

## MEMORANDUM

To: Janine King, Village of Croton-on-Hudson Village Manager  
CC: Dan O'Connor, Village Engineer; Linda Whitehead, Village Attorney  
From: Stuart Mesinger, AICP and Nick Vamvas  
Date: February 23, 2021  
Re: Hudson National Golf Club/Matrix Development, LLC – Solar Project - Engineering Review  
Project #: 82050.00

The following are our comments on the applicant's submission dated February 10, 2021. The following items were reviewed for conformance with the Village code, NYSDEC stormwater design requirements, and general engineering best practices:

- Proposed Subdivision/Solar Array System prepared for Hudson National Golf Club dated April 22, 2019 revised January 15, 2021 sheet 1 of 6 sheets, (Preliminary Plat),
- Erosion Control Plan, Solar Array System prepared for Hudson National Golf Club dated July 2, 2020 revised January 15, 2021 sheet 5 of 6 sheets,
- Detail/Notes, Solar Array System prepared for Hudson National Golf Club dated July 2, 2020 revised January 15, 2021 sheet 6 of 6 sheets,
- Letter to Dan O'Connor regarding slope stabilization dated February 8, 2021, and
- Stormwater Assessment at Prickly Pear Hill Road memorandum dated February 9, 2021.

### COMMENTS ON REVISED PLANS

1. A cut slope crosses a proposed lot line (west of the maintenance building). The grading should be corrected to comply with §195-4.A(14).
2. The equipment pads, a portion of the detention basin, and a portion of the access road to the east site are shown outside of the proposed disturbance line. The disturbance line should be corrected accordingly.
3. There is insufficient stormwater management proposed. Temporarily setting aside the applicant's assertion that the proposed action will lead to no increase in runoff discharge, the proposed action involves the creation of impervious areas. Thus, the applicant must provide a SWPPP including post-construction stormwater management practices to capture and treat runoff from all impervious surfaces. The SWPPP must comply with the requirements of both the Village Code and The New York State Stormwater Management Design Manual.
4. EZ roll pavers proposed for driveway slopes greater than 10%. What is proposed for other driveway surfaces?
5. Will runoff from tables 73-99 be directed to a level spreader or permanent basin?
6. The applicant should revise the plans to indicate the location where slope stabilization measures are required.
7. The EZ Roll Grass Pavers detail provided doesn't comply with manufacturer specifications.
  - a. Item 4 fill within the paver cells is specified – the manufacturer detail calls for topsoil infill.
  - b. Item 4 is unlikely to be a suitable growth matrix for grass seed.
  - c. Compacted Item 4 would be considered an impervious surface which runs counter to the proposed use of the EZ roll pavers.

- d. The manufacturer specification states that the product is recommended only for erosion and sediment control on slopes greater than 10%, and traffic movement is not recommended. The proposed plan calls exclusively for use on slopes greater than 10%.
- e. Separation fabric should be proposed between the subbase and native soil.
- 8. See below for updated SWPPP requirement checklists based on review of the revised plans.

#### COMMENTS ON SLOPES MEMO

- 1. We accept the applicant's reasoning on slope stabilization. Plans should be revised to indicate the location where the stabilization measures are required.
- 2. We do not accept the applicant's reasoning on the lack of need for water quality treatment and detention. Please provide a detail of the proposed driveway section to be constructed on slopes less than 10%. Driveway construction notwithstanding, runoff from the proposed equipment pads must be directed to WQv treatment practices.

#### COMMENTS ON STORMWATER ASSESSMENT

- 1. The applicant refers to a study from 1996 that examined the potential changes to area drainage patterns in the pre and post golf course construction conditions. A portion of the study is included, but not enough to draw a conclusion as to the validity of the study with regards to the present-day condition. Could the full study be supplied for review? The specific areas of concern are:
  - a. Did the study include a hydrologic analysis with respect to typical design storm intervals (10-year/24-hour, 100-year/24-hour, etc.)? It might be worth looking at the storm intervals in the 1996 study against intervals currently used with 25 additional years of rainfall data available.
  - b. What was the storage volume of the pond below the outlet? Have there been changes to the pond (sedimentation, grading) that might affect the available storage?
  - c. Was a maintenance plan established? Could the purported increases in neighborhood runoff be due to a maintenance issue at the pond outlet or other structures?
  - d. Have there been changes to the course configuration that might contribute to additional runoff being directed toward the Prickley Pear Hill neighborhood?
- 2. There is insufficient information provided to verify that the solar array will not create an increase in runoff. The panels themselves don't contribute to impervious areas, but the equipment pads and driveways will (except for the EZ paver sections, if the applicant intends to go against the manufacturer recommendation). This increase in impervious is missing from the analysis. Also, there is no formal analysis provided which accounts for the grading activities on site and potential changes to the flow paths. The change in grades and channelization of runoff can lead to changes in the discharge rates. Until a more robust runoff model is provided, the claim that there will be no increase in runoff can not be verified.

