



133 Keyes Road
Concord, MA 01742

DATE: 10/8/2020

MEMORANDUM

TO: Elizabeth Hughes, Town Planner
COPY: Alan Cathcart, Director of Public Works
VIA: Steve Dookran, P.E., Town Engineer
FROM: Justin Richardson, P.E., Assistant Town Engineer
SUBJECT: Definitive Subdivisions Plan Application filed by Symes Development & Permitting, LLC at 1440 - 1450 Main Street

Engineering Division Comments:

The Engineering Division has reviewed the Definitive Subdivision Application, Plans, Calculations and Reports for 1440 – 1450 Main Street prepared by Williams Sparages, dated July 16, 2020 from Symes Development & Permitting LLC (Applicant) and provided comments dated 9/15/2020. These comments can be seen below with Williams Sparages' responses from a letter dated September 25, 2020 in italics. Revised Plans, Calculations, and reports have not yet been submitted. The Engineering Division offers the following:

1. On Sheet 2 of 12 please dimension the overall Right of Way Width.
 - o *50'-WIDE dimension label will be added to Sheet 2.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
2. On Sheet 2 of 12 in the Legend of Abbreviations please define RC, WCB.
 - o *Add to Legend: RC – Residence C, WCB – Wetlands Conservancy District.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
3. Please provide bar scale in the title block for the vertical scale of 1" = 4' where it applies.
 - o *A vertical bar scale will be added to profile sheets.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
4. Sheets 3 of 12 and 4 of 12 show existing grades in the profile but do not label what the 3 lines are and the lines with the larger scale of dash end abruptly before the end of the profile. It is presumed that these lines show the elevations at the edge of the roadway. Please label the lines and extend them as necessary.
 - o *Labels will be added and lines extended within the profile sheets, to indicate left sideline, centerline and right sideline of right-of-way.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
5. Please state the roadway speed that is intended for this Subdivision Roadway.
 - o *Design Speed is 25 MPH (6.8.1 Table 1A – Minimum Design Standards for Local Streets).*
 - **Comment has been addressed**



6. Please provide Benchmarks on the plans
 - *Benchmarks are provided in lower left corner on Sheets 5 & 6.*
 - **Comment has been addressed**
7. Plan details show various kinds of curbs and berms, but it is unclear where they will be used. Please show the locations of the various curb and berm sections.
 - *Labels will be added to profiles to designate curb type and locations.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
8. It is not apparent if Street Lighting will be provided for this subdivision. Please show street lighting and lamination plan for the roadway if street lighting is planned.
 - *Street lighting will be provided if required following consultation with CMLP.*
 - **Comment has been addressed if Street Light coordination is a condition of approval.**
9. Street Trees are planned right over the electrical conduit. Recommend moving electric conduit away from trees as much as possible.
 - *Electrical conduit will be moved back and street trees moved forward to provide separation.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
10. Approval Not Required Lots (F & E) along Main Street have driveways that enter from the new subdivision roadway. These lots should either have driveway on Main Street or be considered as lots in the new subdivision.
 - *The side entry driveways shown for Lot E & Lot F, are provided in order to properly size the stormwater system. Regulations require us to incorporate all upgradient areas into our watershed calculations which include (Lot E, Lot F & a portion abutting Center Village). Driveways could also come off Main Street should they be constructed prior to roadway.*
 - **The Engineering Divisions agrees that these lots could have driveways off of Main Street as long as the driveways meet Town's Driveway Permit Application Requirements, but they are currently shown accessing the proposed subdivision road that is not yet approved. The drainage system sizing should include the driveways if stormwater runoff flows into the roadway. The Applicant in the updated plans should show the driveways in the final location.**
11. The Site Evaluation refers to a "Traffic Impact Study and peer Review on File with Planning Division for Site" that was performed for a different development project that has more dwelling units. A revised Impact should be submitted for this project. The Impact study should include impacts that will result during construction including but not limited to material hauling, tree and stump removal, and home construction activities. Additionally, the impact study should include the sight distance for the intersections at Road A and Main Street and Road A and Road B.
 - *Vanesse & Associates Inc. has prepared a traffic response letter dated September 21, 2020.*
 - **The Engineering Division has reviewed the document and submitted a Memorandum dated 10/5/2020 that states "The Engineering Division has reviewed the information in this letter and have no objections to the information provided."**
12. On the Site Evaluation Plan please add the various line types to the Legend. It is difficult to identify zoning lines, soil type lines, limit of work lines, and wetland lines. Additionally, please define the areas that are designated as "Wooded" and "Lawn". Please also identify any existing trees/tree groups that will remain.

