

January 31, 2022 (rev 02-06-22_

To: Alaa M. Abusalah
Director of Development & Inspectional
Services/Town Planner
3 Washburn Square
Leicester, Massachusetts 01524

A&M Project #: 2889-01
Re: Skyview Estates
Special Permit /
Site Plan Review
Town & Engineer Comments
651 Main Street
Map 21/Parcel B5.1

Copy:

Dear Ms. Abusalah,

Please find Allen & Major Associates, Inc. (A&M) responses to the review letter prepared by Quinn Engineering Inc., dated January 28, 2022, in reference to the Skyview Estates Major Site Plan Review and Special Permit Applications, to be located along Main Street in Leicester, Massachusetts.

Plan Comments:

1. *This site presents exceptional challenges for earthwork: steep slopes exist, wet conditions frequently prevail, and the native soils will be difficult to work with particularly under saturated conditions. It would be appropriate to execute site earthwork in phases, to limit the area of soil disruption and exposed soil surfaces at any one time. Each phase must have a plan for controlling runoff and groundwater, and stabilizing soils. Failure to implement an appropriate plan for managing earthwork risks enormous problems with soil instability, erosion and sediment transport and with runoff.*

Response: The Site Preparation Plan, sheet C-100, outlines the anticipated phasing of the project. The information shown on the plans illustrates measures anticipated to be taken, however the limits of each phase may be adjusted depending on the contractor performing the work, which cannot be fully envisioned at this time, nor is it customary to have a contractor on board during the permitting process. Details of the phasing of the construction, are typically handled and outlined during the pre-construction meeting on-site once the project is approved.

2. *On Sheet C-100 project phases of the site development are identified. The Engineer must identify what each phase represents: if phasing is intended to permit building construction and seek occupancy of dwellings by phase, it must be clearly defined to Leicester Planning Board.*

Response: It is anticipated that this project will be constructed under a general sequence similar to a typical subdivision whereas the roadway network, drainage infrastructure and utilities would be constructed first prior to the commencement of any building construction. This is outlined in the general construction sequence noted on Sheet C-100 and further described in Phase 2 note #5.

3. *The submitted plans are found to be incomplete in relation to requirements for Site Plans. The following required plan information is not found:*

a.) *Porches or decks on each dwelling not shown. It is understood from applicant that porches or decks are planned for each unit. (REF: Site Plan Review Regulations, Section II, F, 2)*

Response: The specific type and configuration of the decks are not fully envisioned at this time. Unit specific plans would be submitted during the building permit process. However a prototypical layout has been illustrated on Sheet C-001.

b.) *Locations of sidewalks to dwellings not shown. (REF: Site Plan Review Regulations, Section II, F, 4)*

Response: As stated in our 12-14-2021 response letter, there are no separate sidewalks to the dwelling units as access is incorporated within the paved driveways. Refer to Sheet C-001 for further information.

c.) *Proposed landscaping not shown. (REF: Site Plan Review Regulations, Section II, F, 6)*

Response: Street trees are shown on the previously submitted plans which would be common for this type of development. As stated in our 12-14-2021 response letter, landscaping around the individual units may vary depending on occupants, a more detailed landscaping plan will be provided during the building permit phase as noted on the plans. However a prototypical layout has been illustrated on Sheet C-001.

d.) *Proposed water and sewer services to individual dwellings not found on plan; roof drywells from each dwelling not found on plan. (REF: Site Plan Review Regulations, Section II, F, 7)*

Response: The main collection system for both water & sewer have been shown on the previously submitted plans. Due to the nature of the units, final architectural plan have not been developed, however the individual water & sewer connections can be illustrated on the plans. However a prototypical layout has been illustrated on Sheet C-001

e.) *Plans do not identify the location where earth removal or filling will take place, nor the volume of material to be moved. (REF: Site Plan Review Regulations, Section II, F, 9)*

Response: Limits of excavation & re-fill are illustrated through the use of contours as shown on Sheet C-102 (Overall Grading & Drainage Plan) and including the approximate quantity of material being moved. To better illustrate the difference between cut (excavation) and fill, see Sheet C-102d for further clarification.

f.) *Plans do not identify proposed lighting at driveways. (REF: Site Plan Review Regulations, Section II, F, 5)*

Response: A prototypical layout has been illustrated on Sheet C-001 illustrating the location of referenced driveway lights.

