

133 Keyes Road
Concord, MA 01742



DATE: 12/2/2020

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 were not submitted with the response letter, but the Engineering Division provided comments to the responses, dated October 8, 2020, seen below in bold. Revised plans, calculations, reports, and responses to Engineering's October 8, 2020 comment letter (in italics and underlined if additional comments where added) have been submitted with revision dates of October 29, 2020, October 30, 2020, and November 2, 2020. Revised plans, calculations, reports, and responses to Engineering's November 10, 2020 comment letter (in italics and underlined if additional comments were added) have been submitted with revision dates of November 12, 2020 and November 13, 2020. The Engineering Division offers the following in bold and underlined text with (12/2/2020) after each new comment:

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.**
 - **Dimension has been added and this comment has been addressed.**
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.**
 - *Districts have been defined; RC – Residence C, WCB – Wetlands Conservancy District.*
 - **Abbreviations added to the Legend of Abbreviation and this comment has been addressed.**
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.**
 - **Vertical Scale added and comment has been addressed.**
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.
- *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.**
 - **Labels have been added and the entire length of the roadway is now shown. Comment has been addressed.**
5. Please state the roadway speed that is intended for this Subdivision Roadway.
- *Design Speed is 25 MPH (6.8.1 Table 1A – Minimum Design Standards for Local Streets).*
 - **Comment has been addressed**
 - *See Note 1., added to Sheet 3.*
 - **Comment addressed**
6. Please provide Benchmarks on the plans
- *Benchmarks are provided in lower left corner on Sheets 5 & 6.*
 - **Comment has been addressed**
 - **Comment 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.**
 - *Labels and Notes 2, 3 & 4, have been added to profile (Sheet 3) to designate curb type and locations.*
 - **It is still unclear where each cubing type is used. The “Typical Roadway Cross Section” on Sheet 3 of 14 appears to have the berm portion crossed out with no other label added. There are notes added underneath the “Typical Roadway Cross Section” but they do not state on both sides of the street or one side of the street. Some curbing appears to be hatched on the plan views, but no legend is provided to indicate which type of curb is what. Also on Sheet 9 of 14 There are still Hot Mix Asphalt Berm and details. Please provide more information related to curb types.**
 - *Clarified on Sheet 3; Curbing type is the same for both sides of the street; The Hot Mix Asphalt berm and Curb Detail has been removed from Sheet 9, since all curbing will be either slope granite or vertical granite per locations designated on plan. Also the “Cape Cod Berm (Type 2)” label has been removed and replaced with the “Curb – Sloped Granite Edging or Vertical Granite” label with the Thot Mix Asphalt Sidewalk with Grass Strip Detail also on Sheet 9.*
 - **Revised plans are now clear. Comment has been addressed (12/2/2020)**
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.**
 - *Per CMLP Engineer, Street lighting is already present along Main Street at set intervals on the utility poles now properly labeled on plan. Also See Note 26 (Sheet 7).*

- **Comment addressed**

9. Street Trees are planted 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.**
 - **Conduit has been moved and the comment has been addressed.**
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.**
 - *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. Actual location will be displayed on Proposed Plot Plan at time of Building Permit Application. At this time, house boxes have been reduced by ten (10') feet away from Main Street.*
 - **Driveways are still shown connecting to new subdivision. The previous 10/8/2020 comment still applies, but it is acceptable to Engineering that the driveway location be determined when the building permit is applied for.**
 - *Frontage Lots (Lot E & Lot F) are not part of the subdivisions. Actual location of driveway serving each dwelling from (Main Street or Road A) to be determined at such time a building permit is applied for.*
 - **It is acceptable to the Engineering Division that the driveway location be determined when the building permit is applied for. Comment has been addressed (12/2/2020)**
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.”

- Vanasse & Associates Inc. has prepared a traffic response letter dated September 21, 2020, with a follow-up letter dated October 27, 2020 relative to sight distance triangles.
 - **Comment has been addressed above.**

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.**
 - A Legend has been 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.
 - **A revised Site Evaluation Plan was not provided with the revised documents, and the lines are not defined in the legend on the Definitive Plan Set or the Watershed Maps. The previous 10/8/2020 comment still applies and these areas need to be defined.**
 - **A revised plan was included with the areas defined. Comment has been addressed. (12/2/2020)**

