

January 26, 2021, **UPDATED** April 16, 2021

Town of Lynnfield Planning Board  
c/o Ms. Emilie Cademartori, Director of Planning and Conservation  
Town Hall, 55 Summer Street  
Lynnfield, MA 01940

Re: **UPDATED** Review of Definitive Subdivision Filing  
271 Main Street, Lynnfield, MA

Dear Planning Board Members:

This **UPDATED** peer review letter report is submitted to you in accordance with our proposal dated November 2, 2020. Authorization to proceed with the work outlined in our proposal was received by our firm via email on Monday, January 11, 2021. Hard copies of the materials provided by the Applicant's Engineers for this **UPDATED** review were picked up by our firm from the Planning Board Office on Thursday, March 25, 2019. Electronic files for this **UPDATED** review were received at the end of the day on Wednesday, March 24, 2021 and additional files were received on Thursday, March 25, 2021.

This **UPDATED** review of the Definitive Subdivision filing is being conducted to assure compliance of the project, plans, and submitted data with the requirements of the Town of Lynnfield, MA Rules and Regulations Chapter 375, Subdivision Regulations, Chapter 213, Storm Water Management (to the extent applicable) and by reference the Massachusetts Department of Environmental Protection (DEP) 2008 Stormwater Regulations and Handbook (to the extent applicable).

The following are our **UPDATED** comments and observations on the **UPDATED AND REVISED** plans and filing with respect to the requirements of the regulations and standard engineering practice. The numbered items in this report correspond to the numbered items in our previous report dated January 26, 2021. **NOTE THAT THE UPDATES TO OUR COMMENTS AND ANY NEW COMMENTS ARE SHOWN IN THE BOLD ITALIC TEXT.**

**GENERAL ISSUES:**

1. We note that the garage on the abutting land of Howard to the southwest of the new roadway appears to be less than the required setback from the new roadway. We recommend that an opinion be obtained from the Building Inspector as to whether the approval of the new roadway in this location will create any future issues for the abutter if they wish to make any changes to this garage?

***Comment NOT Addressed by the Applicant's Engineer's response and we have not been provided with any response from the Applicant's legal counsel or the building inspector. We are concerned that the creation of this new roadway will negatively***

***impact the abutting land by increasing the required yard offset for future structures on the lot and potentially rendering the existing structure nonconforming.***

2. Has the Planning Board received letters from the Board of Health, the Wiring Inspector (may not be necessary if the Street Lighting Waiver is granted), the Gas Utility, Other Public Utilities (such as telephone and cable TV), and the Division of Zoning Enforcement and Inspection? as the Planning Board received an "Opinion of Board of Health as to Suitability of the Land" as required?

***Comment NOT FULLY Addressed. We understand that the Planning Director is in receipt of an email from the Health Director stating that the land is suitable, however, no correspondence has been received from the Fire Department other than their original letter stating that the roadway, as proposed, is not acceptable to them. We have been told that the Applicant's Engineer and Legal Counsel met with the Fire Department and the roadway, as modified, is acceptable to the Fire Department with the addition of a hydrant and a notation that the home is to be sprinklered but there is no updated correspondence from the Fire Department. Approval from the Fire Department is necessary to ensure that the subdivision does not pose any public safety risk.***

3. The proposed roadway is simply listed as "Road A" with no proposed road name. Since the road is being used as frontage the roadway should have a name and that the name should be included in the subdivision name as required or there should be agreement with the DPW and the Planning Board that the road will remain unnamed. If the road is to remain unnamed the Applicant should present evidence from the U.S. Postal Service as to what addresses they will assign to Lot 2. Then the Board could consider a waiver of the road name requirement (if this waiver is requested).

***Comment Addressed. The issue of the roadway not having a name was generally accepted by the Planning Board at their January 27<sup>th</sup> meeting. The Planning Director is going to speak with the Assessor's Office regarding the assignment of a street address.***

4. The required street sign (375-6.11) is not shown (and no detail is provided) and no waiver has been requested.

***Comment NOT FULLY Addressed. See response to #3 above. The plans need to be modified to add a request for a waiver from the requirements of 375-6.11.***

5. All sheets of the plan need to be signed and stamped by the Massachusetts professional land surveyor and professional engineer who is responsible for designing the subdivision as required by 375-6.3.A.5 of the Subdivision Regulations.

