

DECOULOS & COMPANY

ENVIRONMENTAL ENGINEERING & LAND PLANNING

VIA EMAIL

Thursday, November 18, 2021

Daniel Pasquarello, Acting Chairman
Wenham Planning Board
138 Main Street
Wenham, MA 01984

*RE: Definitive Subdivision of 60 Arbor Street, Wenham;
Wenham Assessor Map 13, Parcels 84 and 84A*

Dear Chairman Pasquarello and members of the Board:

On behalf of Susan M. Hamilton and Jeffrey R. Hamilton, we respond to the peer review of the proposed definitive subdivision conducted by Susan E. Carter of Places Associates, Inc. dated November 1, 2021. The property being divided is described by the Wenham Assessors on Map 13 as Parcels 84 and 84A. It is further described in a deed recorded at the Essex South Registry of Deeds in Book 31953, Page 274; as Lot 1 on Land Court Plan 20396B; and, as Lot 3 on Land Court Plan 20396C (the "Site").

The proposed definitive subdivision plans and application were filed with the Planning Board and Town Clerk by hand delivery on August 17, 2021 (the "2021 Application"). The plans and application are similar to a definitive subdivision application filed by the Hamiltons on February 18, 2020 (the "2020 Application"). That application was denied by the Board on March 11, 2021. The 2021 Application has been submitted without prejudice to the 2020 Application and the positions asserted in the pending appeal with the Massachusetts Land Court, Docket No. 21 MISC 000184 (MDV).

The March 11th decision of the 2020 Application relied on nineteen reasons for the denial of the previous definitive subdivision application. Each of the nineteen reasons the Board previously relied upon were addressed in the 2021 Application filed on August 17th.

Places Associates, Inc. is the second peer reviewer that the Board has hired for review and analysis of the proposed one lot subdivision. The first peer reviewer for the 2020 application was Envirobusiness, Inc. d/b/a EBI Consulting. EBI's review served as the basis for the denial of the 2020 Application.¹ The Board has authority to hire outside consultants and demand that the applicant pay for the reviewer's costs under authority of Section 5 of the Board's Administrative Rules and Regulations as amended on June 6, 2019.

¹ The denial of the 2020 Application appeared at odds with a letter to the Board dated February 4, 2021, where EBI had "no further comment on the Site Plans prepared by the Engineer and finds that the project as proposed has been satisfactorily designed in conformance with the Wenham Town By-Laws and Subdivision Rules and Regulations."

The Hamiltons promptly paid the Board \$5,000 to cover the estimated costs for the second peer review that Places Associates, Inc. detailed in a proposal dated August 26, 2021.

In her November 1st review, Ms. Carter identified “one critical waiver” to make the project “viable”. Other newly identified deficiencies could be resolved with “careful plan revisions/checking”. She also admitted that the Board’s current Rules and Regulations Governing the Subdivision of Land, dated 1984 (the “Rules”), did not meet current standards. See page 10 of Carter review. It is our understanding that the Board has been working recently to update its Rules and Regulations to follow current standards of care for subdivision design, stormwater management and environmental protection.

THE CRITICAL WAIVER

The ninth reason of denial in the March 11th decision alleges that the proposed subdivision fails to comply with Section 4.1.3.5 of the Rules by not providing a forty (40) foot radius for the proposed way with Arbor Street. Ms. Carter addresses this alleged deficiency and identifies it as the “one critical waiver”. We respectfully disagree.

The configuration of the proposed way is shown on Sheet C2 of the plan set entitled “Definitive Subdivision at 60 Arbor Street; property of Susan M. Hamilton and Jeffrey R. Hamilton; Civil Engineer: Decoulos & Company, LLC; Date: August 16, 2021” (the “Plans”). The Plans clearly show that the southerly radius of the proposed way intersecting Arbor Street has a 40 foot radius with an arc length of 15.13 feet, and the northerly radius of the proposed way has a 40 foot radius with an arc length of 6.25 feet.

