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April 2, 2018

Mr. Craig Dixon
Chairman
New Bedford Conservation Commission
New Bedford City Hall
133 William Street
New Bedford, MA 02744

RE: Nitsch Project #9972
Tarkiln Hill Road &
Kings Highway Improvements
New Bedford, MA

Dear Mr. Dixon:

This letter is in regard to the proposed road and drainage improvements along Tarkiln Hill Road and Kings Highway in New Bedford, Massachusetts. Nitsch Engineering has reviewed the following documents for compliance with the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards:

- Plans entitled "City of New Bedford, Department of Public Infrastructure, Tarkiln Hill Road Drainage Improvements, Notice of Intent Plans," dated March 2, 2018.
- Plans entitled "New Bedford, Kings Highway Improvements," sheets 67-72, 80-81, prepared by CDM Smith, no date.
- Notice of Intent with Drainage Report entitled "Kings Highway Improvements, New Bedford, Massachusetts, MassDOT Project No. 606709," prepared by CDM Smith, February, 2018.

The proposed project was submitted in two components designed by two different entities. Road Improvement plans, which include geometric alterations as well as stormwater management improvements, were designed and prepared by CDM Smith. The Stormwater Report was also prepared by CDM Smith. Offsite stormwater improvements and wetlands alterations and mitigation were designed by the New Bedford Department of Public Infrastructure.

Below are our comments on the proposed project, regarding stormwater management only:

1. The project meets the definition of a redevelopment project as defined by Standard 7 of the Standards.
2. The project includes the alteration of 6,296 square feet of an existing wetland. The plans are somewhat vague regarding how the wetland/drainage ditch will be re-established. The detail simply shows ballast stone in a depression. It is unclear whether this constitutes filling of wetlands. The applicant should confirm whether a Water Quality Certificate is required for this work since it exceeds 5,000 square feet.
3. The wetlands mitigation area is located approximately 5500 square feet south of the proposed wetlands alteration. It is proposed to be 7200 square feet. The wetlands mitigation area is somewhat disconnected from the existing wetlands in that area as there is a strip of upland proposed between the existing wetland area and the proposed mitigation area. It does appear to accept flow from an existing culvert, which will not provide continuous flow. We recommend a test hole be performed in the vicinity of the mitigation area to confirm seasonal high groundwater elevations and ensure the proposed wetland will thrive.
4. We recommend a rip-rap pad be added prior to discharge to the wetland NBS3. A detail of the pad – including sizing - should be added to the plans and the location of the pad should be relocated away from the wetland, preferably 25 feet from the wetlands consistent with the Conservation Commission policies. We recommend stone for pipe ends as defined in the Massachusetts Department of Transportation (MassDOT) specification book be used for the pad.
5. It does not appear that sizing calculations were provided for the proposed 4-foot x 3-foot box culvert. The proposed culvert has been designed at .1% which will limit its capacity to convey flow. Sizing calculations should be provided for this culvert.

6. The proposed project provides limited stormwater treatment. The majority of the improvements are only treated by deep-sump catch basins which provide 25% Total Suspended Solids removal. There are three BMPs proposed including two bioretention basins and one water quality swale. Although the TSS removal forms submitted with the Stormwater Report state that the bioretention basins will provide 90% TSS removal, we feel that is high. The Standards state that bioretention basins will provide 90% TSS removal if adequate pre-treatment is provided. There is no pretreatment provided to these small basins.
7. The bioretention basins treat approximately one (1) acre out of the six (6) acres within the project area and additional 24 acres outside of the project area. Therefore, the water quality treatment provided on this project is limited to a very small percentage of the project area.
8. We recommend the applicant consider including a structural water quality device to provide additional stormwater treatment.
9. The Stormwater Report states that the cumulative TSS removal for the entire project is 30%. This assumes that the bioretention basins provide 90% TSS removal. Therefore, we feel the actual cumulative TSS removal rate is somewhat lower.
10. The test holes/borings that were performed were within the existing road and not in close proximity to the proposed bioretention basins and swale. One test hole was only three (3) feet deep. The results of the test holes appeared to be quite variable and did not account for seasonal high groundwater. The Stormwater Management Report states that the results of the test holes do not give an accurate representation of soils conditions and seasonal high groundwater. We recommend that more accurate groundwater information be obtained.
11. The project includes a net increase of 29,800 square feet of impervious surface. This increase results in an increase in peak flows to the existing wetland NBS(3) for all storm events.
12. The detail for the bioretention basins does not include depths of stone, soil media, etc. The Stormwater report states there is 1.5 feet of soil media. The Standards recommend 2.5 to four (4) feet of soil media in bioretention basins.
13. We recommend the applicant check the input stage storage data for each of the BMP's proposed for the project. The stage-storage data seems inconsistent with the elevations shown on the plans. Also, the applicant should more clearly specify which BMP is being referred to (i.e. BMP 1, BMP 2, BMP 3) so the calculations clearly correspond with the plans.
14. The peak inflow for BMP#2 is lower than the outflow. We recommend that the applicant check the model for accuracy.
15. We recommend the plans that were prepared by DPI and CDM be more closely coordinated. For example, we recommend that the plans and numbering of structures be coordinated for clarity. It is unclear where the limit of work for each 'project' begins and ends.
16. The Long-Term Maintenance Plan refers to the Draft Department of Public Utilities Standard Operating Procedures regarding maintenance. The Standard Operating Procedures should be provided to insure they comply with the Standards.
17. The Operations and Maintenance Plan should include catch basin cleaning since street sweeping and the deep sump catch basins are part of the proposed treatment train in the TSS removal sheets.

If you have any questions, please call us at 617-338-0063.

Very truly yours,

Nitsch Engineering, Inc.

Scott D. Turner, PE, AICP, LEED AP ND
Vice President, Director of Planning

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