Water District specifications has been added to sheet P1 of both plan sets.

11. *The plans do not reference the zoning district. (§3.2.4.1.p)*

The Land Plans in the Flexible Plan set have a note which indicates that the site is within the R4 zoning district. A similar note has been added to the Conventional Plans.

12. *The plans do not reference that Adams Road is a Scenic Road. (§3.2.4.1.q)*

We have added labeling to indicate that Adams Road is a Scenic Road to sheets L3 and G3 in both the Conventional and Flexible Plans.

13. *The plans do not reference the deed book and page nor the Assessor's Map and lot number. (§3.2.4.1.r)*

Notes have been added to the Land Plans in both the Conventional and Flexible Plan sets indicating that this site is shown as parcel 10 on assessor's map 32 and that the deed for the property is recorded at the Worcester District Registry of Deeds at Book 37262 Page 367.

14. *We defer to the Planning Board whether a projection of streets (layout on plans, not road construction) needs to be made to abutting property to the north owned by n/f LaFlamme. This area of the project and the abutting land is located within Estimated Habitat of Rare Wildlife and Priority Habitat of Rare Species as mapped by the Massachusetts Division of Fisheries & Wildlife's Natural Heritage & Endangered Species Program. This street projection could potentially connect the*

project's road system to the abutting parcel and also would roughly align with a street projection located on Robin Drive (in an area of a deep earth cut). The project's street projection and the Robin Drive street projection would be separated by two parcels of land with a total distance of approximately 1,200 feet. The projection of project streets would consist of: extending Road D on the Conventional Development Plans approximately 80 feet or extending Road C on the Flexible Development Plans approximately 750 feet. (§4.1.4.1.d & GZBL §5.3.8)

The abutter to the north, LaFlamme has not expressed any interest in developing his land in conjunction with this project and, as noted, there would be significant difficulties in attempting to extend roads in this project to the next Town road to the north.

15. *The plans propose roadway pavement widths of 24 feet throughout the project. A waiver request was submitted to allow this pavement width in lieu of a 30-foot wide pavement width on Road A. We don't have an issue with the proposal to reduce the pavement width to less than 30 feet in an effort to promote traffic calming. At this time we don't have a concern with the proposed width of 24 feet. If additional information comes to light that suggests a wider pavement width may be in order, then an alternative to the 24-foot width could perhaps be a pavement width of 26 feet. (§4.1.4.2)*

We have nothing to add to Mr. Walsh's statement.

16. *A vertical curve is required at Road A station 11+00 due to the proposed 1% change in grade. (§4.1.5.3)*

A 50 foot vertical curve has been inserted at this location on both sets of plans. It can be seen on sheet P2 of both sets of plans.

17. *The proposed project relies on the connection of Road A to a yet-to-be-constructed extension of Harvest Way located in Westborough in order to avoid the creation of a dead end street in Grafton. The concept of this connection does not seem unreasonable. However, coordination between the Grafton project and the Westborough project needs to occur. This coordination issue is beyond the scope of an engineering peer review, and as such we defer coordination to the Planning Board. (§4.1.6.3)*

We have met for an informal discussion with the Westborough Planning Board and they raised the same issue noting that there would have to be some coordination between the two Towns as the proposed subdivisions in each Town needs the construction of the other to comply with dead end road lengths.

18. *Retaining walls are proposed within the Road A right-of-way at station 5+25+/- . We understand that the Town requires any retaining walls to be located outside of the rights-of-way. (§5.8)*

The retaining walls on the north and south sides of Road A, in both the Conventional and Flexible Plans, have been moved outside of the right of way and within new 10 foot wide retaining wall easements. These changes can be seen on sheets L3 and G3 of both sets of Plans.