**Comment NOT Addressed. The Applicant's Engineer's response stated that all sheets will be signed and stamped by the Massachusetts professional land surveyor and professional engineer who is responsible for designing the subdivision but the set of revised plans received does not have both seals and signatures on the sheets.**

6. The Regulations (375-6.C.2.k) require that the wetland boundary shown on the plans be a current, approved and a nonappealed wetlands boundary. To our knowledge the wetland delineation has not been submitted to the Lynnfield Conservation as part of a Notice of Intent, a Request for Determination of Applicability or an Abbreviated Notice of Resource Area Delineation and therefore has not been "approved". Our proposal did not include a field verification of the location of wetland boundaries on and adjacent to the property as the proposed subdivision work is located away from the wetlands shown on the plan. We did review the locations of the wetland boundary shown on the plans using the topographic survey included with the subdivision plans, aerial photographs of the site and MassGIS data. Using this information, it is our conclusion that the wetland boundary depicted on the subdivision plans appears reasonable, however, the criteria in the Regulations has not been met.

**Comment NOT FULLY Addressed. The wetland line shown on the plans has not been reviewed by the Lynnfield Conservation Commission under a Request for Determination of Applicability or a Notice of Intent. We understand that the Planning Director agrees with this approach at the Applicant's risk. However, the plans need to be modified to add a request for a waiver from the requirements of 375-6.C.2.k.**

7. The Regulations s (375-6.C.2.k) also require that the 25 foot buffer zone be shown on the plans.

**Comment Addressed by the Applicant's Engineer's response and the revised plans.**

8. The filing of a Request for Determination of Applicability or a Notice of Intent with the Town of Lynnfield Conservation Commission will be required for any work proposed within 100 feet of the wetland boundary.

**Comment acknowledged by the Applicant's Engineer. No further response is necessary.**

9. The Lynnfield DPW will need to determine if the easements for the bioretention area and the roadway infiltration system need to be extended (either by plan or wording in the document that creates the easement) to provide for the overflow from these structures to the wetland.

**Comment NOT Addressed. In discussing this issue with the Town Engineer, the DPW has not decided as to whether more extensive easements are necessary. The DPW's**

**decision will be based on who will own the roadway, who will have rights in the roadway and the drainage system, who will be responsible for maintenance of the roadway and drainage system and the DPW's role to finish the work if the roadway is bonded and the builder defaults on the bond.**

10. A DRAFT of the proposed Homeowners Agreement needs to be provided for review and approval by Town Counsel and DPW.

**Comment NOT Addressed by the Applicant's Engineer's response. No DRAFT HOA has been received by our firm, the Planning Office, or the Town Engineer.**

11. Since the proposed roadway has been designed to be and remain a private way, we recommend that a note be placed on all the plans and a statement be made in the Homeowners Agreement stating that Town Acceptance of the Roadway will not be requested at any time and that the roadway is to remain a private way with the homeowners responsible for all maintenance of the roadway, drainage, and utility systems.

**Comment PARTIALLY Addressed by the Applicant's Engineer's response and the revised plans. The note has been added on the plan, but no HOA has been received by our firm, the Planning Office, or the Town Engineer..**

**PLAN REVIEW:**

Our firm has conducted an **UPDATED** review of the definitive plans for the subdivision by Hayes Engineering, Inc., Wakefield, MA dated August 13, 2020 (sheets 1 to 6) to assess compliance of the plans with from the requirements of the Town of Lynnfield, MA Rules and Regulations Chapter 375, Subdivision Regulations. The following are our **UPDATED** comments and observations on the plans with respect to the requirements of the regulations and standard engineering practice:

**SHEET 1 of 6 – LOTTING PLAN:**

Waiver Requests:

The following are the waiver requests listed on sheet 1 of the plans and our opinion regarding the waivers:

PLAN WAIVERS:

SECTION 375-6.4.A(6) TO NOT SHOW TWO BENCHMARKS ON THIS SHEET – We see no reason for this waiver and do not recommend the waiver be granted. The plan contains a list of three benchmarks. These should be shown on the plan and a waiver regarding the character/type of the benchmarks should be added to the plans.

