

July 2, 2020

Susan Noyes, Administrator
Newbury Zoning Board of Appeals
12 Kent Way, Suite 200
Newbury, MA 01922

Re: The Villages at Cricket Lane
55R Pearson Drive
Peer Review

Dear Ms. Noyes:

Please see our responses to the peer review letter comments below. Revised plans that reflect the changes referenced in these comments as well as revised drainage calculations are attached.

Our responses are in bold italicized letters and area are as follows.

Letter from Joseph Serwatke, PE

Sheet 1 of 18, CS0001, Cover Sheet

The index of drawings lists sheet 10 of 18, CS3501, as Road Profile, but sheet 10 appears to incorrectly contain site details. It appears to be a duplicate of sheet 11. The engineer should provide the road profile sheet for review.

Road profile sheet previously provided under separate mailing. The sheet is included in this submission

Sheet 1 of 1, CS9001, Open Space Plan

1. The plan labels an open space parcel, proposed to be deemed to the Commonwealth of Massachusetts Division of Fish and Game as 4.82 acres, but sheet 6 of 18 labels the area as 9.15 acres. The engineer should verify which number is correct.

The area labels have been corrected as 4.82 Acres.

2. It is not clear on this plan, but the division line between the two open space parcels appears to be the stone wall, based on what is presented on sheet 6 of 18.

The proposed property line has been added to this plan sheet and it is along the existing stone wall.

Sheets 3 and 4 of 18, CS0201/0202, Existing Conditions Plan

1. It is worth noting that wetland flags C8-C11 are depicted across a rock outcrop. The engineer may want to review whether the depiction reflects actual field conditions. ***This area is not a rock outcrop, it is an area strewn with rocks and boulders. The plan has been revised.***
 2. Existing curb cuts and driveways should be depicted for lots 75 and 76 in order to determine their relation to the proposed roadway. ***The existing driveways have been shown on the plan.***
 3. The pipe size and material are not provided for the existing water line in Pearson Drive. Typically, the water department/authority will have this information on file. ***The line has been labeled as an 8" line.***
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4. Approximately 22 test pits were conducted, primarily on the western side of the site, to a depth of 6-10 feet, presumably with a backhoe or excavator. The plan also depicts 6 “HP” test pits which, according to the legend on sheet 2, were “hand-dug” to a depth of only 26-36 inches. The method, and resulting shallow analysis depth, is unusual, and does not provide adequate information on the depth of the C layer, or possible depth to ledge. The locations and number of these test pits may also not be suitable for the design of the Stormwater BMPs (Best Management Practices). This will be discussed further in the Stormwater section. **Additional test pits have been done and have been added to the plan.**
5. Existing tree lines should be depicted on the plans, as would be typical. **The tree line has been corrected on the plan.**

Sheets 5 and 6 of 18, V0801/V0802, Roadway Layout and Property Line Plan

1. The plans are stamped by a registered professional engineer. Given that the plans present “property line” data, it would be appropriate to have a registered surveyor’s stamp and signature on the plans. **The plan has been stamped by a registered professional land surveyor.**
2. Section 3.1(e) of the Comprehensive Rules and Regulations states “where a subdivision of land is involved, a definitive subdivision plan, conforming to all of the requirements of the Planning Board’s Rules and Regulations for the Subdivision of Land” shall accompany the application. The right-of-way layout, width and cul-de-sac dimensions do not conform to the subdivision regulations. Of particular concern is the 100’ radius provided at about station 2+00, where the engineer should demonstrate that the required 200’ sight distance is provided. **A 200’ site distance line has been added to the plan. There are no obstructions above the line of site that interfere with this line.**
3. The board may want the engineer to provide lot areas for the 24 individual lots proposed, as would be typical. **The area of each exclusive use area has been added. The areas are exclusive use areas which will be outlined in the condominium documents, not building lots.**