Each of the 40 foot radii merge into second curves that contain radii of 10 feet. The integration of curves is common practice in the geometric design of road and railways and are called *compound curves*.

The American Association of State Highway and Transportation Officials (“AASHTO”) details the use of compound curves in Section 3.3.7.3 of its “Policy on Geometric Design of Highways and Street, 7th edition (2018)”, commonly referred to as the “Green Book”.

The Green Book is the standard policy used by town, cities, counties and states in adopting road design guidelines. The Massachusetts Department of Transportation (“MassDOT”, formerly known as Massachusetts Highway Department) ensures that its projects and designs are consistent with the Green Book and other AASHTO standards. See e.g. Project Development & Design Guide, Massachusetts Highway Department (2006), page 1-6².

² <https://www.mass.gov/doc/2006-project-development-and-design-guide/download>

Section 3.3.7.3 of the Green Book states that for speeds less than 45 miles per hour, “compound curvature can be used to form the entire alignment of the turning roadway.”

In numerous towns, cities and states throughout the country, compound curves are specifically addressed in their road design rules as either allowed or prohibited. For example, compound curves are specifically *allowed* in the town of Plymouth, MA, whose Planning Board requires that compound curves be denoted in Section 221(B)(2) of their most recent Rules and Regulations Governing the Subdivision of Land; the Delaware Department of Transportation encourages the use of compound curves to accommodate large design vehicles³; the State of Michigan allows compound curvature under their general laws⁴; and, the city of Milford, CT allows compound curves in Section 3.3.7 of their Subdivision Regulations.

Compound curves are specifically *prohibited* in the city of Chula Vista, CA as set forth in its Subdivision Manual, Section 3-401.10; prohibited under Section 159.078 of the Unified Development Code of the city of Noblesville, IN; prohibited under Section 22-1004(6)(E) of the township of Salisbury, PA within Ordinance No. 06-2021-637; and, prohibited in the city of San Diego’s Street Design Manual, Section 6.1.1.

The Planning Board’s Rules are silent on whether compound curves are allowed or prohibited.

Ironically, the sketch plan that Ms. Carter provides with her peer review shows a compound curve. The radius of 295 feet transitioning into a 60 foot radius of the cul-de-sac meets the definition of a compound curve.⁵ See <https://www.merriam-webster.com/dictionary/compound%20curve>

The Rules are also outdated on why a 40 foot radius is even necessary. Most surrounding towns have minimum radii requirements of 25 feet and the nearby town of Essex specifically allows 10 foot radii. See *Town of Essex Rules and Regulations Relative to Subdivision Control*, Section 7.2(2)(g) (2019).

The primary purpose of establishing minimum radius requirements is to ensure public health and safety. For accessing one additional house off Arbor Street, the horizontal alignment of the proposed way is no different than many large estates that have existed in the town of Wenham (the “Town”) for decades and that continue to be constructed.

The proposed alignment and radii of the way as shown on the Plans is safe, consistent with well accepted road design standards and fully compliant with Section 4.1.3.5 of the Rules.

³ DelDOT Development Coordination Manual, November, 2019, page 5-23.

⁴ Michigan Land Division Act, Section 560.137 of the Acts of 1967.

⁵ Ms. Carter also admits that her proposed configuration would not provide sufficient lot areas for the proposed subdivision under the Wenham Zoning By-Law.

REMAINING ISSUES FROM THE 2020 APPLICATION

Responses to Ms. Carter's comments regarding the remaining eighteen reasons for denial of the 2020 Application are as follows ⁶:

1. §3.3.3.16.1 – Sheet C1 of the Plans provides in the Notes section that “the land shown on this plan lies in an area of minimal flooding, Zone X.” The flood plain was therefore addressed in note form.

As discussed in Section 2.1 of the Environmental Assessment, the isolated freshwater wetlands in the southern portion of the Site is a kettle hole, formed through a remnant glacial block in the sandy glacial outwash. The surficial geology of the Site consists of late glacial stratified deposits that are composed of coarse sand and gravel deposits. The subsurface is a highly pervious material that does not result in groundwater "within several feet of the surface", quoting Carter letter at page 2. Subsurface soil tests submitted to the Board and recently conducted soil testing refute her presumption.