**Comment NOT FULLY Addressed. The benchmarks have been added to the plan, however, the nature and character of the benchmarks do not meet the requirements of 375-5.4 A(6) of the Planning Board Regulations. Either a second benchmark on a stone bound needs to be added to the plans or a request for a waiver from the requirements of 375-5.4 A(6) needs to be added to the plan. Our firm would not be in favor of granting this request as there is a second stone bound on Main Street near the property that a benchmark could be established on.**

SECTION 375-6.4.A(9) TO NOT SHOW BUILDING SETBACKS ON THIS SHEET – We see no reason why this requirement cannot be complied with and we do not recommend the waiver be granted.

**Comment Addressed by the revised plans.**

SECTION 375-6.4.A(13) TO HAVE A LOCUS AT A SCALE OF 1"=40' – We believe that this requirement is a typographical error in the regulations (it should be 1"=400'). The plans do have a locus at a scale of 1"=300' which we believe is adequate for the purpose. Therefore, we see no issues in granting this waiver.

**Comment requires no response.**

SHEET WAIVERS:

375-6.4.E TO NOT HAVE A STREET LIGHTING PLAN – Assuming that the Planning Board grants the waiver regarding the requirement for street lighting we see no need for a street lighting plan.

**Comment addressed based on the discussion at the January 27<sup>th</sup> Planning Board meeting.**

375-6.4.F TO NOT HAVE AN EROSION CONTROL PLAN (SHOWN ON TOPOGRAPHIC PLAN – We see no need for a separate erosion control plan provided all the requirements for the erosion control plan are met by the Topographic Plan.

**Comment requires no response.**

DESIGN WAIVERS:

375-7.1.A(10) TO HAVE AN ENTRANCE ROUNDING LESS THAN 25 FEET – Given that this is more of a driveway than a roadway we see no issues with waiving the 20 foot requirement. We do, however, believe that the 8 foot curb radius shown is too small. The Applicant's Engineer should provide a SWEPT Path Analysis for an SU30 vehicle (box type truck like an appliance delivery truck) entering the driveway to show that the proposed configuration is adequate. If not, then the curb radius should be increased to accommodate the SU30 vehicle.

**Comment NOT FULLY Addressed. Although the Applicant's Engineer's response states that the radii at the entry have been increased to 15 feet this is still less than required. The**

***Applicant's Engineer has not provided the requested SWEPT Vehicle Path Analysis and the actual curb radius are not labeled on the plan.***

375-8.2.B.(1) TO REDUCE PAVEMENT WIDTH TO 20 FEET AND TO ALLOW THE PAVEMENT CENTERLINE TO NOT COINCIDE WITH THE CENTERLINE OF THE ROADWAY - Given that this is more of a driveway than a roadway we see no issues with waiving the pavement width and alignment criteria.

***Comment requires no response.***

375-8.2.B.(6) TO NOT HAVE CURBING BEYOND THE CATCH BASINS SINCE THE DRAINAGE IS TO FLOW OFF OF THE PAVEMENT INTO A GRASS SWALE – We do not recommend that this waiver be granted. See other comments regarding the drainage in the cul-de-sac area.

***Comment Addressed by the revised plans.***

375-8.2.B.(11) REQUEST NO SIDEWALKS - Given that this is more of a driveway than a roadway we see no issues with waiving the requirement for sidewalks.

***Comment requires no response.***

375-8.3.B(1) TO ALLOW HDPE DRAIN PIPES IN PLACE OF RCP – We defer to the Town of Lynnfield Department of Public Works on this waiver. All the subdivisions we are familiar with have used Reinforced Concrete Drain Pipe within roadway areas.

***Comment NOT Addressed. It is my understanding from the Town Engineer that the DPW will not approve of a waiver for the use of HDPE drain pipe. The pipe needs to be changed to RCP (if the system can be redesigned to provide adequate cover) or Cement Lined Ductile Iron pipe and the waiver request modified to delete the request (if RCP with adequate cover is the option chosen) or revise it to request the use of CLDI pipe with reduced cover.***

375-8.3.B(2) TO ALLOW A DIFFERENT CASTING. LEBARON WHICH IS REQUIRED IS NO LONGER IN BUSINESS – This waiver should be reworded to allow the use of the East Jordan Iron Works Model #0MS552000024..

***Comment Addressed by the revised plans.***

12. The plans do not contain a waiver request from the requirements of 375-8.2.B(2) regarding the configuration of the pavement in the cul-de-sac area.