Sheet 7 of 18, CS1001, Layout and Materials Plan

1. As mentioned previously, the existing curb cuts and driveways for units 75 and 76 should be shown on the plan in order to determine their relation to the proposed roadway/sidewalk. **Driveways have been added.**
 2. The proposed curb cut appears to include the roadway, but also a paved way onto lot 76. It scales about 8’ wide, which would typically be too narrow for a driveway, and appears to connect to existing gravel or rock. In either case, it is not recommended to have an abutting entrance included in the proposed roadway. The board may want the engineer to explain why the layout shown is necessary. **This condition has been revised. The existing gravel is an old access way to the rear of the adjacent lot which infringes upon land which is part of the access easement for the project.**
 3. Proposed curb radii should be provided at the entrance, as would be typical. **Pavement curb radii have been added to the plan**
 4. A 5’ sidewalk is proposed from the project onto Pearson drive, but no connection is shown to an existing sidewalk. The engineer should address whether the proposed sidewalk will connect to an existing walkway. The engineer should also address the need for an ADA ramp at the end of the sidewalk, as would be typical. **An ADA ramp has been added to the end of the sidewalk. There are no existing sidewalks on Pearson Drive.**
 5. The engineer should address where mail/parcels will be delivered. Projects of this type will typically have a central mailbox stand, as dictated by the postmaster general for the area. Some projects locate the
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stand under a shelter. ***The proposed gazebo is where the mailbox will be located, a note has been added to the plans.***

6. It appears that 4 solar powered street lights are proposed along the roadway, within the project. No light appears to be provided at the intersection with Pearson Drive. The engineer should address how the intersection will be lit. ***An additional solar light has been added at the project entrance.***
7. Individual driveway depths do not appear sufficient in some cases to park a vehicle in the driveway. The lot 7 driveway scales about 15', lot 2 scales about 18', and lot 7 scales about 13' to the back of sidewalk. The board may want the engineer to provide a suitable driveway depth, say 20', to ensure that residents can park vehicles. ***The location of several dwellings have been revised to accommodate driveways with a minimum depth of 20 feet.***
8. The plan appears to depict a proposed tree line beyond the wetlands line at flags D14-D18, which is also beyond the erosion control line depicted on sheet 17. The engineer should comment on this. ***The tree line has been adjusted.***
9. A proposed wall appears to be depicted at lot 21-22, but it is not labeled. ***The wall has been labeled.***
10. The plan proposes a 5' bituminous concrete sidewalk with a sloped granite curb. It has been my experience that this combination results in a gap that forms where the curb meets the sidewalk. This allows water to get under the sidewalk and curb. The way to typically avoid this is to install vertical granite curb with the bituminous sidewalk. The board may want to consider requiring vertical curb abutting the sidewalk, with sloped curb at all other locations. ***There is always a seam between the curb and sidewalk, the curbing will be sloped granite.***
11. The cul-de-sac island is 90' in diameter with a label that states "prop. hard packed grass area to be kept clear of snow". No curbing is depicted around the island, which will make it easy to use for parking. The engineer should comment on the lack of curbing, combined with a hard packed grass area. ***The fire department previously had requested that the interior area of the cul-de-sac be designed for traffic loading to allow better maneuverability of fire trucks if required.***
12. There appear to be only 4 visitor parking spaces for the site. The lack of visitor parking, combined with a narrow roadway, could create traffic enforcement issues. ***Additional four spaces have been added in the center of the cul-de-sac. No parking signs are proposed on the left side of the roadway to prevent vehicles from parking on one side of the road. Each home has 4 available parking spaces, two in the garage and 2 in the driveway.***

