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October 26, 2022

Planning Board
Town of Stow
380 Great Road
Stow, MA 01775

Re: **The Cottages at Wandering Pond**
Athens Street
Map R02 Parcels: 1A, 3, 4, 5, 18, 19, 20-7

Dear Members of the Board,

On behalf of our client, The Cottages at Wandering Pond Realty Trust, we have revised the attached Site Plan, dated October 26, 2022. Changes have been made at the request of the applicant, and in response to comments made by the board, town staff, and Places Associates, Inc..

At the request of the applicant, the soil absorption system has been relocated. It is now proposed beyond the second stream crossing, within the vicinity the previously proposed location of the Stepping Stone Lane cul-de-sac. Stepping Stone Lane has been shortened and some of the dwelling units previously proposed along this road have been relocated to accommodate this change. A road split is proposed along Wildflower Way to provide space for the relocated units, within the vicinity of the original soil absorption system location. The total number of units has been reduced by 1, with 140 units now proposed in total.

The proposed sewer network has been redesigned to reduce the number of manholes. The proposed roadway grading over the second stream crossing has been modified to provide gravity sewer service across the crossing, so that now the entire proposed sewer will flow via gravity to the wastewater treatment facility.

Additional soil testing has been conducted on the hillside (near Wandering Pond Circle). The stormwater management system has been redesigned in this area so that basins are now located outside the road loops, where possible. Where the basins are located within road loops, adequate overflow designs are provided to ensure that there are no adverse impacts to downgradient homes during large storm events.

We hereby offer the following in response to comments made by Places Associates, Inc., in a letter to the board, dated August 2, 2022:

General Comments

1. The plans should have key sheets, showing how the various plans relate to each other.
Key sheets are provided as appropriate for sheet groups.
2. All roads should be labeled on all sheets and consideration should be given to including unit numbers on all sheets for reference.
Road names and unit numbering are provided on all sheets as necessary.
3. All plans containing unique data should be at a scale of at least 1"= 40'. The Site Development Plans were prepared at 1"=60' and are illegible in many locations.
The plans have been revised to provide a scale of 1"=40' on the Site Development Plans.
4. It is recommended that the Plan Index list individual roads to facilitate review of the Profile sheets.
The Plan Index now includes a list of the proposed roads their respective Plan and Profile Sheet(s).

5. Phasing is mentioned verbally in the narratives provided. This phasing should be reflected in the plans with a Master Phasing Plan and individual phasing plans. These phasing plans should include:
 - a. Address Utilities specific to the Phase. We assume that the water distribution system will have to be constructed to serve early phases of construction. Will there be a temporary connection or will the water line be routed through future roadways?
Utilities are addressed on individual phasing plan sheets. Most of the utilities including water will be constructed in areas as needed during specific phases. See phasing plans for more details.
 - b. Address drainage – will there be a cross connection between phases or will each phase stand alone.
Drainage is addressed in the phasing plans. Cross connections will occur where needed and the construction of basins is called out explicitly for each phase.
 - c. Address public safety providing temporary turnarounds if needed.
Turnarounds are provided at the completion of each phase. The design of cul-de-sacs, loops and permeant turnarounds will provide safe access in and out of the development.
 - d. Erosion and Sedimentation Control plan should be reviewed to determine if there are sufficient temporary basins, stockpile location etc., for the phase. It is also recommended that the SWPPP include the basic information on construction trailer, port-a-johns, stockpiles of erosion control materials, concrete washout stations etc.
The Erosion and Sedimentation Control plan has been reviewed and updated to provide sufficient controls for each phase. Additional basic information will be provided on the SWPPP.

