November 10, 2021

Ref: 73170.00

Mr. Nazih Elkallassi, Chairman
Town of Wareham Zoning Board of Appeals
Town Hall
54 Marion Road
Wareham, MA 02571

Re: Reign Car Wash, 3005/3013 Cranberry Highway
Proponent Responses to Field Engineering Co., Inc. comments dated November 8, 2021

Dear Mr. Chairman and Members of the Board:

For the benefit of the ZBA who may not be familiar with the Massachusetts Department of Environmental Protection (DEP) stormwater design standards, the DEP recognizes that site constraints often make it difficult to comply with all the Stormwater Standards. Specifically, Standard 7 provides that a redevelopment project is required to meet some of the standards "only to the maximum extent practicable". As designers we have to balance and prioritize stormwater goals and objectives when working on redevelopment projects, and we have documented for the ZBA where the design stands relative to meeting each and every standard within the Stormwater Report prepared for this project. In addition, we subsequently addressed stormwater management design comments by the ZBA's peer review consultant, Mr. Rowley, which included conducting supplemental soil test pits. At this time, we remain confident that the project as presently designed responsibly achieves a balance of meeting standards outright where it is possible to do so, and to the maximum extent practicable where it is not.

With this background, we respectfully provide the following responses to additional stormwater design comments submitted to the ZBA in the November 8, 2021 "peer review" letter prepared by Field Engineering Co, Inc. (copy attached) on behalf of a local business owner in opposition to the project:

1. The Massachusetts Stormwater Handbook Volume 2, Chapter 2, Infiltration Basins notes to "take one soil boring or dig one test pit for every 5,000 feet of basin area, with a minimum of three borings for each infiltration basin." The project has conducted two test pits for every infiltration basin and two out of the three have one boring. This is consistent with the requirements of the Stormwater Handbook. The Test Pit Results letter provided by Aries Engineering, dated October 27, 2021 regarding the oxidation observed in one of the test pits specifically notes "could be interpreted to be an indicator of the seasonal high water elevation *were it not for the absence of oxidation in all the other test pits conducted on the site with similar soils*" (emphasis added). It is VHB's understanding that Mr. Rowley was on-site to witness some of the test pits.
2. This comment is inaccurate. Under the Massachusetts Stormwater Management Standards, Volume 2: Technical Guide for Compliance with the Massachusetts Stormwater Management Standards, Chapter 3, Checklist for Redevelopment Standards, this project is considered a redevelopment. Standard 3 of the

Redevelopment Checklist requires a mounding analysis for sites that have an Activity and Use Limitation (AUL), sites that are located in a solid waste landfill or a 21E site. This site is not any of the above, therefore a mounding analysis is not a requirement by DEP. Regardless, the site conditions are also not conducive to mounding because of the soils and the substantial depth to the confining layer (i.e. bedrock). The Geotechnical Report determined refusal within the site to be at about elevation - 43.5, (greater than 50-feet below the ground surface) and the sandy soils are well draining. The mounding effects are negligible and VHB confirmed water will not break out above the ground surface.

3. A 1-foot freeboard is a recommendation (where applicable) and not a requirement. It is good practice to incorporate additional storage capacity (i.e., freeboard) where conditions allow, and when in a location where accidental overtopping would pose potential harm to human safety and/or threat to downstream properties from flooding during a 100-year storm event. However, this is just not the case for this site. The basins handle relatively small volumes of runoff due to the small area of the site; and while we have raised the site and maximized capacity of the basins in balance with other site design objectives, our analyses show the basins will overflow briefly during most of the design storms analyzed. More importantly, our analyses also demonstrate that the project will significantly reduce the rate and volume of runoff leaving the site meaning the design reduces the potential for downstream flooding effects.

4. This is a recommendation and not a requirement. It is recommended for access to, and maintenance of, large stormwater basins. There are no impediments to access any of the basins for inspection and maintenance, and 15' access roads around each are simply not warranted.

