

August 9, 2022

Devens Enterprise Commission  
c/o Mr. Neil Angus, AICP CEP, LEED AP  
Environmental Planner  
33 Andrews Parkway  
Devens, MA 01434

RE: Nitsch Project #9419  
Site Plan and Stormwater Review  
31 Independence Drive  
Devens, MA

Dear Mr. Angus:

Nitsch Engineering received and reviewed the Site Plans (the Plans) entitled, "Proposed Building 31 Independence Drive Devens, Massachusetts," dated June 29, 2022, prepared by Eugene T. Sullivan, Inc. In addition, Nitsch Engineering has received and reviewed the following documents:

1. Level Two Unified Permit – Checklist for Determination Of Completeness;
2. Level 2 Unified Permit Application, prepared by Eugene T. Sullivan, dated June 29, 2022; and
3. Storm Drainage Management Report, prepared by Eugene T. Sullivan, dated June 29, 2022.

Nitsch Engineering is providing comments with respect to Site Plan and Stormwater Management in this letter. Please note that traffic and landscape review are being provided in separate letters.

## PROJECT UNDERSTANDING

The project will be located on a previously undeveloped site of approximately 5.6 acres. The project is a 111,000-square-foot distribution center and warehousing with two (2) office spaces. The parking area is located in the front of the building with a fire access road that wraps around the left and back sides of the building, connecting to a private driveway running along the right side of the building. The parking features spaces for carpooling, electric vehicles, and porous pavement.

Based on Nitsch Engineering's review of the submitted documents and the above-referenced regulations, we offer the following comments for consideration:

## DEC SITE DESIGN STANDARDS

1. **Exhibit C of the Zoning By-Laws** requires 111 parking spaces for this site given the noted use as "office, distribution, and warehousing." The Parking Calculations table references "manufacturing and industrial use," which is not consistent with the note. The Applicant has proposed 63 spaces including four (4) accessible spaces. We understand that reduced parking is encouraged by the Devens Enterprise Commission (DEC), but the Applicant should review these calculations for consistency and provide justification for why a reduced number of parking spaces is appropriate.
2. **974 CMR 2.07(1)(f)** requires that water mains shall connect to the Devens water supply system and the system shall be designed to form a continuous loop with existing or proposed water mains. The Applicant should confirm whether the existing water line central to the site is abandoned or not. If it is not abandoned, it should remain in place or be integrated into a continuous loop.

3. **974 CMR 3.04(3)(a)1.a** requires a 60-foot landscaped strip between the front lot line and the parking lot in cases where buildings in the Rail, Industrial, and Trade Related District are set back 150 feet or more and parking is located in the front of the building. All parking is currently provided in front of the building and the landscape strip provided ranges between 20 and 38 feet in width. The Applicant should review and address this requirement.
4. **974 CMR 3.04(3)(a)(4.d)** requires that commercial and industrial driveway widths shall be no greater than 24 feet for a two-way (2-way) driveway and 14 feet for a one-way (1-way) driveway. The Applicant should provide turning movements to justify the proposed driveway width of up to 90 feet.
5. **974 CMR 3.04(3)(a)(4.g)** requires standard “STOP” at the intersection of driveways with streets and roads. The Applicant should review and address this requirement.
6. **974 CMR 3.04(3)(a)(5)** requires that access to buildings shall be kept clear of hazardous substances and obstacles that may, in the opinion of the fire officials, impede the proper placement of fire apparatus and personnel in case of emergency. The Applicant shall obtain a letter from the Devens Fire Chief stating there is adequate access for fire equipment. Access for fire equipment shall be provided and maintained on at least two (2) sides of the building. Fire lanes shall be designated with pavement marking and signage. The Applicant has proposed a fire access driveway that extends from Independence Drive around the rear of the building and connects to a private driveway (Devens Recycling Center, 45 Independence Drive). We note this fire access is located immediately adjacent to the property line, within the setback. If approved by Devens Fire and the DEC, this will require an access easement from the abutting property owner. The Applicant should provide alternatives to this configuration that provide egress to the public right-of-way (Independence Drive).
7. **974 CMR 3.04(3)(a)(10)** requires that all proposed developments shall demonstrate they have made reasonable efforts to consider and, where feasible, include Transportation Demand Management (TDM) initiatives early in the site design and layout process. This includes providing a minimum of 5% of total parking spaces each for preferred parking for any ridesharing services (car/van vanpools), hybrid or zero/low-emitting vehicles, and hybrid/electrical vehicle plug-in/recharge stations. The Applicant should review and address this requirement and add these calculations to the Parking Summary table.
8. **974 CMR 3.04(5)(a)** requires that topographic alterations shall be minimized, such that buildings, roadways, parking, detention/retention facilities, and all other site improvements shall be located first in previously developed, cleared, disturbed, and/or improved areas of the site, before proposing topographic alterations in previously undisturbed or vegetated areas. We note that the entire site will be disturbed with all existing trees removed. The Applicant should evaluate alternatives to reduce the footprint of the development and address this requirement.
9. **974 CMR 3.04(5)(b)** states that topographic alterations in undeveloped woodland areas within the setbacks may be approved by the DEC if it determines that the construction of earth berms or slopes will reduce any adverse impacts of development. Tree removal shall be allowed in undeveloped woodland within the setbacks to create a berm or other topographic alteration, so long as alterations are minimized. We note that tree removal and alteration is proposed within the setback; the Applicant should review and address this requirement.