2. §3.3.3.17.1 – Additional layers from the drawing file will be turned off or grayed out to improve clarity in an updated set of plans that will be submitted next week.

§3.3.3.17.2 – Soil test logs of Observation Holes 9 and 10 were provided in Appendix A of the Stormwater Management Report dated October 30, 2020. As we have repeatedly stated during the 2020 Application, the information related to the construction of a house on proposed Lot 6 has no bearing on any application to the Planning Board. Soil test holes OH5 – OH8 demonstrate soil conditions to support a proposed septic system on Lot 6. The purpose of the soil testing is to ensure that the stormwater management design is sufficient to handle peak rainfall events. The Board was notified of additional soil testing conducted on November 10th and no members or representatives of the Board appeared.

3. §3.3.3.20.1 – The grading shown on Sheet C4 of the Plans shall be revised to demonstrate consistency with the typical roadway cross section. The cross sections are the same within the cul-de-sac and at the beginning of the roadway.
4. §3.3.4.1 – As mentioned in the letter to the Board that accompanied the 2021 Application, the centerline of the proposed roadway has been staked at 100-foot intervals showing the cut and fill at each location, as well as the lot frontage of the newly created lot. Ms. Carter has not conducted a site to verify that the stakes were set along the centerline of the proposed pavement.⁷

⁶ All section citations are to the Planning Board's current Rules and Regulations governing the Subdivision of Land, dated 1984.

⁷ The proposal from Places Associates, Inc. dated August 26, 2021 specifically provides for a site inspection.

5. §3.3.5.1.1 – The Board was notified of additional soil testing conducted on November 10th and no members or representatives of the Board appeared. The test pit data shall be shown on the revised set of plans.
6. §3.3.5.2.1 – The soil logs provided in the Stormwater Management Plan shall be stamped by a Professional Engineer. Gregory Bernard is a Registered Sanitarian and approved Soil Evaluator.
7. §3.3.5.3.1 – The Board was notified of additional soil testing conducted on November 10th and no members or representatives of the Board appeared. The test pits were conducted at 200 foot intervals along the centerline of the proposed pavement, in the vicinity of the proposed subsurface drainage infiltration area and were witnessed by the agent for the Board of Health.
8. §4.1.2.2.1 – Lot 7 is not a lot that restricts or prohibits connection of streets to adjoining property. It is a surplus lot, free and clear of any encumbrances and is denoted on the plan as “not a buildable lot”. See Bloom v. Planning Bd. of Brookline, 346 Mass. 278 (1963) and Cricones v. Planning Bd. of Dracut, 39 Mass. App. Ct. 264 (1995).
9. §4.1.3.5 – The “one critical waiver” previously addressed in this letter.
10. §4.1.5.3 – The proposed right-of-way that is designed to serve *one house* is a cul-de-sac with a 120 foot diameter and is presented as a minor street. Minor streets “may be built to less exacting standards than those hereinafter prescribed for arterial, collector, local or local modified streets...” quoting §2.1.1.33. The distance from the center of Arbor Street to the center of the cul-de-sac is 103 feet.

Rather than pave the entire 100 foot inner diameter of the cul-de-sac, the Board has allowed the center of the cul-de-sac to remain unpaved, pervious and vegetated. We intend to preserve as much of the native vegetation inside the center as possible. The resulting “donut” of pavement has significantly less impervious surface area and is more protective of the environment.

The centerline of the way includes a portion of Arbor Street, a portion of the paved outer donut and runs to the centerline of the unpaved donut. Being an undefined minor donut street, it is devoid of traditional elements of a profile such as Points of Vertical Intersection (PVIs), Points of Vertical Curvature (PVCs), Points of Vertical Tangency (PVTs) and K values (which define the abruptness of grade changes along a road centerline).