- *A Legend will be added to Site Evaluation Plan; A majority of the information requested is more accurately provided in clarity within the Definitive Plan Set and Watershed Maps. The existing lawn area labels are limited to along Main Street, with remainder of site woodland.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**

- 13. Please provide an Operation and Maintenance Plan for Review.
 - *A Long-term Operation & Maintenance Plan will be provided under separate cover.*
 - **The Engineering Division will review the document when it is submitted.**

- 14. Please provide a Stormwater Pollution Prevention Plan (SWPPP) and make the appropriate filings with National Pollutant Discharge Elimination System (NPDES) for the site alterations that are to be performed.
 - *The Stormwater Pollution Prevention Plan is provided as Sheets 11 & 12. The filing of the NPDES will occur a minimum of fourteen days prior to the start of construction.*
 - **Additional information will need to accompany the NPDES permit. Please submit the entire approved SWPPP and NPDES filing to the Engineering Division for review.**

- 15. The Stormwater Reports states on Page #4, under the “Standard 2” explanation that two Rain Gardens are incorporated into the design on Lots D1 and F. The Rain Gardens do not appear on the plans and they are not detailed. Please provide information and location on the Rain Gardens.
 - *Rain Garden details will be provided with the sewer connection plan for each ANR Lot at time of building permit for review and approval.*
 - **The Engineering Division is typically responsible for reviewing Stormwater related items. Please submit the detail(s) to the Engineering Divisions.**

- 16. Table 1 and Table 5 in the Stormwater Report indicate that there is an increase in peak runoff and volume of runoff in the 2 Year and 10 Year Storm Events. Town of Concord Subdivision Rules and Regulations State in section 6.13.1 Peak Flows “Peak flows and run-off at the boundaries of the subdivision shall be no higher following development than before development.”
 - *The increases indicated are to the limit of work line located within the interior of the site and does not represent an increase in runoff at the boundary. Peak flows at the boundaries will be no higher following development than before development.*
 - **From the “Proposed Water Shed Map” Link 1L appears to be defined as an isolated wetland that is partially located on the parcel that is being subdivided, but also on a Parcel owned Junction Square Condominium Association, Inc. The existing contours show that the isolated wetland is at roughly the same elevation on both sides of the property line. This would technically constitute an increase inflow to the abutting lot because the isolated wetland is receiving more peak runoff and volume of runoff than it was previously. It is important however that the existing drainage patters is maintained with roughly the same amount of runoff entering the isolated wetland so that it continues to be an isolated wetland and does not dry out.**

- 17. According to the Drainage Calculations, all roof drains will be directed to in lot drywells except for Lots A1, 13, 14, and 15. The calculations show that the dry wells are sized to contain the 100 year storm event, but no roof drain lines are shown from the house. The roof drains and gutters need to be able to carry the 100 year storm to the drywells. Please provide information related to piping and gutter system or provide working for a condition of approval that requires all houses with roof runoff directed to dry wells to provided gutters and piping that are sufficient to carry the rainfall from a 100 year storm event. Soil testing for each drywell will need to be performed and observed by a Town representative.
 - *We agree to a condition of approval for review of roof drywells, at time of building permit, since the dwelling style, septic design and roof pitches are not yet available for each lot.*



