

January 25, 2023

Mr. Steven Boulay, Chairman
Shrewsbury Planning Board
100 Maple Avenue
Shrewsbury, MA 01545

Subject: Response to Graves Engineering Review Comments
Proposed Automobile Dealership
701 Boston Turnpike, Shrewsbury, MA
Site Plan Review

Dear Mr. Boulay and Members of the Board:

We are writing to respond to review comments addressed to the Board in a letter from Jeffrey Walsh, P.E. of Graves Engineering, Inc. (GEI) dated October 4, 2022. The Graves Engineering comments are shown in *grayscale* and our responses (TLAI) are shown in ***bold italics***. We delayed responding to these comments until we were sure the plan configuration is final.

Some changes to the plans were also made during the ZBA public hearing and approval process. The proponent has been working with the architect to refine the building plans, and changes to the footprint also affected the site design. Throughout the review and public hearing process, the proponent has agreed to alter various aspects of the plans to address concerns that have been raised, and we have incorporated those revisions into the plans and stormwater calculations. These changes include altering the location and configuration of Pond 3 to retain a buffer of existing trees along South Street, and a configuration of the curb cut and driveway geometry at South Street to be restricted to right turns in and out.

In addition to the revisions to the plans and stormwater report described herein, we also addressed comments of Town officials and staff, as compiled in a letter from Louise O'Neill, assistant Town Planner, and a review letter from MDM Transportation, replies to which are in separate correspondence to the Board.

Rules and Regulations Governing Specials Permits and Site Plan Review

1. The plans must identify the abutting land uses. (Article IV §1.g(4))

TLAI Response: Information has been added to the survey plans.

2. The abutter's information must include the street addresses. (Article IV §1.g(7))

TLAI Response: Information has been added to the survey plans.

- The topographic contours need be clearly labeled on plans. The existing topographic contours were not labeled on the existing conditions plans nor on Sheet C2.2 (the proposed grading plan). (Article IV §1.g(8)).

TLAI Response: Information has been added to the survey plans.

- Top and bottom of wall elevations need to be provided at appropriate locations for all retaining walls. (Article IV §1.g(8)).

TLAI Response: We added plan Sheet C2.3 to show the retaining wall information clearly.

- On-site traffic management signs (e.g., stop signs, "no left turn sign" at Boston Turnpike exit) need to be include on the plans. (Article IV §1.g(16))

TLAI Response: We added signs and notes to the plans.

- No structural information or table listing the drain manhole rim elevations; drain pipe invert elevations; drain pipe size, material, length or slope was included on the plan set. The plans must be revised to include this information. (Article IV §1.g(18))

TLAI Response: Drainage and Sewer manhole and pipe information has been shown in tables on Sheet C6.6.

Zoning By-Law

- GEI has no issues relative to compliance with these By-Laws except as noted in the following comment.
- The Zoning Summary Table on Sheet C1.2 of the plans indicates that 55 parking spaces are required based upon "All other" (non-residential uses) at a rate of one space per 1,000 squared feet of gross floor area. A requirement of 55 parking spaces for employee, sales, parts, and service parking seems low. GEI defers to the Town of Shrewsbury whether the requirement of "retail stores and personal service shops" (one space per 250 square feet of gross floor area) is required for automobile dealerships. (VII.D.2i & n)

TLAI Response: The parking summary on Plan Sheet C2.2 has been updated, and the parking spaces have been tabulated as follows. 120 spaces are provided for the occupancy of the building, including sales and service customers and employees.

PARKING REQUIRED:	
"ALL OTHER"(1 SP/1,000 S.F.)(57,862 SF) =	58
TOTAL REQUIRED	58 SPACES
PROVIDED:PARKING SPACES FOR CUSTOMERS (SALES).	18 SPACES
PARKING SPACES FOR CUSTOMERS (SERV).	61 SPACES
PARKING SPACES FOR EMPLOYEES	77 SPACES
INVENTORY VEHICLES	418 AUTOS
DISPLAY VEHICLES IN GRASS AREAS	26 AUTOS
TOTAL PROVIDED ON SITE	600 AUTOS
ACCESSIBLE PARKING 521CMR:	
MINIMUM REQUIRED: 1/25 SPACES	4
PROVIDED:	4
ALL SPACES SHOWN ARE 9' BY 19' UNLESS OTHERWISE SPECIFIED	

9. GEI understands the proposed site work will be incidental to the issuance of a building permit and therefore an Earth Removal Permit is not required. Nevertheless, the plans show substantial earth cuts (up to 27 feet deep at the base of the earth slope located at the northwest section of the site, approximately eleven feet deep through the middle of the building) and some earth fills at the terraced parking east of the building. The Planning Board may wish to inquire of the applicant the net earth cut or fill that will be removed from or brought to the site.

TLAI Response: Due to the existing topography, development of the site does involve significant cuts and fills. The nature of the glacial till soil does not allow for it to be used as structural fill without significant amendment, and that is difficult to accomplish on a topographically challenging site, where there are no flat areas where stockpiles of materials can be stored and where the materials can be homogenized. We have consulted with a site contractor and have determined the net volume of earth removal from the site to be approximately 100,000 cubic yards.