Section 4.1.5.3 defines K values for local, modified and minor streets for design speeds of 30 miles per hour. The design speed for the proposed way is 10 miles per hour. We have provided the most logical vertical curvature between stations 0+00 and 1+03.

11. §4.1.5.4 – Sheet C4 of the Plans shall be revised to more fully demonstrate a cross slope of two percent on the pavement, consistent with the cross slope shown on Sheet C8.
12. §4.1.5.6 – Sheet C4 demonstrates that a leveling area of 75 feet is provided with a maximum grade of three (3) percent. Centerline stations typically intersect with other centerline stations (“true centerline profiles” are defined in this manner by AASHTO and MassDOT). The proposed centerline is easily definable and reproduceable (and we would be glad to provide coordinates in the Massachusetts State Plane Coordinate System). Sheet C5 will be revised for consistency with Sheet C4.
13. §4.3.1 – Resolved.
14. §4.7.7.2 – Resolved.
15. §5.1.5 – Sheets C4 and C5 shall be revised to more fully show the proposed paved way with a crown, consistent with the cross section shown on Sheet C8.
16. §5.2.4.1 – A level area of at least two (2) feet shall be shown in the vicinity of catch basin 2.
17. §5.4.1.1.1 – Resolved.
18. §5.4.1.1.2(a) – The detail of the drainage manhole on Sheet C8 shall be revised to show a reinforced concrete pipe.
19. §5.10.2 – Sheet C7 includes a tree legend that shows existing and proposed trees. The tree species were reviewed and approved by tree warden Winslow Mulry. We would be glad to change the proposed tree species, as long as Mr. Mulry approves.

NEWLY DISCOVERED ISSUES

With a fresh set of eyes and a second bite of the apple, Ms. Carter has identified new compliance problems with the 2021 Application. Our responses to these comments on individual sections of the Rules are as follows:

§3.1.2.2.4 – All the land shown on Sheets C1 to C9 lies within the Town’s Residential Zoning District. We will place a note on Sheet C2 that no portion of the land is within the Flood Plain or Wetlands District.

§3.3.3.6 – We would be glad to provide an aerial photograph at a scale of one inch equals thirty feet, but are not sure what benefit this would provide over what has been provided.

§3.3.3.7 – The one missing dimension of Lot 7 will be provided and a street name shall be identified.

§3.3.3.15 – As stated earlier, the proposed right-of-way is designed to serve *one house* in a cul-de-sac with a 120 foot diameter and meets the definition of a minor street. Minor streets “may be built to less exacting standards than those hereinafter prescribed for arterial, collector, local or local modified streets...” quoting §2.1.1.33.

It is wrong to assert that this minor street cannot be constructed from the Plans. All new ways require layouts in the field by land surveyors or engineers. Conventional design practices do not apply to *de minimis* centerlines that serve one house and seek to provide a form of environmental protection. If the Board would like the Hamiltons to pave the entire 100 foot inner diameter of the cul-de-sac, we can provide a “conventional” profile.

§3.3.3.16.1 – The estimated 100 year high water mark and the contour line four feet above that water mark shall be shown on Sheet C1.

§3.3.3.17.1 – Additional layers from the drawing file will be turned off or grayed out to improve clarity in the updated set of plans.

§3.3.3.18.1 – Stormwater modeling has been provided in both the 2020 and 2021 Applications based on current standards of care and stormwater management policies from the Massachusetts Department of Environmental Protection. The Board properly accepted the work in the 2020 Application and we would be glad to request a waiver for the 2021 Application if it determines that it is necessary.

§3.3.3.20 – Sheets C4 and C5 shall be revised to demonstrate consistency with the typical roadway cross section. It is not clear why the typical cross section shown on Sheet C8 does not meet the standards defined in the Rules (particularly since it appears to have been previously accepted). The “typical” cross sections are the same within the cul-de-sac and at the beginning of the roadway (although they have different widths). With a 10 mph design speed, there is no intent to create a super elevated speedway in a 100 foot diameter way.

Grading shall be adjusted to eliminate the need for guardrails as described in §5.2.4.2.

