



dan@legacy-ce.com

508-376-8883(o)

508-868-8353(c)

730 Main Street

Suite 2C

Millis, MA 02054

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Medway Conservation Commission
Town Hall
155 Village Street
Medway, MA 02053

Ref: 39 Main Street
40B Site Plan Review
Tetra Tech Review

Dear Members of the Commission:

We are in receipt of comments from the Commission's consultant, Tetra Tech, dated May 17, 2019. We offer the following responses to the Town Engineer's comments for the Board's consideration. Please find enclosed the following revised documents:

- One full-size and one 11x17 copy of a revised site plan; and
- One copy of a revised Stormwater Report.

STORMWATER:

- 1. Comment: We recommend the applicant consider using National Oceanic and Atmospheric Administration (NOAA) Atlas 14 precipitation frequency estimates in the stormwater analysis of the site. MassDEP is currently reviewing studies conducted recently by NOAA and the 2008 Northeast Regional Climate Center (NRCC) for potential amendments to the Stormwater Handbook. Applying these new estimates to the site will ensure the site is designed with the present and future in mind to prevent flooding, provide greater climate change resiliency for the site and protect the safety of on-site residents and downstream resource areas.*

Response: There are no local or state regulations that require that the suggested precipitation rates be used. On the contrary, it is the current MassDEP policy to use TP40 rainfall data. Implementing the requested larger design storms would result in substantive additional construction expenses, which is not appropriate for a low-income



housing project. The proposed stormwater management system is designed using the MassDEP approved design storms.

2. *Comment: We recommend the applicant include the 25-year storm event in the analysis to confirm storm drain infrastructure is sized to convey stormwater during this event. Additionally, the applicant should provide grate sizing calculations to confirm flooding does not occur at the catch basins during this event.*

Response: The 25-year storm analysis has been added to the HydroCAD calculations. Grate sizing calculations are included in the revised stormwater report. Although no double grates are required according to these calculations, double grates are proposed on the west side of the building as a conservative measure.

3. *Comment: The applicant provided test pit information at proposed Infiltration Field (IF) locations. Test pits conducted at IF#1 show a loamy sand (2.41 in/hr Rawls rate), sand and fill at the bottom elevation of the system at each test pit location. The applicant shall remove fill material beneath the system to native soils and backfill with suitable material (the Applicant has provided provision for this in the Infiltration Trench/Field Detail). The applicant shall also use the Rawls rate associated with the loamy sand in the analysis as opposed to the higher conductive sand layer due to it being the most restrictive layer found in the test pits at the proposed bottom elevation of the system. This condition is similar for IF#2 where loamy sand was encountered at the proposed bottom elevation of that system.*

Response: With respect to infiltration field #1, The two test pits in the heart of the system (9 & 22) reflect only sand soils at the bottom of the system, which likely have a significantly higher infiltration rate than the assumed Rawl's rate of 8.27 inches per hour. OTH 10 lies at the fringe of the system and is not representative of the soils found in 9 & 22. Encountered fill and unsuitable soils below the system will be replaced with sand soils as noted on the details. It is therefore our opinion that it would be unreasonably conservative to characterize the entire field as having a design infiltration rate of 2.41 inches per hour. Because soils at OTH 7 were consistently loamy sand, we have split the field into two sections and applied the loamy sand Rawl's rate to the portion in the vicinity of OTH 7.

With respect to infiltration field #2, the test pits show a mixture of sand and soils that are on the border of sand and loamy sand. Although it will be very conservative, we have revised the calculations for a loamy sand Rawls Rate (2.41 inches per hour). The average infiltration rate for the system will be significantly higher.



4. *Comment: Groundwater elevations not present in test pits (OTH 19, OTH 20) for IF#2. However, the applicant mentions groundwater elevation in the mounding analysis portion of the Stormwater Report. Please provide all test pits conducted at the system locations if test pits confirmed groundwater under the proposed system.*

Response: Although no groundwater was found in these test pits, groundwater elevations were conservatively assumed to be at the bottom of the test pit for conservative design purposes in the mounding discussions. This is clarified in the revised stormwater report narrative.