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.**
 - A Long-Term Operation & Maintenance Plan dated October 30, 2020 has been provided.
 - **No inspection or cleaning requirements are provided for the Underground Infiltration Chambers. Additionally, snow storage in the areas of the chambers should be prohibited due to the chamber stability and operations. The Long Term Operations and Maintenance Plan should be updated to include this information.**
 - Snow Storage within the island is suitable and does not need to be prohibited based upon the discussion with the vendor representative. Chambers have the design capacity to support eight feet of soil cover and current design only required about four-feet thus leaving additional design load for use as a live load for snow storage. There are no cleaning requirements for the Underground Infiltration System within each culdesac. Cleaning requirements are to be focused on each sediment forebay. Inspection ports will be provided at the beginning and each row of chambers.
 - **The Engineering Division does not believe that no cleaning of the chambers is required over its years of service. Additionally, CPW would need assurance that large snow removal equipment with the addition of the snow load would still be supported by the chamber system. A condition of approval should request the Concord Public Works Commission to approve the Chamber System in the Right of Way and if determined necessary by the commission, a revised**

Long-Term Operation and Maintenance Plan should be submitted and approved by the Engineering Division. Finally, the annual inspection reports and the periodic maintenance reports must be submitted as they occur to the Engineering Division. (12/2/2020)

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.
 - o *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.**
 - *The Stormwater Pollution Prevention Plan is provided as Sheets 13 & 14. The filing of the NPDES will occur a minimum of fourteen days prior to the start of construction.*
 - **A “Construction Period Pollution Prevention Plan” has been provided. The Engineering Division will review it, and provide comment if required. This can be a condition of approval and the NPDES filing can be a condition of approval.**
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.
 - o *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.**
 - *At this time, the updated Stormwater Report calculations for Subcatchments (M1 & M2) show that a rain garden is currently not necessary on Lot D1 or Lot F. A Bioretention Area Detail has been added (Sheet 8) and will be followed, if deemed necessary at time of building permit.*
 - **Comment has been addressed**
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.”
 - o *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.**
 - *The rate and volume increases indicated are to an arbitrary interior analysis point along the edge of Isolated vegetated wetland flags. The ORAD Plan illustrates the existing topography and locations of the five Depressions within this IVW. This*

does not represent an increase in runoff at the boundary to the upgradient Junction Square Condominium. Runoff from Junction Square actually discharges onto our site along northeasterly boundary to a low area (Depression Areas #5, #4 & #3) located partially within the Junction Square Open Space Parcel and within our site. The minor increases in question, are collected by Depression Areas (#1 & #2) where the storm events are mitigated in separate low areas located completely within our site, thus resulting in no increase in runoff at the site boundary (See ORAD Plan).

- **The Engineering Division understands that Link 1L is an arbitrary analysis point, but in the Drainage Report it states that “Available storage (1,761 cf) within Depressions #1 & #2, far exceeds volume increase of 212 cf”. This area is not analyzed in the Hydrocad model, and there is more offsite area (N/F- M.B.T.A., N/F Center Village, Inc., Town of Concord, and potentially Junction Square Condominiums Associates, Inc.) that contributes stormwater runoff to Depression #1 and #2.**
 - Stormwater Report has been addressed
 - **Stormwater report and calculations have been revised to show only a minor increase in volume to the isolated wetland which is to be mitigated through bioretention areas. See Engineering Division comments on 12/2/2020 comment #1 on page 13 of this document. This comment has been addressed.**
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.**
 - *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.*
 - **The previous 10/8/2020 comment still applies, and this should be a condition of approval.**
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.**

- **The previous 10/8/2020 comment still applies, and should be a condition of approval.**
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.**
 - **The Engineering Division has reviewed the revised stormwater report and Subcatcment P3 appears to now be connected. See Engineering Division comments on 11/9/2020 for further comments on the Stormwater Report.**
 - **Comment has been addressed. (12/2/2020)**
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 issue 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,**
 2. **Submit a request to the Concord Public Works Commission (PWC) to approve the system in the Right of Way with the maintenance of the system contracted to a company specializing in the maintenance of these systems that is paid for and scheduled by a homeowners association created for this development,**
 3. **Propose and maintain the chamber system on private property through a homeowners association created for this development, which will not require PWC’s approval**

