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March 3, 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
Patton Road & Bulge Road Intersection
Site Plan and Stormwater Review
Devens, MA

Dear Mr. Angus:

Nitsch Engineering received and reviewed the Site Plans (the Plans) entitled, "Mass Development, Patton Road and Bulge Road Intersection and Improvements, Devens, MA", dated February 7, 2022, prepared by Weston & Sampson. In addition, Nitsch Engineering has received and reviewed the following documents:

1. Stormwater Report, Bulge Rd & Patton Rd Intersection Improvements, Devens, Massachusetts, prepared by Weston & Sampson, dated February 2022.

Nitsch Engineering is providing comments with respect to the Stormwater Management in this letter.

PROJECT UNDERSTANDING

This MassDevelopment Project consists of roadway and drainage improvements along an approximately 1,500-foot stretch of Bulge Road, terminating at the intersection with Patton Road, in Devens, Massachusetts. The purpose of this project is to re-align the existing intersection of Bulge Road and Patton Road from a 'Y' intersection to a 'T' intersection. The project will also include resurfacing approximately 1,000 feet of Bulge Road, constructing curbing and continuous sidewalk, constructing approximately 350 feet of new roadway, and implementing drainage improvements in compliance with Massachusetts Stormwater Management Standards and MS4 Permit for Devens, Massachusetts.

DEC REGULATORY CONFORMANCE

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

DEC STORMWATER DESIGN STANDARDS

1. **974 CMR 4.08(2)(c)vi.** requires all projects shall incorporate low-impact development (LID) techniques for stormwater management to the maximum extent feasible. For projects proposing traditional closed drainage systems, the Applicant shall demonstrate to the satisfaction of the DEC why LID stormwater management design methods are not feasible. The Applicant should consider LID approaches, such as a roadside swale for the more moderately sloped portions of Bulge Road or provide clarification on feasibility.

2. **974 CMR 4.08(3)(b)** requires the post-development peak rate of stormwater discharge off-site shall not be greater than the pre-development peak rate of stormwater discharge for the 2-, 10-, 25-, 50-, and 100-year storm events from any point of discharge on the site. Table 1.0 provided in the Appendix B of the Stormwater Report indicates that this requirement has been met for all storms except the 50-year storm. Although the overall runoff is reduced, the individual drainage area (POA-1) is not. The

Applicant should review and address the requirement. Additionally, it appears there is a typo in Table 1.0 listing the 50-year storm twice, instead of the 100-year storm. The Applicant should address for clarity.

3. **974 CMR 4.08(3)(g)** recommends post-construction erosion control methods include geotextile and/or biodegradable erosion control fabrics staked or anchored to the slope, with loose weave to allow vegetative cover to be established. Vegetative cover shall consist of native woody plant species installed as live brush or nursery stock, or native grasses. The Applicant should review this recommendation as there are steep slopes on the edges of the roadway that will be disturbed during the construction.

4. **947 CMR 4.08(4)(d)** requires 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. It does appear that an emergency spillway is modeled in HydroCAD for INF-1 (Device #5?). However, it is not indicated on the Plans where the emergency overflow is located on INF-1 or INF-2. Additionally, as indicated in the HydroCAD model there is less than 1-foot of freeboard for both INF-1 and INF-2. The Applicant should review and address this requirement.

5. **947 CMR 4.08(6)(b)** requires Closed Drainage Systems (CDS) and swales shall be designed to accommodate the 25-year storm event based on the Rational Method without surcharging. The Applicant did not provide Closed Drainage calculations. The Applicant should review and address this requirement.

STORMWATER DESIGN AND CALCULATIONS

6. Under the Regulatory Compliance section of the Stormwater Report there is a reference to Hospital Road. The Applicant should update for clarity.

7. The Operations and Maintenance Plan mentions four (4) Stormwater Treatment Units but only one (1) is indicated on the plans. The Applicant should update for clarity.

8. A few inconsistencies in values were noted between the Recharge Calculations and the Phosphorous Calculations. The Recharge Calculations indicate 1.67 acres (72,862 sf) of proposed impervious while the Phosphorus Calculations indicate 1.64 acres. Additionally, the Recharge Calculations indicate 3,360 cf of recharge volume below the outlet while the Phosphorus Calculations indicate 9,534 cf below the outfall. The Applicant should review all calculations for consistency.

9. A few inconsistencies were noticed in the Drainage Structures Table and listed as follows. The Applicant should review and address for clarity and consistency.

    a. The rim elevation of OCS2 does not match between the Table and HydroCAD. Additionally, the rim is modeled as 24 feet by 24 feet but the detail indicates 30 feet by 30 feet.
    b. DMH1 is not listed in the Table.
    c. A 0.1’ drop between the invert in and invert out is recommended at DMH3, DMH6, DMH8, and DMH14.
    d. The invert in is lower than the invert out at DMH5 and DMH10.

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, Nitsch Engineering offers the following comments:

10. **Standard 8** requires a plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities shall be developed and implemented. It is noted that a Construction General Permit a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan narrative document was included as part of Appendix D, and a portion of the erosion control components have been indicated on the Plans and details. However, the plans are not inclusive of all the erosion control elements. For example, an Inlet Sediment Control detail is provided on Sheet C701, but the Construction Plans do not indicate the location of any inlet protection. The Applicant should update the Plans to be inclusive of all soil erosion and sediment controls.

11. **Standard 10** prohibits illicit discharges to the stormwater management systems. The Illicit Discharge Statement should be signed by the Engineer of Record.

If the Commission has any questions, please call.

Very truly yours,

Nitsch Engineering, Inc.

Paige Simmons

Paige Simmons, PE, LEED Green Associate
Project Engineer

Approved By:

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

JLJ/ajc

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