Summit Engineering & Survey, Inc.

Rebecca Gendreau
Conservation Agent
Sturbridge Conservation Commission
301 Main Street First Floor
Sturbridge, MA 01566

August 17, 2022

Re: Stormwater Management & Notice of Intent Peer Review #4
150 Charlton Road Sturbridge, MA DEP # CE 300-1115
CMG ID 2021-254

Dear Rebecca,

Summit Engineering offers the following responses to the above referenced peer review letter. The reviewer's comments are briefly summarized in italics followed by our responses in bold:

1. *Summit Engineering's Hydrologic Calculations Report includes a Rational Method Pipe Sizing Worksheet…The following pipe lengths are undersized and not adequate for the 25-year storm event:*
   - *8" pipe between CB-3 & DMH-2*
   - *8" pipe between CB-4 & DMH-2*
   - *12" pipe between DMH-2 & SC-1*
   - *12" pipe between SC-1 & UG Basin*

   The Rational Method Pipe Sizing Worksheet has been eliminated from the report and analysis. The calculations have been prepared using the HydroCAD Stormwater Modeling System. HydroCAD uses the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service (SCS)) TR-20 methodology. The Rational Method was developed for open channel flow conditions. The Towns' preferred underground basin design results surcharging in the pipe network which is not open channel flow leading to erroneous pipe velocities. The Hydrologic calculations have been revised in accordance with SCS to model each catch basin and manhole as a separate pond to allow for surcharging. The post development Subcatchment P-1 has been divided into five (5) smaller Subcatchment to better represent the flow conditions occurring to each structure. The pipe from CB-3 to DMH-2 has been increased to 12" as well as the pipe from SC-2 to UG Basin.

   This modeling approach / change was discussed with the reviewer who was amenable to the change. No requirement is identified in the By-Laws nor Regulations necessitating the use of the Rational Method, it appears to have been a personal preference.

2. *Catch basin and Stormceptor grater inlet capacities are not adequate to handle the 25-year event for the following structures: CB-3, CB-4 and SC-2 based on the information shown on the Rational Method Pipe Sizing Worksheet.*
   As noted above TR-20 methodology substituted for the Rational Method. The plans have been revised to have curb inlets on CB-3 and SC-2 based on the 25-year storm event.

3. *Proposed catch basins are designed with an approximate 3' depth to outlet…evaluate if slab top catch basin structures are necessary.*
   The plans have been revised depicting flat-top catch basins and drain manholes.

4. *The boulder retention wall…should include a subdrain…*
   Retaining wall detail has been revised and weep holes have been added.

5. *An interceptor drain is shown on Sheet C-10.0. It is unclear where the drain is proposed on the site plans.*
   The location of the interceptor drain appears on Sheet 5.

6. *The applicant is proposing a stepped underground infiltration basin, using two different chambers from different manufacturers…interconnection detail…*
   Each of the chamber is manufactured with knockouts of varying diameters allowing various pipe dimeter. Interconnection between the chambers is not an issue since each manufacture allows for various pipe sizes for connection. Stormwater is intended to flow throughout the stone bed seeking level with the void space provided. An additional detail has been added to the detail for clarification.

7. *Grading…dumpster….*
   Additional grading added to Sheet C-4.0.

8. *CMG requests…source information…rip-rap…*
   MassDOT Construction Standards Detail E-206.7.0 have been provided in the appendices as a reference and the plans have been edited to reflect this detail. The previous rip-rap calculations have been removed from the report.

9. *The proposed grading plan…Route 20 may enter site…additional grading…*
   Additional spot grades added to the plan. Please note MassDOT may require additional changes along the access to Route 20. The Conditions of Approval should allow for changes required by MassDOT for pubic safety.

10. *Summit's recharge calculations…revise submission…meet the required 984 c.f…*
    Plans and calculations has been revised to meet the required volume.

11. *TSS removal worksheets….*
    TSS worksheets added to the report.

12. *…Stormceptor…TSS removal efficiency…*
    TSS efficiency added to the report appendices.

13. *Not Applicable…LUHPPL…*
    Correction made to the check list.
14. *Not Applicable…not acritical area…*
    No response required.

15. *Not Applicable…not a redevelopment…*
    No response required.

16. *Limits of the erosion control….not shown…*
    Limits to erosion control added to plans.

17. *No detail provided…stabilization blankets…*
    Detail added to the plans.

18. *Sheet C-6.0…add filter bag to #1…*
    Filter bag added as requested.

19. *…NPDES SWPPP…conditional of approval…*
    Amenable to the requested condition of approval.

20. *…Stormwater BMP…access.*
    All stormwater BMP's have access via the proposed paved surfaces.

21. *Public safety feature…O & M Plan…*
    Requested language added to the O&M Plan.

22. *Estimated operation and maintenance budget….*
    Given the volatility of the current inflation rate and rising energy costs providing long-term operating and maintenance costs would only be a best guess at this time. Given the additional permitting timeframes associated with the Planning Board site plan approval process and MassDOT access permit.

23. *…Stormceptor manufacturers O&M manual…*
    Copy included in the stormwater report appendices.

24. *..O&M…as one stand-alone document…*
    Stormwater report appendices have been reorganized for a more concise location at the end of the report for easier reference.

25. *A signed Illicit Discharge Statement…*
    A signed statement is included in the Stormwater Report.

26. *…stormwater maintenance plans must be submitted to and approved by the DPW Director before the SCC will accept them…*
Stormwater maintenance plans will be submitted to the DPW for approval.

Thank you for your consideration in this matter. Please contact us with any questions or requests for additional information.

Sincerely,
SUMMIT ENGINEERING & SURVEY, INC.

Mikael A. Lassila, P.E.

CC: David T Faist, PE - CMG Engineering Services