Town of Millbury Department of Public Works

SEWER DEPARTMENT OFFICE • 131 PROVIDENCE STREET • MILLBURY, MA 01527 • Tel. 508 / 865-9143

To: Zoning Board of Appeals, Town of Millbury
From: Mark Hollis, P.E., Director of Engineering, Facilities & Sewer Operations
Date: January 9, 2024
Re: Ch. 40B Comprehensive Permit Application for Rice Pond Village

Per your request, the Department of Public Works, Engineering and Board of Sewer Commissioners has reviewed the responses to comments and updated materials for the Rice Pond Village development at 17 Rice Road and offers the following additional comments (original comment in regular text, response from Applicant in italics and new comments in bold):

Engineering Comments:

1. The provided Drainage Report should be updated to include discussion of how the stormwater design meets the ten Massachusetts Stormwater Standards.
    a. *We were intending to submit the Stormwater Report Checklist with the analysis of how we will comply with the Stormwater Standards to the Conservation Commission with our Notice of Intent but a copy is attached to this letter.*

    Response: In order to not duplicate efforts, we'll defer the review of the Massachusetts Stormwater Standards to Stantec. However, we do question why this site is being classified as a partial redevelopment.

2. An Operations & Maintenance Report should be provided that speaks to maintenance of the stormwater structures. Inspection and maintenance of the CDS units is particularly important to keep sediment out of the infiltration structures and therefore maintain infiltration capacity. The applicant should clarify whether access will be required to the infiltration structures for maintenance purposes. If maintenance is required, a path should be shown on the plan set. The Operations & Maintenance Report should also specify who is responsible for the cost of maintaining the stormwater system.
    a. *The Operations and Maintenance Plan is included with the Stormwater Report Checklist materials and is signed by the property owner, SJV Investments, LLC, who is responsible for maintenance. The Plans show a path between two garage buildings down to infiltration structure #1. Access to infiltration structures #'s 2 and 3 will be off the nearest parking spaces where there will be gaps in the granite berms.*

    Response: The path shown between the two garage buildings down to infiltration structure #1 is on a 3:1 slope. Applicant should show a detail for the construction of this path and also clarify how system will be maintained. For instance, if a vac truck is required to access infiltration structure #1 via the proposed pathway, then a truck turn analysis should be presented showing the movements to and from the access points.

3. The HydroCAD modeling of the infiltration structures and plan details should be modified to eliminate the stone storage volume on top of the Retain-It concrete modules. The modules have concrete top slabs with tape-sealed joints that do not allow stormwater to migrate into the stone above the modules. Per manufacturer guidelines, "the system should fill to the maximum design storm water level elevation (hydraulic grade line) per design. In most cases, that is the highest storage elevation available in the system, at the underside of the module top slab." Therefore, as part of the design modifications, the flooding elevation in the 100-year storm should not be higher than the underside of the module top slab. Infiltration Structure #2 is particularly problematic because the RIM elevations of the catch basins located at the bottom of the access road are at close to the same elevation as the top of the concrete modules. Therefore, when stormwater reaches the top of the infiltration structure, it could start to back flood out of the catch basins and onto Rice Road, instead of infiltrating as designed. As an alternative to design modifications, the applicant could provide shop drawings and a letter from the manufacturer (Retain-It) stating that they agree with the design and HydroCAD modeling as presented. Shop drawings should include "windows" within the concrete modules that allow for even distribution of stormwater throughout the infiltration system.

a. *The stone beneath the Retain-It modules will be in contact with the stone on the outside of the modules which is in contact with the stone above the modules. Any stormwater discharged into the modules fills voids in the stone beneath them and thereby voids in the stone outside of the modules and thereby the voids in the stone atop the modules. The HydroCAD stormwater modeling program acknowledges the thickness of the concrete top of the Retain-It modules in its calculations.*

   In regard to infiltration structure #2, the commenter is correct. As a result, we increased the footprint of infiltration structure #2 so that the highest elevation of stored runoff, in even the 100 year storm, will be below the rim elevation of catch basin #'s 1 and 2.

Response: We consulted the manufacturer of the concrete modules and they were not able to definitively say whether modeling the stone storage on top of the concrete was appropriate. In our opinion, the stone on top of the concrete should be eliminated from the storage volume because of the very limited available pathways for the stormwater to travel vertically to the stone storage. We would prefer to see additional stone between the rows of concrete modules or even replace the 3' of top stone with additional 3' concrete modules stacked on top of the 5' modules (in the case of infiltration structure 1). Stacking the modules would also allow for a reduction in the system footprint. However, because of the lack of clear guidance from the manufacturer on modeling, we would accept the design as presented.