- *We are agreeable to a condition requiring a to submittal in writing to the Public Works Commission.*
 - **A condition of approval should request the Concord Public Works Commission to approve the Camber System in the Right of Way.**
 - **Condition of approval still applies, and the three options mentioned above are available to the Applicant. (12/2/2020)**
21. The drainage pipe layout at the end of both Cul-De-Sacs require the drain pipes flowing into the sediment forebays to become partially submerged and back flow prior to stormwater runoff enters the infiltration chambers in the Cul-De-Sac islands. This will result in more sediment entering the infiltration chambers than if and inflow pipe was show at one end of the sediment forebay and a second outflow pipe was proposed at the opposite side of the forebay. Additionally, calculations were to provided that show the first 1-inch of flow will enter the sediment forebays before the outflow pipe backflows into the infiltration chambers.
- *We will discuss with the Town engineer, the preferred method of pipe conveyance. The Report does include calculations (See report Section 2.4 – Sediment Forebay Sizing) that show the first 1-inch of flow will enter the forebay.*
 - **The Engineering Division will discuss the preferred method of pipe conveyance. The Sediment Forebay Sizing was review and will be reviewed again with revised calculations from comment #19 and #22.**
 - *The Report does include sediment forebay calculations (See report Section 2.4 – Sediment Forebay Sizing) that show the first 1-inch of flow will enter the forebay.*
 - **The sediment forebay sizing has been reviewed by the Engineering Division, but no discussion with the Engineering Division has occurred. The previous 10/8/2020 comment still applies.**
 - Sediment Forebay Volume is provided for 1-inch.
 - **The design and routing of the pipe conveyance to the chamber is still not approved by Concord Public Works, but approval of this can be requested from the Public Works Commission as a condition of approval similar to the previous comment #20. (12/2/2020)**
22. The Routing Diagram and the Drainage Calculations do not have Subcatcments P10 and P11 going to the respective Chamber infiltration system. While in smaller storm events this may be the case, in larger storm event when the sediment forebays are full these areas will flow into the chamber systems.
- *The Routing Diagram will be updated to connect P10 and P11 to each infiltration system.*
 - **The Engineering Division will review the updated calculations when they are received.**
 - *The Routing Diagram has been updated to connect P10 and P11 to each infiltration system and has been reflected in the revised stormwater report*
 - **The Engineering Division reviewed the revised stormwater report and P10 and P11 appears to now be connected. See Engineering Division comments on 11/9/2020 for further comments on the Stormwater Report.**
 - **Comment has been addressed. (12/2/2020)**
23. Please include the pipe Velocity (f/s) in the rational method calculations.
- *Storm Sewer Design Table will be expanded to include pipe velocities.*
 - **The Engineering Division will review the updated calculations when they are received.**
 - *Storm Sewer Design Table has been expanded to include pipe velocities.*



- **Velocity has been added to the Rational Method Calculations, and the comment has been addressed.**
24. The rational method calculations show that the capacity of some of the catch basin grates may be exceeded. Please provide grate inlet capacities analysis for review.
- *Inlet grate capacity calculations will be provided.*
 - **The Engineering Division will review the updated calculations when they are received.**
 - *Inlet grate capacity calculations have also been provided.*
 - **Calculations have been reviewed, and the comment has been addressed.**
25. Bottom of chamber systems close to 2 feet from seasonal high ground water. Ground Water Mounding Analysis is provided, but it is unclear if the calculation was performed if the basin was full or with the flow from what storm event. Please provide additional information stating if the calculation was performed with the basin full or what storm was modeled.
- *The Groundwater Mounding Analysis was performed full up to the 100-year storm.*
 - **The Engineering Division will discuss the preferred method of pipe conveyance. The Sediment Forebay Sizing was review and will be reviewed again with revised calculations from comment #19 and #22.**
 - **Comment has been addressed.**
26. Concord Public Works Design and Construction Standards, Section 2 requires that “Double catch basin grates shall be installed perpendicular to the curb line.” Please update the drawings to incorporate this.
- *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.**
 - *Double grate orientations have been updated, with granite curb inlets shown in plan view*
 - **Double Grates are now perpendicular to the curb line, and the comment has been addressed.**
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.**
 - *Agree, condition of approval.*
 - **The previous 10/8/2020 comment still applies, and 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.**
 - *See Patriot Excavating Letter for response*

- **The previous 10/8/2020 comment still applies, and this will be reviewed by the Engineering Division when the applicant applies 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.**
 - See Symes Supplemental Trucking Letter dated October 30, 2020.
 - **The previous 10/8/2020 comment still applies, and this will be reviewed by the Engineering Division when the applicant applies 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.**

- A Definitive Street Topographic Plan (Sheet 5) has been added, to illustrate only the cut area grades required to construct the roadways. Please note, labels have been provided indicating where proposed grades match exiting grades within turnaround areas.
The six Geoprobes (GP801 – GP806), conducted by Haley & Aldrich, Inc, provide further confirmation of suitable depths of sand, down to twenty-five (25') feet; (Road A – STA 2+09). Test locations as illustrated by Geoprobe Plan & Profile added to Sheet 9. An additional Plan & Profile has been added for Lots 1-5 (Sheet 7). Soil Observation Depths have also been added to both Street Plan & Profiles (Sheets 3 & 4).

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 to confirm that specifications and standards have been followed.

- **Engineering Division has reviewed the new Geoprobe soil testing and it does not indicate any refusal due to bedrock. Geoprobe hole 805 is in a particularly deep cut and while the test hole did not go as deep as the proposed water, it does appear that no bedrock was found. The Engineering division was not present during this testing.**
 - A copy of the Haley Aldrich Geoprobe Report, conducted on October 22, 2020 has been provided to document in writing the presence of suitable material within the cut areas associated with the grading requirements of the proposed subdivision roadway cul-de-sac.
 - **See previous response no further comments. (12/2/2020)**

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.**
 - **The previous 10/8/2020 comment still applies, and 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.**
 - Agree, condition of approval.

