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June 1, 2025

Andover Planning Board
Town Office
36 Bartlett Street
Andover, MA 01810

Attn: Ms. Jacki Byerley, Town Planner

RE: Response to Initial Peer Review of the Stormwater Design
Ministers Estates – Definitive Subdivision @ 39 Sunset Rock Road, Andover, MA

The Horsley Witten Group, Inc. performed a peer review of the stormwater design for Ministers Estates and provided comments to the Board as outlined in their letter dated May 12, 2025. The following responses address each of the comments:

STORMWATER REVIEW

1. STANDARD 1:

a. *HW recommends that the Applicant provides the sizing calculations for the level spreader to confirm that no erosion will occur at the outfall…from the basin.*

<u>Response</u>: The level spreader has been removed since there is no discharge for the 2, 10 and 25 year storms and only 0.7 cfs during the 100-yr storm.

2. STANDARD 2:

a. *The total area for pre-development does not match the post-development area. HW recommends that the Applicant revisit the subcatchment areas and revise as necessary. Furthermore, HW notes that separating the pre-development and post-development HydroCAD models simplifies the review.*

<u>Response</u>: The drainage areas and table have been updated. Since there are five (5) separate design points, it seems logical that the pre and post development elements are grouped together for each design point and with the diagram as a guide, it should be easy to follow.

b. *The Applicant has provided NOAA Atlas 14 rainfall data. HW concurs with the precipitation rates utilized in the HydroCAD model.*

<u>Response</u>: No response necessary.

c. *It appears a portion of subcatchment area "E" cuts through a proposed grassed swale that routes to subcatchment area "A-1". HW recommends that the Applicant revisit the catchment area divide and confirm it reflects the proposed topography.*

<u>Response</u>: The drainage area boundary between A-1 and E has been updated and the drainage calculations modified to reflect the change.

e. *The Applicant has provided summary tables for each study point and design storm. Some of the values listed are not consistent with the HydroCAD output provided in the Project Report. HW recommends that the Applicant review the HydroCAD models and revise the summary tables as needed. Furthermore, HW recommends that the Applicant provide the pre- and post-development peak runoff volumes to confirm that the Applicant is controlling the volume per the Stormwater Regulations.*

Response: The summary tables and the HydroCAD model have been updated as recommended. The recharge volumes are presented in section V of the Stormwater Report.

f. *The Applicant has provided exfiltration rates for the various infiltration systems in the Post-Development HydroCAD. HW recommends that the Applicant use the Rawls Rates as provided in Volume 3, Chapter 1, page 1 of the MSH for the respective hydrologic soil groups or justify the values listed with on-site permeability testing.*

Response: The exfiltration rates were determined using the Rawls Rates based on the soils texture class as discussed in the MSH Volume 3 Chapter 1 Page 10 Stage 2)a.

g. *The Applicant has provided a Post-Development HydroCAD model. There are multiple nodes regarding infiltration trenches. (Nodes 24, 34, 44) It is unclear where these trenches are on the plans. HW recommends that the Applicant clearly label these stormwater practices on the Grading & Erosion Control Plan. HW further recommends that the Applicant consider providing a separate plan for the stormwater management and utilities layout.*

Response: The infiltration trenches have been added to the Grading & Erosion Control Plan.

h. *The Applicant has proposed a Stormwater Pond (node 23) in the Post-Development HydroCAD model. It is unclear where this is on the plan. There is a proposed depression area on the southeast corner of the lot, but it does not match in size or elevation. Furthermore, there is no information regarding the overflow spillway or structure information on the plans. HW recommends that the Applicant review the design and revise the HydroCAD model as needed.*

Response: The design and HydroCAD model have been updated.

i. *The Applicant has proposed a Stormwater Basin (node 14) in the Post-Development HydroCAD model. The elevation of the bottom of the basin is not listed on the plan and the size of the basin and the outlets in the HydroCAD model do not match the information provided on the plans. HW recommends that the Applicant review the design and revise the HydroCAD model or the plans for consistency.*

Response: The HydroCAD model, design plans and details have been updated.

j. *The Applicant has proposed a Stormwater Basin (node 14) in the Post-Development HydroCAD model with an outlet control structure. HW recommends that the Applicant add a primary routing out of the structure that represents the outlet pipe and include devices #2 and #3 (the orifices) as shown on the outlet control structure detail.*

Response: The HydroCAD model has been updated to conform with the outlet detail.

k. *It appears that the Applicant is proposing an infiltration basin and trench on the south side of the lot. However, there are no dimensions or details for either of these practices on the plans. HW recommends that the Applicant clarify the design of these proposed stormwater practices and provide details for each.*

Response: Additional information and details have been added to the plans.

l. *The Applicant has provided a standard roof infiltration system detailed on the plans and in the Post-Development HydroCAD model. However, the dimensions of the systems in the HydroCAD model do not match the plans. Furthermore, it appears that the routing of the buildings in the HydroCAD model to the infiltration systems does not match the plans. HW recommends that the Applicant review the design and revise as needed.*