Hydrology & Stormwater Management Review

10. GEI reviewed the hydrology computations and found them to be in order provided that the following five comments are addressed:
11. The boundary between Subcatchments 2S and 3S needs to be shifted farther to the east; as observed during my site visit, runoff from the east side of the depression to the culvert (likely a livestock crossing associated with the former Boston-Worcester trolley system) that crosses Boston Turnpike originates from the existing driveway at 701 Boston Turnpike.

TLAI Response: We have reviewed the driveway and agree that runoff crosses the driveway into the depression, and we have revised the boundary and areas of the subcatchments on the plan and in the hydrology model accordingly.

12. The hydrology computations indicate a swale for Reaches 1R (discharging to the proposed pond by Boston Turnpike) and 2R (discharging to CB 36) are to be constructed on the upgradient side of the rear parking lot. The grading for these swales need be shown on the grading plans. As currently proposed, the topographic contours indicate that the runoff will be directed to the pavement in the parking area.

TLAI Response: We have revised the plans to show the grading of the swales, we have updated the drainage area plan, and we have adjusted the boundary of the two affected subcatchments on the plans and in the hydrology model accordingly.

13. The configuration of Pond 11 must be clarified to be consistent between the HydroCAD calculations and the plans as follows: The plan scales 64' long x 32' wide with no outlet. The HydroCAD calculations indicate 66' long x 36' wide with a 6" outlet 6' long.

TLAI Response: We have reviewed the dimensions of the subsurface ponds, and outlet pipes, and they are now consistent between the plans and hydrology model. We adjusted the infiltration BMPs to provide the infiltration volume required for compliance with the Shrewsbury Stormwater Regulations.

14. The configuration of Pond 21 must be clarified to be consistent between the HydroCAD calculations and the plans as follows: The plan scales 76' long x 60' wide. The HydroCAD calculations indicate 46' long x 32' wide. Both the plan and HydroCAD calcs indicate a 6" outlet.

TLAI Response: We have reviewed the dimensions of the subsurface ponds, and outlet pipes, and they are now consistent between the plans and hydrology model. We adjusted the infiltration BMPs to provide the infiltration volume required for compliance with the Shrewsbury Stormwater Regulations. This is also the case at Pond 31.

15. Detention Pond 1 contour labeling appears incorrect (i.e., 541 contour most likely is meant to be 542). Engineer to confirm and correct as necessary. Additionally, the hydrology computations indicate a peak water surface elevation of 583.82 but the top of berm elevation is approximately 543.0. The unusual peak elevation in the computations is likely due to under-sizing of the pond and storage extrapolation by the software. The pond and computations must be revised to provide meaningful peak water surface elevations.

TLAI Response: We have reviewed the pond designs vs. the hydrology model and have modified the ponds slightly in terms of the outlets. Where the majority of the grading plan shows two-foot contours, some one-foot contours are shown in the infiltration pond areas where they are warranted to clarify the design intent. We have labeled the contours to clarify the intended conditions. With the revisions to the pond and correction of the outlets, the noted anomalous flood depth has been corrected.

16. The post-development drainage areas map is difficult to read due to text size and drainage area boundary line conflicts/overlaps at the parking areas.

TLAI Response: We have edited the plan to make it easier to read. We have also provided a separate plan showing the catch basin drainage areas.

17. Compliance with the MassDEP Stormwater Handbook is reasonable except as noted in the following two comments.

18. There will only be 0.17 feet of freeboard (as measured from the peak water surface elevation to the top of the berm) in Detention Pond 2 during a 100-year storm event. A minimum freeboard of at least one foot is required.

TLAI Response: We have modified the design plans at Pond 2 and Pond 3 to provide overflow spillways and to provide at least one foot of freeboard above the highest calculated flood elevation (100-year storm).

19. The open stormwater basins were labeled "infiltration/detention" and "infiltration/retention." The labels should be consistent with MassDEP Stormwater Handbook nomenclature (e.g., infiltration, detention, or retention).

TLAI Response: "Infiltration Basin" seems to be the preferred nomenclature, and we have revised the labels and notes accordingly.

General Engineering Comments

20. Vehicle guard rails need to be provided at the top of the retaining walls.

TLAI Response: We have added callout notes for the guardrails, which were shown on the retaining wall detail.

21. The plans propose an on-site sidewalk system that ends at South Street. The proponent should provide a crosswalk in South Street and accessible curb cuts at each end of the crosswalk to connect the project's sidewalk system to the sidewalk on the east side of South Street.

TLAI Response: We have adjusted the sidewalks and added crosswalk markings to the plans as suggested.

22. The plans need to show the Pond 3 "Infiltration/Detention Basin", its grading and its outlet pipe system in their entirety. Sheet C2.2 shows only a portion of the basin.

TLAI Response: We have added a Plan Sheet C2.4 to show the entirety of Pond 3, including grading and pipes on one sheet. I will note that this pond was moved to be further away from South Street compared to the original design location. Elevations, slopes, and outlets were adjusted as well. We added the rip rap splash pads as well as an emergency overflow spillway.

