DK Engineering LLC

Address: 59 Granite Lane, Chester, NH 03036
Tel. (603) 505-5226 ◆ E-mail dan@dke.llc

July 7, 2025

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

Attn: Ms. Jacki Byerley, Town Planner

RE: Response to 2nd 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 June 20, 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.

06/20/25: *HW recommends that the Applicant includes the flared end section on the Infiltration Basin Overflow Outlet Detail provided on Sheet 7.*

Response: The flared end section has been added to the outlet detail on Sheet 7 with a note referencing the Erosion Stone for Drainage Outlet detail on the same sheet.

2. STANDARD 2:

f. 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.

06/20/25: *The Applicant has labeled the infiltration trenches on the Grading and Drainage plan. It is unclear how these trenches are connected or receive stormwater. HW recommends that the Applicant clarify the design intent and use in the stormwater narrative and on the grading plans. Furthermore, HW recommends that the Applicant review the setback requirements from slopes as listed in Volume 2, Chapter 2, page 97 of the MSH and confirm the placement of the trenches complies with the requirements.*

Response: Area drains have been added on the upgradient side of the infiltration trenches will allow surface runoff to enter the systems. Most of the inflow to Trench #1 enters from the depression and inlet basin to the east of the trench. The average slope within 100 feet of the infiltration trenches does not exceed 20 percent per Massachusetts Stormwater Handbook.

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.

06/20/25: *HW recommends that the Applicant adjust the HydroCAD model to reflect the slope on the plans, changing the manning coefficient to 'clean and straight' for this ditch and all other swales, and adding a pond node for the circular structure prior to Infiltration Trench 1 (B24) to confirm that the stormwater from the ditch is fully captured and not flowing off property.*

Response: The slope has been updated in the model and the manning's coefficient changed "clean and straight". Pond B23 (please note that some of the node numbers have changed) was added and labeled as Inlet. The calculations show that the stormwater is fully captured.

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.

06/20/25: *The Applicant has listed the Infiltration Basin elevations on the Drainage Detail Sheet. HW suggests that the Applicant includes the peak elevations of the various storm events modeled. HW further recommends that the Applicant label the inverts and pipe sizes on the Grading Plan (Sheet 4).*

Response: The Infiltration Basin design storm ponding elevations have been added to the Infiltration Overflow Outlet Detail and the inverts and pipe sizes have been added to the grading plan.

j. 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.

06/20/25: *The Applicant has included three infiltration trenches along the south side of the parcel. Some design information has been provided under the Infiltration System Typical Detail on the Drainage Detail Sheet. It is unclear how Infiltration Trench #2 or #3 is connected to Trench #1. As noted above, there is a circular structure at the end of a grassed swale along Sunset Rock Road that appears to be piped to Infiltration Trench #1 that is not labeled. HW recommends clarifying this on the plans. HW further recommends labeling all drainage structures and inverts on the Grading Plan for continuity. The outlet devices included in the HydroCAD model are not shown on the design plans.*

Response: The information has been added to the Grading Plan as recommended.

j. 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.

06/20/25: *The Applicant has updated the HydroCAD model to match the plans. HW notes that the information for Building #2 and Building #4 is not consistent between Sheet 7 and the HydroCAD model. HW recommends that the Applicant review the Table provided on Sheet 7. It also appears that some of the downspout's routing and invert elevations of the pipes may be exposed based on the surrounding grades. HW recommends that the Applicant confirm there is adequate cover over the drainage pipes leading to the infiltration systems specifically for Lots 1 and 2 and adjust the grading if necessary.*

Response: The table has been updated and is consistent with the HydroCAD model. The connections to the drywell systems on buildings 2 and 4 have been revised and there is adequate cover over the drainage pipes.

n. 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.

06/20/25: *The Applicant has updated the HydroCAD model. HW recommends that the Applicant adjust the HydroCAD model to reflect clean and straight channel bed instead of 'dense weeds'. See comment 2g.*

Response: The grass channel is a curvilinear and it is anticipated that dense weeds will take root, therefore, it is believed that the manning's coefficient is appropriate.

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.

06/20/25: *The Applicant has provided recharge calculations in Section V of the Project Stormwater Report. The Applicant used a total impervious area of 5,037 sf for Treatment Train #1 in the Required Recharge Volume calculations. HW believes this value is closer to 9,228 sf. It does not appear that the Applicant has included the storage provided in Trench #2 or #3 in the Provided Recharge Volume calculations. In HW's opinion the Applicant has provided adequate recharge, however we were not able to confirm the values provided. HW recommends that the Applicant revisit the calculations and for documentation purposes clearly outline the proposed impervious areas and the provided recharge volumes.*

Response: The areas have been updated and the additional calculations provided.

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.

06/20/25: *The Applicant has provided water quality treatment train diagrams showing the percentage of TSS removal. However, it does not appear that the Applicant has submitted documentation showing the total phosphorus load and removal calculations for the site. HW's previous comment stands.*

Response: As mentioned in the previous response, 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." Based on the regulations, it does not appear that the requested information is necessary.

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.

06/20/25: **Suggested Condition of Approval.**

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.

06/20/25: *The Applicant has included an Operation & Maintenance (O&M) Plan in Appendix XI of the Stormwater Management Report. HW recommends that the O&M Plan for the long-term maintenance of the stormwater practices is provided as a standalone document that is provided to the party responsible for long-term maintenance. The document should include the name of the parties responsible, whether the Town of Andover or a Homeowners Association (HOA). Furthermore, a simple sketch to illustrate where the practices are located on the site should be attached to the O&M Plan.*

Response: A separate Operation & Maintenance Plan has been prepared with the responsible party identified and including a sketch of the BMP locations.

11. ADDITIONAL COMMENT

a. During the site visit, the proposed water line loop was discussed. It appears that the trees behind proposed Lots 4 and 5 will need to be removed to install and maintain the water line per the Town's requirements. HW recommends that the Applicant clearly illustrate the proposed tree line on the site plans taking into consideration the location of the new water line.

Response: The tree line has been adjusted to eliminate trees within the water easement at the rear of lots 4 and 5 as recommended. The Grading Plan and drainage calculations have been updated.

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