5. Again, this is a recommendation and not a requirement, and more applicable to basins with long slopes that make them susceptible to erosion. Our basins are 18"-24" deep and we have no concern about our ability to establish and maintain stable side slopes with such shallow basins. Flatter slopes would mean less storage volume in each basin; and as designers cognizant of the community's concern with flooding at this location we chose to prioritize/maximize storage volume over mild concerns with side slopes.

6. The project significantly and substantially reduces runoff to Cranberry Highway. Proponent is fully aware that drainage will be reviewed by DOT as part of the Highway Access Permit process.

7. Comment noted. This is a matter that will be reviewed by DOT.

8. This comment is painting a scenario suggesting flooding will result from failed stormwater basins uniquely attributable to car wash customers apparently doing oil changes and flushing their anti-freeze at the vacuum stalls. Automobiles at a carwash are no more likely to generate "oil spills" or spread hazardous materials than the automobiles of customers at other commercial uses permitted as of right in this zoning district. In fact, most customers use the vacuum stations *after* the car wash and are therefore less likely to generate pollutants on the pavement. The project site is not in a Critical Area as defined by DEP and this use is not a LUPPL - this was previously confirmed by the ZBA's peer review consultant. Additionally, we note again that the DEP handbook makes a distinction between requirements for new construction and those for re-construction. It is correct to say that we do not fully meet the TSS removal target - we meet the target to the maximum extent practicable and this is due to groundwater elevation/existing site conditions.

9. In consideration of the soils, the flat topography of the site, the size of the basins and the relatively small volumes of water to be handled by these basins we see no need for emergency overflow spillways or drawdown devices for maintenance.
10. Comment noted.
11. The ZBA's peer review consultant made the same comment, and this has been addressed.

We are prepared to discuss any of these comments and responses with the ZBA.

Sincerely,

VHB

Curtis Quitzau, P.E.
Director of Land Development

cc: A. Haseotes
D. Troyer
S. Kavanagh

FIELD
ENGINEERING CO., INC.
CONSULTING ENGINEERS

November 8, 2021
Project No. 2440

Nazih Elkallassi, Chairman
Town of Wareham Board of Appeals
Memorial Town Hall
54 Marion Road
Wareham, MA 02571

Subject: **Stormwater Peer Review**
Reign Car Wash
3005/3013 Cranberry Highway
Wareham, Massachusetts

Dear Mr. Elkallassi,

At the request of our client, Mr. Steven MacDonald, we have reviewed the stormwater management system design and stormwater report for compliance with applicable Rules and Regulations as well as the Massachusetts Stormwater Handbook. We have also reviewed the meeting tapes of the presentations to date as well as correspondence between the applicant's engineer and the Town of Wareham's peer review consultant. As you are aware, the major components of the stormwater management system include three infiltration basins that have been designed to retain and infiltrate stormwater runoff back into the underlying soils in order to reduce the rate of runoff of stormwater from the property in the subject storm events.

Following review of the plans and supporting calculations we offer the following comments related to the stormwater management system design that should be considered in the review and approval of the project:

1. It is our understanding that the applicant has performed test pits in the areas being proposed for infiltration basins on the project site. The Massachusetts Stormwater Handbook recommends a minimum of three soil samples/tests in each infiltration basin to confirm infiltrative capacity and groundwater conditions beneath each basin. This does not appear to have been done in Infiltration Basin 1 and 3. It was also mentioned in the documentation provided that there was oxidation color, which may be an indication of seasonal high groundwater, in one of the test pits at elevation 7.5, but that this wasn't consistent with the other test pits so it was disregarded as an indication of seasonal high groundwater. The Town may wish to have a representative witness test pits to confirm the groundwater determinations performed by the applicant.

2. Regardless of the final determinations of seasonal high groundwater on the site, in accordance the Massachusetts Stormwater Handbook, a mounding analysis is required when the vertical separation from the bottom of an exfiltration system to seasonal high groundwater is less than four (4) feet and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm.