- **Engineering Division agrees that this can be a condition of approval and will observe the soil testing and review the stormwater piping and calculation when they are provided.**
18. Detailed elevations of the roof drywell were not provided. In Lots 6,7,10, and 11 the drywells are on very steep slopes and depending on the elevation of the drywells there could be stormwater breaking out the sides of the slope. Additionally, in lots 10 and 11 the drywells are located very close to the sediment forebays and the breakout could enter the forebays. Please provide more detailed information on the elevations of the drywells, and recommend moving the drywells for lots 10 and 11 out of the sediment forebay areas.
- *Roof drywell elevations, with soil testing information, will be included with the septic design for complete review of each lot at time of building permit.*
 - **Engineering Division agrees that this can be a condition of approval and will observe the soil testing and review the stormwater piping, calculations, and location of the systems on steep slope and in close proximity to proposed BMPs when they are provided.**
19. From Routing Diagram and the Drainage Calculations it does not appear that stormwater runoff from Subcatchment P3 is accounted for. It is minimal in the 2 years storm, but it is significant in larger storm events.
- *Subcatchment P3 has been accounted for in the plan set and stormwater sizing, but was unintentionally disconnected within diagram prior to submittal during adjustment of the Routing Diagram presentation. The Report and Tables will be updated accordingly.*
 - **The Engineering Division will review the updated calculations when they are received to confirm that this has been completed.**
20. Locating the drainage/infiltration system under the center island of the cul-de-sac is not within the Concord Public Works Standards. As a result, this street will remain private and cannot be petitioned for street acceptance. Furthermore, the Applicant shall provide detailed information on their plan for maintenance of the roadway and all utilities.
- *The design of the Underground Infiltration System, under each cul-de-sac island, has been adjusted from the preliminary to be offline and in compliance with the Public Works Drainage Standards; Section 2.2.4. Structural Best Management Practices as follows:*

E. Leaching Basins/Drywells/Underground Infiltration Systems:

 1. *Will be used in areas with highly permeable soils.*
 2. *Has been designed as an offline system.*
 3. *Safe overflow has been provided.*
 4. *Discharge of the overflow has been incorporated into the design.*
 5. *System locations meet minimum building, property line and Title V setbacks.*
 - **Concord Public Works Design & Construction Standards & Details regulate “the infrastructure system includes, but is not limited to: roadways, stormwater management systems and erosion control measures”. Just because there is a provision for the design in the Standards does not mean that it can be implemented and maintained by the Town. The issues with the underground infiltration system is that if the roadway is accepted by the Town of Concord as a public way then the responsibility of maintaining the drainage system is also accepted by the Town. Concord Public Works (CPW) Highway and Ground Department does not have the equipment, training, and ability to maintain an underground system. The following options are available to the Applicant**
 1. **Redesign the system to be an above ground basin that can be maintained by the Town with the appropriate easements and/or land deeded to the Town if required,**

- *Double grate orientations will be updated.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**

- 27. A Right of Way (ROW) and/or Driveway permit is required for the work being performed on Main Street and work inside the right of way shall comply with CONCORD PUBLIC WORKS DESIGN & CONSTRUCTION STANDARDS & DETAILS.
 - *Ok*
 - **This should be a condition of approval.**

- 28. In the Definitive Subdivision Plan Application Form C, Section 5 (Site Characteristic and Drainage) it states that 60,840± Cubic Yards of material will be relocated. Please provide information on whether this volume of soil is in its natural state. Additionally, the volume of material that will be hauled (loose-measure volume) should have a swell factor applied to it based on the soil classification. Please verify that this factor was applied when determining the amount of material that will be hauled, and if a swell factor was not applied, please provide additional cut/fill calculations showing the swell factor included for the hauling volume.
 - *Volume provided was calculated in its natural state. Additional information will be provided.*
 - **The Engineering Division will review the provided information when the Applicant files for the ZBA Special Permit Earth Removal Permit.**

- 29. In the Definitive Subdivision Plan Application Form C, Section 5 (Site Characteristic and Drainage) it states that 60,840± Cubic Yards of material will be relocated. Please provide a haul route plan that shows the roadways that will be used for the relocation of the material. Please also provide the estimated vehicle trips per day with the approximate weight of vehicles and volume of material that will be hauled by each truck.
 - *We are providing a portion of the documentation that will be filed with the ZBA for the earth removal permit. There will be a total of 2,168 trailers of soil, 24 trailers of timber and 6 trailers of chips for a total offsite trailer trucking of 2,196. Patriot Excavating Corp stated they will haul 50 to 65 trailers a day and total trucking days would be 38. We also enclosed route maps to the likely destinations, the Acton location is 4.1 miles away and the Concord location is 1.7 miles away. Although Patriot expects a majority of the export to go to the 1.7 mile site, we will assume half to each site or an average of 2.9 miles one way. This will result in approximately 348 trucking miles per day (2.9 miles x 2 x 60 trailers) on a state route. One of the primary purposes of Massachusetts state routes and highways is for commerce transportation, prohibition of trucking on a state route requires a truck exclusion permit from MASS D.O.T.*
 - **The Engineering Division will review the provided information when the Applicant files for the ZBA Special Permit Earth Removal Permit.**

