

MEMORANDUM

- DATE: November 29, 2022
- TO: Jean Bubon, AICP, Town Planner
- CC: file

FROM: John P. Shevlin, P.E.

Re: Engineering Review Services Blueberry Hill Estates-Site Plan & Special Permit 30 Main Street/20 Fiske Hill Road Sturbridge, Massachusetts (Pare Project No.: 22088.00)

Pare Corporation had completed our review dated May 20, 2022 on the Special Permit and Site Plan Approval application submitted by Fiske Hill Realty Trust for the construction of a 55+ manufactured housing community within the cul-de-sac subdivision on the site located at 30 Main Street and 20 Fiske Hill Road. The site consists of 71 units with optional garages, a clubhouse, open space for residents and a storm water system. The community will be privately owned and maintained after completion. The Subdivision Plan was approved by the Planning Board in 2021.

Pare has been provided the additional following information for review:

- Special Permit and Site Plan "Blueberry Hill Estates, 55+ Manufactured Housing Community Lot 3 Berry Farms Road" – Sturbridge, Massachusetts: Applicant Justin Stelmok. Plans dated 4/1/22 with a revision date of 11/10/22. Plan prepared by McClure Engineering.
- Stormwater Management Report dated March 31, 2022 with a revision date of November 9, 2022 prepared by McClure Engineering, Inc.
- Response to comments dated November 10, 2022 prepared by McClure Engineeringe

Pare offers the following pertaining to this revised submission in bold below.

PLANS

- 1. *Sheet C-1- Title Sheet-* Fix spelling of "Manufactured", **Comment addressed.**
- 2. *Sheet C-1- Title Sheet* Owner is referenced as both Justin Stelmok and Fisk Hill Realty Trust. Please clarify.

Comment addressed.

- 3. *Sheet C-1- Title Sheet* Please modify Drawing Index to match plan sheets:
 - C-15 thru C-18: "Phasing and Erosion Control Plans" should be "Erosion and Sediment Control Plans".
 - Comment addressed.
 - Add Sheet C-19 "Phasing Plan".

Comment addressed.

- Plan & Profile Sheets should be sheets C-20 thru C-23. Comment addressed.
- "Construction Details" should be "Site Details". Should also be labelled sheets C-24 thru C-30.

Comment addressed.

- 4. *Sheet C-3 thru Sheet C-5 Existing Conditions* Show test pit locations on plans.
- Comment addressed. Test pit locations have been added to the Existing Conditions Plans.
 5. Sheet C-7 Layout and Materials Plan Cul-de-sac for Proposed Drive C exceeds 500 feet.
- Pare considers a cul-de-sac as a dead-end street. Per Section 350-4.2.E.2 of the subdivision regulations, dead end streets shall be no longer than 500 feet. Proposed Drive C is approximately 700 feet. Clarification is being requested by the Town Planner and/or Planning Board from the applicant. If agreed that the maximum length is 500 feet the applicant will be looking for a waiver.
- 6. *Sheet C-7 Layout and Materials Plan-* Label width of Proposed Drive A. **Comment addressed.**
- 7. *Sheet C-7 and C-8: Layout and Materials Plan-* Is Drive A considered a major road? If so is radii of 150' acceptable?

After further review of the "Manufactured Housing Communities" regulations, in particular Section 199-6 E, Regulations, "All manufactured housing communities shall be served by a hard-surfaced road, not less than 20 feet in width and with a radius at all turns of not less than 50 feet..."). The application exceeds this requirement.

8. *Sheet C- 7 thru C-9: Layout and Materials Plan* – Curb radii shown as 20 feet. Minimum radius should be 30 feet.

All radii at intersecting streets have been revised to 30 feet.

9. Sheet C-7 thru C-10: Layout and Materials Plan - Lot lines with areas, frontage and depth dimensions should be provided.

Areas, frontages and depths have been added to each lot.

- Sheets C-7 thru C-10: Show bound locations on plan and provide a detail.
 Clarification is being requested of the Planner and/or the Planning Board related to the need for bounds.
- 11. Sheets C-7 thru C-10: Locations for snow storage have been added to the plans. A note should be added that "Snow storage will not be allowed in the bioretention areas." This has been addressed in the O&M Plan.
- 12. *Sheet C-8: Layout and Materials Plan-* Label width of Drive A. Width of 20' has been added to the plan.
- 13. *Sheet C-8: Layout and Materials Plan* Label square footage of clubhouse. Should be 1,500 square foot minimum.

Square footage of clubhouse has been revised.

- 14. Sheet C-9: Layout and Materials Plan Label Drive A. Provide width.
 - Width of 20' has been added to the plan.
- 15. *Sheets C-11 thru C-14: Grading and Drainage Plans-* In general, the design concept for the stormwater layout is acceptable. Confirmation of many of the grades and elevations were difficult to review due to clarity of numbers.
 - Plans have been revised for clarity.
- 16. *Sheet C-19 Phasing Plan* Please clarify the limits of some of the phasing There is a Phase 1 identified in the area of the intersection of Drive A and Drive C. A separate colored Phasing Plan was provided. Please clarify which is correct. If necessary modify the plan set.

