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VIA EMAIL

Ipswich Planning Board
Town Hall
25 Green Street
Ipswich, MA 01938

RE: 50-56 Market Street - Site Plan Review & Special Permit Applications
Second Engineering Review - Task 2

Mr. Ethan Parsons and Planning Board Members:

As requested, I have continued an engineering review of the above referenced project with respect to drainage and stormwater management, parking, loading, and vehicular circulation. In response to the initial (Task 1) review, I have received the following pertinent revised and/or supplemental plans and documents as prepared by the Morin-Cameron Group, Inc., of Danvers, MA (unless otherwise noted).

- Copy of correspondence to the Ipswich Planning Board, dated December 22, 2021 regarding ‘Response to Initial Engineering Review...’
- “Site Improvement Plans for Market Street Station located at 50-56 Market Street...” consisting of eleven (11) sheets, all dated September 22, 2021 and revised to December 22, 2021.
- “Stormwater Management Report...” dated September 22, 2021, and revised to December 22, 2021, including appendices for MA DEP Stormwater Management Report Checklist, Hydrologic Analysis, Supplemental Stormwater Management Calculations, Construction Phase Pollution Prevention Plan, Long Term Best Management Practices O&M Plan, and an Illicit Discharge Statement.

At this time, the following remaining comments and opinions are offered for your consideration.

Parking, Loading, and Vehicular Circulation:

1. Several non-compliant design elements identified in the initial (Task 1) review that relate to parking lot geometry, layout, and setbacks (i.e., Zoning Bylaw Section VII) remain non-compliant in this revision. It is my understanding that the Applicant will be discussing potential design relief from the Planning Board on these design requirements.
2. Project Entrance – As noted in the initial review, the driveway slope entering the property is excessively steep (approximately 18 percent grade). It is again pointed out that this is an existing condition that is not proposed to be significantly mitigated. As a result, the Planning Board may want to consider whether a substantial increase in the intensity of the site use is warranted or desired.
3. Driveway Curb Cut - The revised widening of the driveway entrance has encroached into the area of an existing ‘on-street’ parking space. The existing condition consists of a 20 foot long parking space located approximately 10 feet away from the curb cut, however, the proposed condition reduces that parking space length to 18 feet and locates the parking space

approximately 1 foot away from the new curb cut (refer to plan sheets 3 and 5 for comparison). It is strongly suggested that the Planning Board consult with the Public Works Director regarding the suitability of this proposal, specifically with respect to the revised 'on-street' parking space length, the relationship of the space to the revised curb cut, and the required vehicle turning movements leaving the site.

4. Vehicle Aisle Width - In response to initial review comment regarding the inadequacy of the vehicle aisle width, the proposed aisle width has been revised and increased to 20 feet along the southerly project entrance and 21 feet between the two buildings (Zoning requires a minimum 22 foot aisle width). Note that the new edge of pavement is located approximately one foot from the northeasterly and southeasterly corners of the existing building, and approximately one foot from the southwesterly corner of the new (proposed) porch. It is suggested that additional design measures be undertaken to protect/separate the building from vehicular movement.
5. Vehicle Turning Movement - New plan sheets are provided to show required vehicular turning movement at various locations and for various vehicle types. While this information is generally satisfactory, it should be noted that the analysis does not fully address the entrance/exit movements needed for the most northwesterly tandem parking space on the site. Additional information should be provided to demonstrate whether or not adequate turning area is provided for this parking space for both entry and exit maneuvers.
 - a. Vehicular turning movement for a 'Garbage Truck' has been provided and demonstrates that such a vehicle can reverse direction on the site, however, multiple back and forth turning movements are needed to accomplish the turnaround and the turnaround location is not clearly designated. It could be reasonably anticipated that a truck driver will ultimately disregard the potential on-site turnaround movement and back up into the public way. It is suggested that additional consideration be given to this issue as it relates to the requirements of Section VII.M.2.
 - b. Initial review comment noted that access to the dumpster by service vehicles was obstructed by a parking space. This issue does not appear to be resolved by the plan revision and remains to be addressed (i.e., it does not appear that a service vehicle can approach the dumpster in a manner suitable for emptying the contents if a vehicle is parked in the most northeasterly parking space).
6. Snow Storage - In response to initial review comment regarding snow storage, one storage area was deleted from the plans (previously located in front of the existing building) and the other area reduced in size (located westerly of the tandem parking area). As noted in the initial review, the proposed snow storage area was inadequate for the proposed site, and the reduction in storage area only exacerbates this inadequacy. In addition, it is again noted that the snow storage area requires the movement of parked cars, and while this may not be an insurmountable problem, it is an issue that the site design should better attempt to reduce or eliminate.
7. Retaining Walls & Grading - Plan revisions now clearly identify retaining walls along the northerly and southerly property lines, with top and bottom of retaining wall elevations indicated. Given the exposed height and location of the retaining walls, the Planning Board may wish to consider the construction material proposed for used and the visual aesthetic of the exposed wall.
 - a. The proposed grading of the patio area (behind the proposed building) is not indicated. A revision should be conducted to establish the desired grading, noting that:
 - i. If the patio is intended to be at the elevation of the proposed building, then a retaining wall along the rear property line would be required.
 - ii. If the patio is intended to match existing grades, then the proposed roof drain inverts will be above grade and would need revision.