Plan Comments

1. Existing Conditions Plans:
 - a. Too much data is on the plans which obscure the information. Specifically, the metes and bounds make it difficult to see Athens Lane information- edge of pavement, contours etc.
Scale has been reduced from 1"= 60' scale to 1"= 40' scale to make plans easier to view.
 - b. We recommend spot shots in the wetlands in the proximity of the two crossings including along the road/cart path surfaces for high flows.
Spot Grades at Wetland Crossings are now provided.
 - c. What is the basis of the topography? Lidar? On the ground? Please confirm that it is the same datum as the FEMA Flood Plain elevations.
Datum NAVD of 1988, same as the FEMA Flood Plain elevations, is now shown.
 - d. Plans do not show the 100 year flood plain.
The 100-year flood plain is now shown
 - e. Plans do not show the thread line of the existing brook channel.
Thread Line of the existing brook channel is now shown
 - f. Plans do not show the existing pond.
Existing ponds are now identified
 - g. Are there any existing specimen trees on site? The Board may want any significant trees on the fringes of the grading to be identified and a determination as to saving them. Is there any vegetation on Hudson Road that will be cleared? Street Trees?
Additional existing trees on site are now shown. There are no existing street trees in Hudson Road that are expected to be impacted by the proposed project.
 - h. Wetland flags are missing in the area of Flag C-17 where the wetlands line jogs out.
WF- C20 is now shown
2. Master Plan (sheet 15):
 - a. Please show street names and unit numbers for reference.
Street names and unit numbers are now provided on the Master Plan.
 - b. Under the lot coverage calculations, Section 3.24.6 requires the following additional information:
 - i. Undisturbed Open Space

The Undisturbed Open Space acreage and percentage is now shown on the Master Plan.

- ii. Building Height

The Building Height is now shown on the Master Plan.

- iii. FAR, Gross Floor Area

The FAR and Gross Floor area are now shown on the Master Plan.

- iv. Flood Plain (if it is not shown, how was it calculated?)

The Flood Plain is now shown on the Existing Conditions sheets where it is more easily seen at a smaller scale. The Flood Plain is based on an on-the-ground survey and FEMA flood maps.

- v. We note that the visitor spaces are not integrated into the overall site (not equally dispersed) and visitor spaces at the Wastewater Treatment Facility are isolated as they are not connected by sidewalks to the remainder of the site.

Each dwelling unit has a 2-car garage and enough space for 2 cars in front of the garage. The visitor spaces at the Wastewater Treatment Facility are intended to allow access to the trails, without having to drive through the development.

Additionally, adequate parking spaces are provided at the Indoor Community Center.

- vi. Chart does not indicate how many handicap spaces are provided on site.

Two handicap spaces are provided at the Indoor Community Center and the chart has been updated to reflect this.

3. Site Development Plans:

- a. Plan scale needs to be larger.

The Site Development Plans are now shown at a scale of 1"=40'

- b. Road names are needed, road stationing is illegible in places

Road Names are now shown. The Site Development Plans are now provided at a scale of 1"=40' so that the proposed stationing is now more easily legible

- c. Both existing and proposed contour labels are difficult to determine in some areas, particularly near stormwater basins.

The Site Development Plans are now provided at a scale of 1"=40' so that existing and proposed contours are now more easily legible.

- d. Area of wetlands crossing illegible, plans do not indicate any replication area

Wetland replication areas are now shown on the Site Development Plans.

- e. Recommend showing the clubhouse area on a separate sheet at 1"=20'. Parking spaces are not clearly defined as well as handicap parking, accessible route, curbs/berms etc. Are the mailboxes in the clubhouse area? Dumpster? Recycling?

A plan sheet dedicated to the clubhouse area, at a scale of 1"=20', is now provided (Sheet 31 of 72).

4. Erosion and Sedimentation Control Plans:

- a. Plans should have roads and units labeled to provide reference point for notes.

Roads and units are now labeled.

- b. Plans are insufficient and lack the level of detail needed for a project being constructed on a hillside.

The plans have been reduced from 1"=60' scale to 1"=40' scale with more details shown for erosion and sediment control structures and locations. These plans are complimented by the phasing plan sheets, providing further details on construction.

- c. The plans should address the overall construction sequence (will the entire site be cleared at the beginning of the project or by phase?) Erosion control should be addressed per each phase.

A master phasing plan has been provided along with individual phasing plan sheets to compliment the erosion and sedimentation control plan and provide construction sequencing.

- d. We recommend the use of stump grindings for both temporary stabilization as well as temporary berms.

The use of stump grindings are recommended in the phasing plans.

- e. The temporary settling basins do not appear to be of sufficient size for the tributary area,

particularly those on the back of units on Wandering Pond Circle and Daffodil Lane.

The temporary sediment basins have been appropriately sized based on MA DEP's recommendation of providing 1" storage for each acre of drainage area. All temporary sediment basins were designed based on the maximum area of disturbance during each phase. Areas on the plan requiring slope stabilization have been identified on the Erosion and Sediment control plan sheets.

- f. Plans should address emergency provisions for extreme weather applicable during the different phases of construction (i.e. the use of sand bags when the site is at binder vs check dams while rough graded). The plan should identify which stormwater basins are suitable to store silt laden runoff during an extreme event.