***Comment Addressed by the revised plans.***

13. The Lotting plan should show the existing structures on the property with a notation as to whether they are to remain and for those to remain (that are within 60 feet of the new roadway) an offset distance to the new roadway should be shown.

**Comment Addressed by the revised plans.**

14. The locations of the benchmarks listed on the plan should be shown on the plan view. In addition, we recommend that benchmarks be established on the stone bound at the front of the site and the stone bound located 86 feet south of the site.

**Comment NOT FULLY Addressed. The benchmarks have been added to the plan, however, the nature and character of the benchmarks do not meet the requirements of 375-5.4 A(6) of the Planning Board Regulations. Either a second benchmark on a stone bound needs to be added to the plans or a request for a waiver from the requirements of 375-5.4 A(6) needs to be added to the plan. Our firm would not be in favor of granting this request as there is a second stone bound on Main Street that a benchmark could be established on.**

15. We suggest that one or two of the stone bounds with drill holes to be set along the new roadway be labeled on the plan view with the designation "Typical".

**Comment NOT Addressed. Rather than simply labeling one or two of the proposed stone bounds as requested, the Engineer changed the plans to eliminate 7 of the proposed stone bounds (12 originally proposed vs 5 on the revised plans). The elimination of these stone bounds would require a waiver from the requirements of Section 375-8.2 B(8) of the regulations be added to the plans. We would not recommend that the Planning Board grant this waiver.**

16. The Plan should show the Groundwater Protection Zone boundary.

**Comment Addressed by the revised plans.**

17. In our opinion Massachusetts State Coordinates should be shown on at least two of the property or lot corners on the plan.

**Comment Addressed by the revised plans.**

**SHEET 2 of 6 – EXISTING CONDITIONS & DEMOLITION PLAN:**

Waiver Requests:

The following are the waiver requests listed on sheet 2 of the plans and our opinion regarding the waivers:

PLAN WAIVERS:

375-6.4.B(8) TO NOT SHOW REGULATED RESOURCES WITHIN 150' FROM THE SUBDIVISION. RESOURCES ARE SHOWN ON THE SUBDIVISION PROPERTY – Given the

locations of the wetland resource areas on the site (which are shown on the plans) we see no issues with the granting of this request.

**Comment requires no response.**

18. The Plan should show the Groundwater Protection Zone boundary.

**Comment Addressed by the revised plans.**

19. The Plan needs to show grades in Main Street (at least to the centerline) along with existing overhead wires and utilities in Main Street (especially to the point where connections are to be made).

**Comment NOT FULLY Addressed by the revised plans. The overhead wires running along Main Street in the proposed roadway need to be shown on the plan.**

20. The plan does not indicate the items to be demolished as part of the project as required by 375-6.4.B(2).

**Comment NOT FULLY Addressed. The response stated that no items are to be demolished yet other plans show a portion of the existing driveway being demolished. This work along with a note about the car port should be shown on the Erosion Control & Demolition Plan.**

21. It does not appear that all the trees to be removed for the construction of the project are so indicated on the plans. The Applicant's Engineer should carefully review the existing trees and all the proposed construction and all the trees to be removed should be indicated on the plans.

**Comment Addressed by the revised plans.**

22. Existing contours are not shown for the entire property. There are no contours in the wetland area and in the wooded area along the southwestern property line. The contours in the wetland areas can be added from the Town of Lynnfield GIS (with an appropriate note) to give a sense of the topography. Other areas should have the topography filled in by survey methods.

**Comment Addressed by the revised plans.**

**SHEET 3 of 6 – PLAN AND PROFILE:**

Waiver Requests:

The following are the waiver requests listed on sheet 3 of the plans and our opinion regarding the waivers:



PLAN WAIVERS:

375-6.4.C(1)(d) SCALE OF THE PLAN IS 1"=20' HORIZONTAL AND 1"=2' VERTICAL – We see no issues with this waiver request as the larger scale shows more detail.

***Comment requires no response.***

375-6.4.C(2)(d) TO NOT SHOW ABUTTING HOUSES – We do not recommend that this waiver be granted for the reason of the proximity of the abutting houses (and garage) to the proposed roadway.

