

November 01, 2023

Ms. Jean Bubon, AICP
Town Planner
Sturbridge Planning Board
301 Main Street First Floor
Sturbridge, MA 01566

**Re: Peer Review, Stormwater Compliance and Zoning Review #1
Sturbridge PV, LLC – 200 Haynes Street (Formerly 200 Route 15), Sturbridge, MA
CMG ID 2023-218**

Dear Jean,

CMG is providing this letter report detailing our engineering peer review of the stormwater management system design and Application for Site Plan Approval Submission for the proposed Large-Scale Ground-Mounted Solar Energy Facility located at 200 Haynes Street, Sturbridge, MA” (the “Site”).

The project is located on a 13.92 +/- Acre parcel within the “Special Use” zoning district and includes ground mounted solar voltaic arrays, a gravel access road, associated utilities, and an on-site stormwater management system. The proposed project limits are within the Town of Sturbridge Conservation Commission’s 200-FT wetland buffer zone and 500-FT buffer zone of areas with 8% slope or greater to areas subject to protection.

CMG is in receipt of the following documents:

- Site Plan entitled “Ground-Mounted Photovoltaic System, 200 Route 15, Sturbridge, MA” plans, prepared by BSC Group – 349 Main Street, West Yarmouth, MA 02673, dated 8/1/2023.
- Stormwater Management Report entitled “Stormwater Report – Ground-Mounted Photovoltaic System, 200 Route 15, Sturbridge, MA” prepared by BSC Group – 349 Main Street, West Yarmouth, MA 02673, dated April 2023.
- Site Plan Review Application (with Attachments) for 200 Route 15, Sturbridge, MA, prepared by Robinson & Cole – 1 Boston Place, 25th Floor, Boston, MA, received 8/9/2023.

CMG provides the following technical comments for the Board’s consideration based on general good engineering practice, MA DEP Stormwater Management Standards, the Town of Sturbridge Planning Board Stormwater Management Regulations (revised date 9/12/17), Town of Sturbridge Planning Board Rules and Regulations (revised date 9/12/17), Town of Sturbridge Zoning Bylaws (revised 6/5/2023), Town of Sturbridge Wetland Regulations (§365 of Sturbridge Town Bylaws), and the Wetlands Protection Act (310 CMR 10.00):

General Engineering & Stormwater Management Design Comments

1. CMG recommends Applicant coordinate proposed site access with the Sturbridge Fire Department to determine if emergency apparatus can enter and exit the site safely. A truck turn diagram for the Sturbridge Fire Department's apparatus should be provided.
2. Site Grading Plan is difficult to read due to the 1" = 60' scale and does not provide existing elevation contour labels or contour labels on all proposed grading areas.
3. A portion of the proposed solar voltaic panels are proposed within the limits of the proposed steep grades (associated with the Infiltration Basin). Please verify constructability of the panels along this slope.
4. CMG recommends all proposed slopes on the Grading Plan be labelled to identify 2:1 and 3:1 slopes.
5. There is no proposed drain pipe or accompanying design calculations to accommodate existing runoff flow through the Haynes Street roadside swale underneath the proposed driveway apron.
6. Driveway apron construction detail should be provided. More grading detail of this area should also be shown to determine if guard rails are necessary adjacent to the drainage swale on either side of the entrance.
7. Applicant to obtain a Street Entrance Permit from the Department of Public Works.
8. Applicant needs to accurately locate the nearby adjacent septic system at the Sturbridge Crossing Condominium property on Bentwood Drive and verify the distance to the proposed infiltration basin. Proposed Site Infiltration Basin #1 appears to be located approximately 80 feet from the condominium's property line greater than the Massachusetts Stormwater Standards setback requirement of 50 ft. and 310 CMR 15.211 Title V Setback for stormwater infiltration = 25 ft.
9. Site plans show a proposed 7' height chain link fence. CMG recommends a gate detail also be provided.
10. Planting Plan notes planting of trees and shrubs in certain areas but does not provide planting details and/or planting list or schedule.

Stormwater Standard 1: *No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth.*

11. How will runoff from the first 90 +/- ft. of the proposed access driveway apron be routed and treated to prevent runoff flow into the Haynes Street roadway gutter line.
12. Site's interior gravel access road appears to be super elevated with proposed catch basin locations on the high side of the road. Catch basins should be located on the low side in order collect roadway runoff. In addition, CMG recommends catch basin grates be constructed with concrete collars and a detail provided for all locations within the gravel access road.

Stormwater Standard 2: *Stormwater management systems shall be designed so that post development peak discharge rates do not exceed pre-development peak discharge rates.*

13. Stormwater report indicates very small increases to post-development peak rate discharge at several stormwater outfalls during the 2-year and 10-year storm events. CMG recommends Engineer reduce all post-development discharge rates to be equal to or below pre-development conditions.
14. Rational method pipe sizing calculations are not included in the submitted stormwater report for the proposed drain pipes.