- 30. It appears from the grading plans that portions of proposed subdivision road are cutting the existing site down approximately 25-feet, and with utility construction the excavation will surpass ±30-feet. None of the soil tests that have been performed to ±30-feet in this area. How can the Applicant assure that bedrock or other unsuitable Land will be encountered with roadway and utility construction? See Town of Concord, Massachusetts Subdivision Rules and Regulations, Section 6.2.2 (Unsuitable Land).
 - *The areas of cut (25'-30') mentioned occur along only one-hundred feet of roadway (STA 1+50 to 2+50). This represents only thirteen percent (13%) of the entire length of Road A at 768 linear feet. Soil test Pit, (TP 17-20), conducted near STA 2+00, observed coarse sand to a depth of twelve-feet, (soil info - Sheet 10). This area can either be terraced to obtain greater depths of soil testing information or soil borings can be conducted, if deemed necessary prior to start of construction.*



- *Regardless of additional test pit data, the construction of the roadway within all areas of the right of way is still required to be completed in accordance with the regulations as follows:*
 - Section 6.6 Construction Materials and Materials*
 - 6.6.1 Clearing and Grubbing: Right of way shall be cleared and grubbed.*
 - 6.6.2 Earth Excavation: If mucky soils, ledge or clay is encountered then Applicant is required to remove entirely and replace with sand and gravel.*
 - 6.6.3 Ledge Excavation: If encountered, Applicant is required to remove all boulders or ledge to a required depth below final pavement grade.*
 - 6.6.4 Retaining walls: Will not be necessary since right-of-way layout is located away from abutting property lines.*
 - 6.6.5 Materials: Public Works will be conducting inspections*
 - **Encountering unsuitable land in this area could dramatically change the design of the roadways and house lots. Borings or soil testing is recommended to ensure that the roadway and house elevations are viable in this area.**
31. The Approval Not Required Lots (F & E) along Main Street have “Road Grading Easements” in them. Will these easements be permanent or temporary? Typically, easements are permanent, but in this case after the road is constructed the easement will no longer be necessary. Please explain how this will be recorded and deeded?
- *Status of easements will follow typical town guidelines.*
 - **This should be a condition of approval.**
32. Stormwater Pollution Prevention Plans should include language on cleaning the Public Right of Way during hauling. This should be performed daily to ensure that the roadways are free of excess sediment and debris.
- *Ok*
 - **This should be a condition of approval.**
33. On the Stormwater Pollution Prevention Plan temporary settling basins are shown inside the sediment forebay areas. How will the sediment forebays operate while the settling basins are in operation? Please provide a more phased Stormwater Pollution Prevention Plan that describes when the sediment forebays and infiltration system will become operational. Additionally, please provide information on how the infiltration areas inside the cul-de-sacs will be protected against sediment migration during construction.
- *Temporary settling basins will be relocated to outside of the forebay areas. Additional detail will be added to the SWPPP relative to protection of infiltration systems during construction.*
 - **The Engineering Division will review the updated plans when they are received to confirm that this has been completed.**
34. The Engineering Division reserves the right to comment on future submittals related to any new or previously submitted information provided to the Town for review including the Definitive Subdivision Plan and supporting documentation.
- *Ok*
 - **Comment Addressed**

Engineering Division further comments on 10/8/2020:

1. In reviewing the grading on the westerly side of lots #3 and #4, it appears that the proposed slope is approximately 2.2H to 1V (scaled) and protected by erosion control matting. However, no contours are shown on the Center Village, Inc. property, but there are a few housing units that are close to this newly created cut slope. Please have a Geotechnical

Engineer certify that this cut slope is outside of the zone of influence for the existing housing unit's foundation in the abutting Center Village, Inc. development.

2. The Engineering Divisions reserves the right to comment on future submittals related to any new or previously submitted information provided to the Town for review.