4. *The Engineer must document the status of this project in relation to the Watershed Protection Overlay District (WPOD) bylaw. §7.1.04, (2), Special Permit Uses states that uses which render impervious more than 15% or 2500 square feet of any lot, but not greater than 30% are subject to Special Permit.*

Response: A Special Permit application has been to be submitted to the Zoning Board of Appeals to address this condition. Based upon the previously submitted drainage analysis and plans, we respectfully request that this be made a condition of approval.

5. *The Engineer should document the status of this project in relation to §5.16, Earth Filling & Removal.*

Response: As the project will exceed the removal of 1,000 cubic yards of material, a Special Permit would need to be obtained from the Planning Board. As Planning Board is the same permit granting authority for this Special Permit and Site Plan Approval, these could be granted simultaneously based upon the updated plans better illustrating the limits of cut and fill. Refer to Sheet C-102d.

6. *The plan cover sheet identifies the project as "Definitive Subdivision" however, subdividing the property is not part of the development.*

Response: The cover sheet has been updated to state "Definitive Site Plans ...".

7. *The submission package states in many locations that 49 duplex units are proposed, but the number of duplex houses depicted does not equal 49. In a meeting on January 11, 2022, it was understood from the applicant that frontage lots on Main Street would not be included as part of the site development. As this application stands currently, however, those frontage lots are included as part of the Special Permit and Site Plan Review applications. Among the references to the number of dwellings or buildings:*

- *Special Permit Application identifies 49 duplex units*
- *Plan Sheet C-101 identifies Lots 2, 3 and 4 as part of the Site Plan.*
- *Plan Sheet C-102 identifies "98 Units", presumed to mean 98 dwelling units.*
- *The Zoning Table on Sheet C-101 identifies Lots 1, 2, 3, 4 and 5*
- *The narrative identifies 49 duplex units, page 1 of 10.*
- *The narrative identifies 49 duplex units, and provides a summary table with Lots 1, 2, 3, 4 and 5.*

Response: To clarify, there will be the construction of 49 duplex units as part of the total project under review as illustrated on the site plans and the narrative. Each duplex consists of 2 dwelling units for a total of 98 dwelling units. For purposes of clarification, 3 duplexes (6 dwelling units) will have direct access to Main Street and as such would not be included in the overall homeowner's association agreement, but within the site plan review. The creation of those lots will handled through the ANR process, however the site development of those lots would still be included in the general site plan review process.

8. *In a meeting on January 11, 2022, the applicant indicated that Colonial Drive extension would be deleted from plans, as an Emergency Access Road. This office does not object to eliminating Colonial Drive Extension as an Emergency Access road, due to the severe slopes and difficulties for fire apparatus to negotiate the existing section of Colonial Drive. It is anticipated that future plan revisions will reflect the elimination of Colonial Drive Extension.*

Response: The revised plans have removed the connection to Colonial Drive.

9. *"Trash Enclosures" are identified in three locations on Plan Sheets C-101, C-101A and C-101B. The Applicant's proposal package should identify how solid waste removal will be handled.*

Response: Trash enclosures have been centrally located throughout the project and further explanation for trash removal will be provided to the residents through the homeowner's association agreement. The removal of trash from the "trash enclosures" will be handled by a private trash removal company authorized to do business in the Commonwealth and contracted by the property management company.

10. *Subdrains should be clearly identified on utility plans on both sides of all roadways onsite, to control groundwater in the road base. The entire site is located in earthwork cut areas.*

Response: We agree that subdrains are prudent within deep cut areas of the roadway, although as illustrated on the Sheet C-201 and C-202 there are many areas where the cut depth is less than the typical roadway construction subbase. The updated plans illustrate the installation of subdrain only in roadway areas which exceed 2.5 feet of excavation, see Sheet C-102A, C-102B, C-102C.

