

1. The project meets the definition of a redevelopment project as defined by Standard 7 of the Standards.

Response to Comment: No response required.

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.

Response to Comment: The railroad ditch is not considered a federally jurisdictional wetland resource so a WQC is not required.

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.

Response to Comment: On April 9, 2018, a test pit was excavated in the proposed mitigation area, which confirmed the groundwater elevation is appropriate for the proposed finished grade. The test pit was witnessed by David Fredette.

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.

Response to Comment: The headwall outlet will be shifted 25' north and the rip rap pad will be added as suggested. A revised plan and detail will be submitted separately for review and approval and will include the stone for pipe end specified material.

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.

Response to Comment: The culvert slope is restricted to 0.1% due to the inverts of existing drainage systems and the downstream outlet elevation. Sizing calculations take the hydraulic grade line of the entire system and account for freeboard at drainage structures. Attachment D has been updated to include pipe-specific information.

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.

Response to Comment: The project has been updated to include pretreatment within Stormwater BMP 2 and 3. A sediment basin controlled by a check dam has been added downstream of the inlet to each basin.

7. The bioretention basins treat approximately one (1) acre out of the six (6) acres within the project area and additional 24 acres outside the project area. Therefore, the water quality treatment provided on this project is limited to a very small percentage of the project area.

Response to Comment: As noted in the drainage report, the majority of the project area is existing roadway and commercial/business parcels. The total increase in impervious area due to roadway widening, defined as redevelopment per Standard 7, is approximately 0.68 acres. Therefore, the water quality treatment provided is equivalent to the difference between existing and proposed conditions. Although the stormwater BMPs do not receive 100% of their flow directly from the new impervious area due to site constraints, their tributary areas are of an equivalent land type (i.e., roadway) in the same project area.

8. We recommend the applicant consider including a structural water quality device to provide additional stormwater treatment.

Response to Comment: Due to site constraints, it is felt that the available land for structural water quality treatment has been maximized to the greatest extent possible.

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.

Response to Comment: The design for the bioretention basins has been updated to include pretreatment, meeting the requirements for 90% TSS removal.

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.

Response to Comment: As stated in the comment, the constraints of the available test pit information were noted in the drainage report. As a result, a low infiltration rate based on hydrologic group "C" soils was used in water quality treatment calculations and a back-up underdrain system will be installed in each BMP to circumvent infiltration failure. The BMPs were graded to a shallow elevation to minimize the chances of groundwater infiltration. However, consideration will be given to obtaining additional groundwater information.

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.

Response to Comment: As noted in the drainage report, the increase in peak flows is also partially due to a new inlet alignment, which redirects flow away from other watersheds towards the existing wetland NBS(3). Therefore, some increase in peak flows is to be expected, even if the impact of additional area is mitigated. To mitigate the increases in peak rates of runoff, the addition of the three stormwater BMPs provides a measure of infiltration and detention. It is felt that the detention of the stormwater BMPs has been maximized and Standard 2 has been met by providing mitigation to the greatest extent practicable.

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.

Response to Comment: The "Typical Stormwater BMP" detail on Sheet 80 of the Kings Highway Improvements (CDM Smith) contains the depths and specified materials for the stone, soil media, etc. within the bioretention basins. The depth of the soil media has been increased from 18- to 24-inches, per page 26, Volume 2, of the Massachusetts Stormwater Manual.

13. We recommend the applicant check the input state storage data for each of the BMPs 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, BMP3) so the calculations clearly correspond with the plans.

Response to Comment: The model and calculations have been updated to reflect the current elevations shown on the design plans and to clarify naming.

14. The peak inflow for BMP#2 is lower than the outflow. We recommend that the applicant check the model for accuracy.

Response to Comment: The model has been updated to remove this error.

15. We recommend the plans that were prepared for 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.

Response to Comment: The project plans each follow a set numeric system. It is felt that updating the plans in this manner will cause undue confusion and therefore no changes will be made.

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.

Question for the City: The draft SOPs for DPI are still under development. Is it ok to share the maintenance BMP with ConComm?

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.

The Operations and Maintenance Plan has been updated to include cleaning of deep sump catch basins.

COMMENTS FROM SARA PORTER

1. I concur with Nitsch Engineering's comment on the need for a test hole to be excavated in the wetland replication area to establish where seasonal high groundwater elevation is

Response to Comment: On April 9, 2018, a test pit was excavated in the proposed mitigation area, which confirmed the groundwater elevation is appropriate for the proposed finished grade. The test pit was witnessed by David Fredette.

2. With regard to Nitsch comment number 2, it is my understanding that the goal is to remove all wetland vegetation, grade the ditch (swale) and line it with ballast stone with the idea of keeping it maintained as an open swale with no wetland vegetation. Therefore, it would be the permanent loss of 6,296 s.f. of Bordering Vegetated Wetland. The Commission normally requests a 1 ½ : 1 ratio of wetland replication to wetland impact. With that in mind would it be possible to increase the wetland replication area accordingly (increase it by approximately 2,250 s.f.)? The expansion could be easterly and northerly, where upland grass mix is proposed.

Response to Comment: The wetland mitigation area has been enlarged to provide 9,450 square feet of mitigation, which now meets the 1.5:1 ratio.

3. The cross section of the wetland replication area (Section A-A) does not show the 12" depth of over-excavation and therefore does not show where the hydric soils are to be placed.

Response to Comment: The cross section has been updated to show the 1' of over excavation with placement of 1' of wetland soil.

4. We would prefer that leaf mulch be used to mulch around the shrubs on the side slopes. Pine bark mulch (as referenced in the shrub planting detail) doesn't stay in place very well on slopes.

Response to Comment: The shrub planting detail has been revised to indicate placement of 3" of leaf mulch.

5. The following are Special Conditions that will be placed in the Order of Conditions relative to the wetland replication area.

Response to Comment: We have no objections to the suggested conditions.

1. 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.
2. 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.
3. We recommend the applicant consider including a structural water quality device to provide additional stormwater treatment.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. The peak inflow for BMP#2 is lower than the outflow. We recommend that the applicant check the model for accuracy.
10. We recommend the plans that were prepared by DPI and COM 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.
11. 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.
12. 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.



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