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September 12, 2023

Town of Wareham
Zoning Board of Appeals
54 Marion Road
Wareham, MA 02571

Attention: Nazih Elkallassi – Chairman

RE: Response to Initial Peer Review
Special Permit, Variance, and Site Plan Review Application
176 Main Street
Wareham, MA
ZBA Case 31-23
G.A.F. Job No. 21-9822

Dear Chairman Elkallassi,

G.A.F. Engineering, Inc., on behalf of our client Warren 176 Main St QOZB, LLC, provides the following responses to the review comments received from Allen & Major Associates, Inc. by letter dated August 29, 2023. A revised plan dated September 12, 2023, is included with the submittal.

This letter has been formatted for clarity by listing the review comment followed by our response in ***bold italics***.

Variance Request

The proposed project is seeking a variance request for a reduction to the required landscape buffer (Article 10: Landscaping). Based on the Zoning By-Laws §1040 Landscape Buffers, the proposed commercial use is required to provide a minimum 20-ft landscape buffer to the adjacent uses consisting of single and two-family houses located on the southwesterly and westerly side of the property and 10-ft to adjacent commercial uses on the remainder of the property. The submitted material does not provide any explanation or narrative on the variance request. Please note that no landscaping is being proposed, fence or otherwise.

A&M defers to the Zoning Board of Appeals as to the merits of the application as provided as to whether it meets the statutory requirements of section 1470.

Wareham By-Laws and Zoning By-Laws

1. The proposed site improvements are located within the Floodplain Overlay District, therefore subject to subject to Article 4: Overlay Districts, subsection 420 Floodplain Overlay District. A permit is required for development in the Floodplain Overlay District, per §420.10. The applicant should provide an update to the ZBA on the status of the permit. The plans should be updated to note and refer to the overlay district. If the proposed improvements costs are equal to or greater than 50 percent of the structure's market value, then the project would be considered a substantial improvement and the structure would need to be brought into compliance with current FEMA and building code regulations. Has the applicant considered the impacts that may be required to the building and what the potential impacts will be to the site to accommodate the improvements?

   The Zoning Data Table on the cover sheet and sheet 1 of 8 have been revised to include the Floodplain Overlay District. The value of the improvements are left to the discretion of the Building Commissioner. Tt is our opinion that the building permit is the required permit per section 420.10.

2. The proposed project is required to obtain a Stormwater Management Permit (SMP) in accordance with Wareham By-Laws Division V, Article XI, Article I Stormwater Management. The applicant should provide documentation on the status of the SMP.

   A stormwater permit is not required as the activity does not disturb or alter 20,000 SF or more of land subject to jurisdiction requiring a stormwater permit. Refer to stormwater report summary for a listing of subcatchment areas.

3. The proposed project is located within the Wareham Village 1 and 2 Zoning District and is subject to Article 7: Design Standards and Guideline, subsection 730 Wareham Village Districts. No architectural plans have been submitted; therefore A&M is unable to review for compliance with subsection 730 Architectural Design Guidelines. The

applicant/architect should provide a statement for the record on how the proposed modifications will conform to the applicable section of the Zoning By-Laws. The ZBA may consider a condition of approval requiring the architectural modification of the building to be in compliance with subsection 730 of the Zoning By-Laws.

Article 7, Design Standards and Guidelines is not applicable as the project does not involve an exterior extension, alteration or reconstruction to the existing building.

4. Zoning By-Law Section 1031 requires "new projects or expansions exceeding 5,000 square feet of non- residential development or more than three multi-family dwelling units, the landscape plan shall be prepared by a registered landscape architect whose seal shall appear on the plan." Landscaping is currently shown on the site plans but has not been prepared by a Landscape Architect. A landscape plan should be provided in accordance with the Zoning By-Law. Please provide a landscape table showing the requirements and what is being provided.

The landscaping shown on the plan are the existing landscape features. The existing site landscaping is to remain. New landscaping is not proposed hence the variance request previously cited as the required setbacks cannot be met due to existing conditions.

5. The proposed project is proposing a new sign in the location of the existing sign and will be subject to Article 11: Signs. The applicant will be required to submit to the Director of Inspectional Services a completed sign permit application, together with all supporting materials specifically building and sign dimensions, materials of which the sign is comprised, colors, attachment methods and the position of the sign.