- **The previous 10/8/2020 comment still applies and should be a condition of approval. This language did not appear to be included in the “Construction Period Pollution Prevention Plan”.**
33. On the Stormwater Pollution Prevention Plan temporary settling basins are show 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.**
 - **The Sediment Forebays have been relocated, but the protection of the infiltration system language did not appear to be included in the “Construction Period Pollution Prevention Plan” or the plans.**
 - *Plan notes has been added to protect underground infiltration system.*
 - **Language has been added to plans, and comment has been addressed. (12/2/2020)**
34. 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 including the Definitive Subdivision Plan and supporting documentation.
- *Ok*
 - **Comment Addressed**
 - *Agree, our office is available to meet or discuss with Engineering prior to hearing.*
 - **The previous 10/8/2020 comment still applies. The Engineering Division is available for discussion at the applicant’s request.**

Engineering Division 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.
 - *Contours, obtained from the Center Village Site Plan, have been added to the applicable sheets. The proposed cut slope (2:1) has been moved away from the common boundary.*
 - **Some Contours have been added to the plans, but they are not labeled or connected to this sites grading. The proposed grading has been moved farther away from the existing N/F Center Village, INC development, but no Geotechnical Engineer certification is included stating that the slope is outside the zone of influence of the existing housing unit foundations. The Certification can be a Condition of Approval.**
 - *Condition of Approval relating to earth removal. Please note, Building Division also has authority to request additional information and safe guards within the provisions of the International Residential Building Code prior to construction during review oof Building Permit Application.*
 - **This should be a condition of approval. (12/2/2020)**

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.
 - See response to Comment #34 above.
 - **The Engineering Division is available for discussion at the applicant's request.**

Engineering Division comments on 11/9/2020:

1. **The Revised Stormwater Report Dated November 2, 2020 has significantly updated the Predevelopment Subcatchment areas. The predevelopment total area of 357,132 Sq-Ft does not match the postdevelopment total area of 330,370 Sq-Ft. These numbers should match because the outer limits of the drainage area appear to be the same in the pre and post condition on the Watershed Maps. Please update the calculations to have the correct are or provide clarification as to why the areas are different.**
 - Updated Watershed area calcs have been further reduced for both Existing analysis and proposed analysis to follow limit of work line associated with wetland filling of 4,930 square feet and protection of additional trees on Lot 11.
 - **In the revised calculations the pre-development area matches the post-development area and this comment has been addressed. (12/2/2020)**
2. **In the Revised Stormwater Report Dated November 2, 2020 there appears to be an error in the calculations of inflow area to Link 1L. When the individual subcatcment areas going to Link 1L are added the total area is 281,734 Sq-Ft, but the Link 1L summary on page 180 of the report has an inflow area of 236,304 Sq-Ft. Please update the calculations to have the correct area or provide clarification as to why the areas are different.**
 - Stormwater Report has been revised and resubmitted with reduced matching areas for existing and proposed due to further mitigation measures incorporated.
 - **In the revised calculations the areas match and this comment has been addressed. (12/2/2020)**
3. **The tree removal for the line of sight triangle shall be performed before the start of construction so that construction vehicles will have the appropriate sight line when pulling out of the site.**
 - Agree, Condition of Approval
 - **This comment can be a condition of approval (12/2/2020)**
4. **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.**
 - Ok

Engineering Division comments on 12/2/2020:

1. **Table 5.0: Volume of Runoff | Comparison Location 1L on page 9 of the revised Stormwater Report dated November 13, 2020 under the 2 year storm event has an asterisk that states “*Multiple pocket Bioretention Areas, with a combined storage area equal to 1.5 times the volume (1.5 x 26 = 39 cf) will be provided along limit of work line. This additional storage on Lots 7, 10 & 11, will mitigate this negligible volume prior to and outside of the onsite Isolated Vegetated Wetland.” These areas should be identified and shown because there are steep slopes along the limit of work line and any additional grading for these bioretention areas may have other impacts to the project and its limits of disturbance. This can be a condition of approval. (12/2/2020)**

-
2. There are several underground infiltration structures that are to be installed for this project that are critical to the subdivisions stormwater mitigation. How will these structures be maintained to operate correctly throughout the life of the subdivisions? Will each lot have a long term operation and maintenance plan that is the responsibility of the homeowner? (12/2/2020)
 3. Recommend having an emergency overflow on the sediment forebays due to the large amount of runoff that has the potential to enter the forebays. (12/2/2020)
 4. 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. (12/2/2020)