***Comment Addressed by the revised plans. The garage near the property line is shown.***

23. The Plan should show the Groundwater Protection Zone boundary if it appears in the plan view window.

***Comment Addressed by the revised plans.***

24. The proposed pavement centerline is not located in the center of the right of way. The proposed roadway pavement centerline along with the centerline geometry needs to be shown on the plans (bearings, distances, radius, lengths, and angles) with ties to the sideline so that the centerline can be laid out in the field. The radius of all rounding curves and any curves not concentric with the roadway centerline also need to be shown.

***Comment Addressed by the revised plans.***

25. The configuration of the pavement in the roadway cul-de-sac is different from the subdivision standard of a paved circle. The Lynnfield Fire Department review letter has indicated that the modified "T" configuration proposed is not acceptable to them. The Applicant's Engineer needs to provide a SWEPT Path Analysis for the Town of Lynnfield Fire Truck maneuvering into and out of the turnaround to show that the proposed configuration works and present this analysis to the Town of Lynnfield Fire Department to gain their approval. This issue needs to be resolved to the satisfaction of the Lynnfield Fire Department before the plan can be finalized approved.

***Comment NOT FULLY Addressed by the revised plans. A hydrant has been added along with a note that the proposed dwelling is to be sprinkled but no letter has been received from the Fire Department indicating that they are satisfied with the revised plan has been received.***

26. Catch basin curb inlets and transition curbs should be shown on the plan view.

***Comment Addressed by the revised plans.***

27. A waiver needs to be added to request a reduction in cover for drain pipes from 3 feet (375-8.3.B.1). If the waiver for the use of HDPE drain pipe is not approved, then we recommend that these drain pipes be changed to ductile iron pipe.

***Comment NOT FULLY Addressed by the revised plans. Waiver request was added but see other comments in this report regarding the DPW's opinion on the use of HDPE pipe.***

28. The proposed utility lines need to use a linotype with a symbol and have more labels to improve the readability of the plan.

***Comment Addressed by the revised plans.***

29. There is no "street" water line and hydrant shown. The water line shown is a 2" line. The letter from the water company indicates that they do not do 2" taps but only 1" taps. How will this water line be connected to the water main in Main Street and have any pressure drop calculations been done to indicate that with a water connection of this length there will be sufficient flow and pressure in the proposed house?

***Comment Addressed by the Applicant's Engineer's response and the revised plans.***

30. The issue of fire protection for the proposed house needs to be addressed. Based on our observations there is an existing hydrant on the northeastern side of Partridge Lane (about 335 feet from the proposed roadway centerline) and a hydrant to the northeast of Village Row (about 445 feet from the proposed roadway centerline). The proposed dwelling is set back another 385± feet from Main Street. The review letter from the Lynnfield Fire Department requests a hydrant either at Main Street where the proposed roadway is located or on the proposed roadway. I understand that there has been some discussion of providing sprinklers in the dwelling as an alternative to adding a hydrant. Has this issue been resolved? If the home is to be sprinklered what size will the water line be to provide sufficient pressure and flow for the sprinkler system. This issue needs to be resolved to the satisfaction of the Lynnfield Fire Department before the plan can be finalized approved.

***Comment NOT FULLY Addressed by the Applicant's Engineer's response and the revised plans. See other comments in this report regarding the need for a revised letter from the Fire Department.***

31. Based on the letter from the Reading Municipal Light Company it appears that there are issues with the relocation of the existing pole as shown on the plan and the conduits connecting to the pole. These issues need to be resolved and the electrical design finalized before the plan can be finalized approved.

***Comment NOT FULLY Addressed by the Applicant's Engineer's response and the revised plans. The relocated pole and wires to service the existing dwellings need to be shown on the plans based on the discussions the Applicant's Engineer has had with Verizon and the Reading Municipal Light Company.***

**SHEET 4 of 6 – TOPOGRAPHIC PLAN AND EROSION CONTROL PLAN:**

Waiver Requests:

The following are the waiver requests listed on sheet 4 of the plans and our opinion regarding the waivers:

PLAN WAIVERS:

375-6.4.D(2) TO SHOW TWO FOOT CONTOURS IN PLACE OF ONE FOOT CONTOURS – We do not recommend that this waiver be granted as the additional detail provided by one foot contours is necessary.

