



PESCE ENGINEERING & ASSOCIATES, INC.

**43 Porter Lane
West Dennis, MA 02670**
Phone: 508-333-7630
Ed@PesceEng.com

December 30, 2023

Mr. Brian Murphy, Chair
Town of Marshfield
Zoning Board of Appeals
870 Moraine Street
Marshfield, MA 02050

Subject: Engineering Peer Review Report, **Proposed Bridle Crossing Ch. 408 Project**
Off Ferry Street, Marshfield, MA

Dear Mr. Murphy and Members of the Board,

Pesce Engineering & Associates, Inc. is pleased to provide you with this engineering review of the proposed Bridle Crossing Chapter 408 project, located off Ferry Street, Marshfield, MA. We have evaluated the existing plans for consistency with the Town's Zoning Bylaw, the Marshfield Rules and Regulations Governing the Subdivision of Land (for design standards), and general conformance with the Massachusetts Stormwater Management regulations.

We have reviewed the following information to prepare this report:

- Comprehensive Permit Application package, dated November 15, 2023, with exhibits & attachments, including project ZBA Form 2, Form 2D, and List of Waivers.
- Letter to Marshfield Zoning Board from Grady Consulting, LLC, dated November 15, 2023, RE Bridle Crossing Application for Site Plan Modification (providing a summary of changes of the project).
- Site Plan drawings, entitled "Site Plan, Bridle Crossing, Off Ferry Street, Marshfield, Massachusetts," 14 sheets, prepared by Grady Consulting, LLC, dated November 9, 2023
- Stormwater Management Design Calculations, Bridle Crossing, prepared by Grady Consulting, LLC, dated November 10, 2023.
- "Construction Operation & Maintenance Plan," Bridle Path Village, prepared by Grady Consulting, LLC., dated January 9, 2017, and revised November 15, 2023.
- "Traffic Assessment Supplement, Proposed Bridle Path Village Residential Development, Marshfield, Massachusetts," prepared by TEPP, LLC, dated November 15, 2023.
- Natural Heritage & Endangered Species Program Conservation & Management Permit Status Report, Bridle Path Village, dated January 9, 2027, revised November 15, 2023.
- E-mail from Darren Grady, Grady Consulting, LLC to Patrick Brennan, PGB Engineering, LLC, Subject: Bridle Crossing and nitrogen loading calculations, dated December 8, 2023.

- Architectural Plans (Elevations & Floor Plans), Bridle Path Village, prepared by 209 Design, 4 sheets, dated November 6, 2023.

The Zoning Board is of course familiar with this project, as it is an update of the original "Bridle Path Village Project," which was previously reviewed in 2016 & 2017. As before, this project is located on a 10-acre site off the east side of Ferry Street, near Waltham Ave. The project is now proposed as a 56-unit residential community with 8 multi-family residential buildings and 8 garage buildings (with one of these garage buildings containing an office). The updated project proposes to provide a total of 133 parking spaces (130 for the residential units and 3 spaces for the office), including 17 handicapped-accessible spaces, all of which exceeds the requirements of the Marshfield Zoning Bylaw (Section 305-8.01), and the Mass. Architectural Access Board requirements (521 CMR 23).

The site is located in the R-1 Residential District, and also within the Water Resource Protection District. Although the site is subject to review by the MA Natural Heritage & Endangered Species Program (NHESP), no wetland resources are present on the site, and it is not located within the flood plain (100-yr.). Municipal water service is planned for water supply, and Title 5 septic systems are planned to provide sewer service for the new residential buildings and office space.