Sheet 8 of 18, CS1501, Grading and Drainage Plan

1. DMH1 and CB1 and CB2 cannot be constructed as shown, given the invert information and details provided. As designed, the top of pipe is only about 8" below the rim elevation. About 1.5-2' is required between the rim and top of pipe, given the frame, bricks, and slab top thicknesses. The engineer should revise the design accordingly. ***The pipe elevations have been adjusted down 6" to provide more cover. The pipes are designed as 8" CLDI to provide a reduced wall thickness, diameter, and strength for the shallow cover condition.***
 2. The engineer should discuss what will be done to keep Pearson Drive runoff from entering the proposed roadway. ***A small lip has been added along the gutter line which will channel stormwater flow past the entrance of the roadway where it presently flows now.***
 3. The 30-40 arrow leaders make the plan very busy and difficult to follow. It would be simple enough for the engineer to put the drainage structure information in a table on the plan. This would eliminate many of the leaders. ***The leader system remains but some labels have been shifted so they are easier to read.***
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4. The proposed walking path depicted on sheet 7 should be shown on the grading plan. It appears that the proposed grades do not account for the walking path. **The walking path has been added to sheet 7.**
 5. Top and bottom elevations should be provided for the retaining walls depicted. **Elevations have been added.**
 6. The plans depict a “roof infiltrator” area for most, but not all, of the proposed dwellings. I cannot comment on the proposed size as I was not provided with a copy of the Stormwater Report, but they do appear too small (i.e. 5’X10’) for a 1,600s.f. +/- roof area. Further, the detail on sheet 12 shows that the bottom of the infiltration system needs to be about 60” below grade. Typical groundwater throughout the site is about 18-48” below grade, based on the test pit data provided. Based on this, the engineer should verify that each system will be above groundwater. **Plans have been revised to show roof infiltrators on those units that can maintain a separation to ground water. Several units will not have individual infiltration systems but will be piped to the underground infiltration / storage system located in the cul-de-sac. Units 1-5 do not have infiltration but will be piped to detention pond P1-1 to receive treatment. The stormwater calculations have been revised to account for the reduced impervious areas**
 7. The slopes around detention pond P3-2 are graded at 2:1, whereas 3:1 maximum slopes are typically required. The 2:1 is difficult to stabilize, mow, and likely poses a safety hazard given the proximity to the proposed dwellings. The board may want the engineer to propose a safer, more maintainable slope around the pond. **Grading has been revised in these areas to maintain 3:1 slopes.**
 8. The large existing rock outcrop depicted on sheet 3 is not accounted for in the detention pond P3-2 grading. The engineer should address whether the outcrop is proposed to be removed entirely. **As stated previously this is an area strewn with rocks and boulders, not exposed bedrock. The label has been revised.**
 9. The closest test pit to detention pond P3-2, HP5, has groundwater at 18”. The bottom of the pond is 6 feet below grade, likely 4-5 feet into the water table. The engineer should address this issue. **Additional test pits were performed and included on the plans. The bottom of the pond is set below the groundwater elevation as determined by soil mottling in the test pits, however the groundwater table is a perched water table present only during a short period of the year. Actual water was not encountered in the test pits.**
 10. The plan does not depict any decks or patios on the backs of the dwellings. The architectural renderings show a sliding door at the back of each house, so it would stand to reason that a deck or patio would be needed. These should be accounted for on the plan. **Decks have been added to the plan.**
 11. Based on the architectural renderings and grading scheme, it appears that all of the dwellings will have basements, some with walkouts perhaps. The dwellings with walkouts will need a deck above for the sliding door, and likely a set of stairs to come off the deck. All of these features should be depicted on the plan so that the board has a true sense of all the site features. **Stairs from the decks have been shown where appropriate.**
 12. Dwelling 1 is located about 10 feet off a 6-8 foot retaining wall, dwelling 4 is about 3 feet off the sidewalk, dwelling 8 is about 1 foot off the sidewalk, and dwelling 21 is about 5 feet off a 6-8’ retaining wall. The board may want the engineer to redesign the layout to provide more useable space around each dwelling. **Several buildings have been shifted to provide more usable yard space.**
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Sheet 9 of 18, CS1701, Utility Plan