10. **974 CMR 3.04(6)(a)(2.a)** allows for sloped granite curb, vertical granite curb, cement concrete curb, and bituminous Cape Cod berm but vertical granite curb or cement concrete curb is required at all driveway entrance roundings to the point of rounding tangency. Cast-in-place monolithic, reinforced, air-entrained concrete vertical curb and sidewalks, or vertical granite curb is required where sidewalks abut driveways or parking areas. The submitted plans do not provide the curb type between sidewalk and parking areas. The Applicant should review and address this requirement.
11. **974 CMR 3.04(6)(a)(4)** requires that, to the extent feasible, service areas, dumpsters, or open storage areas shall be located to the rear of buildings and placed on cement concrete pads. The dumpster is currently located at the front of the building. The Applicant should review and address this requirement.
12. **974 CMR 3.04(6)(a)(5)** requires that loading docks shall be located to the sides and rear of buildings and shall not be located forward of the front facade of the building. The loading dock is currently positioned in the front of the building. The Applicant should review and address this requirement.
13. The existing tree line and significant trees should be shown on the Civil and Landscape Plans to better document the proposed tree removal. We note that the plans currently show work up to the property line, which indicates all trees to be removed. There is minimal proposed landscaping or screening provided in the proposed plan set. Refer to Landscape Review letter by IBI Group for additional comments.

## **DEC STORMWATER DESIGN STANDARDS**

14. **974 CMR 3.04(4)(a)(3)** decrees that Low Impact Development (LID) Stormwater Management design shall be incorporated into the site plan to allow for the full utilization of the property while maintaining the pre-development characteristics of the site as though it were a "green field" (volume, frequency, peak runoff rate) to the maximum extent feasible. Maximizing the use of pervious areas minimizes stormwater runoff from a site, improves stormwater quality, and increases groundwater recharge. We note that the Applicant has incorporated the green field requirement into their existing conditions calculations and has proposed two (2) parking areas for the site as porous pavement. While we appreciate these efforts, there is a significant portion of the proposed site that is either impermeable pavement or roof area. The Applicant should be mindful that maximizing the use of pervious areas minimizes stormwater runoff from a site.
15. **974 CMR 3.04(4)(b)(4)** requires that catch basins or other drainage features in loading/unloading and/or fueling areas shall be equipped with post-indicator valves (which are to remain in the closed position) on the outlets for containment in the event of any spills. The loading dock does not appear to have any associated drainage. The entire parking and loading area is draining to a singular catch basin, which causes concerns with capacity and contamination. The Applicant should consider adding additional drainage infrastructure to isolate the loading dock area in the event of a spill and reduce pressure on the catch basin. The post indicator valve can be left in the open position with signage that directs the operator to close the valve in the event of the spill. The Applicant should review and address this requirement.
16. **974 CMR 4.08(1)(a)** strives to replicate natural conditions of infiltration, evapotranspiration, and runoff. In typical natural conditions, approximately 50% of stormwater infiltrates, 40% leaves land through evapotranspiration, and 10% leaves the land as runoff. The Applicant should consider adjusting the proposed stormwater management plan to meet this objective as the majority of the site is impervious and minimally planted.

