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June 13, 2022

Sutton Planning Board
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**Subject: Sutton Douglas Development
Definitive Subdivision Plan Review**

Dear Planning Board Members:

We received the following documents in our office on June 6, 2022:

- Correspondence from Land Design Collaborative to Sutton and Douglas Planning Boards dated June 3, 2022, RE: Form C Application for a Definitive Plan-Residential Subdivision, Response to Sutton Douglas Development Definitive Subdivision Peer Review, 0 Mumford Street & 5 Forest Street, Douglas, MA 01516, 61 Duval Road, Sutton, MA 01590.
- Plans entitled Definitive Plan Pursuant to the Town of Sutton Subdivision Rules and Regulations Section 3.C & Douglas Subdivision Rules and Regulations Section 4.2 for Sutton Douglas Development, Sutton & Douglas, MA dated February 10, 2022 and revised May 27, 2022, prepared by Land Design Collaborative for Sutton Douglas Development LLC. (61 sheets)
- Document entitled Stormwater Management Report – Addendum 1, Residential Subdivision, Duval Road, Sutton, Massachusetts, Forest Street, Douglas, Massachusetts dated May 2022, prepared by Land Design Collaborative for Sutton Douglas Development

We also received the following document on June 9, 2022 via email:

- Correspondence from Corporate Environmental Advisors to Land Design Collaborative dated June 9, 2022, RE: Potential Impact of Fire-sprinkler Systems on Abutter's Water Supply...

Graves Engineering, Inc. (GEI) has been requested to review the documents for conformance with Subdivision Rules & Regulations, Sutton, Massachusetts with amendments through October 30, 2006, Zoning Bylaw, Sutton, Massachusetts with amendments through May 13, 2019, the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Handbook and generally accepted engineering practices. As part of our initial review, GEI visited the site on March 18, 2022. GEI also visited the site on April 27, 28 and 29, 2022 to witness soil testing in the Sutton and Douglas sections of the project.

This letter is a follow-up to our previous review letter dated April 7, 2022. For clarity, comments from our previous letters are *italicized* and our comments to the design engineer's responses are depicted in **bold**. Previous comment numbering has been maintained.

Our comments follow:

Subdivision Rules & Regulations

1. *On Existing Conditions Sheet 2, the elevations for TBM-B and TBM-C need to be provided. Additionally, on Existing Conditions Sheet 8, the elevations for TBM-D and TBM-E need to be provided. (§3(C)1.f)*
Acknowledged. Sheet C-001 was revised to include a Benchmark Information table with the necessary elevations.
2. *Elevations every 50 feet need to be included on the road profiles, including Sheet C-301. GEI recommends elevations every 25 feet along vertical curves. (§3(C)2.l)*
Acknowledged. Sheets C-301 through C-356 were revised to include elevations every 25 feet on the road profiles.
3. *GEI understands a waiver was requested to allow for a 24-foot pavement width along Road "A" and a 22-foot pavement width along Road "B". GEI has no issue with these pavement widths and understands the Planning Board will address waiver requests. (§4(A)3)*
No further comment necessary.
4. *Subdrains should be provided along Road "A" unless it is demonstrated that groundwater is greater than four feet below the road surface. (§4(B)1.a)*
Based upon the depth of the earth cut (up to approximately nine feet along Road A) and the depth to estimated seasonal high groundwater, subdrains should be provided along Road A from the catch basins at station 0+08 to station 3+20 and along Road B from Road A to station 1+25 (with a connection to the catch basins at station 2+88.
5. *Rational Method pipe sizing calculations need to be provided. (§4(B)2.a)*
Acknowledged. The Stormwater Management Report was revised to include Rational Method pipe sizing calculations. GEI has no issues with the pipe sizing calculations.
6. *The pipes along Road "A" need to have a minimum four feet of cover. Currently, a general cover of 3.3 feet is proposed. (§4(B)2.b)*
The road grade and drainage structures were revised, however the pipes still do not have a minimum four feet of cover. GEI is not aware if a waiver was requested. In GEI's opinion, considering the proposed topography and the desire to keep Road "A" at a lesser grade, the proposed pipe cover is not unreasonable.
7. *The plans propose 2H:1V slopes outside the planting strips and sidewalks. Slopes of 3H:1V are required. (§4(K))*
GEI's comment remains; the plans still propose 2H:1V slopes. GEI is not aware if a waiver was requested.
8. *On Sheet C-404, the Bituminous Concrete Pavement construction detail lists material thicknesses for trucking areas as well as passenger car/parking areas; this construction detail appears to be for a commercial development and needs to be revised. It would be advantageous to have one road section for the entire subdivision. Sutton and Douglas have different road section requirements. GEI recommends that consideration be given to a road section consisting of twelve inches of gravel, 2-1/2 inches of binder asphalt and 1-1/2 inches of top course asphalt. (§5(F)2)*
Acknowledged. The Bituminous Concrete Pavement construction detail was revised to depict a road section consisting of twelve inches of gravel, 2-1/2 inches of binder asphalt, and 1-1/2 inches of top course asphalt.