1. The plan labels an "8" Tapping Sleeve" in Pearson Drive, but a triple gate system is drawn, and the detail on sheet 15 shows a triple gate cut-out on the existing watermain. This should be corrected and, as noted previously, the existing pipe size and material should be provided. **The note for water line connection has been revised**
2. At SMH 1-6 there will be about 2 feet of cover over the pipe, given the elevations shown. Sewer mains should have 4 or more feet of cover, or be insulated properly. The engineer should address this issue. **The septic system plan has been revised to indicate insulation shall be provided.**
3. At SMH 1-1 about 3 feet of cover is provided. The engineer should review this and revise accordingly. **The septic system plan has been revised to indicate insulation over the pipe.**
4. At SMH 1-2, the pipe in from SMH 2-2 is incorrectly labeled and the invert appears incorrect. The engineer should revise. **The invert has been revised.**
5. At SMH 2-2, the invert out to SMH 1-2 should be labeled correctly. **The invert has been revised.**
6. At SMH 2-3 about 3 feet of cover is provided. The engineer should look at revising the design.
7. Sewer pipe lengths and slopes should be provided on the plan, as this information is not shown on the road profile. **This information is shown on the septic system design plans. This plan sheet contains a note referring to those sheets.**
8. Two inch copper waterlines with blowoffs are proposed for the two dead end streets, but a blowoff detail does not appear to be provided. The engineer should address this. **A detail has been added.**

Sheet 10 of 18, CS3501, Road Profile

1. The road profile starts off at one percent into the site from Pearson Drive. As mentioned previously, the engineer should discuss how runoff from Pearson Drive will be kept from flowing onto the proposed road. **The profile has been revised to show a small rise at the beginning of the new roadway which will maintain the gutter along Pearson drive and prevent water from flowing down the new roadway.**
 2. The engineer may want to consider starting the road profile at plus one percent, rather than minus one percent. This would require the catch basins to be relocated to station 0+00, but would increase the cover over the pipes. As mentioned previously, the current design has only about 8" of cover over the pipes. **Relocating the catch basins to station 0+00 would capture all runoff from Pearson Drive which is contrary to comment 1 above.**
 3. Proposed sewer structures and piping are typically depicted in the roadway profile, as they are generally installed under the paved roadway. In this case, most of the structures/piping are located outside of the paved roadway, and are not depicted on the profile. It is still important to provide sewer profiles to the site contractor, so I would recommend that a sewer profile sheet be provided in the plan set. For clarity, **sewer profiles are part of the septic system design plans.**
 4. Catch basin grates should be set at a gutter grade which is 0.22 feet lower than the centerline, to account for the 11 feet of pavement sloping at 2 percent. Catch basins 1 and 2 have grate elevations that are only 0.12 feet lower than centerline, or about 1 percent cross slope. The engineer should adjust these elevation, and verify the remaining catch basin grates. **The grate elevations have been adjusted.**
 5. The cul-de-sac has a slope of 1.25 percent through the centerline. When the gutter grade is checked, which is the route that runoff will take, it comes out to only 0.8 percent from the high point to catch basin 9. The engineer should adjust the profile so that a minimum gutter grade of one percent is provided. **The profile has been adjusted.**
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6. It appears that the cul-de-sac pavement is proposed to be superelevated so that all runoff drains to the outside curb. The detail on sheet 10, however, depicts a typical crowned roadway. This should be adjusted to agree with the profile/grading. **An additional roadway section has been provided and spot grades added**

Exhibit M, Stormwater Design Narrative

1. The "Subsurface Investigation" section of the narrative states that "sufficient soils were found beneath the proposed detention/infiltration basin to allow for infiltration at a rate of 1" per hour". This is not accurate, in my opinion. The plans depict one hand-dug pit (HP6) in the area of Galley System P3-1, whereas the Policy require a minimum of three test pits. Further, the hand-dug pit exhibits only 6" of C layer. The engineer should conduct the required number of test pits, with a machine, and submit the data for review. **Additional test pits were performed and added to the plans.**
2. The narrative states that Detention Pond P1-1 is a "detention pond with a pocket wetland". The detail on sheet 13 does not appear to match Policy requirements for a pocket wetland. Sheet "14 of 17" is referred to for "pocket wetland details", but sheet 14 has no details. The engineer should address these issues. **The pocket wetland details are located on sheet 15. The reference has been changed.**
3. The narrative and detail sheet 14 refer to "treatment galley row(s)" associated with buried detention basin P3-1. Neither the plans, nor the details, appear to depict any treatment rows. The engineer should address this issue. **Filter fabric has been shown in the cross section detail that wraps all of the rows in the galley system.**

