



VIA: HAND DELIVERY

August 18, 2021

Ethan Parsons, Senior Planner
Department of Planning and Development
25 Green Street
Ipswich, MA 01938

**Re: 14-16 Mitchell Road
Ipswich, Massachusetts**

Dear Mr. Parsons:

We have received the peer review letter from Robert E. Puff, Jr. dated August 11, 2021 in regards to the Special Permit & Site Plan Review Modification and the Drainage and Stormwater Management Review (Task 1) and offer the following responses.

1. Pre Development Hydrology Model

- a. It is noted that a significant portion of the existing roof runoff (subcatchment 4) is routed to Design Point 1 (i.e., Mitchell Road). By contrast, the June 2019 calculations account for this area as being routed to Design Point 2 (i.e., the rear of the property). The design engineer should explain this inconsistency between the two sets of calculations and identify why the analysis approach has changed for this submittal.

Response: It was recently determined that stormwater runoff from a portion of the existing building rooftop discharges to the front of the building. Therefore the drainage plans and calculations have been updated to reflect this condition.

- b. It is also noted that a portion of the high roof on the northeasterly side of the building (identified as subcatchment 3) has gutters and downspouts that discharge onto the lower roof (subcatchment 4). As such, it would be expected that this portion of subcatchment 3 would be routed to Design Point 1 (in conjunction with subcatchment 4), however, this portion of subcatchment 3 is routed to Design Point 2. The design engineer should clarify and/or revise this portion of the analysis.

Response: The drainage plans and calculations have been revised to reflect that stormwater runoff from a portion of the high rooftop runs off onto the lower rooftop and ultimately discharges to the front of the building.

2. Post Development Hydrology Model



- a. The boundary between subcatchments 6 and 9 should be rechecked with respect to the southwesterly corner of the existing building (i.e., the area southeasterly of the ridge line should be directed to Design Point 1, consistent with the Pre Development Model).

Response: The stormwater runoff from the existing building rooftop southeasterly of the ridge line is being directed to the back of the building and discharged to the proposed subsurface infiltration facility. The proposed gutters showing this rerouting of the stormwater runoff will be shown on the architectural plans for the building permit.

- b. Explain the curvilinear shape of the boundary between subcatchments 6 and 9 (this comment also applies to the existing conditions model between subcatchments 3 and 4). There is no indication on the architectural roof plans that would imply a ridge line of this shape, nor would it be anticipated in a conventionally framed building.

Response: The curvilinear shape for the boundary between these subcatchments for both the existing and proposed conditions is the best estimate that we have for this boundary.

3. Concern is noted with respect to the proposed method of collecting and conveying roof runoff from subcatchment 7 to the infiltration basin. As proposed, a stone trench is located beneath the drip edge of the roof line and a perforated pipe is utilized to collect and convey runoff. Fluctuating stormwater levels in the infiltration basin will cause water to back up into this trench. This is a new design element that was not proposed as part of the June 2019 project.

- a. While structural review of the building is beyond the scope of this report, the design engineer should evaluate the potential impacts of this design on the building foundation/footing system (i.e., the introduction of water adjacent to the footings).

Response: An impervious liner has been added to the bottom and sides of the stone trench so stormwater runoff does not infiltrate near the building foundation and footings.

- b. Furthermore, the design engineer should establish whether or not there are footing drains for the building which would cause runoff to bypass the infiltration chamber and potentially invalidate the stormwater mitigation analysis.

Response: It is not known if there are existing footing drains, however, an impervious liner has been added to the bottom and sides of the stone trench so stormwater runoff will not infiltrate into the footing drains if they exist.

4. Inadequate off-site topographic information is provided to establish whether or not there is surface runoff flowing onto the paved portion of subcatchment 5 (which would require additional analysis of the infiltration chamber). The design engineer should address whether off-site runoff is anticipated to occur. Provision of supplemental analysis or supplemental grading on the plans may be warranted.



Response: A site visit was conducted and it was determined that stormwater runoff from a portion of the adjacent property flows onto the project site. The drainage plans and calculations have been revised to reflect this condition.

5. 'Proposed Utility Notes' item #2 (on plan sheet 5) specifies all existing and proposed roof drains to be directed to the infiltration facility. This is not reflected in the stormwater analysis. The note should be revised and coordinated with the stormwater management design intent.

Response: The note has been revised.

6. The grate elevation of proposed CDS unit #2 should be rechecked/revised. To ensure proper inlet function, it is presumed that the proposed grate elevation is intended to be comparable to the existing grate elevation of CB 3.

Response: The grate elevation for the proposed CDS unit has been revised to match the grate elevation of the existing CB 3.

7. Coordinate pipe size of pipe reaches R10 and R11. The pipe chart specifies 12 inch pipes whereas the calculations assume a 15 inch pipe.

Response: The pipe chart has been revised.

8. Coordinate the pipe slope of pipe reach R11 with the inverts specified on the plans.

Response: This has been revised.

9. The proposed slope of pipe reach R3 is excessive and should be significantly reduced.

Response: This has been revised.

10. Identify the location of pipe reaches R12, R13, and R15. They were not found on the Utility plan.

Response: This has been revised.

11. Common design convention is to align pipe crowns when pipe size changes across a manhole. Inverts should be revised at PDMH 7 to reflect this practice.

Response: The size of the upstream pipe from PDMH 7 has been revised to a 15" pipe and therefore the pipe crowns now match at PDMH 4.

DEP Stormwater Management Standards: No significant objection is offered to the proposed site plan modification with respect to the DEP Stormwater Management Standards. The following items are suggested for incorporation into the documents and should be viewed largely as housekeeping matters:

1. Sign and date the 'Checklist for Stormwater Report.'



Response: The stormwater checklist has been signed and dated.