4. Trees are proposed on top of Infiltration Structure 2 and directly adjacent to Infiltration Structure 1, applicant should clarify whether these trees will survive with limited soil. Infiltration Structure 3 is proposed to be installed within 10 feet of the existing oak tree to remain. Applicant should clarify whether this infiltration structure can be installed without damaging the root system of that tree.

   a. *Perhaps two of the four Japanese Stewartia trees proposed on the west side of the entrance on the landscaping plan are proposed over the edge of infiltration structure #2. These are relatively small trees but these locations will be revised. Similarly, on the east side of the entrance, perhaps two of the Chanticleer Pear trees proposed will have to be*

moved. Regarding the existing oak trees south of infiltration structure #3, they were examined and found to be hollow inside. We will try to leave them in place but they are not in good condition as is.

Response: Landscape Plan should be updated to reflect these changes. It should also be noted that the new transformer location results in another conflict with the proposed landscaping. There also appears to be a conflict between a hydrant, light pole and landscaping within the island at the main entrance. The light pole locations presented on the Utility Plan do not match the locations shown on the Photometric and Landscape Plans. Applicant should provide a consistent plan set for above ground conflict review. The Tree Warden will examine the existing oak trees along the front of the site and determine whether they should remain.

5. Infiltration Structure 2 is within a foot of the proposed transformer pad. Applicant should show actual size of transformer pad, confirm whether oil containment is required, and show bollard protection to ensure that this location is appropriate per utility company standards and required clearances.
    a. *The commenter is right to note this as this location was simply unacceptable. The transformer pad has been moved to a location off the sidewalk toward the clubhouse building.*

    Response: Applicant should confirm with utility provider that the proposed location is acceptable. Typically, 10 feet of clear space is required from the front of the transformer for maintenance purposes. This is not provided with the transformer located behind parking stalls. The proposed location also presents a new conflict with the Japanese Stewartia trees located on the west side of the entrance.

6. The Drainage Report and HydroCAD modeling should be updated to include information on flow rates through the proposed CDS structures to ensure adequate sizing. Applicant should also consider re-routing roof runoff around the CDS units as the rooftops do not contribute a sediment load and the additional flow risks re-suspending the solids and clogging the infiltration systems.
    a. *The CDS unit proposed near the entrance will be a model 2025 which is ascribed a treatment capacity of 1.6 cfs by Contech. The peak total rate of flow captured by the two catch basins directing flow through this structure, (represented as subcatchment 109) in the 100 year storm, will be 1.16 cfs. We don't typically choose a structure that can treat even 100 year storm flows but that unit has no bypass. The two CDS units discharging flow to infiltration structure #1 will both be model 4030 units to which Contech ascribes a treatment flow capacity of 4.5 cfs each. The total 2 year storm flow directed to that structure (represented as subcatchment 22) will be 8.77 cfs. So, the choice of model 4030 units seems reasonable with the goal of treating the 2 year storm event flows.*

    We agree with the commenter about the value of separating roof runoff flows. Building #1 roof runoff is all to be directed to infiltration structure #3, which will receive no other flows. Runoff from the Clubhouse roof and Building #2's roof are to be piped to infiltration structure #2 and not mixed with any pavement runoff. Only

Building #3's roof runoff will be mixed with other flows.

Response: No further action required.

7. Detail Sheet D-4 lists "Unofficial Soil Test Results." Official soil test logs, including information for deep test holes 20-23, should be provided that includes seasonal high groundwater readings. Three feet of separation to the seasonal high groundwater table should be provided at *all* corners of the infiltrating surface. If proper separation to groundwater cannot be maintained, as could be the case with the south side of Infiltration Structure 1, then a groundwater mounding analysis should be provided.
    a. *We have attached copies of the logs for deep observation holes #'s 20-23 which were observed by staff of Stantec and used to confirm the characteristics noted of the previous deep observation holes. The slope north of proposed building #1 and at the south edge of infiltration structure #1 is all fill as was found to be the case at deep hole #9 which was all fill.*

    Response: Detail Sheet D4 should list Official Soil Test Results and include information for test holes 20-23. No further action required.

8. More detail should be provided on the proposed retaining walls. The wall behind Building #1 is over 17 feet high and should include a guardrail and pedestrian fall protection fence. Depending on the type of wall, geogrid tiebacks may be required that could conflict with the drainage structures and the proposed light pole base. Wall drainage may also need to be considered. The wall between infiltration structure 1 and the northern property line is almost directly on the property line. The applicant should confirm whether this can be constructed without encroaching on the railroad property and whether the nearby infiltration structure will affect wall stability. The Board may want to consider requiring stamped plans from a geotechnical engineer or shop drawings from the manufacturer for these two walls. Similarly, the applicant should confirm whether the proposed 1:1 slope along the northern property line is constructable without encroaching on the railroad property and whether there is enough room for a guardrail to be installed between the edge of pavement and the top of slope.
    a. *The Applicant understands that any retaining wall over 4 feet tall requires a stamped design to be submitted. We propose a Conigliaro block retaining wall, in the General Notes on sheet D1, which doesn't require the geogrid extension into the ground behind it. We now propose a 4' high chain link safety fence behind this wall.*

       The 1:1 slope at the north end of the site will be a fill slope that the Applicant can construct in lifts without encroachment upon the abutting property.

