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May 12, 2024

Ms. Jacki Byerley, Planner
Andover Planning Board
Town Office
36 Bartlett Street
Andover, MA 01810

Re: Initial Peer Review of the Stormwater Design
Ministers Estates Subdivision
39 Sunset Rock Road, Andover, MA

Dear Ms. Byerley and Members of the Board:

The Horsley Witten Group, Inc. (HW) is pleased to provide the Andover Planning Board with this letter summarizing our initial peer review of the stormwater management for the proposed Ministers Estates definitive subdivision located at 39 Sunset Rock Road in Andover, Massachusetts. We understand that Ministers Lane LLC (Applicant) has applied for the Approval of Definitive Plan for a five-lot subdivision on a 4.90-acre parcel. The Applicant is proposing to construct a 480-foot-long cul-de-sac, with sewer, water, and stormwater management to access the five proposed house lots. The stormwater management includes deep sump catch basins, a grassed swale, and a detention basin with a forebay. The roof runoff from the individual houses will be managed by subsurface infiltration chambers. No wetlands are indicated on the Existing Conditions Plan.

The following documents and plans were received by HW for review:

- Application for Approval of Definitive Plan Ministers Estates, prepared by Ministers Lane, LLC, dated April 14, 2025 (2 pages);
- Stormwater Report, Ministers Estates, prepared by DK Engineering LLC, dated April 14, 2025 (90 pages);
- Report to Accompany Application for Special Permit for Earth Movement, Ministers Estates, prepared by DK Engineering, LLC, dated April 14, 2025 (33 pages);
- Illicit Discharge Compliance Statement, prepared by Ministers Lane, LLC, dated April 14, 2025 (1 page); and
- Definitive Subdivision Plan - Ministers Estates, prepared by DK Engineering LLC, dated April 14, 2025 (7 pages) which includes:
    - Title Sheet 1 of 7
    - Definitive Subdivision Plan 2 of 7
    - Existing Conditions Plan 3 of 7
    - Grading & Erosion Control Plan 4 of 7
    - Plan & Profile Sheet 5 of 7

- Detail Sheet – Drainage & Erosion Control 6 of 7
- Detail Sheet – Miscellaneous 7 of 7

Stormwater Review

HW has reviewed the documents listed above and has the following comments concerning the stormwater management design in accordance with the Massachusetts Stormwater Handbook (MSH) dated February 2008, and the Town of Andover Stormwater Management and Erosion Control Regulations amended May 11, 2021 (Stormwater Regulations).

In accordance with Section VI. B. of the Andover Stormwater Regulations the Stormwater Management Permit and Narrative provided by the Applicant shall contain sufficient information to verify compliance with the local Stormwater Bylaw and the MassDEP Stormwater Management Handbook (MSH). Below are comments relating to the standards as presented in the MSH. Where the more stringent requirements of the Andover Stormwater Regulations are applicable, those comments are included.

1. *Standard 1: No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly or cause erosion in wetlands or waters of the Commonwealth.*
   a. The Applicant has analyzed the pre- and post-development stormwater runoff for the site. Under existing conditions, the site sheet flows to five different study points along the edges of the property. Under proposed conditions, the roof tops, driveways, and roadways will increase the area of impervious cover. Runoff from most of the proposed impervious cover is directed to either subsurface infiltration systems or to grassed swales that lead to an infiltration trench onsite or to an extended detention basin located on the west side of the development. The outfall from the detention basin will be discharged via an outlet control structure through a level spreader and offsite. HW recommends that the Applicant provides the sizing calculations for the level spreader to confirm that no erosion will occur at the outfall.
2. *Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*
   a. HW has reviewed the Pre-Development and Post-Development Drainage Maps and the HydroCAD model. 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.
   b. The Applicant has provided NOAA Atlas 14 rainfall data. HW concurs with the precipitation rates utilized in the HydroCAD model.
   c. The Applicant has provided a Post-Development Drainage Map. 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.
   d. 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.

e. 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.

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.

g. 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.

h. 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.

i. 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.

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.

k. 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.

l. 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.

m. 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.

n. 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.

o. 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.

p. 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.

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

   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.

4. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1-inch of volume from the impervious area for water quality. The Town of Andover requires stormwater management systems to remove TSS at a rate of 90% and total Phosphorus at a rate of 60% for new projects and 80% and 50%, respectively for redevelopment projects.*

   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.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

   a. HW notes that a residential development is not considered a land use of higher potential pollutant load. Therefore, Standard 5 is not applicable.

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II, or an Interim Wellhead Protection Area of a public water supply.*

   a. The proposed development is not discharging near or into a critical area, Zone II, or an IWPA area; therefore Standard 6 is not applicable. No further action is requested.

7. *Standard 7 is related to projects considered Redevelopment.*

   a. The project at 39 Sunset Rock Road is considered a new development, and therefore, Standard 7 is not applicable. No further action is requested.

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation, or other pollutant sources.*
    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.
    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.
9. *Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan to be provided.*
    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.
10. *Standard 10 requires an Illicit Discharge Compliance Statement be provided.*
    a. The Applicant has provided a signed Illicit Discharge Compliance Statement. No further action is requested.

Conclusions

HW recommends that the Applicant provide a written response to address these comments as part of the permitting process. The Applicant is advised that the provision of these comments does not relieve him/her of the responsibility to comply with all Town of Andover Codes and By-Laws, Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Bernardo at 508-833-6600 or at jbernardo@horsleywitten.com if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.

Janet Carter Bernardo, P.E.
Principal

Steve Stanish, P.E.
Senior Engineer