***Comment Addressed by the revised plans.***

375-6.4.D(8) TO NOT SHOW TOP AND BOTTOM OF CURB ELEVATIONS – We see no issues with this waiver being granted except that top and bottom of curb grades need to be shown on the entrance roundings at Main Street and at the turnaround area in the cul-de-sac.

***Comment Addressed by the Applicant's Engineer's response and the revised plans.***

375-6.4.D(11) TO NOT SHOW STORMWATER DETAIL ON THIS SHEET – We see no issue with granting this waiver as this information is shown on other sheets in the plan set (see separate comments on these details). It would be helpful if a note were added to this sheet referring to the sheets where the stormwater detail can be found.

***Comment requires no response.***

375-6.4.D(12) TO NOT SHOW SIGHT DISTANCES - Given that this is more of a driveway for 1 or 2 homes we see no issue with the granting of this waiver.

***Comment requires no response.***

32. The Plan should show the Groundwater Protection Zone boundary.

***Comment Addressed by the revised plans.***

33. The proposed roadway needs detailed grading (spot grades and contours) in the cul-de-sac turnout area and adjacent to the southwestern edge of the roadway.

***Comment Addressed by the revised plans.***

34. The erosion control line should be labeled as a limit of work line and a limit of work line should be added in all locations where there are no erosion controls.

***Comment Addressed by the revised plans.***

35. The erosion controls at the northeastern property line should be run up about 30 feet parallel with the property line and the 4 ft. post and wire fence toward the 42" deciduous tree. The erosion controls should also be extended northwesterly along the southern property line to Main Street to prevent any soil and sediment migration onto the abutting property.

***Comment Addressed by the revised plans.***

36. The vehicle and equipment service and storage areas (375-6.F.7) need to be shown on the plan.

***Comment Addressed by the revised plans.***

37. The plans need to provide for the installation of silt sacks in the new catch basins upon installation and a detail of the silt sacks needs to be provided.

***Comment Addressed by the revised plans.***

38. Sheet 4 of the plans is lacking any of the typical erosion control plan notes regarding duration of disturbed ground without temporary seeding or stabilization, street sweeping, erosion control maintenance, etc. These need to be added to the plan.

***Comment Addressed by the revised plans.***

39. The size and species of the proposed street trees is not shown on the plan. Either the size and species need to be shown on the plan (after approval by the Tree Warden) or a note should be added to the plan (and to the detail on sheet 5) indicating that the tree size and species shall be approved by the Tree Warden prior to the trees being purchased and installed.

***Comment Addressed by the revised plans.***

**SHEET 5 and 6 of 6 – DETAIL SHEETS:**

Waiver Requests:

The following are the waiver requests listed on sheet 3 of the plans and our opinion regarding the waivers:

PLAN WAIVERS:

375-6.4.G.(1) TO NOT SHOW DETAILS NOT APPLICABLE TO THE SUBDIVISION – While we have no issue with granting a waiver that states that the plans do not need to show details that are not relevant to the proposed subdivision, the Engineer should provide a list to the Town

Engineer and our firm of the details that he is not including so that we can concur that they are not relevant.

***Comment Addressed by the revised plans.***

40. The curb inlets and transition curbs should be added to the catch basin detail.

***Comment Addressed by the revised plans.***

41. The catch basin grate should be labeled as EJIW Model #oMA552000025.

***Comment Addressed by the revised plans.***

42. The detail for the siltation barrier shown is for a 12" straw wattle staked at 10 foot intervals. The Lynnfield Conservation Commission typically does not approve straw wattles as the sole erosion control barrier near a wetland. Typically, they require a siltation control fence dug into the ground and staked with a straw wattle staked at 4 to 6 foot intervals placed in front of the silt fence. The detail shown should be revised.

***Comment Addressed by the revised plans.***

***STORMWATER DESIGN:***

The following are our firm's comments on the stormwater design and calculations for the proposed subdivision:

43. The configuration of the watershed boundary between EX-1 and EX-2 does not seem to follow the path the runoff will take to get to the discharge point. The Engineer needs to re-evaluate this and revise or explain his reasoning as to why this boundary is configured this way. It would also be preferred if the watersheds considered water flow from the abutting property to two common points in the wetland and intermittent stream on the edge of the site.

