



Oak Consulting Group

September 15, 2022

Project 16012

Ms. Elizabeth Hughes, Town Planner  
Town of Concord  
1414 Keyes Road  
Concord, MA 01742

Re: CPW – Engineering Division Review  
Concord Academy – Centennial Arts Center  
Concord, Massachusetts

Dear Ms. Hughes:

We are in receipt of a memorandum dated 8/31/2022 from Justin Richardson, P.E., Assistant Town Engineer. The memo offers several comments and requests for additional information from review of the ZBA and Planning Board applications for the above referenced project. We have made revisions to the plans and stormwater calculations in response to these comments. Please find the enclosed:

- Site Plans, Revised 9/15/22; and
- Stormwater Report, Revised 9/15/22.

Below are the comments received with the applicants response in **bold**.

Engineering Division Comments (08/31/2022):

1. 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.

**Applicant response 9/15/22: The applicant recognizes that the project will disturb more than one acre of land and will require coverage under the NPDES Construction General Permit (CGP). As part of this permit a site specific SWPPP is required.**

**The project is a large-scale project and will require coordination of logistics with the Owner, project design team and contractor. At this time has been no contractor chosen for the project. Prior to the start of construction, a SWPPP will be prepared, in coordination with the project team, and the appropriate NOI for coverage under the CGP will be filed. The applicant will provide a copy of this filing and the SWPPP to the Town.**

2. The Traffic Study is required to determine if additional traffic will be generated by the development. The traffic study should also include line of sight determinations for all driveways being improved.

**Applicant response 9/15/22: The applicant is in the process of retaining a traffic engineer and the requested report will be submitted as soon as its complete.**

3. 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. This includes ADA compliant ramps at all driveway entrances.

**Applicant response 9/15/22:** The applicant will obtain a ROW and/or Driveway permit from CPW prior to starting work. All work will comply with Concord Public Works Design & Construction Standards and Details.

4. The accessible space at the southeasterly edge of the parking lot do not appear to be graded at 2% or less.

**Applicant response 9/15/22:** Additional grading detail as well as a note has been added to sheet C-003 indicating a maximum grade for the accessible spaces.

5. Please explain why in HydroCAD the Dynamic Storage-Indication method was used instead of the more typical Storage-Indication method?

**Applicant response 9/15/22:** We typically use this method to account for tailwater conditions within a system that can affect the flow through a system. The following is a description from HydroCAD about this method. “A dynamic routing method also calculates the nodes in flow order, but evaluates every node at each time step. This allows each node to respond to other conditions, such as varying tailwater or pump switching. For these situations, HydroCAD provides the *Dynamic Storage-Indication method*. DSI uses the same calculations as the Storage-Indication method, but permits automatic tailwater capabilities by updating the routing curves at each time step.”

However, as required in the Town’s drainage standards, the calculations have been revised using the Storage-Indication method.

6. Please explain why in HydroCAD the Lag/CN method was used in calculating the Tc instead of the more typical TR-55 method? Additionally, on the Pre and Post Development Subcatchment Plan please label the “longest flow path” lines so that it is clear what was used in the calculations.

**Applicant response 9/15/22:** We typically use the Lag method as a simpler estimate of the Tc and this method is allowed in the MADEP Stormwater Handbook. However, the stormwater calculations were revised using the TR-55 method and the longest flow paths have been labeled on the Subcatchment plans.

7. The Plastic Grid Reinforced Lawn, Permeable Concrete Unit Pavers, and Stabilized Stone Dust Paving while still pervious should be called out separately in the Subcatchments with the appropriate curve number that is based on the compacted base.

**Applicant response 9/15/22:** The stormwater calculations have been revised with the areas of reinforced lawn, permeable pavers and stone dust areas have been separated out and classified as “gravel.”

8. Inspection reports from the LTOMP are to be submitted to the CPW Engineering Division annually.

**Applicant response 9/15/22: Comment noted. The applicant will submit all required reports and inspections.**

9. The Water Quality Swale (that is essentially a Basin), basins and Sediment Forebay need to be detailed. These areas shall comply with CPW Design and Construction Standards, Sections 2 “Drainage Standards”. Currently, the basin does not have an emergency overflow and the appropriate amount of freeboard. In the 100-year storm event the basins overtop according to the calculations. Please revise the drainage calculations to incorporate the changes necessary to comply with CPW Design and Construction Standards.

**Applicant response 9/15/22: Water quality swale A has been revised to eliminate the outlet structure in favor of a longer conveyance with stone check dams to retain flow for treatment. Swale B has been revised to provide 1’ of freeboard and a second area drain outlet structure has been added to serve as an emergency overflow.**

**A detail for the sediment forebay outlet has been added to the Sheet C-008 and Sheet C-011 has been added to the plan set with details and sections for the swales.**

10. Water Quality Volume calculations should be provided.

**Applicant response 9/15/22: Water quality volume calculations have been included in Appendix D of the revised stormwater report.**

11. Why is no sediment Forebay provided for Basin B? Stormwater runoff from the driveway of #228 Main Street flows into the basin.

**Applicant response 9/15/22: Because of the sheet flow into the basin, a forebay is not practical for this basin. Alternatively, in combination with sediment removal from the moderately sloped lawn and landscape area upgradient of the basin, a pea stone diaphragm has been added to the top of the basin slope to help filter stormwater entering the basin.**

12. A groundwater mounding analysis is required for all stormwater infiltration areas with less than 4-foot separation from estimated seasonal high ground water.

**Applicant response 9/15/22: The mounding calculations using the Hantoush Method for the proposed infiltration basins (Subsurface Infiltration Basins 1 and 2) can be found in Appendix D in the revised Stormwater Report. These calculations show that the groundwater mound below the infiltration basins will not reach a breakout level.**

13. The Subsurface Infiltration System is required to have an overflow per the CPW Design and Construction Standards, Sections 2 “Drainage Standards”.

**Applicant response 9/15/22: The Infiltration System 1 has been revised to include a grated opening on the inspection port in the northwest corner of the system where the grade is lowest. This will serve as an overflow for the system as well have aid in system venting.**

Ms. Elizabeth Hughes  
Concord Town Planner

**The downspout boot detail has been revised to specify an overflow that will spill to the ground is the system backs up.**

14. The Stormwater Report should provide rational method calculations in accordance with Concord Public Works Design & Construction Standards & Details, Section 2 - Drainage Standards requires "rational method for a 100-year frequency storm event". Please provide these calculations, and also ensure that the grate capacities for catch basins are not exceeded.

**Applicant response 9/15/22: The required grate capacity and stormwater conveyance calculations using the rational method are included in Appendix C of the revised stormwater report.**

15. Flood Plain fill areas should also include at least portions of the emergency access road. CPW Engineering requires AutoCAD design plans that include the existing and proposed surfaces to confirm the flood plain alteration. Please provide AutoCAD .dwg files for review.

**Applicant response 9/15/22: Sheet C-009 has been revised to include the additional fill and compensatory storage area. The AutoCAD file will be forwarded directly to Engineering.**

16. 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.

**Applicant response 9/15/22: Comment Noted.**

We look forward to discussing the project further with the Planning Board. Please feel free to contact me at if you have any questions or require additional information.

Sincerely,

OAK CONSULTING GROUP, LLC



Sean P. Malone, P.E.  
Vice President

SPM:

Enclosures

Cc: