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DESIGN ENGINEERS, INC.

July 26, 2022

Kenneth Buckland
Director of Planning and Community Development
Town of Wareham Planning Board
54 Marion Road
Wareham, MA 02571

RE: Response to Charles Rowley's Peer Review Comments, July 19, 2022
91 and 101 Fearing Hill Road Solar Project – Wareham, MA
ADE Job #3055.02

Dear Mr. Buckland:

This response letter addresses the comments made in Charles Rowley's Peer Review letter dated July 19, 2022, for the above-referenced project. Accompanying this letter are revised Site Plans, revised dated 7/26/22, and Sediment Forebay Sizing calculations dated 7/26/22. Please note the peer review comments are italicized, and our responses follow in bold text:

Plans

Sheet 2 of 7

1. *My letter of July 20, 2021 requested information to show that the site was tied to property monuments so that the location the property boundaries could be identified. This has been done. The notation for street monuments along Fearing Hill Road should be changed from MHB (Massachusetts Highway Bound) to PCHB (Plymouth County Highway Bound) since Fearing Hill Road is a 1930 County Layout.*

   The notation to PCHB has been revised, refer to the revised Site Plans – Sheet 2.

2. *The detail of the railroad bed shows only one culvert location. It is assumed that the other end of the culvert on the south side of Fearing Hill Road was not found.*

   The culvert end on the south side of Fearing Hill Road was exposed and surveyed and is now shown on the Site Plans.

P.O. Box 1051
Sandwich, MA 02563
(508) 888-9282 · FAX 888-5859
email: ade@atlanticcompanies.com
www.atlanticcompanies.com

Sheet 3 of 7

1. *Buffers have been shown as 50 feet wide around most of the site with the exception of the area northerly of the Lewis A. Demello property where the buffer has been increased to a minimum of 71 feet. It is recommended that this buffer be increased. The type of vegetated screen noted on the plan is not identified as to depth, height or density and should be shown in detail for consideration.*

   The plan has been revised to show that the <u>minimum</u> buffer to the Demello property has been increased from 71 feet to 85 feet and provisions have been made for additional vegetative screening in this buffer if required in the future. Green Giant arborvitae plantings, 6 feet tall have been proposed for type and size of vegetative screening.

2. *Twelve-foot high sound barrier walls are shown around both equipment pad sites. Has any documentary evidence been provided to substantiate the need for these barriers and what they will consist of? Are structural components required for stability?*

   Refer to the HMMH Sound Level Assessment Technical memo dated December 13, 2022. The sound barrier walls would most likely be post and panel construction. The posts will require a footing.

   The actual design of the walls will be completed by the Developer's vendor and details will be provided to the Building Inspector as part of the Building Permit process.

Sheet 4 of 7

1. *The entrance road is shown with a construction entrance with details provided on Sheet 7 of 7. The detail should be revised to show minimum radii of 10 feet on each side rather than 2 feet and should be of 8" minimum depth. Four-inch stone at a depth of four inches will not be sufficient to lock stone in place.*

   The construction entrance layout and detail have been revised as requested.

2. *From Fearing Hill Road, the entrance road is at a five percent grade. It is recommended that the first 50 feet from Fearing Hill Road be paved. It is also recommended that the rest of the roadway be constructed with an exaggerated crown and with stone filled trenches on each side to capture runoff. A detail of the crown and trenches should be provided. A curb cut permit from Wareham Municipal Maintenance will be required for this road opening.*

The site plans have been revised to show the first 50 feet of access road as paved. The grading of the access road has been revised up to the entrance gate to show an exaggerated crown with stone trenches on each side of the access road. A detail for this portion of the access road has been added to the revised site plans as requested.

A curb cut permit will be requested by the contractor from the Town of Wareham Municipal Maintenance department before construction begins.

3. *The plan shows a micropool within the detention basin 3 that is only twelve inches deep. It is recommended that this micropool be designed with a forebay that will trap potential sediment before it gets to the lowest discharge pipes to prevent their clogging. It is also recommended that the micropool be made with connecting stone and fabric lined trenches along the lower edges of the twenty-foot wide berms that will enhance surface runoff collection and prevent ponding.*

   The micropools for all basins have been increased in size and depth based upon the enclosed forebay sizing calculations, and fabric lined stone trenches are also provided at the lower edges of the basin berms as requested.

4. *The plan shows a proposed stone and pipe trench running across the slope toward detention basin 3. It crosses the access road at elevation 85.*

   a. *It is recommended that the trench cut across the road include additional crushed stone at the surface to prevent the filter fabric from being displaced or damaged.*

      An additional detail has been provided for the trench crossing the roadway and additional stone is provided as requested.

   b. *What prevents the filter fabric from becoming sediment filled in other parts of the trench where it is exposed to up-hill surfaces?*

      As called out in the detail for the stone trench, the fabric <u>on top</u> of the stone trench is to be cut and removed once the site is stabilized. In addition, any sediment buildup during during construction will be removed/cleaned periodically as required.