Conventional Development Plans

19. *There are several areas within the rights-of-way where the proposed cut or fill is greater than six feet (as measured from the existing centerline elevation to the proposed centerline elevation). These areas consist of:*

- *Road A station 2+70± to 5+70± and station 6+80+/- to 12+70+/- (fill),*
- *Road A station 18+00+/- to 21+40+/- [town line] (cut),*
- *Road C station 0+80+/- to 3+00+/-, station 15+70+/- to 17+20+/- and station 21+00 to 22+70+/- [town line] (cut),*
- *Road C station 11+20+/- to 13+90+/- (fill),*
- *Road D station 0+90+/- to 4+08+/- (cut),*
- *Road E station 0+00 to station 2+80+/- (cut). (§4.1.2.1.b)*

These observations are all correct. Having some significant cuts and fills is unavoidable given the topography of the site.

20. *On Sheet L4, the Road C tangent length of 146.40 feet (the straight section of Road C that provides part of the frontage for Lots 17, 18, 21 and 22) has less than the required minimum length of 150 feet. (§4.1.3.3)*

In order to address this, we made the curve radius on the curve after this tangent slightly smaller, going from 200 feet at the centerline to 175 feet and this lengthened the tangent to 165.37 feet. This also required some small changes in the profile in this area and changes in grading. These changes are shown on sheets L4, G4 and P7.

21. *If a Major Residential Development Special Permit (MRDSP) is issued for the Conventional Development, then during the preparation of definitive plans all slopes adjacent to the rights-of-way must be no steeper than 2H:1V. For example, slopes steeper than 2H:1V are proposed at Road A station 5+50+/- right, at Road A station 8+50+/- right, at Road C station 16+50+/- right and along the right side of Road D except at driveways. (§5.1.1 & Minor Street Standard Cross Sections)*

With the exception of the slope off to the right of Road A station 8+50, where a steeper slope is needed to maintain separation of grading from a wetland, the slope of grading in the cited areas has been lessened to 2:1.

Flexible Development Plans

22. *There are several areas within the rights-of-way where the proposed cut or fill is greater than six feet (as measured from the existing centerline elevation to the proposed centerline elevation). These areas consist of:*

- *Road A station 2+70± to 5+70± and station 9+15+/- to 13+50+/- (fill),*
- *Road A station 16+15+/- to 18+20+/- and station 20+00+/- to 22+05+/- [town line] (cut). (§4.1.2.1.b)*

Some significant cuts and fills are unavoidable given the topography of the site but it should be noted how many fewer such areas there are for the Flexible Development Plans than were cited for the Conventional Plans in comment number 19.

23. *The applicant has requested a waiver to allow a dead end street (Road C) in excess of 500 feet in length. A narrative was provided along with this waiver request. We don't take exception to the points made in the narrative. Nevertheless we understand that the Planning Board will address waiver requests and may vote to deny or approve said waiver request. (§4.1.6.3)*

The only thing we would add to Mr. Walsh's comment is that we are willing to work with the Planning Board with non-standard cross sections and other measures to help make the requested waiver acceptable to the Board.

24. *If a MRDSP is issued for the Flexible Development, then during the preparation of definitive plans the 1H:1V slope proposed at the right side of Road A at station 5+50+/- must be revised to a slope no steeper than 2H:1V slope. (§5.1.1 & Minor Street Standard Cross Sections)*

The proposed retaining wall has been extended and the grading in this area revised as suggested. This can be seen on sheet G3.

General Engineering Comments

Both Conventional and Flexible Development Plans

25. *The intersection curb radii within the project should be no greater than 30 feet. Curb radii of approximately 45 feet were proposed.*

The radii at the street corners are required to be 30 feet. Using larger radii at the curbs allows us to maintain a consistent cross section and larger radii make vehicle turning movements easier, particularly in winter when snow banks may narrow the available driving surface. So, where the regulations appear to be silent on this specific point we would prefer to keep the larger radii.

26. *We reviewed the Traffic Impact Study (The Study) in a general manner (not as a detailed peer review). The methodology appeared to be in order. The Study concluded that the level of service at the intersection of Adams Road and the project street will operate at level of service (LOS) A. Based upon the information presented in The Study, we have no reason to dispute this conclusion.*

We have nothing to add to Mr. Walsh's comment.

27. *The Study discusses improvements (i.e. vegetation clearing) to improve sight distance along Adams Road and/or the use of advance warning signs. These measures should be implemented as appropriate.*

We have now located the trees in the right of way which would need to be cut. We would file a request with the Board to work within the Scenic Road as required.