Note 22 has been added to the Erosion and Sediment Control notes stating "sand bags shall be used in place of velocity check dams when roads are at binder grade". All temporary sediment basins have been appropriately sized to store silt laden runoff during extreme events. Notes 13 & 14 specify the need for slope stabilization with respect to the timing of excavations and the changing of seasons.

- g. Plans should identify temporary measures for individual unit development (stabilized construction entrances, roof drainage, etc).

Stabilized construction entrances are specified as needed for each phase. Erosion and Sediment control measures are implemented for each phase and are appropriate for the construction of individual units.

- h. Storage of additional erosion control materials appropriate for the phase.

An erosion control material storage area is proposed for each phase.

- i. All drainage rims should be functional at binder grade

Note 21 has been added to the Erosion and Sediment Control notes stating "all drainage rims shall be functional at binder grade".

5. Plan and Profile Sheets:

- a. Plans should provide geometry for the construction of the pavement – centerline radii, curb treatment, curb radii, pavement widths

Centerline geometry and curb radii are now provided.

- b. Handicap ramps should be provided at each intersection in compliance with MAAB requirements. Crosswalks should be indicated.

Handicap ramps and crosswalks are now shown.

- c. No electric or communications utilities shown.

Proposed underground wires are now shown.

- d. Vertical curves K values result in very flat slopes and should be adjusted. We recommend removing sag vertical curves where the change in slope is 2 percent or less.

Sag curves have been removed where the change in grade is less than 2%.

- e. Stationing is hard to read. Stations for centerline intersects with adjacent streets should be shown and the elevations should be shown on the profile portion.

Stationing at intersections is now provided in the plan view and intersection elevations are provided in the profile view.

- f. Where does Athens Lane end and Wandering Pond Way start? (Could be confusing for GPS and cross sections not consistent with profile plans).

Athens Street and Wandering Pond Way begins at STA 9+12.53. This is now identified on the plan.

- g. Plans do not show the existing culverts with elevations in the profile section at the crossings.

The existing culverts are now shown.

- h. Many sheets show that the water and sewer mains are at the same approximate elevations. This will create many conflicts with the water and sewer services crossing each other. It is recommended that consideration be given to lowering the sewer line to make the site easier to construct.

The proposed sewer design has been modified so that it is generally proposed lower than the proposed water main and water services in order to limit conflicts.

- i. Water gates are not shown on the plans and are typically required at intersection but should be coordinated with the phasing plans.

Water gates are now shown.

- j. Each sheet needs to be carefully checked for conflict of utilities – water (5' cover), sewer and drainage as well as electric and communications (2.5' cover). We have noted many areas of conflict. In places where the depth for a utility is not the standard, it needs to be called out so it can be constructed accordingly. There are multiple locations with conflicts between the drainage and sewer lines. Plans should indicate elevations of pipes where crossing.

The plans have been substantially revised. The proposed sewer network has been modified extensively so that the utility conflict present in the initial submission have been corrected.

- k. Catchbasin elevations do not appear to have sufficient depth to allow for the frame to be set to binder. Example CB-WPC4: Rim – invert= 3.0' – 1.17' (12" ADS)- 0.29" (Eliminator hood) - 0.66' (8" thick conc. Structure for H2O loading)- .66' (8" frame and grate) = 0.22'. The finish course of pavement is 1.5" or 0.125' leaving only 0.1' to provide clearance in the structure for the eliminator and for mortar under the frame and grate. Bricks or riser rings are required under the frame per MassDOT standards. It is recommended that all catchbasins provide at least 3.5' difference between the rim and 12" inverts.

The plans have been revised so that a minimum height of 3.5' is now provided for all catch basins.

- l. Buttercup and Daisy Lanes should have catchbasins at the low points to accommodate winter conditions to avoid icing.

Catch Basins are now proposed at the low points in Buttercup and Daisy Lanes. Please note that the vertical profiles and locations of these roadways have been modified.

- m. Random checks indicate multiple locations where a 4' diameter manhole will not have sufficient sidewall due to inlet and outlet pipes set at the same invert elevations. A minimum of 6" between openings should be provided.

The proposed drainage networks have been substantially revised so that 4' diameter manholes are now sufficient in most instances. 5' diameter manholes are now specified where 4' diameter manholes are insufficient.

- n. In areas where the utilities are likely to be within the water table, anti-seep collars should be required.