The following are our review comments:

1. Please note that Pesce Engineering has teamed with Chappelle Engineering Associates for review of the Traffic Assessment Supplement, and PGB Engineering, LLC for a review of the drainage, water supply design, and nitrogen loading analysis. We direct the applicant to these separate peer review reports and ask the applicant to make the appropriate responses to these, as well as those listed below. Attached is the report from PGB Engineering LLC, and the report from Chapelle Engineering Associates, will be forwarded as soon as possible.
2. We are aware that the proposed septic system for this project is in the process of changing to reflect a system capable of reducing the effluent nitrate nitrogen concentration to 10 PPM or less. This type of advanced treatment system is recommended in order to reduce the nitrogen impacts of this project in the Water Resource Protection District. The current nitrogen loading analysis provided by Grady Consulting shows a site nitrogen calculation of approximately 3.62 PPM. We recommend that additional information & design details be provided for review after the final septic treatment system is selected.
3. We recommend that the Marshfield Fire Dept. review these plans and provide comments to the Board (if they haven't already) regarding the adequacy of emergency vehicle access, and spacing of fire hydrants proposed on the site, as well as the need for any proposed location(s) of Fire Dept. Connections (FDCs) on the residential buildings (since each one will require a fire protection system).

As part of this comment, we note that the proposed hydrants located at the cul-de-sac and near Building 1 appear to be separated by 500'+/- . We recommend that this distance

be reduced to 400' or less, or to a distance as directed by the Marshfield Fire Dept.

4. The project site is within a mapped "Priority Habitat", which will require an updated application filing with the MA NHESP. We understand that this permitting effort was previously completed (for the previous site design), resulting in a Conservation & Management Permit issued by the MA Division of Fisheries & Wildlife. We recommend that the applicant be required to provide the Board with an update of this permit reflecting the current project scope, for the Board's records.
5. We recommend that the applicant discuss with the Board all the relief requested from the Zoning Bylaws, the General Bylaws, and the Subdivision Rules & Regulations, and the justification for each.
6. We recommend that additional site grading & drainage details be provided for the following (for clarity during construction):
 - a. Inspection ports (to grade) for each row of infiltration galleys proposed.
 - b. Additional spot grades and proposed grading information for the right of way from Ferry Street to the proposed site (Assessor's Lot G12-29-02).
7. We recommend that an Erosion Control Plan be added to the plan set. This plan should show the locations of erosion control barriers (including the use of silt sacks or other similar measure for sedimentation control at all catch basins) and the requirement for the contractor to perform street sweeping on Ferry Street on a weekly basis, and as needed. We acknowledge that Sheets 7 and 13 of 14 show the proposed temporary 18' X 50' construction entrance. Sheet 11 shows a construction detail for a 15' x 50' "Crushed Stone Construction Entrance." We recommend that this be modified to reflect the 18' X 50' dimensions.
8. We recommend that additional information regarding site signage & pavement marking be added to the plans. This should include the following:
 - a. A proposed street sign for the development at Ferry Street.
 - b. Lane markings details and a "STOP" sign and painted stop line at the intersection with Ferry Street. We note that a previous recommendation (December 13, 2016) included a comment regarding a design for 2 exit lanes and 1 entrance lane at this intersection.
 - c. Appropriate warning/caution signage to reflect the horse/multiuse path near Ferry Street.
 - d. NOTE: All signage and lane marking to comply with the standards of the Manual of Uniform Traffic Control Devices (MUTCD, 11th Edition).

9. We recommend that a Lighting Plan be added to the plan set. NOTE: All exterior lighting fixtures should be "Dark Sky Compliant" to mitigate impacts to abutters. This involves lighting outfitted with shields and guards to provide downward lighting with a 90-degree vertical cutoff of light to prevent the emission of light above the horizontal plane.
10. We note that Sheet 4 shows 3 dashed rectangles in the cul-de-sac, with one labeled as "Drainage Galley System #3." We recommend that these be labeled as 3a, 3b & 3c, and shown on the table on Sheet 10 (for consistency and clarity during construction).
11. We recommend that the proposed water line & fire hydrants be added to both the plan profile views shown on sheets 5 & 6 (for clarity during construction).
12. We recommend that trash/recycling dumpster pad locations be added to the plans (or the plan for trash collection & recycling management explained to the Board).
13. We recommend that the applicant provide a copy of the required Stormwater Pollution Prevention Plan (SWPPP) in the future for review prior to construction start.
14. We recommend that the applicant confirm whether an irrigation well is intended for the proposed landscaped areas. If this is the case, then we recommend that the tentative/proposed location be shown on the plans as well.
15. We have the following comments regarding the Construction Operation & Maintenance Plan:
 - a. We recommend the applicant discuss the proposed daily construction operation times for both Monday through Friday, and Saturdays (we recommend that no construction activities be allowed on Sundays or on holidays).
 - b. We recommend that the proposed haul route through the Marshfield DPW salt shed area be confirmed by the applicant.
 - c. Page 2 mentions the installation of monitoring wells. We recommend that these wells are shown on the site plans for clarity during construction.
16. We recommend that a cross-section detail be added for the proposed sidewalks.
17. We recommend that the location of a proposed neighborhood ground sign be shown on the site plans near the site entrance.
18. The earth removal duration contained in the Traffic Assessment Supplement assumes 40 truck trips/day. For an 8-hour workday, this results in 1 truck loaded and hauling material off site every 12 minutes. This truck cycling rate may be optimistic. The original Traffic