28. *We noted that in the "Existing Roadway Geometry" section of The Study (on Page 2), reference was made that Adams Road is posted at 25 miles per hour (mph). This appears to be a typographic error. The "Sight Distance" section on Page 7 correctly references a posted speed of 30 mph. We observed*

at the site that there is a sign for southbound travel located south of Old Westboro Road and a sign for northbound travel located north of High Point Drive.

Mr. Walsh is correct. That appears to have been a typographic error in the Traffic Impact Study. Furthermore, it was not the basis for Conley Associates' determination of the adequacy of sight distance at the proposed intersection as the 85th percentile of measured traffic speeds was used.

29. *With a through-connection being proposed between Adams Road in Grafton and Adams Street in Westborough, we were concerned about the potential for cut-through traffic. I spoke with Jennifer Conley of Conley Associates concerning this issue. To summarize the discussion, we concurred that it is unlikely that the project street would serve as a major cut-through. The Adams Street area contains narrow, winding streets (except for the newer subdivision streets) with no nearby major thoroughfare. We also concurred that some localized traffic may use the new connection and that localized traffic should not significantly affect roadway operations proximate to the project.*

We agree that creating a cut through route for significant traffic was a concern. Staff at the Westborough Planning Department expressed the same worry but they also arrived at the conclusion that the extension of Harvest Way in Westborough to Adams Road in Grafton is unlikely to draw additional traffic from either Town.

Conventional Development Plans

30. *The Conventional Development Plans show proprietary stormwater treatment units and what appears to be underground infiltration systems. In order to minimize the cost of long-term operation and maintenance if/when this infrastructure is accepted by the Town, we recommend that the use of proprietary stormwater treatment units and underground infiltration or detention systems be avoided unless specific site conditions suggest otherwise. The use of open stormwater BMPs such as forebays, detention basins and infiltration basins will be less costly to own and maintain.*

We agree with this sentiment, though, in some cases, a proprietary stormwater treatment unit is worthwhile as a means to save space as compared to installing a sediment forebay.

31. *The plans propose 1H:1V slopes at many locations on the building lots. To the extent possible, we recommend the use of 2H:1V slopes. Any slopes proposed at 1H:1V will need to be appropriately stabilized and protected (e.g. pedestrian guards).*

Mr. Walsh raises a good point. In a Definitive Subdivision Plan set we would include details calling for the method of slope stabilization on slopes of steeper than 2:1 including riprap stabilization and specific options for turf reinforcement mats. We have reduced the slopes steeper than 2:1 on the plans and will included details for stabilization and for fencing in a Definitive Subdivision Plan set.

Flexible Development Plans

32. *The owners of Lots 18, 19 and 20 will have difficulty gaining access to their septic system leaching areas after lot development – a slope of 1.5H:1V will have to be traversed with a total elevation change of sixteen to twenty feet.*

Grading was revised on these lots as well as on lot 13 to create a 3:1 slope up from these lots' back yards to their respective septic system leaching areas to have reasonable access. This can be seen on sheets G5 and G6 of the Flexible Development Plans.

General Comments

Conventional Development Plans

33. *On Sheet L4, the northern property line of Lot 24 (part of the project perimeter) is not consistent with the Key Sheet nor with the Flexible Development Plans.*

This inconsistency has been fixed. The plans now all show the same boundary at the northern property line.

Flexible Development Plans

34. *There is a minor typographic error on Sheets L5 and G5. The area for Lot 20 reads "50.589 S.F." but should be corrected to 50,589 S.F.*

This typographic error has been fixed.

One more revision that was made to the Plans was in response to the discussion at the Board's hearing on March 28, 2016 and that is the property roundings at the abutting properties where proposed Road A will intersect with Adams Road. Both abutters' deeds and the recorded plan to which they refer clearly indicate that there are 30 foot radius roundings in place now. I was in error in not showing them as such on the initial sets of plans.

Sincerely,

Thompson-Liston Associates, Inc..



James Tetreault, PE

Enclosures

Cc: Graves Engineering, Inc.
Casa Builders