§4.1.2.2.1 – As stated earlier, Lot 7 is not a lot that restricts or prohibits connection of streets to adjoining property. It is a surplus lot, free and clear of any encumbrances that is denoted on the plan as “not a buildable lot”. The lot is not a reserve strip as defined in the Rules. It is proposed as a fully accessible, non-buildable lot, free of encumbrances.

§4.1.3.5 – The “one critical waiver” has been previously addressed in this letter.

§4.1.4.3 – The requirement for a sidewalk is at the discretion of the Board. At the Board hearing on November 4th, Planning Board member Virginia L. Rogers reaffirmed that sidewalks will not be necessary. We would be glad to formally request a waiver for both §§4.1.4.3 and 5.5 if the Board requests. At the moment, we are currently only requesting a waiver of §4.1.4.3. See Title Sheet of Plans.

§§4.1.5.1, 4.1.5.2 and 4.1.5.3 – The proposed minor street is designed to serve *one house*. Minor streets “may be built to less exacting standards than those hereinafter prescribed for arterial, collector, local or local modified streets...” quoting §2.1.1.33. The need to provide a centerline profile of the pavement is not described in any of these sections.

§4.1.5.4 – As stated earlier, Sheet C4 of the Plans shall be revised to more fully demonstrate a cross slope of two percent on the pavement, consistent with the cross slope shown on Sheet C8.

§4.1.7.1 – There is no curb proposed for the minor street and there can be no curb line to follow. See requirements for curbs and berms in Schedule F of the Rules.

§4.1.8.1 – A street name shall be provided in the updated set of plans.

§4.3.1 – Detailing the geometry of a driveway is not specified in this section. The driveway width is currently 11.5 feet and it will be reduced to 10 feet in the updated set of plans. The width of the driveway at the gutter line is currently 20 feet.

§4.6.1 – The recommendation to provide a positive overflow path from catch basin 2 will be adopted and shown in the updated set of plans.

§4.7.5.4 – A detail for the one inch water service for the proposed house will be provided on Sheet C8.

§4.7.7.1 – Stormwater modeling has been provided in both the 2020 and 2021 Applications based on current standards of care and stormwater management policies from the Massachusetts Department of Environmental Protection. The modeling is significantly more intense than the ten year storm frequency specified in this section. The Board properly accepted the stormwater design in the 2020 Application and we would be glad to request a waiver for the 2021 Application if it determines that it is necessary.

§4.7.7.3 – Four foot sediment sumps are provided at all the catch basins and the need for self-cleaning velocities is therefore not necessary.

§4.7.8.1 – As we repeatedly stated during the 2020 Application, the information related to the construction of a house on proposed Lot 6 has no bearing on the application to the Planning Board. A transformer shall be placed on the ground on Lot 6 in a location approved by National Grid when a work order is submitted. The transformer shall be screened with evergreen shrubbery as the section requires.

§4.7.10 – Deputy Fire Chief and Fire Prevention Officer Jeff Baxter of the Wenham Fire Department has previously determined that the one proposed house can be adequately protected with hydrants that exist on Arbor Street.

§4.8.1 – Sheet C2 shows a proposed granite stone bound with an open square symbol as typical. Two additional bounds shall be proposed at the PC and PT of the cul-de-sac in the updated set of plans. The specifications for the bound materials and installation identified in this section shall be cited on Sheet C2.

§4.9.1 – The requirement for a sidewalk is at the discretion of the Board. At the Board hearing on November 4th, Planning Board member Virginia L. Rogers reaffirmed that sidewalks will not be necessary. We would be glad to formally request a waiver for §§4.1.4.3, 4.9.1 and 5.5 if the Board requests. At the moment, we are currently only requesting a waiver of §4.1.4.3. See Title Sheet of Plans.

§5.1.2 – The recommended note shall be added in the updated set of plans.

§5.2.1.5.4 – The Hamiltons have no intent to use road oil on the binder coarse pavement and fully intend on using a tackifier between the binder and top coarses. We would be glad to formally request a waiver of this banned petroleum product if the Board requests.