Response: The HydroCAD model, design plans and details have been updated.

n. *The Applicant has detailed the plans for a grassed channel. The detail calls for 1:1 side slope within the grass channel. HW recommends using a 3:1 side slope to reduce erosion along the side slopes of the channel.*

Response: The side slopes have been increased to 2:1. Please note that the velocity in the channel during the 100-year design storm is 0.33 fps.

o. *The Applicant has provided a detail shown on the plans for a grassed channel. This channel is also listed in the Post-Development HydroCAD model. The dimensions of the channel in HydroCAD do not appear to match the plans. Furthermore, the coefficient used for the bottom of the channel is listed as cobblestones. There does not appear to be any indication of cobblestones within the channel on the plans. HW recommends that the Applicant review and revise the HydroCAD model to reflect the detail shown on the plans.*

Response: The grassed channel, detail plans and HydroCAD model have been revised and are consistent.

p. *The Applicant has provided a detail shown on the plans for a grassed channel in the Post-Development HydroCAD model. The elevation of the flared end section (HW#2) does not match the start elevation of the grassed channel in the HydroCAD model. HW recommends that the Applicant review and revise the HydroCAD model or the plans as needed.*

Response: See response above.

q. *The Applicant has modeled several rooftop infiltration trenches as drywells in the HydroCAD model. HW recommends that the Applicant confirm the elevation of each trench that corresponds with the design elevations on the plans.*

Response: The HydroCAD model, design plans and details have been updated.

r. *The Applicant has conducted several test pits over the entire site. It appears that the estimated seasonal high groundwater (ESHGW) ranges onsite from 48 inches to 68 inches below existing grade. The proposed grade is about the same elevation as the existing grade in several areas. Several proposed infiltration trenches and basins do not have adequate separation from ESHGW. A minimum of two feet of separation from the ESHGW is required for infiltration practices, and four feet of separation is required for infiltration without a mounding analysis. HW recommends that the Applicant review the infiltration practices as they relate to the elevation of ESHGW and revise accordingly.*

Response: The HydroCAD model, design plans and details have been updated.

3. STANDARD 3

a. *It does not appear that the Applicant has provided recharge calculations as part of the Stormwater Report. HW recommends that the Applicant provide a summary of the required recharge calculations for the site in accordance with the MSH Volume 3, Chapter 1, page 15.*

Response: The recharge calculations are provided in Section V of the Project Stormwater Report.

4. STANDARD 4

a. *Per the Town Stormwater Regulations Section IX.D.1, stormwater systems shall be designed to remove a percentage of total suspended solids and total phosphorus. The Applicant has not provided TSS or TP removal calculations for this project. HW recommends that the Applicant submit documentation to confirm removal at the new development specified rate.*

Response: The TSS Removal Calculations are provided in Section of the Project Stormwater Report. The Recharge Calculations are provided in Section V of the Project Stormwater Report. The Stormwater Regulations Section IX.D.1.a states the "Average annual pollutant removal requirements for TSS and TP are met through one of the following methods:... (2) Retaining the volume of runoff equivalent to, or greater than:... (a) For new developments, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site."

5. STANDARD 5

a. *Standard 5 is not applicable.*

6. STANDARD 6

a. *No further action is requested.*

7. STANDARD 7

a. *No further action is requested.*

8. STANDARD 8

a. *The proposed project will be disturbing greater than one acre of land. A SWPPP is required by EPA for land disturbance of greater than 1 acre. The Applicant has provided recommended erosion controls to be included in a SWPPP in Section V. of the Stormwater Report. The SWPPP should include source control and pollution prevention measures, stormwater practices to address erosion and sedimentation, stabilization measures, and procedures for operating and maintaining the proposed stormwater practices. The plan should also identify the parties responsible for implementing the plan. HW recommends that the Planning Board requires receipt of a final signed SWPPP a minimum of 14 days prior to land disturbance.*

Response: No response necessary.

b. *The Applicant has provided a Grading and Erosion Control Plan, Sheet 4 of 7, that includes an erosion control barrier. HW recommends that the Applicant provide a separate Erosion Control Plan and illustrates where the construction entrance will be located, any stockpiles, and the proposed silt sacks.*

Response: A separate Erosion Control Plan has been prepared and is included in the plan set.

9. STANDARD 9

a. *In the Stormwater Management Report, the Applicant has provided some descriptions as part of a Long-Term O&M Plan. HW recommends that the Applicant provides a standalone O&M Plan to the Planning Board that includes the entire subdivision. The O&M Plan should include the parties responsible, descriptions of the various stormwater practices, clear descriptions of how they should be maintained and the frequency of inspections. A simple inspection log with a schedule, a simple sketch to illustrate where the practices are located on the site, and a budget, so that the property owner understands what to expect.*

Response: The Operation and Maintenance Plan is included in the Project Stormwater Report in Section XI.

10. STANDARD 10

a. *No further action is requested.*

Should you require any additional information or questions concerning the responses, please do not hesitate to contact me at your convenience.

Sincerely,

Daniel Koravos, P.E.
DK Engineering LLC