Stormwater Management Report

1. Section X, Stormwater management standards, states that "detention ponds 1-2 and 3-2 have been designed as dry detention basins to control flow". The policy states that the bottom of the basin should not intercept groundwater. Pond 1-2 is at, or slightly above, groundwater based on the soil testing provided, and basin 3-2 is several feet into the groundwater based on the minimal testing provided. The engineer should address these issues. Additional testing has been done and included with the plans. **The stormwater management standards state that "the effects of seepage should be evaluated if the basin intercepts the groundwater table". This basin will intercept the observed seasonal high ground water as observed based upon mottling in the soil. At the time of soil testing, which was completed at the end of the typical wet season, no actual groundwater was observed. The 3:1 slopes will be stable even if there is seepage and the bottom of the basin is graded so it will drain and not pond water.**
 2. Relative to "dry detention basin" 3-2, the Policy requires side slopes to be no steeper than 3:1. The subdivision regulations also call for slopes no steeper than 3:1. The engineer has provided 3:1 inside the basin itself, but the slopes above and around the basin are graded at 2:1. **The policy states the interior embankment slopes no greater than 3:1 which is what has been designed. The exterior slopes will be 2:1 slopes stabilized with a slope seed mix.**
 3. The engineer states that Standard 4 is met by using "the impervious paved area", but the Policy dictates that "total impervious area" be used. The engineer should adjust the Standard 4 calculations accordingly. **The calculations have been revised.**
 4. The LID Measures section of the Checklist for Stormwater Report lists only 'constructed Stormwater wetlands' as an LID measure used on the site. The local stormwater regulations states that "Low Impact Development (LID) measures are to be used". The Subdivision Regulations states that "drainage systems relying on gutters, catch basins and underground piping will be allowed only where country drainage is
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not feasible”. The board may want the engineer to address how additional LID measures can be incorporated into the site drainage system. ***The drainage design for the project is in compliance with the Massachusetts Stormwater Management Standards.***

5. The Standard 3: Recharge section of the checklist states that soil analysis has been provided. As stated previously, only one hand-dug test pit, demonstrating only 6” of C Layer, has been depicted in the area of the galley infiltration system. The engineer should provide the minimum 3 test pits required in the infiltration area. Further, sufficient information has not been provided relative to the proposed roof infiltration systems. The engineer should provide additional soil testing for the roof infiltration systems and provide system elevations relative to groundwater. ***Three test pits have been performed in the area of the gallery infiltration system which document the existence of sufficient soil below the system. A table depicting the elevations of the ground surface, ground water elevations, and infiltrator elevations has been added to the plans to document that the systems shown are above the groundwater elevation based upon***
6. The report assumes that all 24 dwellings have roof infiltration systems, but the plans do not depict systems for dwellings 4 and 9. The engineer should address this. ***The plans and stormwater report have been revised to show that only 13 of the 24 dwellings will be routed to an individual infiltrator.***
7. The post development watershed plan shows roof runoff shedding in 2 to 3 different directions on some dwelling. With the roof infiltration system, however, the entire roof area is collected in gutters and directed to the system. Any runoff not capable of being stored in the infiltration system would still overflow into the same subcatchment area as the system. The engineer should revise the watershed plan accordingly. ***The drainage area maps and the stormwater calculations have been revised to route the roofs into the drainage areas where the roof runoff is directed.***

Town Memos

Fire Department (9/23/19)

1. The fire department suggested “a minimum of twenty (20) feet of space between buildings due to exposure issues in the event of fire”. The submitted plans do not comply, and provide a minimum 15’ between buildings instead. ***With cement fiberboard siding the building code allows a separation of 5’***
2. The fire department suggested that the dead-end sections be reconfigured or eliminated. It appears that the dead-ends have not been adjusted to comply. ***The dead ends are in compliance with NFPA which require a minimum 16’ wide fire lane. Dead end fire lanes are allowed but can be no longer than 300’.***

Planning Board (9/29/19)