5. *Comment: Third party testing documentation is required for the First Defense proprietary separators (including inlet separators) to document TSS removal rates associated with water quality calculations for Standard 4. Furthermore, we request sizing calculations be provided to ensure these units are sized to accommodate flow from upstream catchment areas.*

Response: Third party testing documents have been added to the stormwater report. Treatment sizing calculations are based on the 1-inch storm flow rates. A 1-inch storm analysis for the First Defense units has been included in Attachment M of the stormwater report. No First Defense unit receives more than 1.5 cfs under treatment loading, and therefore all units are to be 4 feet in diameter. FD#3 is proposed to be 6 feet in diameter due to pipe sizes entering and exiting the unit. The New Jersey study concluded a TSS removal rate of 50% for the First Defense unit so we have updated the TSS calculations accordingly.

6. *Comment: The project is considered a Land Use with Higher Potential Pollutant Load (LUHPPL) since it generates greater than 1,000 vehicle trips per day (as provided in the November 2018 Transportation Impact Assessment). The applicant shall provide required information to meet requirements for Standard 5.*

Response: The stormwater report has been updated to include a narrative on meeting the requirements of Standard 5. The standard had already been met.

7. *Comment: We recommend the applicant provide greater detail on proposed SWPPP Plans. The Plans should provide construction related phasing including laydown areas, stockpiles, equipment fueling, temporary sediment basins, etc.*

Response: The proposed SWPPP plans have been modified to include more detail. An additional sheet (C-3) has also been added to the site plan to show additional detail.



8. *Comment: We recommend including greater inspection frequency of area drains located along the west side of the building in the fall months due to potential for being clogged by leaves and debris which may cause flooding in this area.*

Response: The O&M plan has been updated accordingly.

9. *Comment: We recommend the applicant provide one-foot of freeboard from the 100-year peak elevation in the proposed IF's. Freeboard is typical of basin applications and provides relief for inconsistencies in design. Additionally, monitoring wells are required to be installed at the systems and should be included in the Plans.*

Response: Monitoring wells have been added to the plans. Freeboard is provided in open basins to primarily provide insurance against the inherently imprecise placement of soils in a berm situation and to prevent the berm from overtopping and eroding. Underground systems don't have these issues and freeboard is therefore not necessary. Adding freeboard to these systems means importing addition volumes of crushed stone, which would incur unnecessary cost. The applicant, however, is willing to provide a minimum of 3-inches of freeboard as a protective measure. The plans have been revised accordingly. It should also be noted that design infiltration rates on some of the infiltration systems are quite conservative.

10. *Comment: The proposed "Infiltration Trench/Field Detail" shows fabric on all sides of the system. We do not recommend fabric be installed on the bottom of the system as it may act as a limiting barrier if all materials placed on it are not clean of sediment. The applicant should coordinate with the manufacturer to determine if removal of the fabric will negatively affect the performance of the system.*

Response: The detail has been changed to include fabric on all the top and sides only.

11. *Comment: The proposed "Infiltration Trench/Field Detail" calls for 1.5" – 2" crushed stone. Stone in these systems should double washed stone to prevent sediment buildup and potential lack of recharge.*

Response: The detail has been updated as requested.

12. *Comment: We recommend the applicant plan site traffic during construction to avoid heavy equipment trips within the limits of the Infiltration Fields. Proper cover should be established per the manufacturers recommendations prior to travelling over the systems to prevent damage or potential collapse during construction.*

Response: The erosion control plan has been updated to include this information.

13. *Comment: Light poles are proposed above proposed Infiltration Field #1 and are expected to extend into the field below. The Applicant should reconfigure the system to prevent any damage to the system during light pole installation.*



Response: The top of the infiltration field is at elevation 161.9. The light poles are at a ground elevation of 167 and are to be installed to 4 feet below grade. The light pole installation will not impact the infiltration field. However, a note has been added to the utility sheet calling for cautious installation of these light poles.

14. *Comment: The applicant should confirm if the proposed building will contain a basement. If a basement is proposed it is expected foundation drains will be installed and flow should be accounted for if discharging to proposed drain infrastructure.*

Response: The building will not have a basement.