§5.2.4.1 – As stated earlier, the slopes in the vicinity of catch basin 2 shall be slightly adjusted in the updated set of plans to ensure compliance with this section.

§5.2.4.2 – As stated earlier, grading shall be adjusted to eliminate the need for guardrails as described in this section.

§5.2.5.2 – The recommendations for erosion control shall be adopted and revised in the updated set of plans on Sheet C3.

§5.4.1.1.1 – Compliance with the specifications from MassDOT shall be noted for the frames, covers and grates labeled for the catch basin and drainage manhole details on Sheet C8. The drainage emitter shall be identified and labeled on Sheet C4. We shall have Shea Concrete evaluate the proposed inlet and outlet lines from drainage manhole 3 to either customize the structure or specify a larger structure.

§5.4.1.1.2 – The soil cover over the drainage pipes is barely less than 3 feet and their depths will be adjusted in the updated set of plans to ensure appropriate cover.

§5.5 – The requirement for a sidewalk is at the discretion of the Board. At the Board hearing on November 4th, Planning Board member Virginia L. Rogers reaffirmed that sidewalks will not be necessary. We would be glad to formally request a waiver for §§4.1.4.3, 4.9.1 and 5.5 if the Board requests.

§5.8.1 – As stated earlier, grading shall be adjusted to eliminate the need for guardrails. Up to this point, the Board has not found guardrails necessary.

§5.9.2 – Four inches of loam shall be specified in the updated set of plans.

§5.10 – Regarding landscape architect William Murray’s comments:

- As stated earlier, Sheet C7 includes a tree legend that shows existing and proposed trees. The tree species were reviewed and approved by tree warden Winslow Mulry. We would be glad to change the proposed tree species, as long as Mr. Mulry approves;
- There is no requirement for loam or seeding specifications and no soil testing is required. We intend on using readily available loam in the area with suitable organic content and a native mix of grass seed that will provide rapid stabilization and be drought tolerant;
- There is no requirement for detailed specifications of the proposed trees;
- The elm trees shall be specified as disease resistant;
- We shall select alternatives to the American Beech and Western Red Cedar that will be subject to Mr. Mulry’s approval;
- Invasive Norway Maples shall be removed within the limit of work if they are not in close proximity to property boundaries;
- The reference to Section 771 of the Standard Specifications in Section 5.10.4 is not clear. We would be glad to cite appropriate planting methods from a reputable association or standard if made available;
- No vegetative screening is required along the northerly boundary;
- No White Pines are being proposed;
- We will propose two trees in the cul-de-sac island. Shrubs are not required and the Hamiltons intend to preserve as much of the native vegetation inside the center as possible.

§5.11.1 – As stated earlier, the specifications for the proposed granite bound materials and installation shall be cited on Sheet C2.

§5.12.1 – As stated earlier, a street name shall be identified. As described in this section, street signs and stop signs are only required for public ways.

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Daniel Pasquarello, Acting Chairman
Wenham Planning Board
Thursday, November 18, 2021

OTHER PLAN COMMENTS

We have worked closely with the Wenham Fire Department to ensure that adequate access of their equipment is available to Lot 6. The Department's largest equipment is a Sutphen SL 75 aerial ladder. Deputy Chief Baxter has reviewed the turning templates and is satisfied that the Sutphen ladder can adequately access and egress the Site. He has expressed his opinions in a letter to the Board dated July 9, 2020. I also spoke with him this morning and he is not concerned about potential snow banks imposing an additional hazard for turning.

As acknowledged earlier, there are discrepancies between Sheets C4 and C5 that shall be addressed in the updated set of plans. The proposed house shown in the Stormwater Management Report shall be revised to be consistent with the Plans.

We look forward to quickly addressing most of the recommended changes and working with the Board to identify if any common ground can be found on the disagreements.

Please feel free to contact us if you have any other concerns. Thank you.

Very truly yours,



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cc: Margaret Hoffman, Planning Coordinator *via email*
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