1. The cul-de-sac length exceeds the maximum allowed without a waiver by 345 feet. This is listed as a waiver. ***No response required***
 2. A sidewalk is provided on the proposed street, but there are no sidewalks in Pearson Drive. The board may want the engineer to address whether a sidewalk could be constructed along Pearson Drive. ***Sidewalks will only be provided in the new development.***
 3. As mentioned previously, each unit has a sliding door on the back of the house, likely leading to a deck and/or patio. These should be depicted on the plans, and accounted for in the proposed grading. ***Decks and stairs have been added to the plans***
 4. The project has not addressed what LID alternatives were considered for the site. ***LID alternatives have not been considered.***
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Board of Selectmen (9/23/19)

1. Concerns are raised relative to cul-de-sac length, dead-end sections, and separation between dwellings.
The dead end street is in compliance with NFPA maximum of 100 units on a single entrance dead end.

LEC Comments

1. ***The historic wetland filling figures has been adjusted to reflect the filling shown on Mary Rimmer's 1980 Aerial Image with the exception that the area shown off property has been subtracted from the calculation as it is not located on property that is part of this submittal.***

Adding each of the historic fill areas will be confusing. The wetland replacement area has been added to them, but not the historic fill areas.

The index of drawings has been updated on this set of plans.

2. ***The wetland replacement area has been relocated to E4-E8. A wetland replacement detail has been provided on sheet 13. An additional small area has been included adjacent to flags E17 – E19 to replace the small area that was previously disturbed in that location.***
 3. ***The grading is no closer than 10' to the edge of the wetlands. The buffer zone is not steep and the vegetation along the edge of the wetland will be preserved. Additional plantings can be included along the toe of the slope.***
 4. ***Same comment as 3 above.***
 5. ***The plans have been revised to show a reinforced erosion control fence along the limit of work in the areas where work is closer than 25' to the wetlands. The reinforced erosion control fence includes steel posts with wire fencing to which the silt fence is attached.***
 6. ***The modular retaining wall detail has been revised to show a large block gravity wall with a stone footing.***
 7. ***No comment***
 8. ***The primary system sits adjacent to the required 100 foot setback and the reserve area has been shown closer to the road. The existing topography drives the elevation of each system area so the location chosen for the primary area is the least mounded area for the system. If, in the future, the reserve area is to be utilized the area would need to be raised. In our experience most system reconstructions are done in the same location, not the reserve area.***
 9. ***The open detention ponds, P1-2 and P3-2 will both drain within 48 hours in the 10 year storm. The drain time for smaller storms is less. Pond P1-1 is a wet pond which is designed to hold water at all times to provide treatment of stormwater.***
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- 10. The purported vernal pool within the A series wetland flags did not contain enough evidence to be accepted as a vernal pool by Natural Heritage. As a result the area has been relabeled as an isolated land subject to flooding. Since it is not a vernal pool the proposed plans were revised to eliminate a large wall and make some of the yards more spacious. The boundary of the isolated land subject to flooding has been respected and a proposed split rail fence has been added along the proposed tree line to demarcate the area.**
- 11. These comments have been addressed above.**

Conservation Commission Comments, Doug Packer

- 1. The wetland mitigation location has been moved to the opposite side of the wetlands as previously proposed, along the E series wetland flags. This relocation requires a small temporary crossing to facilitate the work, however the area chosen has only a few large trees, some of which will be preserved, and provides sufficient area to provide 5,050 square feet of replication which provides 1.5 : 1 replacement ratio. An additional small area of previously filled wetland area adjacent to wetland flags E15-E-19 will be re-established in that area.**
- 2. The disturbance within the buffer zone adjacent to the vernal pool is in compliance with the wetland protection act. A good portion of that buffer zone is preserved and stormwater from impervious areas of the site is directed away from the vernal pool. There is no direct alteration of the vernal pool or any area listed in 10.60(1) and therefore a habitat evaluation is not required under the wetland protection act.**
- 3. The snow storage wording on sheet CS8501 has been removed.**
- 4. The proposed walking trail location has been adjusted.**

We will be available to discuss these comments at the first available zoning board meeting.

Regards,



Benjamin C. Osgood, PE
Sr. Engineer

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