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The phasing plan has been modified and clarified. However, Phase 1B ends near the intersection with Drive B. Phase 1 continues easterly. Is there a turnaround for the work done east of Drive B in Phase 1?

17. *Sheet C-20: Plan and Profile Drive A*: The 2% grade at the intersection with Berry Farm Road should be extended to at least 100 feet.

The applicant is requesting a waiver for the leveling area as required under the subdivision regulations. The 3% grade proposed will extend approximately 20 feet from the gutter line when it will enter a vertical curve which has a 6.8% down gradient grade. AASHTO provides guidance that the approach should should be designed with a relatively flat grade and the maximum grade on the approach leg should not exceed 5 percent where practical. Where ice and snow may create poor driving conditions, the desirable grade on the approach leg should be 0.5 percent with no more ,than 2 percent wherever practical.

- Sheet C-21: Plan & Profile Drive A- due to length of cul-de-sac and waterline dead end does waterline need to be looped. Review with the water department.
 Applicant has stated that the Water Department and DPW has reviewed the plan and neither had issues with the dead end water line.
- 19. *Sheets C-20 thru C-23: Plan & Profiles* Label centerline elevations on profiles. **Proposed elevations have been added to the profiles.**
- 20. *Sheet C-24: Site Details* Bituminous Concrete Sidewalk & Driveway Detail Gravel base shall be 8". Also, bituminous concrete sidewalks shall consist of three (3) inches of bituminous concrete applied in a base two-inch layer and a top one-inch layer. Per regulations for sidewalks, "In all areas all materials shall be removed or filled to a depth of thirteen (13) inches below the finished design grade. In areas of high groundwater, as determined by soil borings, all materials shall be removed or filled to a depth of seventeen (17) inches below the finished design grade." Add to detail.

Detail has been revised.

21. *Sheet C-24*: A vegetated area of at least four (4) feet in width shall be located between the sidewalk and the curbing, maintained in grass or retained natural vegetation, unless the Board approves an alternate sidewalk placement.

Applicant is requesting a waiver due to site constraints and stormwater design.

22. *Sheet C-27: Site Details* – Typical Hydrant with Gate Detail Elevation View – 18" minimum should be 24" minimum.

Detail has been revised.

23. *Sheet C-28: Site Details* – Site Entrance Mat – Width of mat should be 24' minimum instead of 20' minimum.

Detail has been revised.

24. *Sheet C-28: Site Details* - A landscaping plan prepared by a certified landscape architect should be provided.

Applicant is requesting a waiver to not have plan stamped by a landscape architect.

25. *Sheet C30: Site Details* – Sidewalk Culvert Section – Sidewalk should be 3" bituminous and 8" gravel borrow.

Detail has been revised.

26. *Sheet C30: Site Details* – Rain Garden Typical Cross Section – Finish grade of rain garden is proposed to be mulch. Has stone been considered.

The applicant has revised the detail eliminating mulch and installing river rock in its place. 27. *Site Details* – Provide light detail.

- Applicant has responded that he will provide light details upon selection of make and model of light and poles.
- 28. General O & M Plan How will snow removal/storage occur?

The applicant has added snow storage areas on plans and has revised the O&M Plan to address this further.

- 29. Sheet C31-The fire apparatus maneuvers appear to accommodate the fire apparatus throughout the roadway system. The applicant should also get confirmation from the Fire Department.
- 30. Provide detail of 12" stop bar location.
- 31. Sheet C24- Details are shown for "Grass Paver Access Road Detail" and "Emergency Access Gravel Road Detail". I believe only the "Grass Paver Access Road Detail" applies to this project. Please confirm.

STORMWATER MANAGEMENT REPORT

The Stormwater Management Report has been revised. The applicant has not provided any responses to the comments below. Additional comments are indicated in bold below based on the revised design.

- Introduction- The applicant does a good job with the Scope of Analysis, the Site Description, and the Proposed Construction description.
 Revise last paragraph by adding "...dated 4/1/22, with a revision date of 11/10/22...."
- 2. *Hydrologic Analysis* The information and analyses performed pertaining to this section are complete. The results of the analyses indicates no increase or a decrease in post peak rate runoff at all 8 analysis points for the 2, 10, 25 and 100-year, 24-hour storm event. Analysis provided is acceptable.

Although with the new analysis the Post-Development rates did increase during some storm events at the 8 analysis points, the post-development flows are still equal or less than the pre-development storm events. The analysis provided is acceptable.

- 3. *Stormwater Standards* We are providing a list of each standard and supporting documentation for each for review.
 - Standard No. 1: No new stormwater (e.g.) outfalls may discharge untreated stormwater directly to or cause erosion in wetlands or waters in Commonwealth.