Sheet 5 of 7

1. *Similar comments as were made for Sheet 4 are made for the micropool and immediate area shown on this sheet.*

See above response for Item 3, Sheet 4 of 7.

2. *There is more than one-half acre of open land between the proposed twenty-foot wide access road and the discharge point of detention basin 2. This area could be re-vegetated with low bush type plantings that over time would spread and help to slow down and capture runoff from the larger areas above. It is recommended that additional plantings to meadow grass be considered for this area with options provided by a landscape architect.*

   Additional low bush plantings are now shown in this area between the vegetated access road and the calculated 100-year water level for Basin 2.

3. *Two stone lined swales are shown on the plan. These swales could be extended to the micropool to enhance runoff control and the removal of sediment.*

   The stone lined swales have been extended as requested.

Sheet 6 of 7

1. *The small micropool for detention basin 1 shown on this sheet is small for the area of surface runoff collection. It should be built with sediment forebay control in order to protect it from clogging and blocking the discharge pipe. A detail should be provided.*

   See above response for Item 3, Sheet 4 of 7.

2. *It is recommended that the level spreader not include a section of concrete curb. The curb section would require the water level behind it to build up before being able to move down slope. Allowing the runoff from the discharge to filter through a complete stone spreader with no sump and consequently no build-up is recommended.*

   The level spreader detail has been revised to remove the proposed curb.

3. *Comment 2 above also applies to spreaders for detention basins 2 and 3.*

   See response for #2 above.

Sheet 7 of 7

1. *It is recommended that the vegetated access road detail not show six (6) inches of loam and seed over the twelve (12) inch gravel driving surface. If additional protection is*

needed against erosion, it is recommended that crushed stone or recycled asphalt be used as a top driving surface instead.

The vegetated access road shown around the perimeter will be rarely used, and being vegetated with loam and seed will reduce the amount of runoff generated on the site while still being stable for emergency or maintenance vehicles. Converting the road to stone or recycled asphalt will only increase runoff and is therefore not desired.

Stormwater Calculations

1. *The calculations for post runoff conditions for the detention basin on the southwest side of the site do not include any infiltration. The soil testing done at the corner of the previous drainage basin 2 showed a percolation rate of 2 minutes per inch, which is generally found in well drained soils. However, the same test site reported mottling at 20 inches, meaning that high ground water conditions that could negatively impact infiltration.*

   No infiltration is accounted for in the modelling of Basin 2.

2. *It is recommended that the design of drainage basin 2 be reconsidered to provide the following:*

   a. *A forebay sediment collector to prevent sediment buildup in the micropool,*

      See above response to Item 3, Sheet 4 of 7.

   b. *Making the micropool larger to trap sediment not caught in a primary sediment control area.*

      See above response to Item 3, Sheet 4 of 7.

   c. *A secondary discharge pipe at a higher elevation than the current 8-inch pipe elevation of 69.0 which will provide emergency flow in case the lower pipe becomes clogged.*

      The emergency spillway shown on the plans will handle emergency flow if the outlet pipe becomes clogged. Adding any additional outlet pipe to the basin will adversely affect the modelling of the basin and will increase runoff to the railroad bed design point.

3. *The plan does not show that the culvert pipe under Fearing Hill Road was located on the southerly side. The invert elevation noted on the north side is 56.26 and approximately 18" below the pavement. It is recommended that the culvert on the southerly side be found and cleaned out to allow runoff to leave the railbed and Fearing Hill Road more easily.*

   See above response to Item 2, Sheet 2 of 7. The applicant will work with the DPW to clean out the culvert to provide better flow.

Other Recommendations

In addition to several recommendations noted above, the following should be done as a means of monitoring ground water conditions before and after any construction on the subject property takes place.

1. *The two monitoring wells on the north side of Fearing Hill Road, just east of the railbed should be kept in place, maintained and monitored on a regular basis.*

2. *An additional monitoring well should be placed on the northerly side of Fearing Hill Road near the proposed site access but so as not to be unduly influenced by surface runoff that may come from the access road itself.*

3. *The purpose of documenting the groundwater in these wells is to establish:*

   a. *A base line against which to measure future changes in groundwater elevation and ground water quality as it relates to the project, should it be developed,*

   b. *A basis for determining whether ground water elevations are changing due to rainstorm events or due to changes brought on by the development of the site,*

   c. *To give nearby residents a means to determine if steps need to be taken to protect existing well water supplies or on-site septic systems, or both.*

4. *It is recommended that the third well be installed and activated along with the two wells near the railroad bed prior to any other work being done on the project, and with a schedule of monitoring and reporting to be established prior to any clearing of the site.*

   The monitoring program should be made part of any conditions of approval that the Planning Board may grant for the project.

The applicant is working with the Geotechnical consultant Horsley Witten Group to develop a monitoring plan for the project and will take these recommendations into consideration.

Please call us at (508) 888-9282 if you should have any questions.

Sincerely,

ATLANTIC DESIGN ENGINEERS, INC.

Richard J. Tabaczynski, P.E.
Vice President

RJT/rp

CC: Charles Rowley
Wareham MA 3, LLC
Horsley Witten Group