9. *GEI understands a waiver was requested to eliminate granite curbing. The plans propose Type 3 (nearly vertical) bituminous curb, which is not customarily used in Sutton and can be prone to displacement by snowplows. GEI recommends that granite curb be provided at intersection radii and extending six feet beyond those radii, granite curb inlets and transition stones be provided at catch basins, and elsewhere Cape Cod berm be installed. Cape Cod berm is required in Douglas except for locations requiring granite curb. If not already done, the Planning Board may wish to solicit comments from the Sutton Highway Department. (§5(G))*

Sheet C-404 was revised to include construction details for Cape Cod Berm and Vertical Granite Curb. The plans need to indicate where each type of curbing is proposed. Additionally, the Catch Basin Curb with Inlet construction detail on Sheet C-402 includes a note "use granite curb inlet stone where specified". The note needs to be revised to specify that all catch basins shall have granite curb inlet stones or the plans need specify where the granite curb inlets are proposed.

10. *A construction detail needs to be provided for the sidewalk showing all requirements outlined in Section 5(I) (e.g. sidewalk width, material, etc.).*

On Sheet C-404, the sidewalk gravel thickness on the typical right-of-way section construction details was revised from six inches to eight inches. The thicknesses of the sidewalk binder course and surface course still need to be added to either the typical right-of-way section construction details or to the Bituminous Concrete Pavement construction detail on Sheet C-404.

11. *GEI understands a waiver was requested to eliminate street trees. GEI doesn't have an issue with preserving existing trees. Any areas along the right-of-ways cleared of trees should have street trees planted. (§5(J)4)*

Acknowledged. The plans were revised to include the location of street trees. Sheet C-001 was revised to include Planting Notes Note 1 stating the tree requirements necessary to meet Sutton Regulations. Tree planting construction details were included on Sheet C-405.

Zoning Bylaw

12. *GEI has no issues regarding compliance with the Zoning Bylaw.*
No further comment necessary.

Hydrology Calculations & Stormwater Management Review

13. *GEI reviewed the hydrology computations; we have no issues with the modeling of the subcatchments, reaches and basins.*

No further comment necessary.

14. *For the stormwater discharges from the project that occur in Sutton, the only analysis point is identified as L4 and consists of stormwater discharges to Duval Road and the abutting properties up-gradient of Duval Road. To address MassDEP Standard #2 at each individual discharge point, the hydrology computations need to be revised to analyze the pre- and post-development peak rates of runoff to Duval Road and each of the abutters separately. Of concern is the potential for increasing rates of stormwater to one or more of: the existing catch basin in Duval Road and the abutting properties at 49, 55, 59, 65 and 71 Duval Road.*

An analysis of the pre- and post-development stormwater discharges to each individual discharge point was not yet submitted. During this follow-up review GEI began to glean data from the Stormwater Management Report. However, the hydrology model was not structured to allow post-development runoff rates to the existing catch basin in Duval Road to be gleaned; runoff to the catch basin originates from one on-site subcatchment, from three on-site stormwater basins and from Duval Road. GEI spoke with the design team on June 13; we understand that such an analysis is forthcoming.