#### REQUIRED COMPONENTS CHECKLIST (per NYSDEC GP 0-20-001, requirements are paraphrased for brevity)

- 1. ESC Component
  - a. Background info **included**
  - b. Site map **included**
  - c. Soils description **not included**
  - d. Construction phasing and sequencing **included**
  - e. Minimum ESC practices **included**
  - f. Temp and perm stabilization plan **included**
  - g. ESC plan **included**

- h. ESC details including sizing of temp sed basins and structural practices **included in plan view but a typical detail of basins should be provided**
  - i. Maintenance inspection schedule **included**
  - j. Description of pollution control measures (litter, chemicals, debris) **not included**
  - k. Description of industrial stormwater discharges – NA
  - l. ID of any elements not in conformance - NA
2. Post-Construction SWM Practice Component
- a. ID of all SWM practices
    - i. Dimensions **not included**
    - ii. Material specs **not included**
    - iii. Installation details **not included**
  - b. Site map showing location and size **included but additional measures should be provided**
  - c. Modeling analysis report **included but needs more detail**
  - d. Soil test results (test pits) **not included**
  - e. Infiltration test results **not applicable unless SWM practices with infiltration are proposed**
  - f. O&M plan including inspection and maintenance schedule and ID of responsible entity **not included**
3. Enhanced Phosphorus Removal Standards (where required) - NA

VILLAGE CODE §196-6. STORMWATER POLLUTION PREVENTION PLANS

- A. No application for approval of a land development activity shall be reviewed until the appropriate approving authority has received a stormwater pollution prevention plan (SWPPP) prepared in accordance with the requirements of this article. **SWPPP has been submitted for review**
- B. All SWPPPs shall provide the following background information, erosion and sediment control, and stormwater management measures relating to stormwater quantity (some requirements are paraphrased for brevity):
  - (1) Background information **included**
  - (2) Site map/construction drawings including the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent offsite surface water(s); wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharge(s). The site map shall be at a scale no smaller than one inch equals 50 feet. **included**
  - (3) Soils description. **not included**
  - (4) Phasing plan. Not more than two acres shall be disturbed at any one time unless otherwise approved. **included but needs revision to restrict disturbance to 2 acres at a time or to request a project-specific maximum**
  - (5) Description of pollution control measures (litter, chemicals, debris). **not included**
  - (6) Description of construction waste materials stored on site and description of controls/storage. **not included**
  - (7) Temporary and permanent structural and vegetative measures for each phase. **A list of the proposed measures is provided but not broken down per phase**

- (8) A site map/construction drawing(s) specifying the location(s), size(s) and length(s) of each erosion and sediment control practice. **included but needs more detail**
  - (9) Dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins. **included**
  - (10) Temporary practices that will be converted to permanent control measures. **included**
  - (11) Implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and duration that each practice will remain in place until the site is stabilized. **included but needs more detail to identify which ESC practices are in place in each phase**
  - (12) Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice. **not included**
  - (13) Name(s) of the receiving water(s) and NYSDEC classification(s), if applicable. **included**
  - (14) Delineation of SWPPP implementation responsibilities for each part of the site. **not included**
  - (15) Description of structural practices designed to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. **included**
  - (16) Any existing data that describes the stormwater runoff at the site. **included**
  - (17) An acknowledgement by the landowner granting to the Village and other agencies having jurisdiction the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. **not included**
  - (18) Description of each postconstruction stormwater management practice, including but not limited to dimensions, material specifications, and installation details for each postconstruction stormwater management practice. **not included**
  - (19) Site map/construction drawing(s) showing the specific location(s) and size(s) of each postconstruction stormwater management practice. **included but additional measures should be provided**
  - (20) Hydrologic and hydraulic analysis for all structural components of the stormwater management system for the applicable design storms, as per the manual specified in § 196-8A(1) herein. **not included**
  - (21) Comparison of postdevelopment stormwater runoff conditions with pre-development conditions. **included but needs more detail**
  - (22) Maintenance schedule to ensure continuous and effective operation of each postconstruction stormwater management practice. **not included**
- C. In addition to the information requirements of § 196-6B, SWPPPs for land development activities disturbing one or more acres, whether or not these land development activities involve discharging a pollutant of concern to either an impaired water identified on the Department's 303(d) list of impaired waters or a total maximum daily load (TMDL) designated watershed for which pollutants in stormwater have been identified as a source of the impairment, must provide the following water quality controls (poststormwater construction controls):
- (1) Description of each postconstruction stormwater management quality practice. **not included**
  - (2) Site map/construction drawing(s) showing the specific location(s) and size(s) of each postconstruction stormwater management quality practice. **not included**
  - (3) Hydrologic and hydraulic analysis for all structural components of the stormwater management quality system for the applicable design storms, as per the manual specified in § 196-8A(1) herein. **not included**

- (4) Dimensions, material specifications and installation details for each postconstruction stormwater management quality practice. **not included**
- (5) Maintenance schedule to ensure continuous and effective operation of each postconstruction stormwater management quality practice. **not included**
- (6) Maintenance easement(s), where required, to ensure access to all stormwater management practices at the site for the purpose of inspection and repair. Easements shall be recorded and shall remain in effect with transfer of title to the property. **Not included but may not be applicable if the stormwater management practices are within the lease controlled by the applicant.**
- (7) Inspection and maintenance agreement recorded and binding on all subsequent landowners served by the on-site stormwater management measures in accordance with § 196-9 of this article. **not included**