17. **974 CMR 4.08(1)(b)** strives to promote decentralized stormwater management systems modeled after natural hydrologic features and infiltration practices that facilitate local groundwater recharge. The large majority of site runoff is being conveyed in closed drainage to a centralized subsurface management system. The Applicant should review and address this objective.
18. **974 CMR 4.08(1)(c)** strives to promote water conservation and efficiency through stormwater capture, treatment, and reuse. It appears that there is no stormwater reuse proposed for this project. The Applicant should review and address this objective.
19. **974 CMR 4.08(3)(c)** requires, in addition to compliance with the SMS, the post-development peak rate of stormwater discharge offsite shall not be greater than the predevelopment peak rate of stormwater discharge for the two- (2-), 10-, 25-, 50-, and 100-year storm events from any point of discharge on the site. The Applicant should include a HydroCAD report that models the Existing Conditions for the 50-year design storm.
20. **974 CMR 4.08(4)(d)** requires that recharge basins have an emergency outlet to accommodate storm flows in excess of the 100-year storm event. A minimum 1-foot freeboard distance shall be established between the 100-year flood elevation and the top of embankment. The Applicant should review and address this requirement. We recommend an emergency overflow outlet be added to the recharge basin with an invert set at the peak elevation of stormwater in the basin during a 100-year storm event.
21. **974 CMR 4.08(4)(f)** requires the floor of all basins and infiltration structure a minimum of 4 feet above the high groundwater elevation. High groundwater testing shall be conducted before the basin design at the proposed location of each basin in compliance with Title V. The Applicant should provide groundwater results and the location of the infiltration basin and subsurface infiltration system.
22. **974 CMR 4.08(4)(g)** requires a falling head soil permeability test in infiltration basins before the basin design in all basins and infiltration structures. We recommend a falling head soil permeability test be performed in the location of the proposed infiltration basin, subsurface infiltration, and permeable pavement locations to ensure it will perform as designed. The Applicant should review and address this requirement.
23. **974 CMR 4.08(4)(i)** requires fencing and/or screening of stormwater detention/retention basins if the DEC determines that safety or appearance require such measures. We defer to the DEC regarding the requirement of fencing and/or screening of the proposed infiltration basin.
24. **974 CMR 4.08(6)(e)** requires details for all drainage structures shall be provided. The Applicant should review and address this requirement as it appears that not all drainage features are detailed, such as the area drain and infiltration basin.
25. **974 CMR 4.08(6)(f)** requires flow capacities shall be calculated using 2 feet per second (fps) minimum velocity and 10 fps maximum velocity under a two- (2-) to 25-year design storm event. The Designer shall account for partial pipe flow capacities, if applicable to the design. The Applicant should provide flow capacity calculations for all proposed pipes in the drainage design, along with a grate capacity calculation for the proposed catch basin due to the large size of its contributing drainage area. Furthermore, We recommend the Applicant consider adding more catch basins throughout the pavement in the front of the building due to concern that a single catch basin for that entire pavement area could result in flooding and/or surface freezing in the lot, and potentially on Independence Drive, if the pipe were to be overwhelmed by a large storm or the pipe becomes clogged.

26. **974 CMR 4.08(1)(d)** requires an Operation and Maintenance Inspection and Maintenance Schedule, which shall include Detention/Retention Basin Inspection and Maintenance. The Applicant should add these maintenance requirements to their Operation and Maintenance Manual for the Storm Drainage Facilities document.
27. **974 CMR 4.08(1)(f)** requires the Operation and Maintenance Plan must be signed by the Owner and must include a provision that the transfer of responsibilities is understood by future owners. The Applicant should review and address this requirement.