11. *Given the likelihood of high groundwater tables in the area, test pits should be conducted on all proposed roads in locations of cuts.*

Response: In our professional opinion, this request is excessive regardless of any presumptions of high groundwater. This obligation to conduct test pits along a full roadway network is not a requirement of a traditional subdivision, nor site plan review. This requirement should it be made a condition of this site review process would subject the Applicant to unequal treatment in violation of current statutes.

12. *On Sheets C-101A, C-101B, C-101C plan notes which provide elevations on Catch Basins, Drain Manholes and Sewer Manholes are overlaid over other information, resulting in many unreadable notes.*

Response: The updated plan have been re-vamped to be more readable.

13. *Virtually the entire development area will be subject to earthwork cuts. As a result, preserving trees or vegetation will be impossible in these areas. Leicester Planning Board may wish to require a revegetation plan, inclusive of street trees, to reestablish trees and growth onsite.*

Response: As shown on the previously submitted plans, street trees are shown to be installed in addition to the individual landscaping that will be incorporated at each duplex unit. See Sheet C-001 & C-101.

14. *In lieu of street lights, the Applicant has proposed to install lights at the ends of individual driveways. Before Leicester Planning Board considers this request, it is recommended that information be provided on the luminaire and post as well as a photometric plan, which documents the intensity of the proposed lighting.*

Response: Due to the nature of the lighting being proposed, a photometric plan is impractical as the final architectural plan have not been developed. However a prototypical luminaire has been shown on the unit legend, see Sheet C-001. This luminaire is stated to be "Dark Sky" compliant which is accordance with site plan and zoning regulations.

15. *No details for construction of the Emergency Access Road are found. Details defining the width, asphalt pavement surface and gravel base must be provided for the Emergency Access Road.*

Response: The width of the emergency access road has been illustrated on the plans. The detail for the pavement construction & base materials is shown on Sheet C-202.

16. *Regarding parking, Leicester Planning Board may wish the Applicant address guest parking onsite.*

Response: As stated previously both in the project narrative, our 12-14-2021 response letter, and recent public hearings that each residential dwelling will include a two car garage and paved driveway to reasonably accommodate two additional vehicles. As the current proposed project has a minimum of 2 spaces per dwelling unit which exceeds that of the published zoning information. Requiring a increase to what is currently provided would subject the Applicant to unequal treatment.

17. *It is understood that dwellings will have a porch or deck on the rear of each unit. There are four buildings on the west side of the site (Skyview Drive, STA 21+50 – STA 24+50 left) in which the rear of the home is at rear-yard setback. Absent zoning relief, these units cannot have a porch or deck.*

Response: Understood. As the final architectural plan have not been developed, location of the deck can be adjusted for these units so as to not encroach on the setback. No dimensional relief is requested at this time.

18. *If wetland flags 47 – 54 and B1 – B11 delineate wetlands jurisdictional under the Massachusetts Wetland Protection Act, a Notice of Intent must be filed with Leicester Conservation Commission.*

Response: A Notice of Intent has already been filed with the Leicester Conservation Commission and as discussed during the public hearing, since the intention of the project was to remove the connection to Colonial Drive, there would be no other encroachments into jurisdictional areas. As such a "Negative Determination" was granted by the Conservation Commission based on no direct impacts to jurisdictional area. As the project still maintains no direct impacts to jurisdictional areas, no further permitting is necessary.

19. *In cut areas, side slopes of 2:1 are proposed. Concerns exist for slope stability as well as surface erosion. In locations of deep cuts, it must be anticipated that soils may be saturated at times, and that groundwater will express from sideslopes, contributing to destabilizing forces. Detail 2 on Sheet C-501 must be specified to pertain to all slopes 3:1 or steeper, and does not address soil stability, only erosion protection.*

Response: The detail will be enhance to address the potential of seepage from cut slopes. See Erosion Control Note #19 on Sheets C-100, C-100A, C-100B, & C-100C

Pertaining to drainage design:

20. The HydroCAD report indicates that post-development flow rates into the existing swale located on the northwest side of the site (modeled as Reach R-02) will be increased substantially over the pre-development rates (37.51 cfs pre-development vs 58.90 cfs post-development). Any increase in flow into this swale risks overflowing to the rear of properties on Main Street. Any design which creates an increase in stormwater flowing into this swale is unacceptable.

Response: The original modeling of the existing swale did not fully account for the potential capacity of the conveyance swale. The model has been updated to address the removal of the emergency access which changed the flow characteristics to the existing swale and which illustrates a decrease to this swale.

21. Drains from Detention Structures DS-1A and DS-1B both connect into existing catch basins in Main Street. Drains must connect into drain manholes, not catch basins.

Response: As stated in our 12-14-2021 response letter, The current drainage system within Main Street is a modified "country drainage" system comprised of two catch basins along each side of the pavement with a single discharge to the north side of Main Street. As this system is limited to two inlets and a single outlet, there are no manholes within the roadway. As such, the connection is made to the catch basin.

22. Detention systems are proposed in three locations on plan, which utilize "Retain-It" underground chambers. Engineer must provide buoyancy calculations, documenting that the chambers are stable against flotation under high groundwater conditions, while empty.

Response: As stated in our 12-14-2021 response letter, buoyancy calculations will be included as part of the shop drawing process for the specific systems. See note #4 on detail 2 & 3 on Sheet C-504.

23. Swales along the sides of Skyline Drive, beginning at Station 0+00 extending upgrade are steep, and may carry flow at erosive velocities. Engineer must determine velocities of flow in the swales and design appropriate protections to withstand velocity.

Response: The swales have been evaluated for velocity and surface treatments have been noted. See Sheet C-102C and drainage report appendix.

24. Engineer must document that Catch Basins CB-03 and CB-09 on Skyline Drive, have sufficient "grate capacity" to admit design flow. Catch basins must be designed to capture storm flow at design velocity.

Response: These structures have been noted to be fitted with vane style grates for added inlet capacity. See and drainage report appendix.

25. Hydrology calculations indicate that 10 large dry wells will be installed onsite. Dry well locations not found on plan. Plans must specify:

a.) Dry well locations.

b.) Drains to convey the roof runoff from the building to the dry well

c.) A note requiring that each building must have roof gutters and downspouts to collect roof runoff

Response: As stated in our 12-14-2021 response letter, the plans have the location of drywells indicated. However an enlarged prototypical layout has been shown on Sheet C-001 to better illustrate the drywell locations.

26. A note on plan Sheet C-102A states that dry wells will be installed for each structure. This note must be corrected when the drywell design is finalized.

Response: As stated in our 12-14-2021 response letter, additional test pits will need to be conducted at these specific locations. In our opinion, no additional note updates are required.

27. *Per Massachusetts DEP Stormwater Management Policy, field test pit evaluations of soils must be conducted at all dry well locations to determine soil suitability and compliance with groundwater separation requirements.*

Response: As stated in our 12-14-2021 response letter, additional test pits will need to be conducted at these specific locations. A note was added to the plan calling for the extra test pits information.

28. *In the hydrologic analysis, under the 100-year storm, Detention Basin 1 discharges water over the Emergency Spillway. Water should not discharge over the Emergency Spillway under any design storm.*

Response: This is not an accurate statement as the Mass Stormwater Handbook states "All extended dry detention basins must have an emergency spillway capable of bypassing runoff from large storms without damaging the impounding structure. In our profession opinion the 100-year event would be deemed a "large" storm and even though there is flow experienced at the emergency spillway at the 100-year event, there is still the require 1 foot of free board within the basis as well as decrease in the rate at the corresponding study point.

29. *Detail 8, on plan sheet C-506 the detail for Outlet Control Structure should be identified as OCS-04.*

Response: The notation of the detail has been corrected. See detail 7 on Sheet C-503

30. *No detail is found for Outlet Control Structure OCS-05.*

Response: A detail has been added to the updated plans. See detail 7 on Sheet C-503

31. *On Detail 1, plan sheet C-504, the length specified (12") should be the length of each gabion structure (250 feet and 80 feet).*

Response: The detail has been updated.

32. *The HydroCAD report page 170, indicates that in the gabion outlet structure downstream of OCS-04, the HDPE distribution lines will have 80 – 2" diameter orifices drilled for each row, but the plan indicates that orifices will be drilled 24" on center, for a total of 40 orifices. The plan should be corrected to reflect the analysis.*

Response: The plan has been updated to correspond to the model.