Assessment Memorandum (dated Nov 29, 2016) assumed 20 truck trips per day. However, if we assume a more conservative estimate of 30 truck trips per day (at the proposed loading of 26 CY/truck), for 150,000 CY of material = 192.31 days of trucking operations. This would still allow for the earth removal operations to be completed within 1 year (by assuming 251 working days in 2024).

Thank you again for this opportunity to assist the Zoning Board in their review of this project, and please call or e-mail me if you have any questions.

Sincerely,

PESCE ENGINEERING & ASSOCIATES, INC.



Edward L. Pesce., P.E., LEED ® AP

Attachment: Engineering Review Letter Report from PGB Engineering, LLC

cc: Dep. Chief Michael Laselva, Marshfield Fire Dept.
Rod Procaccino, P.E., Marshfield Town Engineer
Greg Guimond, Marshfield Town Planner
Patrick Brennan, P.E., PGB Engineering
Kirsten Braun, P.E., Chapelle Engineering Associates
Darren Grady, P.E., Grady Consulting, LLC
Kim Hazarvartian, Ph.D., P.E., PTOE, TEPP, LLC

PGB ENGINEERING, LLC

CIVIL ENGINEERING DESIGN & CONSULTING

49 TUPELO ROAD
MARSHFIELD, MA 02050-1739

Tel.: 781-834-8987
PGBEngineeringLLC@gmail.COM

December 31, 2023

Mr. Edward L. Pesce, P.E.
Pesce Engineering & Associates, Inc.
43 Porter Lane
West Dennis, MA 02050

Subject: **Bridle Crossing – Comprehensive Permit**

Dear Mr. Pesce:

In response to your request, this letter is to advise that we have reviewed the following documents in support of the proposed Comprehensive Permit application for the development on Parcel G12-29-02, off Ferry Street:

- Site Plan (14 Sheets), dated November 9, 2023, prepared by Grady Consulting, LLC (Grady)
- Architectural Plans (4 Sheets), dated November 6, 2023, prepared by 209 Design
- Stormwater Management Design Calculations, dated November, 10, 2023, prepared by Grady
- Summary of changes letter from Grady, dated November 15, 2023
- Comprehensive Permit Application, dated November 15, 2023

The purpose of our review has been to evaluate conformance with the Marshfield Municipal Code (MMC), Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards (SMS) and good engineering practice. Our review is limited to the stormwater and water supply aspects of the project.

Background

The site proposed for development is a ten-acre parcel located off the east side of Ferry Street near the intersection with Waltham Avenue. The site is located in the Residential Rural (R-1) zoning district and the Water Resources Protection District (WRPD). The proposed development includes fifty-six residential units in eight buildings on the ten-acre site. Each residential building would have four one-bedroom units, two two-bedroom units and one three-bedroom unit for a total of 88 bedrooms on site. The buildings would be accessed by a $\pm 1,280$ -foot-long dead-end road off Ferry Street.