23. Sheet C2.2 is missing the symbols for off-site catch basins (labeled "inlets" and drain manholes in South Street and Boston Turnpike).

TLAI Response: The catch basins are shown on the revised plans.

24. Sheet 1 of the Existing Conditions Plans shows a catch basin in the South Street travel lane at the proposed driveway. However, the catch basin is located along the curb line. (See Photo 1 at the end of this letter). The plans propose a connection from the site to the South Street drainage system. The proposed connection will have to be modified to avoid a conflict with the catch basin and the catch basin's inlet grate and curb inlet will have to be modified to accommodate driveway traffic. Whereas the curb inlet stone will have to be removed, GEI recommends that the plans include a gutter inlet (to replace the curb inlet's hydraulic capacity) along the South Street curb line up-gradient of the new driveway and that the curb inlet be connected to the existing catch basin for sediment storage.

TLAI Response: Additional survey work was required to locate the catch basin and pipe and to add them to the plan. The catch basin will remain in place, and the header will be removed. We have added a MASSDOT type gutter inlet as suggested by Mr. Walsh. Two proposed catch basins in the two legs of the modified site driveway will also provide additional collection capacity in this area. The sanitary sewer manhole at the intersection was found to be on the east side of South Street in the raised island, it was located by the surveyor, and added to the plan. We reviewed and revised the connections at South Street. See the revised plan and the Sewer Pipe and Invert Table on Sheet C6.6.

25. The Stormwater Report narrative indicates the use of CDS devices (identified by a drain manhole symbol with a "C" in the legend) for TSS removal compliance. Elsewhere on the plans the intended structures are labeled HS1 - HS4. The engineer should verify and correct as necessary. Further, there is no construction detail for any proprietary stormwater treatment units.

TLAI Response: We are using the term "hydrodynamic separator" (HS) on the plans, as the generic term for the type of stormwater structures proposed to provide TSS removal capacity. In the Stormwater Report and Calculations, we used a hydrodynamic separator trade named CDS product, manufactured by Contech Stormwater Solutions, because to complete the calculations, we are required to use a specific product and to provide documentation from the manufacturer. The actual

product that is selected for installation might vary, and if so, we will have to review submittals for the preferred product to verify that the TSS removal efficiency used in the calculations is provided. May I suggest that if a different product is selected by the contractor, we will verify the engineering and testing data and provide the manufacturer's submittal and documentation to the Town Engineer for the record.

26. Pertaining to Sheet C3, the design engineer should clarify whether the roof drain is supposed to tie into the Pond 31 Infiltration BMP.

TLAI Response: Roof drains will be connected to Ponds 11, 21, and 31. We added notes and called out the pipes on the revised plans. Note that the building footprint expanded to the north and the calculations were updated to include additional roof area in Subcatchment 8S. Pond 31 was enlarged to accommodate this additional flow.

27. On Sheet C3, an overflow outlet should be provided for the Pond 11 Infiltration BMP.

TLAI Response: Overflow pipes are now called out for each of the subsurface infiltration ponds.

28. GEI recommends that the applicant engage a geotechnical consultant to design any slopes steeper than 2H:1V (e.g., the 1.5H:1V slope located at the northwest section of the site).

TLAI Response: Proponent will engage a geotechnical engineer to design the steep slopes and retaining walls.

General Comments

29. GEI understands the Shrewsbury Department of Public Works Water & Sewer Division will review the proposed water and sewer infrastructure.

30. Boston Turnpike is under MassDOT jurisdiction. As such, GEI understands that the proposed driveway at Boston Turnpike and any other work (e.g., earth excavation) within the Boston Turnpike layout will be reviewed by MassDOT. The plans propose a 3H:1V (downward) slope in the shoulder of Boston Turnpike where an upward slope currently exists.

31. GEI did not review for compliance with 310 CMR 10.00 (The Massachusetts Wetlands Protection Act Regulations). Nevertheless, as indicated by note 8 on Existing Conditions Plan sheet 1, the wetland flagging shown on the plans was identified by a survey conducted in 2008; the flagging is outdated.

32. GEI did not review the components associated with the vehicle fuel storage system. Such a review is beyond the scope of this site plan review.

TLAI Response: Acknowledged. No responses are required for these items.

If you or Mr. Walsh have any questions or need any additional information to complete the review, please do not hesitate to contact me at 508-869-6151 or patrick.healy@tlainc.net. Thank you.

Very truly yours,
THOMPSON-LISTON ASSOCIATES, INC.



Patrick J. Healy, P.E.
Principal

Enclosures

cc: Louise O'Neill, Assistant Town Planner
Andy Truman, Town Engineer
Michael Clemmey, Bosh Shrewsbury-Worcester LLC
Richard Ricker, Esq.



Photo 1: Catch basin at the proposed South Street driveway entrance.

TLAI Response: The catch basin was located by field survey and added to the existing conditions plans by Control Point.

The sanitary sewer manhole is visible in this photo in the triangular raised island across the street.