Anti-seep collars are now provided and are shown on the plans.

- o. Buttercup Lane appears to have possible rain gardens in the front yards of the units. If this is correct, they should be labeled, a detail provided for the planting medium and plant list and the connecting pipe inverts should be labelled. Other utilities going beneath these depressions should be checked for adequate cover.

The proposed low areas along the shoulders

6. Detail Sheets:

- a. Wheel Chair Ramp Type A is not consistent with MAAB. Plans do not depict ADA compliant handicap ramps. Ramps and crosswalks should be placed at the perpendicular to the edge of pavement (at tangent of roundings) and should be connected with cross walks per 321 CMR 21.00.

Crosswalks are now shown on the plans. Locating the crosswalks at the tangent of pavement roundings will force stop lines more than 25' from intersections in most places, which will limit sight distance. The Wheel Chair Ramp Type A detail has been removed.

- b. The 3/8" per foot cross section results in a cross slope greater than the 2% required for ADA accessible routes for crosswalks.

A 3/8" per foot cross slope of the roadways is proposed throughout the development in conformance with Stow's subdivision regulations.

- c. Recommended that the pavement detail be revised to reflect 2" binder course and tackifier be applied between courses of pavement, and the binder go through one winter prior to the final pavement, consistent with the Subdivision Regulations.

The pavement detail has been modified per this comment.

- d. Catchbasins should have a minimum of 2 courses of brick and should be set to binder course.

The catch basin detail has been modified per this comment.

- e. Infiltration Basin should have an impermeable core, keyed into the parent material and the width of the berm should be at least 10' wide.

Infiltration Basin berms are now proposed a minimum of 10' wide. The infiltration basin detail has been modified to specify that compact till shall be used where construction of berms is necessary.

- f. There is no cross section for Athens Lane

Provide cross section

- g. Where is the fire cistern located on the plans?

3 fire cisterns are located for this project. The locations of the cisterns are now clearly shown on the plans.

- h. Recommend that the appropriate detection tape be used for all water and sewer lines as this will be both be a private system and will not be able to be dig-safed.

Detection tape is now shown for water and sewer lines in the road profiles and is noted in the associated details.

7. Culvert Crossings:

In response to concerns raised by the Conservation Commission, the second stream crossing, behind the weir box, is now proposed as (2) open bottom box culverts instead of RCPs.

- a. The plans need additional information as to the construction sequence, need for temporary dewatering and means of stabilizing the surfaces inside of the culvert. As learned from the Joanne Drive culvert, the bottom cannot be maintained in a natural state (no daylight) and the inside of the culvert does not have sufficient head space to allow fill to be manually compacted.

Silt sacks for dewatering are proposed downstream and adjacent to the stream crossings.

The surfaces beneath the open culverts are now proposed to be covered in 3"-5" rip-rap. A construction sequence for the wetland crossings has been provided on the plan.

- b. The cross sections should address the placement of other utilities. If water and sewer are to go below the footings for the second crossing, call out on plans and identify any adjustments needed for the footings. Both culverts should address the electric and communications to make sure there is sufficient space to meet the utility company specifications.

The culvert cross sections now show the utilities including water, sewer, electric, and communications. No gas is proposed for the site. There is a minimum of 2.6' between the top of all culverts and the finished grade of the road, enough for electric, communications, and gravity sewer. The water line (only crossing at the second stream crossing) will go beneath the footings of the culverts.

- c. The first culvert narrows down in width below the road surface. This will create a pinch point where debris can get caught as well as create turbulent flows. There needs to be some means to access this area for maintenance. In addition, how will this be constructed?

The construction sequence provided on the plans details the proposed process. A wall will connect the two culverts together, and large boulders are now proposed in the larger width culvert to angle the flow towards the smaller width culvert, like existing conditions with the large boulder abutments. There will be approximately 4' of space between the ground surface and bottom inside of the culvert to allow for maintenance.

- d. Both crossings should show the flood plain – both in plan view and profile. We recommend more existing spot elevations in the wetland areas and identify the brook channel on both sides of the crossings both for design and as-built reviews.

Both crossings now show the floodplain as well as more information on the existing surface elevations.

- e. The weir boxes are somewhat unique and will essentially function as small dams. We recommend that these be reviewed by a structural engineer for stability under flood conditions and that consideration be given to the potential for scouring as flood waters flow over them.

Prior to construction, engineered weir box designs will be provided to the Town for review.