15. *The Total Suspended Solids (TSS) Removal calculations list a treatment train as catch basin to CDS-2015-4 to infiltration basin. However, several catch basins and drain manholes are CDS-2015-4 units (e.g. CB-2B near Duval Road). Thus, the TSS Removal calculations need be revised so these units are not double-counted.*

Acknowledged. Two sets of TSS removal calculations were submitted in Stormwater Management Report – Addendum 1 and upon further review, two sets of TSS removal calculations had been submitted in the initial Stormwater Management Report.

16. *The Stormwater Report needs to include the recharge and water quality volume calculations for Standards 3 and 4.*

Acknowledged. The Stormwater Management Report was revised to include recharge and water quality volume data.

17. *Soil testing needs to be performed at Basins 901, 1200, 1203, and 1300 to demonstrate a two-foot offset to groundwater.*

Acknowledged. The design engineer performed, and GEI witnessed, soil testing on April 27, 2022. GEI has no issue relative to the proposed groundwater offset at the stormwater basins in Sutton.

General Engineering Comments

18. *GEI reviewed the information in the Hydrogeologic Assessment and has no issue with the information presented nor with the conclusions of the assessment. The assessment evaluated hydrogeologic conditions on an area-wide level.*

GEI also has no issue with the information or findings presented in the correspondence from Corporate Environmental Advisors to Land Design Collaborative dated June 9, 2022.

19. *On Sheet C-202, the pipe between catch basin CB-2011B and FE-2010 will only have about 0.6 feet of cover where the pipe passes under the back of the sidewalk. The pipe needs to be deeper to allow for adequate base gravel thickness under the sidewalk and to minimize the potential for the sidewalk to crack over the pipe.*

Acknowledged. The horizontal configuration was revised to minimize the length of drainage pipe that passes under the sidewalk and the drainage system elevations were revised to accommodate the reduction in road grade at the project entrance.

20. *On Sheet C-202, the subdrain invert elevation (517.0) that connects to DI-3 on the west side of Road A needs to be raised so it is not lower than DI-3's out pipe.*

Acknowledged. The subdrain invert elevation was revised to 517.9, above DI-3's out pipe.

21. *The pipe diameter, slope, and length need to be included for Pipe D-1, the pipe connecting DI-1 to EX-CB at Duval Road.*

Acknowledged. The information was added to Sheet C-202.

22. *On Sheet C-301, the outlet elevations of CB-9011A and CB-9011B need to be higher than the downstream manhole (DMH-9011).*

Acknowledged. The elevations of CBCI-9012A and CBCI-9012B (formerly CB-9011A and CB-9011B) were raised to be higher than the downstream manhole.

23. *On Sheet C-404, there are two typical road section construction details. Each construction detail needs to identify to which road(s) the construction detail applies.*

Acknowledged. Sheets C-301 through C-307 were revised to include road pavement width dimensions to differentiate which typical road section construction detail applies to each road.

24. *The plans need to include a construction detail for the light pole itself, or a note stating that streetlights in Sutton will meet all Sutton requirements.*

GEI recommends that the Planning Board include a condition in its decision that requires the developer and contractor to coordinate with the Town of Sutton (i.e., Highway Department and/or Select Board) during construction relative to streetlight installation requirements and relative to streetlight locations (e.g., at the intersection of Duval Road and Road A and at the intersection of Road A and Road B).

General Comments

25. *GEI understands the traffic report will be reviewed by another consultant.*

No further comment necessary.

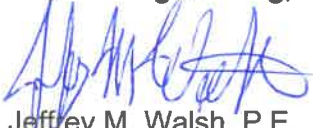
Additional Comments June 13, 2022

26. **On Sheet C-402, the ladder rungs need to be reinstated in the Drain Manhole (DMH) construction detail.**

27. **Sheet C-202 needs to include the invert elevations for DMH-9011.**

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: Wayne M. Belec; Land Design Collaborative