15. *Comment: Inconsistencies exist between the Plans and HydroCAD report for the proposed outlets at DMH #10. The pipe callout on Sheet 5 shows a 4" drain outlet from DMH #10 but the structure callout for DMH #10 and the HydroCAD include an 8" drain outlet. Please confirm proposed pipe size and coordinate plans with HydroCAD analysis.*

Response: The HydroCAD report has the correct pipe sizes, and the plans have been updated accordingly.

SITE GRADING:

16. *Comment: Western portion of building is graded in a low spot with the parking areas higher in elevation than the building with proposed yard drains for drainage between the building and the wall at proposed low points. Potential for flooding lower portions of the building in this area.*

Response: The area drains have been designed to accommodate stormwater runoff from these small landscape areas. Furthermore, the area drain rims are approximately 18 inches lower than the finished floor elevation of the building. While minor ponding may occur when leaves are present, flooding that might reach the building slab elevation is highly unlikely in such small areas. As noted, provisions have been added to the O&M plan for proper maintenance of these grates.

17. *Comment: The proposed wall stops and begins adjacent to FD/CB#12. The applicant may be able to limit disturbance to the buffer zone due to grading in this area if the proposed wall continues and is not interrupted.*

Response: The break in the retaining wall provides a corridor for potential wildlife movement and would seem preferable to a longer, continuous wall. All graded areas beyond the retaining wall will be revegetated.



GENERAL COMMENTS:

18. *Comment: The Project will require a United States Environmental Protection Agency (US EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) as the site is altering greater than one acre of land. A SWPPP has been included in the Stormwater Report and we request it be finalized and confirmation of filing of Notice of Intent with US EPA prior to commencement of construction.*

Response: Confirmation of filing will be provided prior to construction.

19. *Comment: We anticipate construction of the proposed retaining walls to extend partially into the B.L.S.F. buffer along the eastern portion of the site. The applicant shall consider extent of area required for anticipated construction of the walls in revised Plans.*

Response: The parking areas and downslope construction areas have been reconfigured to provide a larger undisturbed buffers to wetland areas.

20. *Comment: We recommend the applicant overlay proposed site grading on the Utilities Plan (Sheet 5) for ease of review and use during construction.*

Response: Site grading has been added to the utilities sheet. The utilities sheet has also been split into two separate sheets for clarity.

21. *Comment: The applicant should add the 100-foot buffer zone to the Plans to ensure all parties are aware of jurisdictional areas on-site.*

Response: The 100-foot buffer has been added to the plans.

In addition, based on other design considerations and discussions with the Town, the following changes were made:

- ✓ A new open stormwater basin has been added to accommodate runoff from the entrance driveways.
- ✓ As requested by the Commission agent, a section has been added to the O&M plan for fertilizers and pest control. Section 2.16.11 of the SWPPP has also been updated to require the use of organic, slow-release, low-phosphorus fertilizers in the buffer zone.
- ✓ As requested by the Commission agent, a note has been added to the project plans, O&M, and SWPPP limiting ice treatment to salt (sodium chloride or calcium chloride) and sand.
- ✓ As requested by the Commission agent, hay bale erosion control has been replaced with biodegradable compost sock and siltation fencing.



- ✓ As requested by the Commission agent, "No snow storage" signs have been added along the pavement edge closest to the wetlands.
- ✓ The Commission agent has questioned what type of pool will be installed. That decision will not be made until the construction phase of the project. However, the applicant understands that no water is to be pumped to the wetlands for winterization.
- ✓ As requested by the Commission agent, notes have been added to the erosion control plan to use catch basin silt sacks and to periodically clean all catch basins during construction as needed. Section 2.10 of the SWPPP has also been updated to refer to these requirements.
- ✓ As requested by the Commission agent, the SWPPP inspection frequency has been increased to once every seven days and after 0.5" storm events.
- ✓ As requested by the Commission agent, the SWPPP inspector form has been revised to include the inspection of proprietary separators, silt sacks and installed infiltration systems.

Do not hesitate to contact me if you have any questions or comments.

Sincerely,

LEGACY ENGINEERING LLC

Daniel J. Merrikin P.E.
President

cc: File