Stormwater Standard 3: *Loss of annual recharge of groundwater shall be eliminated or minimized.*

15. Subcatchment Area 1S does not appear to account for the proposed concrete equipment pads. The HydroCAD model, required recharge volume calculations, and required water quality volume calculations should be revised to incorporate the increase in impervious area.
16. The engineer shall revise the Grading Plan to include elevations associated with test pit locations.
17. Estimated seasonal high groundwater elevations in proximity to the infiltration BMP's cannot be determined due to the scale and lack of existing contour labels on the Grading Plan.
18. Infiltration basin side slopes appear to be greater than 3:1.
19. The top of berm elevation for Infiltration Basin #1 is unclear. A minimum 1 ft. of freeboard must be provided during the 100-year storm event. Calculations indicate top of berm = 705 with peak elevation during 100-year storm = 704.4.

Stormwater Standard 4: *Stormwater management systems shall be designed to remove 80% of the average annual post construction load of Total Suspended Solids (TSS).*

20. Section 2.04 of the submitted stormwater report includes a required water quality volume calculation which utilizes a rainfall depth of 0.5". Section 7.03 of the same report includes a water quality volume calculation which utilizes a rainfall depth of 1-inch due to the presence of soils with rapid infiltration rates. CMG is in agreement with the calculation utilized in Section 7.03. The stormwater report should be revised to include the correct WQv calculation in both sections.

Stormwater Standard 5: *Land uses with higher potential pollutant loads (LUHPPL), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.*

Not Applicable – CMG is in agreement the Site is not considered a LUHPPL.

Stormwater Standard 6: *Stormwater discharges within a Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area.*

Not Applicable – CMG is in agreement the project is not a critical area

Stormwater Standard 7: *Redevelopment Projects*

Not Applicable – Site is not a redevelopment project.

Stormwater Standard 8: *Construction period erosion and sedimentation control*

21. The Site is > 1 Acre therefore an NPDES SWPPP is required to be submitted prior to construction. CMG recommends the Planning Board make this a condition of approval.
22. Inlet protection for the proposed catch basins shall be included in the Soil & Sediment Control Plan.
23. Slope stabilization measures, such as an erosion control blanket, shall be implemented for 3:1 slope or greater. The slope for the cut associated with the proposed infiltration basin cannot be determined on the provided 1"=60' scale plan. Slope stabilization measures such as rip-rap armoring may be necessary for slopes steeper than 2:1.
24. Due to the presence of relatively steep slopes, CMG recommends the engineer include silt fence backing as part of the erosion control compost filter sock.
25. Erosion and Sediment control plan should provide properly sized temporary sediment basins and swale locations to control sediment laden runoff during construction.

Stormwater Standard 9: *Long term operation and maintenance plan*

26. Standard Met – a comprehensive long-term operation and maintenance plan is included as part of the submitted stormwater report.

Stormwater Standard 10: *Illicit discharges*

27. A signed Illicit Discharge Statement is not provided within the O&M Plan.

Town of Sturbridge Zoning Bylaws (Article X Solar Energy Facilities):

28. §300-10.3.B.(4) – Applicant proposes to utilize an anti-reflective coating on the solar panel's front glass to mitigate glint and glare. Applicant should provide manufacturer's specifications indicating the specific properties of the anti-reflective coating to document there will be "no" glare. Otherwise, CMG recommends a glare analysis be provided.
29. §300-10.5.A – The proposed equipment pads appear to be located within 100' of the front property line setback.
30. §300-10.5.A – Applicant notes the solar field utilizes approximately 17% of the parcel's square footage. Please provide additional supporting calculations as the limits of the

proposed solar project appear to be larger than 17% of the site's square footage. Only twenty percent (20%) of a parcel's total square footage may be used for a solar facility.

31. §300-10.5.B –The project does not meet the 200' buffer setback from a residential use for the Sturbridge Crossing Condominiums property located to the South.
32. §300-10.6.A –Applicant states there will be no lighting for the project. CMG recommends Applicant verify if there will be security lighting and if so please provide a manufacturer's cut sheet showing it will be a full cut-off dark sky compliant fixture.
33. §300-10.6.E – CMG recommends a cut / fill analysis be provided to document proposed site grading impacts to the property.
34. §300-19.3.B.3 – Applicant is requesting a waiver to not provide a traffic study for the proposed solar project as the project will not generate traffic to and from the subject parcel, with the exception of maintenance visits. CMG defers to the Planning Board regarding this waiver request.

Town of Sturbridge Planning Board Rules & Regulations:

35. §3.01.B.2 – Site Plan Review applications shall include a site plan with a scale of one-inch equals 40 feet (Also See Comment #2).

Town of Sturbridge Wetlands Regulations (Chapter 365):

36. §365-3.4.B & 365-6.2 – Tree cutting is proposed within the 100' to 200' wetland buffer along the north end of the project. Applicant should document compliance with this section based on discussions with the Conservation Commission.
37. §365-3.7.A – The proposed surface stormwater basin does not contain a sediment forebay.
38. §365-3.7.C – Stormwater maintenance plans must be submitted to and approved by the DPW Director before the Sturbridge Conservation Commission will accept them.
39. §365-3.8.A – O&M Plan should be revised to note the Commission prohibits the use of pesticides, fertilizers and herbicides within the 100-foot buffer and prohibits the use of salts, quick release fertilizers and quick release herbicides within the 200' buffer.
40. §365-7.6.B – Plan scale shall be 1"= 20' or as appropriate (Also See Comment 2 & 35)

Please contact me or Rob Lussier if you have any questions at (774) 241-0901.

Sincerely,
CMG



David T. Faist, PE
Principal Engineer



Robert Lussier, EIT
Project Engineer II