       There's sufficient room for a guard rail atop that slope beside the curb. There doesn't have to be any flat or plateau area of any significant depth off the curb to accommodate the guard rail.

    Response: We appreciate the addition of the fall protection fence; the Board should make the final decision on fence type and height. For the second wall shown on the plans (to the northeast of infiltration structure 1), is a wall necessary in this location? In some locations it appears the grade is the same on both sides of the wall. In other locations, there appears to

be enough distance to grade out elevation difference. Is it possible to construct this wall directly on the property line without encroachment? The wall and infiltration structure are also being proposed in a natural low point and while the contributary area to the low point is reduced in post development conditions, it is still likely that ponding occurs here that could affect wall stability and/or the infiltration structure.

9. Pipe sizing calculations should be provided to ensure drain lines have adequate capacity to safely move stormwater through the drainage network. Note that a minimum pipe size of 12 inches is required by the Town of Millbury Subdivision Regulations and there are 23 – 8 inch pipes proposed in the design.
    a. *We will submit rational method calculations of every pipe in the drainage system to confirm their capacities.*

    Response: We will review these calculations when they are submitted.

Department of Public Works Comments:

1. There is an existing catch basin located near the center of the proposed driveway, applicant should clarify if this is to stay in the same location or be relocated. Information on this catch basin and downstream drainage network (RIMs, inverts, pipe sizes and slopes) should be added to the Existing Conditions Plan. This catch basin appears to be at a low point on Rice Road, therefore the drainage analysis should quantify how much flow is expected to bypass the catch basins within the development and reach this catch basin and whether any puddling is expected in larger storms.
    a. *The existing catch basin near the site entrance is a leaching catch basin. It does not connect to any other structures. Our Drainage Report studied flow to Rice Road among other design points and confirms that we will reduce the flow to Rice Road and therefore reduce the flow to this catch basin at the low point of the road.*

    Response: The catch basin in question at the site entrance is not a leaching catch basin; it has an inlet from the west and outlets to the south down Thomas Hill Road. The existing conditions plan should be updated to reflect this and include the catch basin RIM and inverts of all pipes. The intent of the comment regarding flows to this catch basin was to highlight the fact that Rice Road is analyzed as a design line instead of a series of design points. Some of the flow from pre-development Subcatchment #5 does not make it to the catch basin in question, therefore the analysis doesn't accurately quantify the changes in flow from pre-development to post development conditions. However, we agree that flows to this catch basin will be reduced in post development. Long term maintenance of this catch basin is still a concern. In pre-development conditions this catch basin sees little to no traffic driving over it. In post development conditions, it appears that every single car/truck taking a right out of the development will drive over the catch basin. Would the applicant be amendable to moving the catch basin 15' to the west and out of the way of traffic? If not, this catch basin could see frequent failures and collapses that impact access to the development for periods of time.

2. Inlet protection should be shown on the catch basin at the proposed entrance as it is directly adjacent to the proposed construction entrance. Catch basin should be rebuilt by contractor if it is damaged due to heavy construction traffic. If sediment from the development enters into the

catch basin and downstream drainage network, applicant will be responsible for cleaning the drain lines.

   a. *This is a good point. We will place a silt-sack insert into this catch basin during construction.*

Response: Note that this silt sack will have to be managed during construction to keep the catch basin operational and prevent flooding in the road. No further action required.

3. Plans indicate that a retaining wall is to be removed in front of 9 Rice Road, applicant should clarify the purpose of this. DPW would also like clarification on whether the project will include a sidewalk along the northern side of Rice Road between the proposed development and South Main Street.

   a. *Under the Applicant's agreement with the Board of Selectmen, he will construct a new sidewalk on the northerly side of Rice Road between the site entrance and South Main Street. As part of that construction a small piece of retaining wall on #9 Rice Road will be removed which would otherwise obstruct that sidewalk.*

Response: This sidewalk should be shown on plans for review as there appears to be some grading challenges along Rice Road. Note that intersection of Rice Road and South Main Street was recently repaved and it may need to be resurveyed to reflect the existing conditions accurately.

4. Any modifications to the existing trees along Rice Road in the right-of-way need to be approved by the Tree Warden.

   a. *We acknowledge this requirement.*

Response: No further action required. Note that the Tree Warden will review the trees along Rice Road that are in poor health.