33. *Engineer must document that the drywell design meets the volumetric standard for recharge under the Massachusetts Stormwater Management Policy.*

Response: As noted in the HydroCAD model, each drywell has the capacity of 0.005af (196 cubic feet) of storage. Refer to nodes DW-1 through DW-12 which has consolidated the proposed drywells.

Summary for Pond DW-11: House Drywell

System sized based on standard 1,000g drywell at each dwelling unit.
Storage multiplier added to account for number of dwelling units with subcatchment.
Area multiplier adjusted to the account for the percentage of roof area within subcatchment.

Additionally as noted in the appendix of the previously submitted drainage analysis, there is to be 98 drywells installed (1 for each dwelling unit) which in combination exceed the required recharge.

Total Site Volume required to be recharged =
 $416,172 \text{ sf} \times 1" / 12 \times 0.25 \text{ in} = 8,794 \text{ cf}$

Site volume recharge provided by = volume within residential drywells
98 Drywells at each grouping of homes Volume= 196

= 19,208 c.f. Total Volume Recharged > 8,794 cf (OK)

34. A drain manhole and 15-inch drain from Detention Structure DS-1A are proposed on a parcel of land which will be divided from Skyview Estates, to become private property. An easement must be provided for this drainage to be located on private property.

Response: As stated in our 12-14-2021 response letter, upon acceptance of the site plan, including the location of the specific drainage systems, easements will be illustrated on the final plans.

35. A utility pole exists at the intersection of Skyview Drive and Main Street, and must be relocated.

Response: Understood and a note had already been included on the plans calling attention to this.

36. Engineer indicates that Contech proprietary stormwater treatment units will be used for removal of sediment from stormwater. Plans do not identify treatment units' locations, nor model of Contech treatment unit. The appropriate model of treatment unit must be specified at each location, to accommodate the flow characteristics at each.

Response: The location of the Contech treatment devices has been more clearly noted on the plan sheets and details added to the plans.

37. Plan Sheet C-102B identifies the outlet from OCS-02 as 18-inch diameter culvert, however on page 162, the HydroCAD report modeled the outlet from OCS-02 as 24-inch diameter. The plans must be revised to reflect the model.

Response: The plans have been updated to match the hydraulic model.

38. Detention Structure DS-1B is designed beneath the Emergency Access Road. The Retain-It structure must be specified to sustain HS-20 wheel loading.

Response: The precast structures will be H-20 loading.

39. Parts of Detention Structure DS-1A are exceptionally deep underground. The south west corner of the chambers will have approximately 26 feet of fill over the top of it; constructing this structure will require excavating to a depth approximately 37 feet below the existing grade over the southwest corner. From a practicality standpoint, it would be appropriate to revise the design to reduce the depth of the structure.

Response: The configuration of this specific system has been updated to a non-traditional shape to aid the constructability of the system.

40. If Detention Structure DS-1A is not redesigned, the manufacturer must provide certification that the structure will sustain this exceptional soil loading.

Response: Response: As stated in our 12-14-2021 response letter, shop drawing (stamped by a profession engineer licensed in the Commonwealth) for the specific systems will be required.

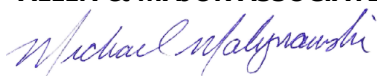
41. The HydroCAD analysis indicates that the 30-inch diameter culvert which flows into Detention Basin #1 discharges stormwater at rates of up to 54.64 cfs. This exceptionally high-velocity flow will erode and disrupt the floor of the basin, and any vegetation growing. An energy dissipater must be designed at the outlet, to break up and disperse the flow at safe velocities.

Response: There was a misinterpretation of the data by the reviewer whereas at the 100-yr storm event only 37.87cfs was encountered at the culvert. We agree that a stone lined energy dissipation mat is required has been added to the flared end section. Supporting calculations for the size and stone diameter have been included in the updated hydraulic calculations.

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Very Truly Yours,

ALLEN & MAJOR ASSOCIATES, INC.



Michael A. Malynowski, PE - Senior Project Manager