***Comment Addressed by the Applicant's Engineer's response.***

44. There are no test pits by a Massachusetts Licensed Soil Evaluator at the locations of the proposed underground roadway drainage infiltration structure, the bioretention area or the roof drainage infiltration systems. These test pits are necessary to confirm the soil type at the receiving elevation (sand vs loamy sand) and thereby the exfiltration rate used in the calculations (8.27 vs 2.41) as well as the elevation of the Estimated Seasonal High Ground Water Table to confirm the required separation between these systems and the ESHGWT. The test pit locations and data need to be added to the stormwater details on sheet 6.

***Comment NOT FULLY Addressed by the Applicant's Engineer's response. The response states that test pits were done on February 25, 2021, however, no test pit logs by a Massachusetts Licensed Soil Evaluator have been provided stating the soil types and the elevation of the Estimated Seasonal High Ground Water Table.***

45. The proposed roof drainage piping around the house and the division between which portion of the home drains to each system need to be shown on the plans.

***Comment NOT FULLY Addressed by the Applicant's Engineer's response. While we understand that it may be difficult to provide this information at this time the information will be necessary prior to the construction of the home. We suggest that a note be added to the plans and a condition be added to the decision requiring that test pits be performed in the locations of the proposed roof drainage systems and the system design be completed (piping, underground systems, etc.) and approved by the Town Engineer prior to any construction work being performed on the home. This would be like the conditions and notes on the Tuttle Lane Subdivision.***

46. A detail of the underground roadway drainage infiltration system needs to be provided. The overflow outlet pipe should be relocated so that any overflow water can only flow on the subdivision property prior to entering the wetlands.

***Comment NOT FULLY Addressed by the Applicant's Engineer's response and the revised plans. The overflow was relocated but the text label for the overflow was not moved. We disagree with the Applicant's Engineer's assessment that no further detail is required. Typically, a cross section showing the elevations of the ESHGWT, the bottom of stone, the bottom of the chamber/unit, the top of the unit, the top of stone and the minimum and maximum finish grades is shown.***

47. How is the grading along the northeastern edge of the roadway configured to channel the water from past the catch basins to the filter strip? Shouldn't the curbing be continued to the beginning of the filter strip? The pre-treatment strip for the bioretention area seems to be sloping at a 2,5:1± slope. It is our understanding that these filter strips should be sloped at <2% not as steep as this. The filter strip needs to be redesigned.

***Comment Addressed by the revised plans.***

48. A cross section detail of the spillway from the bioretention area needs to be provided. The plans say that it will be riprap. How will the riprap be placed to prevent flow through the stone prior to elevation 87.50 and be level for 30 feet at elevation 87.50?

***Comment Addressed by the revised plans.***

49. Monitoring wells are required at each of the underground structures per the MADEP Stormwater Handbook. The location and construction detail for these wells need to be shown on the plans.

***Comment NOT Addressed by the Applicant's Engineer's response and the revised plans. Either the roof drain units are categorized as "Subsurface Structures" under the MADEP 2008 Stormwater Handbook or "Dry Wells". We believe that these roof drainage systems are subsurface structures which require monitoring wells. Even if they were***

**considered dry wells a “test well” is required (see page 84 of Volume 2, Chapter s of the 2008 MADEP Stormwater Handbook),**

50. The Engineer needs to explain why the design is not based on a more conventional system of locating catch basins at the end of the cul-de-sac, piping the runoff through a treatment system, and depositing the runoff in an underground infiltration system.

**Comment NOT FULLY Addressed by the Applicant’s Engineer’s response. It has not been demonstrated that a more conventional system with catch basins collecting all the roadway runoff and discharging to a subsurface system located downhill of the roadway on the lot could not reasonably be built. It is up to the Town Engineer and the DPW to determine if they are willing to accept the proposed system as designed.**

We look forward to discussing the project, this report, and any questions that the Planning Board may have at the continued public hearing. We are available to discuss the project with the Applicant, the Town Engineer, the Applicant’s Engineer and/or the Applicant’s representatives, as necessary. If you have any questions regarding this matter, or should you require any additional information, please do not hesitate to contact our firm.

Very truly yours,

**LINDEN ENGINEERING PARTNERS, LLC**



William A. Jones, Sr. Partner



Richard G. Cutts, P.E., President

Cc: Mr. Charles L. Richter, P.E., Lynnfield Town Engineer