



# FUSS & O'NEILL

February 8, 2021

Mr. Brian Groth  
Town Planner  
Town of Hudson  
12 School Street  
Hudson, NH 03051

Re: Town of Hudson Planning Board Review – Stormwater Design Review  
Hudson Logistics Center, Lowell Road  
Tax Map 239, Lot 1; Acct. #1350-949  
Reference No. 03-0249.1930

Dear Mr. Groth:

Fuss & O'Neill, Inc. has reviewed the fourth submission of materials received February 5, 2021, related to the above-referenced project. The scope of this review letter is related to stormwater aspects of the project design only. Site plan, subdivision, and other review elements will be provided under separate cover.

This review is based on the recently adopted Stormwater Regulations (Chapter 290), Subdivision Regulations (Chapter 289), Site Plan Review Regulations (Chapter 275), Hudson's Engineering Technical Guidelines and Typical Details, and general engineering practices. Due to the size and complexity of this project we have separated our stormwater review comments based on the Subdivision and Site Plan plan sets prepared by the applicant.

We note the following related to the outstanding comments from this review:

## 7. Drainage Design/Stormwater Management

### Subdivision Plan and Master Plan – Green Meadow Drive Plan Sets Prepared By Hayner/Swanson, Inc.

- a. *Former Fuss & O'Neill Comments: Hudson Regulation HR 289-18.B.4. We note that the creation of the cul-de-sac is creating what appears to be a "land-locked" wetland pocket. The applicant should review the need for an outlet structure from the center of the cul-de-sac and/or describe the intent of this design. / The applicant has added CB102 and CB103 to two low points within the cul-de-sac. With rim elevations at approximately 130±, and the existing grade of the wetland at an approximate elevation of 128±, this will potentially result in impounding water of up to 2' over a wetland. / We note that the applicant has reconfigured the round-about relating to layout, grading, and drainage (design and labels/identification numbers). We request the applicant providing the Hayner and Swanson plans for review, and recommend coordination of plans be implemented for design and labeling/identifying drainage structures/pipes.*

Current Fuss & O'Neill Comment: The subdivision is no longer proposed, and the roundabout is now part of a private driveway. The project design is entirely shown within the Site Plan plan set. No further Fuss & O'Neill comment.

- i. *Former Fuss & O'Neill Comments: It appears the drainage analysis treats this location as only a subcatchment, and does not treat this area as a pond. In this modeling the volume of the wetland is*

The Gateway Building  
50 Commercial Street  
Manchester, NH  
03101  
t 603.668.8223  
800.286.2469  
[www.fando.com](http://www.fando.com)

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*consistently filled with stormwater, and stormwater in will equal stormwater out. Given that very poorly drained and poorly drained soils of wetlands have minimal infiltration rates, infiltration is unlikely to occur at a practical rate. The applicant should clarify if infiltration is intended to occur, or is this area intended to be 2' deep standing water at all times. /The redesign has reduced the design "low point" within the round-about from 2' to 0.5' depth below the closest proximity catch basin CLCB-2 (A1-7). Please provide additional design intent with potential standing water.*

Current Fuss & O'Neill Comment: The applicant has redesigned the cul-de-sac where it has been regraded and implements a catch basin in it's center area. Ponding does not occur over a wetland with this redesign. No further Fuss & O'Neill comment.

- iii. *Former Fuss & O'Neill Comment: The applicant should clarify if underdrains are proposed and if so, how will installation of underdrains effect the wetland.*

Current Fuss & O'Neill Comment: The applicant has provided underdrains within the revised plan set and has explained how the design will function and that no impacts to the wetlands or Limit Brook are anticipated. No further Fuss & O'Neill comment.

- iv. *Former Fuss & O'Neill Comment: Stormwater consistently at an elevation above the roadway gravels will have potential negative effects on the structural longevity of the roadway, related to both freeze/thaw as well as overall inability for the free-draining of the gravels. The applicant should provide additional information on this design, and review this design with the Town Engineer.*

Current Fuss & O'Neill Comment: The applicant has provided underdrains within the design and has reviewed this design with the Town Engineer, who is comfortable with the proposed pipe coverage with the understanding that all stormwater management components are private. No further Fuss & O'Neill comment.