5. Rice Road was recently paved, any damage to the road due to heavy construction equipment will be the applicant's responsibility to repair/repave. Any repaving is to be coordinated with the DPW Director. Applicant will also be responsible for daily street sweeping if deemed necessary by the DPW Director.

   a. *We acknowledge these requirements.*

Response: No further action required.

6. The provided Traffic Impact Study recommends that a stop sign be installed at the northbound approach of Thomas Hill Road and the eastbound approach of Rice Road at its intersection with Providence Street, these signs should be added to the plans.

   a. *The proposed stop sign at Thomas Hill Road is now shown on the Site Plans and can be seen on sheets S1, G1 and others. The Applicant's agreement with the Selectmen commits him to preparing a design for improvement of the intersection of Rice Road and Providence Street. A stop sign at the end of Rice Road in that location will be part of that design.*

Response: A stop bar should also be added to plans wherever there is a stop sign. We will review the intersection improvements on Rice Road at Providence Street when the design is complete.

Board of Sewer Commissioners Comments:

1. Based on Article IV, Section 3 of the Town of Millbury Board of Sewer Commissioners Sewer System Rules & Regulations (Revised August 27, 2019), for multifamily dwellings, a permanent sewer privilege fee shall be assessed at a rate of $7,500/unit for the first unit and $3,750 for each additional unit. For uses other than residential, there shall be an assessment of a minimum of one unit ($7,500). Therefore, the total betterment fee due for the proposed development is $738,750, due once occupancy of the buildings has been established.
    a. *The Applicant will request a waiver from paying the full amount of this fee.*

    Response: Applicant should consider presenting an alternate fee structure and setting up a meeting with the Board of Sewer Commissioners to discuss.

2. Based on Article II, Section 29 of the Town of Millbury Board of Sewer Commissioners Sewer System Rules & Regulations (Revised August 27, 2019), "any new proposed subdivision or commercial/industrial business that requires a sewer extension discharging into their sewerage system shall require the removal, on the ratio of at least 4 (four) gallons removed for each gallon proposed, of excess infiltration/inflow (I&I) within the existing sewerage system, thus decreasing the total flow to the wastewater treatment facility. The removal of identified and quantified infiltration/inflow (I&I) shall be as approved by the Board of Sewer Commissioners. If at this time, there is no identified and quantified location where Infiltration/Inflow (I&I) may be removed, the Board of Sewer Commissioners shall require that a sum of money in the amount of $1.00 per gallon of I&I proposed for removal shall be deposited … with the Town Treasurer." The total proposed sewer flow from the residential buildings within the development is 33,660 gallons per day (GPD) (based on 310 CMR 15.000: Title 5 of the State Environmental Code). Based on a required removal ratio of 4/1, the applicant is responsible for removing 134,640 gallons of I/I or paying the I/I fee of $134,640. Note that this fee is for the residential buildings only, building plans for the Clubhouse are required to properly determine the sewer flow and assess the I/I fee for the Clubhouse use. Building plans should also be provided for the Clubhouse to determine if a grease trap is required for food preparation.
    a. *The Applicant will request a waiver from paying the full amount of this fee.*

    Response: Applicant should consider presenting an alternate fee structure and setting up a meeting with the Board of Sewer Commissioners to discuss. Building plans for the Clubhouse should be provided to determine the full fee and to assess the need for a grease trap.

3. The Board of Sewer Commissioners requires that the applicant fund a study to determine if the existing sewer system has the capacity to accept the additional flow from the proposed development. The Town of Millbury solicited a quote from Weston & Sampson Engineers for this work for a fee between $3,950 and $8,000. If the existing sewer system is found to have capacity to accept the additional flow from the development, then the fee will be $3,950. If existing capacity is inadequate and additional engineering is involved to recommend upsizing the pipes, then the fee will move to $8,000. This study should be completed before the Zoning Board of Appeals decides on the project, as potential upsizing of pipes is something that would have to be incorporated into the design.
    a. *The Applicant will fund this study.*

Response: We appreciate the Applicant agreeing to fund the study but would like to see the fee up front before getting Weston & Sampson started on the work.

4. The Board of Sewer Commissioners notes that, at the time of writing these comments, the applicant has not yet paid for the sewer capacity study for the original design of the project in 2021. $5,500 is owed to the Town to pay for the cost of the original capacity study.
    a. *The Applicant will reimburse the Town for this expense.*

    Response: As of 1/9/2024, the Town has not been reimbursed for this expense.

Sincerely,

Mark Hollis, P.E.
Director of Engineering, Facilities and Sewer Operations
Town of Millbury DPW

CC: Keith Caruso, DPW Director, Town of Millbury
Gary C. Nelson, Chairman, Board of Sewer Commissioners, Town of Millbury