The project sign is intended to comply with the provisions of Article 11. A separate building permit application for signage will be presented to the Building Department.

Site Plan & Drainage Calculations

6. The existing conditions plan is not stamped by a Professional Land Surveyor registered in the Commonwealth of Massachusetts. The plan should be endorsed by a PLS for record.

The existing conditions plan and demolition plan sheet 3 of 8 has been stamped by a professional land surveyor.

7. The layout plan should be updated to show the location of curbing in accordance with §934 Surfacing and Curbing of the Zoning By-Laws.

A cobblestone border has been added to define the perimeter of the crushed stone parking and access area.

8. The applicant proposes restriping an area of existing pavement to remain along the Main Street portion of the site adjacent to the 6 parking stalls. There appears to be an opportunity to remove the excess asphalt and reduce the impervious area on this site improving the overall runoff condition. Would the applicant be willing to remove the excess asphalt in this area? If the applicant is amenable to this suggestion, the opportunity exists to regrade the site driveway to promote runoff into the drainage trench versus directly into Main Street also improving the general runoff condition.

The applicant wishes to use the striped area as a snow storage area as noted. Runoff is currently directed to the existing stone drainage trench.

9. Test pit symbols should be added to the Drainage & Grading plan. It appears that the drainage system is located within the estimated seasonal high-water table, based on redoximorphic features (elevation 5.5) in Test Pit #2. The design engineer should review the elevations and revise the

plans accordingly.

Test pits are shown on the Existing Conditions Plan and Demolition Plan sheet 3 of 8. They have also been added to the Drainage and Grading Plan as suggested. No water was encountered in the test pits.

10. After the estimated seasonal high groundwater elevation is confirmed under Comment 9, the applicant is required to provide a groundwater mounding assessment if less than four feet of separation is provided from the bottom of the stormwater system to the confirmed seasonal high water table.

No water was encountered in test pit No. 2. The separation to groundwater is expected to be four (4) feet or greater. A mounding analysis is not required. We would be amenable to a condition requiring verification of the groundwater elevation at the time of construction.

11. Please clarify the intent of the existing stone trench located along Main Street and its intended function including details on depth, etc. The trench is not modeled within the HydroCAD stormwater model.

As noted on the drawings the stone trench is "existing" and serves as an infiltration trench to the existing parking lot which is not intended to be expanded. Details of construction of the existing trench were not available.

12. The design engineer should review the proposed watershed divide line between watersheds "1S" & "2S" on the northerly side of the building. The grading indicates the dividing line should be adjusted.

The modification to water sheds 1S and 2S amounts to perhaps 200 square feet and for practical purposes is inconsequential to the drainage calculations. We have modified the spot grades to coincide with the watershed

delineation.

13. The design engineer should review the HydroCAD input for Pond 1P, which has discrepancies in the top of stone elevation as compared to the elevations noted on the detail (sheet 8). The plans and/or calculations should be revised and updated accordingly.

The top of stone in HydroCAD was set at the parking lot stone grade above the infiltration system so there is no gap in storage below the surface storage.

14. It appears that the design engineer is utilizing pond storage in the HydroCAD model in addition to the proposed subsurface leaching pits. The plans do not depict the intended location of this storage on the plan. It appears the parking lot is being used as the ponding area in all storm events. Based on the peak elevations reported in the HydroCAD report, water will be ponding against the building during the 10-year event and greater storm events. This should be clarified or revised. The rear door elevation is listed at 12.5 while the 100 year ponding in this area is at 12.79.

Refer to drainage narrative. Stormwater will discharge along the north side of the property before it reaches the threshold elevation. The discharge is modelled as a broad crested weir an elevation of 12.3, which is lower in elevation than the rear door elevation of 12.5.

15. The design engineer should revise the TSS calculation worksheet for the Infiltration Trench. The infiltration trench only receives 80% TSS removal with the appropriate pre-treatment, therefore the design engineer cannot take additional credit for the catch basin in the overall calculation for the entire drainage system. The design engineer should update the TSS worksheets accordingly.

Attached is a revised TSS worksheet. From a practical point of view the pretreatment device is a catch basin and typically provides 25% TSS removal. Although the catch basin precedes the infiltration units and provides

function it will not be used in the TSS calculation. The 80% TSS removal is none the less achieved.