- g. *Former Fuss & O'Neill Comments: HR 290-10.A & B. Due to the multiple plan sets concurrently submitted, the applicant should list all related required Town, State, or Federal permits as well as related plan sets (as references) within the plan. This will ensure that if a contractor acquires only one of the multiple plan sets, they are fully aware of the connectivity of the plan sets. / The applicant has updated the plan to state the Langan Set as a plan reference. We recommend the applicant adding a permits/approvals list, or refer directly to the page within the Langan set for associated permits/approvals. /The applicant should provide the Hayner and Swanson plans for review, and coordinate the plans to be implemented for design and labeling/identifying drainage structures/pipes.*

Current Fuss & O'Neill Comment: The subdivision is no longer proposed and all plans have been condensed onto the Site Plan plan set. The plans now reference all permits required on sheet CS002. No further Fuss & O'Neill comment.

Site Plan & Wetlands Conditional Use Applications Plan Set Prepared By Langan Engineering & Environmental Services, Inc.

- x. *Former Fuss & O'Neill Comments: HR 290-7.A.6. We note that the provided Infiltration Feasibility Report states "To be completed during construction". To ensure infiltration is an acceptable treatment upon this project, the applicant should update the Infiltration Feasibility Report as per Env-Wq 1504.13./ The applicant has updated the report with the initial findings. We note that the applicant should continue to keep the Town informed of any further findings that may alter the drainage design./ The Infiltration Feasibility Report continues to state "additional testing to be completed during construction" in relation to*

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*the calculated infiltration rates, while concurrently utilizing anticipated Ksat values achieved from the Ksat Values for New Hampshire SSSNNE tables.*

Current Fuss & O'Neill Comment: The Town Engineer has requested that the applicant add a note to the plans that additional testing shall be performed during construction and test results provided to the Town for review. This was requested to be a final condition of approval as well. The applicant has noted that they will add this note to the plans, and that the Infiltration Feasibility Study is being reviewed by the NHDES as part of the Alteration of Terrain permit application review process. No further Fuss & O'Neill comment.

- i. *Former Fuss & O'Neill Comment: Please provide TP existing surface elevations to the Feasibility Report.*

Current Fuss & O'Neill Comment: The applicant has updated the Infiltration Feasibility Study to illustrate current grades, and included an infiltration test location plan. No further Fuss & O'Neill comment.

- ii. *Former Fuss & O'Neill Comment: Please provide information as to the use of the "Ksat high" infiltration rates rather than the NHDES and engineering standard "Ksat low" infiltration rates.*

Current Fuss & O'Neill Comment: The applicant has explained the infiltration rates in greater detail, noting that in most cases the infiltration rates observed exceeded the Ksat-high classification, and that based on field collected data the upper end Ksat-high design criteria were chosen to more accurately represent the soils present at the site. No further Fuss & O'Neill comment.

- iii. *Former Fuss & O'Neill Comment: Please provide information as to the use of the utilization of the "Ksat C-horizon" over the typical "Ksat B-horizon" infiltration rates.*

Current Fuss & O'Neill Comment: The applicant has explained the C-horizon soil rate usage in greater detail. No further Fuss & O'Neill comment.

- iv. *Former Fuss & O'Neill Comment: Utilization of 100 in/hr for basins A1-3 and A1-4 exceeds the 10 in/hr rate required by Env-1508.06(b). An infiltration rate exceeding 10 in/hr does not allow for proper required NHDES full treatment and requires soil amendments to occur. We request the applicant review this infiltration rate with NHDES to ensure proper treatment is achieved within these practices or if a soil amendment will be required.*

Current Fuss & O'Neill Comment: The applicant has updated the stormwater model and report to reflect a maximum design infiltration rate of 10 inches per hour for both basins A1-3 and A1-4. The applicant also noted that should future testing during construction result in higher rates of infiltration, an engineered soil will be evaluated and infiltration rates adjusted in accordance with NHDES guidelines.