2. Standard 4 – Submit documentation that the CDS hydrodynamic separator is capable of removing 77% of total suspended solids (as assumed in the calculations). Removal rate efficiency was not found in the material submitted.

Response: Documentation from Contech has been provided.

3. Standard 8 – The following elements should be added to the ‘Construction Period Pollution Prevention and Erosion Sedimentation Control Plan’ (i.e., the CPPPP):

- a. Provide the location of the ‘Construction Entrance’ detail on the plans.

Response: The construction entrance has been added to the grading/drainage plan.

- b. Include additional provisions for controlling runoff during construction such as diversions, check dams, and sediment basins and add them to the ‘Inspection Schedule and Evaluation Checklist’ as appropriate.

Response: Adequate erosion control provisions are currently provided for this type of project. Additional erosion control provisions will be added during construction if it is determined that they are needed.

- c. Provide a construction sequence.

Response: A construction sequence has been added to the O&M plan.

4. Standard 9 – The following elements should be added to the ‘Long Term Operation and Maintenance Plan’ (i.e., the O&M Plan):

- a. Provide an estimated operation and maintenance budget for the O&M Plan.

Response: An estimated operation and maintenance budget has been added to the O&M plan.

- b. Specify inspection of vegetated slopes below the ‘Level Spreader’ to check for erosion and rills.

Response: This has been added to the O&M plan.

- c. Add inspection of the inlet and outlet manifolds to the ‘Surface Infiltration Facility.’ Also, include periodic inspection of observation ports after rainfall events to confirm suitable drawdown time of runoff within the chambers (i.e., that the chambers should be empty within approximately 24 hours after rainfall events).

Response: This has been added to the O&M plan.



- d. Add an inspection item for the proposed stone trench adjacent to the existing building and include it on the 'Inspection Schedule and Evaluation Checklist.'

Response: This has been added to the O&M plan.

- e. Add inspection items for all drain manholes, cleanouts, and the catch basins on the front portion of the property and include them on the 'Inspection Schedule and Evaluation Checklist.'

Response: These have been added to the O&M plan.

- f. Emergency contacts and staff training are listed as 'to be determined by the owner.' As this is an existing facility, the responsible personnel and training practices should already exist and should be identified in the O&M Plan.

Response: This has been added to the O&M plan.

5. Standard 10 – Provide a fully executed Illicit Discharge Compliance Statement.

Response: This has been provided.

Additional Planning Board Considerations:

1. An existing catch basin adjacent to Mitchell Road (CB 3) is proposed to be converted to a CDS stormwater treatment unit. No engineering objection is offered to this proposal, however, it is noted that the catch basin is mapped to be within the Mitchell Road right of way rather than within the property. The Planning Board may want to clearly define ownership and maintenance responsibilities of this asset.

Response: The owner will maintain the CDS unit.

2. It is noted that no substantive construction changes are proposed to the front parking area. By contrast, the June 2019 approval involved a reconfiguration of the front parking area and provided a more efficient layout. Given that the applicant is requesting relief from the required amount of parking (with the stated justification that less impervious area and less impact within the buffer zone will result), the Planning Board may want to consider reconfiguration of the front parking lot in a manner similar to the June 2019 plans. Such an approach would further reduce the impervious area of the proposed site by approximately 3,000 square feet, have no impact on the 100 foot wetland buffer, and could potentially increase parking capacity in the front lot beyond what is presently proposed.

Response: The owner might expand the existing front of the building in the future and therefore doesn't want to redesign the existing parking area at this time.



3. No request was received relative to Zoning Bylaw Section IX.C.7 Water Supply Protection District Table of Uses footnote 4 (b), which requires three feet of vertical separation between groundwater level and the bottom of an infiltration system. It is noted that the relationship of the infiltration system to groundwater level remains unchanged with respect to the June 2019 design.

Response: We are requesting relief from this requirement because of shallow estimated seasonal high groundwater underneath the proposed subsurface infiltration facility.

4. To ensure that construction of the stormwater management system is conducted in accordance with the design, an as-built plan of the completed project should be submitted to the Planning Board along with a report from the engineer of record indicating whether or not construction complies with the design intent. The as-built plan and engineering report should also be appended to the final version of the 'Long Term Operation and Maintenance Plan' prepared for the stormwater management system, for the property owner's future use and reference.

Response: These items will be provided after construction is completed.

5. The following documents should be incorporated by reference as part of any Planning Board approval:

- a. The 'Long Term Operation and Maintenance Plan.'
- b. The 'Construction Period Pollution Prevention and Erosion Sedimentation Control Plan.'
- c. The Stormwater Pollution Prevention Plan (SWPPP) for the project.

Response: Noted.

6. Since the project is located within Water Supply Protection District Zone II, the Planning Board may wish to prohibit future use of metal roofing materials unless adequate pretreatment of roof runoff is provided.

Response: Noted.

The Conservation Commission requested some type of LID design measure for the stormwater management system. Therefore a proposed rain garden has been added to the back of the property to treat the stormwater runoff from the patio. A trench drain has also been added to the existing driveway in the front of the property to collect the stormwater runoff and treat it with the CDS unit.



If you have any questions please feel free to contact me at 978-299-0447 x209 or crokos@meridianassoc.com.

Sincerely,

MERIDIAN ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read 'C. J. Rokos', written in a cursive style.

Christopher J. Rokos, PE
Senior Project Engineer

cc: Alan Soucy, (via email)
Rainer Koch (via email)
Brendan Lynch
Robert Puff