3. Infiltration basins do not provide a minimum of one foot of freeboard in the 100-year storm event as recommended in the Massachusetts Stormwater Handbook.

4. The Massachusetts Stormwater Handbook recommends a minimum 15' wide access bench around infiltration basins to facility maintenance of the basin. This does not appear to have been provided on any of the basins. Additionally, it appears that access for maintenance to the southerly side of infiltration basin 3 would require a permanent access easement from the adjacent property owner as encroachment onto the adjacent property would be likely.

5. The Massachusetts Stormwater Handbook recommends that the side slopes of the infiltration basins be no steeper than 3:1 to allow for proper stabilization, ease of maintenance and better public safety. None of the infiltration basins are designed with side slopes that meet this requirement.

6. Infiltration Basin 1 has an overflow spillway that will direct runoff towards Cranberry Highway. According to the calculations, this overflow spillway will be triggered in all storm events other than the 2-year storm. Applicant should consult with MassDOT to determine if this is acceptable or modify the design as necessary.

7. Based on the latest grading plan available for review, it would appear that a portion of the runoff from the site driveway will flow directly towards Cranberry Highway. In our experience permitting projects with MassDOT, this would not be permitted and a trench drain or additional grading would be necessary to intercept any runoff leaving the site

8. Surface runoff from the parking areas and areas where the vacuum stations are proposed will flow directly to a sediment forebay in advance of the infiltration basins which will consist of crushed stone bottoms. Given the proposed use of the property as a car wash with numerous vehicles being parked outside and entering and exiting the site, there would be greater potential for spills of oils or other hazardous materials onto the pavement which could directly enter the groundwater without any potential for containment in the proposed stormwater management system.

   The Massachusetts Stormwater Management Handbook recommends that project proponents design pretreatment BMPs to pretreat runoff before stormwater reaches the infiltration basin. For Critical Areas, land uses with potentially higher pollutant loads, and soils with rapid infiltration rates (greater than 2.4 inches/hour), pretreatment must remove at least 44% of the TSS. This site has soils with rapid infiltration rates and the use could be considered a land use with potentially higher pollutant loads, therefore the proponent should be providing a minimum of 44% TSS Removal prior to discharge to the infiltration basins. This is not accomplished with solely the sediment forebays being provided.

   Appropriate TSS Removal is also critical to the functionality of the infiltration basins with regards to flood control. With an increased TSS load into the infiltration basins, there will be greater opportunity for the suspended solids to "blind" the soils at the bottom of the basins, minimizing the potential for infiltration into the underlying sandy soils. The infiltration into the underlying soils is the main function of the basins for flood control and if this function is impaired, on-site (and potentially off-site) flooding could occur. In an area with known flooding concerns, the functionality of these infiltration basins is critical and every measure should be taken to maintain their continued functionality, including maximum pre-treatment of the runoff prior to discharge.

9. Two of the three infiltration basins are not equipped with an emergency overflow spillway and none of the basins include a drawdown device to allow draining of the basin for maintenance as necessary. Given the minimal amount of pre-treatment currently proposed, frequent maintenance of the bottom of each infiltration basin will be necessary to keep them functioning properly.

10. No provisions for snow storage/snow removal appear on the site plans. No snow should be plowed directly into the areas designated for stormwater management.

11. A portion of the stormwater management system relies on an off-site drainage system. Has the owner of the off-site drainage system signed off on the application as a property owner? This feature is critical to the design and functionality of the stormwater management system and authorization from the adjacent property owner should be provided during the site plan review process. Maintenance of the off-site drainage system should be included in the operation and maintenance plan for this project to ensure its continued functionality.

It is our opinion that the comments discussed above should be resolved prior to approval of the project. If you would like us to review further revisions to the plans or have any questions on our comments, please feel free to contact me at our Mattapoisett Office at (508) 758-2749.

Very truly yours,
Field Engineering Co., Inc.

Richard R. Riccio III, P.E.
Project Manager

11/8/2021

CC: Charles L. Rowley, PE, PLS
Attorney Jilian Morton