- v. *Former Fuss & O'Neill Comment: The above noted comments, as well as the current applicant-proposed field testing verification after approval, could result in revisions to infiltration rates down to the 3-10 iph range. Such a significant difference to the infiltration rate has a potential "ripple effect" to the dynamically interconnected drainage features as well as downstream drainage calculations on such a*

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*large scale project. We request the applicant coordinate with both NHDES AoT and the Town to allow field verification of infiltration rates after approval is granted.*

Current Fuss & O'Neill Comment: The Town Engineer has requested that the applicant add a note to the plans that additional testing shall be performed during construction and test results provided to the Town for review. This was requested to be a final condition of approval as well. The applicant has noted that they will add this note to the plans, and that the Infiltration Feasibility Study is being reviewed by the NHDES as part of the Alteration of Terrain permit application review process. The applicant has also noted that based on the extensive field testing performed to date, a significant difference to the infiltration rate is not anticipated. No further Fuss & O'Neill comment.

- ab. *Former Fuss & O'Neill Comments: HR 290-10.A. The applicant should keep the Town informed of all communication with NHDES in relation to the required Alteration of Terrain, Shoreland, and Wetlands Permits to ensure NHDES comments do not alter drainage design/calculations. / The applicant provided a "concurrent plan sets and permit applications" note on sheet CS001. We also suggest all approved project permits be provided in a similar table or manner as to list easily accessible appropriate permit numbers for easy reference. /We recommend the Town require the NHDES AoT permit be a condition of the requested Site Plan Approval.*

Current Fuss & O'Neill Comment: The Town is making AoT permitting a condition of approval. No further Fuss & O'Neill comment.

- aj. *Former Fuss & O'Neill Comment: HR 290.7.A.5. Comparing the May and December project submittals, there is an increase in A soils of 3.2acres, B soils of 5.07acres, and a decrease in D soils of the combined 8.24 acres. The applicant should provide additional information as to the reasoning behind the significant soil reclassification within the stormwater calculations.*

Current Fuss & O'Neill Comment: The applicant has explained that a section of original watershed A1-2 was misclassified in the original submission and has since been corrected when the revised pond locations were implemented into the design, and as a result there was no significant soil reclassification within the stormwater calculations. No further Fuss & O'Neill comment.

- ak. *Former Fuss & O'Neill Comment: HR 290.7.A.6. The applicant should provide additional information on the constant groundwater flow rate calculations utilized in Table 6 of the Stormwater Management Report, including but not limited to: where is this information from; why was a constant rate utilized; and why was the same constant rate utilized in the 2, 10, 25, and 50 year storm analysis.*

Current Fuss & O'Neill Comment: The applicant has provided additional information on the constant groundwater flow rate calculations, and provided information on the groundwater modeling procedure in Appendix K of the Stormwater Management report. No further Fuss & O'Neill comment.

- al. *Former Fuss & O'Neill Comment: HR 290.13. Although this is not a roadway cut section, due to some areas of significant cut upon the site, the applicant should review the need for underdrain to help prolong the life of the pavement, drainage system, and building structures.*

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Current Fuss & O'Neill Comment: The applicant has incorporated an underdrain system into the project design in locations where existing groundwater elevations were found to be within 4 feet of the proposed finish grade. No further Fuss & O'Neill comment.

- am. *Former Fuss & O'Neill Comment: HR 290-1. We note that the EPA has finalized the MS4 permit modifications for New Hampshire communities and they will go into effect on January 6, 2021. The applicant shall ensure they are in compliance with all aspects of the MS4 permit in the project design, during construction and post-construction. The Town of Hudson shall enforce the terms of the permit, including performing compliance inspections and initiating enforcement actions as required.*

Current Fuss & O'Neill Comment: The applicant has noted that the project will be in compliance with the MS4 permit, included the modifications that became effective on January 6, 2021.

Subdivision Plan and Master Plan – Green Meadow Drive Plan Sets Prepared By Hayner/Swanson, Inc.