Met. The design includes stormwater discharges through water quality treatment BMPs prior to discharge. Riprap outfalls or perforated pipe level spreaders are used to reduce runoff rates to prevent erosion or sedimentation downstream.

Met. New design still meets Standard No. 1 as all discharges are treated and there is no outlets will create erosion or scour to any wetlands.

• Standard No. 2: Stormwater management systems shall be designed so that postdevelopment peak discharge rates do not exceed pre-development peak discharge rates.

Met. The proposed design indicates that there will be no increase to off-site peak flow rates and the rate of runoff will not increase the flood elevation downstream.

Met. New design still meets Standard No. 2.

• Standard No. 3; Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type.

Met. Recharge volumes through the use of raingardens and infiltration basins will provide ground water recharge that will far exceed the required recharge volumes.

Met. New design still meets Standard No. 3. Soil analysis, recharge volume calculations, infiltration sizing and infiltration at BMP's are accurately indicated.

- Standard 4: Stormwater management systems shall be designed to remove 80% of the annual post-construction load of Total Suspended Solids (TSS). The Standard is met when:
 - a. Suitable practices for source control and pollution prevention are identified in a longterm pollution prevention plan, and thereafter are implemented and maintained;
 - b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
 - c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Met: The applicant has provided data that indicates that with the proposed design greater than 80% of the annual post-construction load of TSS will be removed.

Met. New design still far exceeds the 80% of the post-construction load of TSS as no water quality flows bypass any rain gardens. The Long-term Pollution Prevention Plan is acceptable. The applicant has also provided supporting documentation for the treatment of water, recharging of stormwater and the attenuation of peak flows.

• Standard 5: For land uses with higher pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses with the higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMP's determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, Sections 26-53 and the regulations promulgated thereunder at 314 CMR 3.0, 314 CMR 4.00 and 314 CMR 5.00.

NA. Agreed this site is not a Land Use with High Potential Pollutant Loads.

Met. As previously noted the site is not a Land Use with High Potential Pollutant Loads.

• Standard 6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to

be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.

Met. As noted and indicated, stormwater does discharge to or near critical areas consisting of vernal pools. All discharges from paved areas will be treated to a minimum 85% TSS removal and the discharges to or near the critical areas (vernal pools) are treated for 44% pretreatment prior to infiltration. Also with the treatment being provided, the applicant has demonstrated that the EPA Region 1 BMP Performance Extrapolation Tool and the Massachusetts Stormwater Handbook will provide for a minimum of 60% phosphorous removal as well.

Met. The redesign still provides specific stormwater best management practices for discharges.

• Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standards 2 & 3 and the pretreatment and structural best management practice requirements of Standard 4, 5 and 6. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

NA. Agreed that this is not a redevelopment project but the standards are being met.

Met. As previously stated the site is not a redevelopment project. However, standards 2, 3, 4, 5 and 6 are met.

• Standard 8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Met: An acceptable weekly inspection report form has been provided, and a construction period erosion and sediment control plan has been outlined on the site plans along with a sequence for implementation and construction phasing.

Met. New design still meets this standard. Note that the SWPPP will need to be submitted before any land disturbance.

• Standard 9: A long-term Operation and Maintenance Plan shall be developed and implemented to ensure stormwater management systems function as designed.

Met: An acceptable Operations and Maintenance Plan has been provided.

Met. As previously stated the Operations and Maintenance Plan provided is acceptable.

• Standard 10: All illicit discharges to the stormwater management are prohibited.

Met: The applicant has addressed that illicit discharges to the stormwater management system are prohibited in the Long-Term Operation and Maintenance Plan.

Met. New design addresses illicit discharges in the Long-Term Operation and Maintenance Plan.

The overall drainage design is complex. Several BMP's and the use of low-impact development has been incorporated into the design. Questions have been asked regarding the operations of the rain gardens particularly in the winter months. The applicant has provided several references to the effectiveness of rain gardens, bioretention areas and low-impact designs. The supporting documents have been included with the applicant's response to comments dated November 10, 2022 documentation regarding the effectiveness of bioretention areas in the colder months. Based on the information provided Pare concurs the implementation of these basins are acceptable.

Several revisions to the design have been made which appear to address the comments of the Conservation Commission. The raingardens have been designed to provide peak flow attenuation and address water quality and groundwater recharge.

The area of concern with infiltration not being provided and discharge is being directed towards the vernal pools, the design has been modified the rain gardens in cut slopes will be lined and will not provide recharge but the stormwater will pass through the soil media fro treatment and peak flow attenuation. Discharge to a pipe network will convey the treated water to a larger rain garden.

Pare is of the opinion that the submission and the Stormwater Management System has been designed to meet the requirements of the Stormwater Bylaws. Water quality has been addressed with the proposed design components. We have found the assumptions and analysis performed to be accurate and the components of the system have been sized appropriately for the proposed design.

We are available to discuss our initial comments at the next Board meetings. In the meantime, if you have any questions please feel free to contact me.

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