The proposed stormwater system includes catch basins, manholes, oil/water separators and subsurface infiltration systems consisting of concrete chambers surrounded by crushed stone. Water supply for both domestic use and fire protection would be provided by an eight-inch ductile iron water main connected to the Town's distribution system in Ferry Street. An

individual on-site septic system would serve each of the eight residential buildings. In order to meet MassDEP nitrogen loading requirements, an adjacent five-acre parcel (H12-01-09B) will be used for credit land and the proposed septic systems will have advanced treatment for nitrogen removal.

Comments

1. The proposed stormwater system is designed to fully store all runoff from impervious surfaces during the 100-year storm, without taking infiltration into account.
2. The HydroCAD calculations do not account for all of the proposed garage roofs. The calculations include 6,846 square feet (s.f.) of garage roofs and we calculate 10,208 s.f. of garage roofs.
3. We note the following issues with the subsurface infiltration systems:
 - a. System 2 is modeled at 78 feet long, but it is drawn at 75 feet long.
 - b. The side sections of System 3 are modeled at 50 feet long by 15.2 feet wide but drawn at 52.5 feet long by 17 feet wide.
 - c. The note on the Proposed Galley System Detail on Sheet 10 specifies LC-6 chambers and dimensions associated with those chambers. The systems are modeled with 4x4x4 galleys and the detail should reflect this.
 - d. The Operation and Maintenance Plan, Proposed Drainage System – Post Construction specifies inspection of the subsurface system twice per year in the narrative, but the Inspection Schedule and Evaluation Checklist specifies annual inspections. The checklist should be revised to twice per year to match the narrative.
4. An oil/water (oil/grit) separator detail should be provided on the plans. The detail should specify an oil/grit separator similar to the separator included in the MassDEP Stormwater Handbook, Volume 2, Chapter 2, Pages 6-8.
5. In Section II of the Stormwater Management Design Calculations, we note the following:
 - a. Standard 6: it is stated that the site is not located within Zone II. This should be changed since the site is within Zone II of a public well.
 - b. Standard 8: it states that erosion and sediment controls are detailed within the erosion control plan. However, there is very little information on erosion controls on the Erosion Control / Phasing plan, Sheet 13.
6. Section I.3 (also II.8 and IV.4) of the MassDEP Certification for General Use for the Singulair 960 DN advanced treatment system identifies two effluent total nitrogen concentrations, 19 mg/L¹ and 25 mg/L. However, there is nothing in the literature that differentiates between the 19 or 25 mg/L treatment level. The Nitrogen Loading

¹ mg/L = Milligrams per liter

Limitations on Sheet 1 (Cover Sheet) references a loading rate of 660 GPD per acre, which reflects the 19 mg/L total nitrogen treatment level. Grady should explain how this will be achieved.

7. The Applicant should provide a calculation of the total nitrogen load from the project, as required by ZBL §305-13.03.G(1) and as described in Chapter 417, §417-5.C. We have also asked the Planning Board's water scientist, Mr. Eduard Eichner of TMDL Solutions LLC to perform a nitrogen loading analysis and comment on the WRPD aspects of this project, consistent with the analyses that he performs and comments he provides to the Planning Board on all WRDP applications. We will forward Mr. Eichner's analysis and comments when we receive them.
8. Section II.2 of the MassDEP Certification for General Use for the Singlair 960 DN advanced treatment system requires a pretreatment septic tank for flows over 1,000 gallons per day (GPD). The flows to each of the proposed septic systems are all 1,320 GPD or greater, therefore an additional septic tank is required for pretreatment.
9. Septic Design note 2 on Sheet 9 correctly shows that the minimum size of the septic tank should be 2,640 GPD, however, it also specifies use of a 1,500-gallon tank. This should specify a 3,000-gallon tank, which would be the pretreatment tank described in Comment 8, above.
10. Water demand for the proposed use will be 9,680 GPD. We believe that the Town has sufficient capacity to provide water to the project.

Please give us a call should you have any questions.

Very truly yours,

PGB Engineering, LLC

By:



Patrick G. Brennan, P.E.



PGB

enc.

cc: Marshfield Zoning Board of Appeals
Grady Consulting, LLC