- h. *Former Fuss & O'Neill Comments: Hudson Engineering Technical Guidelines and Typical Details (HETGTD) Section 930.1. The applicant should review the design on Plan Sheet 4 of 22, and note that CB 117 and CB 118 are illustrated to have less than 4.0' feet of cover. We note the design does not match the detail on Plan Sheet 15 of 22, illustrating a minimum of 4' of cover. /The applicant has stated that they will seek approval of this deviation from the Town Engineer. The Town should confirm that they have reviewed this item and are comfortable with this design deviation.*

Current Fuss & O'Neill Comment: These catch basins are located on a private driveway, and the Town Engineer has noted that the Town is comfortable with the reduced cover shown on the plans. No further Fuss & O'Neill comment.

- i. *Former Fuss & O'Neill Comments: HETGTD Section 930.4. We note that the majority of the stormwater design utilizes pipe slopes of less than the required 2.0%. The applicant should review these pipe slopes with the Town Engineer to determine if these are adequate. Fuss & O'Neill would take no exception to the applicant requesting a waiver for these slopes if deemed necessary, as long as the applicant can illustrate that the drain line velocities are self-cleaning. /The applicant has stated that they will seek approval of this deviation from the Town Engineer. The Town should confirm that they have reviewed this item and are comfortable with this design deviation.*

Current Fuss & O'Neill Comment: The subject drainage is located within a private site and the Town Engineer has indicated that the Town is comfortable with the pipe slopes indicated on the plans. No further Fuss & O'Neill comment.

Site Plan & Wetlands Conditional Use Applications Plan Set Prepared By Langan Engineering & Environmental Services, Inc.

- m. *Former Fuss & O'Neill Comments: HR 290-5.A.10. Due to the proximity of wetlands and other buffer zones to the proposed locations for installation of erosion control practices, the applicant should review the need for relief from this requirement by the Planning Board. /The applicant has stated that discussions regarding the wetlands and other buffer zone impacts are part of an ongoing discussion with the Planning Board.*

Current Fuss & O'Neill Comment: The Town has indicated that this will be discussed at an upcoming Planning Board meeting. The applicant has noted that a waiver for the unavoidable buffer impacts will be requested and discussed. This comment should be

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considered addressed and closed upon review and granting of this waiver by the Planning Board.

- ah. *Former Fuss & O'Neill Comments: HETGTD Section 920.3.12. We note that there are storm drains that exceed the listed maximum velocity of 10.0 fps. The applicant should review these velocities with the Town Engineer for acceptance. Fuss & O'Neill takes no exception if a waiver from this requirement is deemed necessary. /The applicant has stated that a waiver has been requested from the Town.*

Current Fuss & O'Neill Comment: The applicant has noted that all conveyance velocities in the stormwater management appendix D reflect speeds of less than 10 fps. No further Fuss & O'Neill comment.

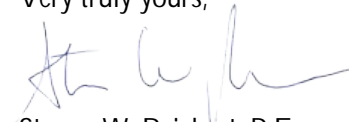
- ai. *Former Fuss & O'Neill Comments: HETGTD Section 920.3.13. We note that there are storm drains that exceed the listed minimum velocity of 2.0fps. We request the applicant review these velocities with the Town Engineer for acceptance. Fuss & O'Neill takes no exception if a waiver from this requirement is deemed necessary. /The applicant has stated that a waiver has been requested from the Town.*

Current Fuss & O'Neill Comment: The applicant has noted that pipe capacity will not be used as storage. The Town Engineer has noted that the Town is comfortable with proposed velocities lower than 2 cfs. No further Fuss & O'Neill comment.

We note that this review was carried out in accordance with applicable regulations and standards in place in New Hampshire at this time. Note that conditions at the site, including average weather conditions, patterns and trends, and design storm characteristics, may change in the future. In addition, future changes in federal, state or local laws, rules or regulations, or in generally accepted scientific or industry information concerning environmental, atmospheric and geotechnical conditions and developments may affect the information and conclusions set forth in this review. In no way shall Fuss & O'Neill be liable for any of these changed conditions that may impact the review, regardless of the source of or reason for such changed conditions. Other than as described herein, no other investigation or analysis has been requested by the Client or performed by Fuss & O'Neill in preparing this review.

Please feel free to call if you have any questions.

Very truly yours,



Steven W. Reichert, P.E.

cc: Town of Hudson Engineering Division – File  
Langan Engineering & Environmental Services, Inc.  
888 Bolyston Street  
Boston, MA 02116  
nkirschner@Langan.com