### **STORMWATER DESIGN AND CALCULATIONS**

28. The Stormwater Report Introduction should be updated to include the proposed building footprint size as designed.
29. The Applicant should update the drainage design to include drainage structures that will collect stormwater generated on the fire access driveway along the west side of the site to reduce stormwater flow onto Independence Drive. Currently, there are no measures in place to collect stormwater from this portion of the fire access driveway.
30. The HydroCAD model should be updated to better reflect the Plans and site hydrology as follows:
  - a. The proposed fire access drive should not be modeled as >75% Grass Cover Good Condition as it is proposed to be made of grass pavers. The grass pavers have a higher compaction and will generate more runoff than a natural grass cover;
  - b. Stormwater runoff generated on the portion of the fire access driveway that runs along the west property line is not routed to the proposed CB-1 and Infiltration System in the Plans but is modeled as such in the HydroCAD model. The HydroCAD model should be updated to reflect this; and
  - c. It is unclear how the majority of the site area that drains to the infiltration basin will reach the basin. We recommend the Applicant provide more grading detail within proposed Subcatchment 1D to better illustrate how stormwater will end up flowing into the infiltration basin within this subcatchment.
31. We note that the rainfall data listed in the Stormwater Report Introduction is different from the rainfall data used for the HydroCAD calculations. The Applicant should confirm which rainfall values are correct and update for consistency.
32. It is our understanding based on the submitted materials that the site captures and contains the majority of stormwater runoff in the existing condition, and that the proposed design intent is to mimic this condition by containing all stormwater within the infiltration systems without overflow. However, a significant portion of site area is directed to the subsurface system and in a severe event the system may become inundated. This would result in ponding, and potential freezing issues, in the proposed parking lot. We understand that the intent is to contain all stormwater up to the 100-year storm, so we recommend an emergency overflow outlet be added to the subsurface system with an invert set at the peak elevation of stormwater in the 100-year storm event.
33. We note that a portion of the rear fire access road grading promotes stormwater flow toward the proposed building. We recommend the Applicant regrade that portion of the fire access driveway to promote stormwater draining away from the building and place area drains along the north edge of the driveway instead of the south edge.

34. We recommend all proposed drainage structures have rim and invert elevations called out on the Plans for review of constructability.
35. We note there are two (2) proposed DMH-3 drainage structures on the Plans and one (1) of them should be renamed to avoid confusion.
36. The proposed pipe running from DMH-2 to DMH-3 appears to have a negative slope.
37. We recommend the Applicant provide a map showing the location of test pits performed on the site.
38. We recommend that the Applicant include additional detail in the Erosion and Sediment Control Plan including inlet protection for proposed drainage structures, tree protection zones, and temporary sedimentation basins.
39. The Applicant should provide a detail of the infiltration basin including the various subgrade materials and be labeled on the Plans.

#### **CONFORMANCE WITH THE MASSDEP STORMWATER STANDARDS**

In accordance with **974 CMR 4.08(2)(a)**, Nitsch Engineering reviewed the stormwater design and calculations for general conformance with the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Standards. Based on this review, we offer the following comments:


40. **Standard 5** requires for land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. The Applicant should confirm whether the proposed use of the Industrial Building will result in a designation of a Land Use with Higher Potential Pollutant Loads.
41. **Standard 3** requires loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, LID techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook. While we believe this Standard is being met, there appears to be inconsistencies in the values listed on the Calculation Sheet. The Applicant should review and address for clarity.
42. **Standard 6** requires stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. We note that the project site is within a Zone II, an Approved Wellhead Protection Area. We recommend the Applicant confirm the stormwater management design meets the requirements outlined in this standard. The Applicant should also acknowledge this in the MassDEP Checklist for Stormwater Report under Standard 6: Critical Areas.

Devens Enterprise Commission: Nitsch Project #9419  
August 9, 2022  
Page 7 of 7

If the Commission has any questions, please call.

Very truly yours,

**Nitsch Engineering, Inc.**

  
Paige Simmons, PE, LEED GA  
Project Engineer

Approved by:

  
Jennifer Johnson, PE, CFM, CPSWQ, LEED AP  
Deputy Director of Planning

PES/JLJ/ajc

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