16. The proposed infiltration drawdown calculation reports that the system will take approximately 416 hours to completely drain after a 100 year storm event occurs. That would render the system unavailable to receive additional stormwater for nearly 17 days after significant precipitation. It is acknowledged that the design is based on redevelopment of a site where limited stormwater controls currently exist, however the potential for increased and repeated flooding of the property should be evaluated and the design revised accordingly. The design statement refers to the use of 0.27 inches per hour as the "conservative" rate of the soil as indicative of the drawdown time. Additional evaluative measures should be performed to further determine the underlying soils condition and consider the use of a double ring infiltrometer, or similar test, to determine the infiltrative ability of the soil.

The potential for increased and repeated flooding is purely speculation. The project results in a reduction in rate and volume for all storms up to and including the 100-year event to Main Street. Additional evaluative measures are unlikely to provide any meaningful reduction in the infiltration capacity of the soil which will result in a significant reduction in drawdown time. Also note the site is located in an AE-14 flood zone. During a 100-year storm event the majority of the site will be inundated as will Main Street.

17. The design engineer should review the grate capacity of the proposed catch basin. Based on the HydroCAD report, the catch basin is proposed to receive over 5 cfs, which exceeds the typical capacity of a standard grate. The plans should be revised accordingly or provide an analysis of the grate's capacity.

It is not possible to manage the 100-year storm for sites within High Hazard Flood Zones. Grate capacity analysis is provided which confirms grate capacity 1S for 100-year storm 4.0 cfs with no surface overflow. See calculations.

18. No details on site lighting nor a photometric plan have been provided, A&M is unable to review impacts on surrounding properties or compliance with Zoning §1243 Lighting Standards or §1533 (11).

No new site lighting is proposed.

19. The project exceeds the maximum access road length of 150 feet without provisions for a fire apparatus turn around (NFPA 1 18.2.3.5.4) for dead ends. The Wareham Fire Department is the Authority Having Jurisdiction (AHJ) for fire access roadways. The design engineer should provide a vehicle movement path showing the anticipated circulation on-site as requested by the Wareham Fire Department. Please identify and note the distance to the closest fire hydrant on the plan. Please provide any correspondence with the Fire Department that approves the circulation path as designed.

A Fire Department swept path analysis is provided. Fire hydrants on Main Street are shorter on the drainage pursuant to NFPA 18.2.3. access to buildings, access is provided to within 50 feet of one exterior door that provides access to the interior of the building.

20. The applicant shall be required to coordinate with the Sewer Department for connection to the system. Correspondence should be provided for record to the Board. It should be noted that the Town of Wareham is currently under a moratorium for additional sewer flow into the municipal system.

An existing sewer connection is provided for the existing building. The proposed sewer flow has been requested and approved by the Sewer Commissioners.

21. The applicant shall be required to coordinate further with the Wareham Fire District on an available water connection as shown on the drawings. Correspondence should be provided for record to the Board.

The water service and fire protection service currently

exist and have existed for a number of years.

Please contact me directly should you have any questions about this project.

Very truly yours,

William F. Madden, P.E.
bill@gafenginc.com

WFM/jlc

Enclosures

cc: Warren 176 Main St QOZB LLC
Jilian Morton, Esq
Allen & Major Associates, Inc.

Summary for Pond 2P: Parking Lot/CB Grate

Inflow Area = 0.935 ac, 47.99% Impervious, Inflow Depth = 5.82" for 100 Year Storm event
Inflow = 6.17 cfs @ 12.09 hrs, Volume= 0.453 af
Outflow = 4.00 cfs @ 12.18 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.5 min
Primary = 4.00 cfs @ 12.18 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.19' @ 12.18 hrs Surf.Area= 3,358 sf Storage= 1,512 cf

Plug-Flow detention time= 3.0 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 3.1 min (795.3 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	3,470 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.50	650	0	0
12.00	3,000	913	913
12.50	3,950	1,738	2,650
12.70	4,250	820	3,470

Device	Routing	Invert	Outlet Devices
#1	Primary	11.50'	**2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads
#2	Primary	12.30'	**10.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.99 cfs @ 12.18 hrs HW=12.19' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 3.99 cfs @ 3.99 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: 176 Main Street, Wareham, Mass

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	0.80	1.00	0.80	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20

Total TSS Removal = 80%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Barcade Warren QOZB, LLC

Prepared By: G.A.F. Engineering, Inc.

Date: 12-Sep-23

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1