- f. What size/weight are the grates over the weir boxes? Concern is that they be child safe yet not require a large crane to remove for maintenance.

The grates over the weir boxes won't be one large grate but smaller, more manageable pieces laid next to each other, to allow access but also heavy enough to be child safe. Type "B" cast iron areaway grating by Neehan Foundry is proposed.

8. Drainage Comments:

- a. Please label proposed ponds on Post Development plan and provide a routing diagram to facilitate review of the calculations

The post-development drainage map has been revised.

- b. Drainage calculations do not route the runoff through the collection system. There is no data to evaluate flows to individual catchbasins or the adequacy of the pipe network. This must be provided. Flows should also consider overland flows which will be captured by the drainage system (i.e. Stepping Stone Lane)

Pipe sizing for the drainage network has been provided and is included in the revised Stormwater Management Report. Sizing was provided using the rational method.

- c. We disagree with some of the pre-development drainage areas and times of concentrations. We believe that P-2B has a natural drainage divide and should be broken into potentially 5 different subcatchments of similar characteristics. Similarly, P-9 is not reflective of the stormwater basin on the abutting property.

The pre-development drainage map has been revised. The soil divides have been modified per the conditions observed during on-site testing.

- d. Many of the basins do not appear to have testing in the basin. The various Rawl's rates used in the infiltration imply better soils than shown on the soils maps. If the soils maps appear to be overconservative as having poor soils versus the on-site testing, the drainage calculations should be consistent with the testing. It is not apparent why three different Rawl's rates were used in the calculations.

Additional soil testing has been conducted across the hillside (around Wandering Pond Circle). There is testing within many of the proposed basins. Where testing was not conducted within the footprint of the basin, soil data from the nearest test pit(s) was used. Soil divides shown on the drainage maps have been revised to reflect the testing. Curve number and required recharge volume calculations have been done based on the Hydrologic Soil Groups identified by the NRCS soil survey, which is based on the topsoil condition. Exfiltration calculations are based on the underlying parent material observed during onsite testing.

- e. The culvert calculations show the inverts of the culverts in inches – we are not familiar with this software to understand the implications of these units- please explain.

The culvert calculations show the invert elevations in feet, but the culvert opening size in inches.

- f. The culvert calculations state that they are not considering the weir flows across the roadways. This will oversimplify the flows through the culvert as the flows across the road will reduce the head on the culverts and therefore the flows.

The culvert calculations do consider the weir flows across the roadways. The second stream crossing is designed such that the flow through the orifices in the weir box matches the flow through the existing pipes. Then the flow that overtops the road in existing conditions is matched by the flow over the weir box, such that the headwater floodplain elevations are the same in the 100-year storm. In determining orifice sizes, the flow that overtops the road is ignored because the top of the weir box takes that flow.

- g. The calculations assume that a similar size orifice will have the same hydrologic conditions as the existing culverts. This is not correct, depending on whether the culverts are under inlet or outlet control.

The orifice sizes were calculated to provide the same flow rate and headwater elevation that the existing culverts provide. The orifice equation considers the flow (matching each existing pipe's flow) and headwater height above inlet elevation (no greater than 100-year floodplain). Existing and proposed conditions will be under inlet control.

- h. We note that the unique configuration of the first culvert cannot simply be modeled as the

contraction beneath the roadway will result in head losses and potential turbulence which directly effects the flow through the culvert.

It is noted that the contraction of the first stream crossing culvert does affect the flow rate under the road. However, a similar situation is occurring now at this crossing, with large boulders along the edges of the abutments upstream of the existing bridge, so that in high flow conditions the flow contracts to get underneath the existing bridge, creating turbulence and head losses. Large boulders are now proposed in the corners of the larger culvert prior to its contraction to mimic this condition.

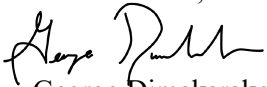
During the early stages of review, planning staff identified parcel 20-7 as being within a residential zoning district, within which AAN is not allowed. Map R02 of the Assessor's maps has recently been revised to reflect this; the previous version of the assessor's maps included the parcel within the AAN overlay, hence the confusion. The applicant will pursue changing the zoning of this parcel so that the AAN is allowed at the next possible town meeting.

We thank you for your attention to this matter. If you have any questions regarding this matter, please feel free to contact our office.

Respectfully,
Stamski and McNary, Inc.



Paul Kirchner, E.I.T.



George Dimakarakos, P.E.