8. Initial review comment expressed concern regarding the rear stairway egress of the existing building (i.e., the location of the stairway landing). As revised, it appears that there are still stairs projecting from the building and that the egress is very close to (or within) the vehicle travel aisle. It is again suggested that this issue be referred to the Building Inspector for interpretation.

Stormwater Management & Drainage:

1. Remaining Stormwater Calculation Items
 - a. Initial review comment noted that the time of concentration for post development subcatchment 1 was double (12 minutes) that of the existing condition. Response from the design engineer indicated that this issue was revised, however, the new calculations do not reflect this change. Additional revision is requested to properly address this comment.
 - b. The exfiltration rates for both infiltration basins assume exfiltration will occur at all wetted surfaces (i.e., that exfiltration is occurring on both the bottom and sidewall areas of the system). This approach is contrary to DEP recommendation which stipulates that only the bottom area should be assumed to infiltrate runoff. It is suggested that the infiltration calculations be revised and rerun using only bottom area for infiltration in order to confirm that the 1 year storm is fully contained on site, and that suitable mitigation is provided for the 2 and 10 year storm events.
2. Concerns regarding surface breakout of runoff down gradient of Infiltration Systems:
 - a. Initial review comments regarding Infiltration System 1 have been adequately explained and justified. No further design action is suggested for this item, however, long term monitoring of the slope down gradient of Infiltration Basin 1 should be added to the operation and maintenance plan. If excessive moisture is noted weeping out of the slope after a rain event, additional engineering consultation and remedial construction should be required at that time.
 - b. Initial review comments regarding Infiltration System 2 have not been adequately addressed and exception is taken to the response offered by the design engineer. The operational flood levels within the infiltration system will be higher than the basement elevation, and it is reasonable to anticipate the potential ability of water to migrate into the basement during rainfall events. Supporting statements are as follows:
 - i. The design engineer notes that the existing basement slab is at elevation 34.5.
 - ii. The stormwater calculations show that the infiltration system will routinely rise to a peak elevation that is more than 1 foot higher than the basement slab (i.e., a peak water elevation of 35.6 for the 1 year storm and elevation 37.3 for the 100 year storm).
 - iii. Site plans show the infiltration system to be approximately 12 feet from the existing building foundation.
 - iv. DEP Stormwater Standards stipulate that a leaching trench should be located a minimum of 20 feet from any building foundation.
 1. The design engineer's comment that the DEP Stormwater Handbook does not stipulate minimum setback requirements for 'Subsurface Structures' is acknowledged, however, DEP also states that "widely accepted design standards and procedures for designing subsurface structures are not available." In my opinion, DEP's lack of design guidance does not imply that setback consideration is not warranted. Practically speaking, the proposed subsurface structure is shaped like,

and will function similar to, a leaching trench system. As such, I believe it reasonable to respect the DEP design guidelines offered for a leaching trench as noted above.

- v. While the design engineer states that no existing foundation drain was found, there is no commentary about whether a foundation drain will be added as part of the building renovation. If a foundation drain is added, it will have the ability to intercept stormwater intended to be infiltrated, thereby ‘short-circuiting’ the stormwater management design intent.
 - vi. In addition to the above, no commentary was offered from the design engineer regarding whether or not the building(s) foundations will be adversely impacted by the adjacent migration of stormwater.
3. Initial review comment was provided regarding the ability of catch basins to effectively collect runoff along the edge of the pavement. While the southerly catch basin is now satisfactory with the addition of a bituminous berm proposed along the adjacent pavement edge, the northerly catch basin remains unsatisfactory. The earthen berm proposed will be subject to disturbance/removal during snow plowing. To ensure the long term integrity of the catch basin to collect runoff without bypass, an alternative approach is strongly suggested by either providing a bituminous or granite edge, or by repositioning the basin within the pavement field and providing edge of pavement grades that are higher than the catch basin rim (thereby ensuring flow from the pavement edge towards the basin).
 4. A proposed leaching catch basin has been added along the entrance driveway to supplement interception of site runoff and increase site recharge. No objection is taken to this proposal, however, it is suggested that the leaching basin be preceded by a conventional catch basin and hood to improve pollutant removal prior to infiltration and to extend the functional life of the leaching structure.
 5. Remaining Drafting Items
 - a. The initial review noted the need for an increased diameter for the outlet control structures to facilitate maintenance access. The design engineer asserts that the proposed 4 foot diameter structure is adequate for ‘personal entry if required.’ Exception is taken to this statement. As designed, a baffle wall is proposed across the center of the manhole, thus the maximum available space for entry in the manhole is 21 inches, which is generally inadequate for personnel access and maintenance. A larger diameter structure is again suggested.
 - b. The outfall elevation of the pipes discharging from the outlet control structures should be revised and specified to insure a minimum 0.5 percent slope.
 - c. The pipe connecting Infiltration System 2 to Outlet Control Structure 2 should be a straight pipe length. The proposed bend should be eliminated or replaced with a drainage manhole.
 - d. In Outlet Control Structure 1, coordinate the specified width of the upper orifice. Conflicting dimensions are specified on the plan, in the detail, and in the calculations.
 - e. Correct an apparent typo for proposed spot grade 38.7 (adjacent to the southerly catch basin). It is anticipated that this grade is intended to be 37.7. If this is not the case, proposed contouring is incorrect and would warrant revision.

DEP Stormwater Management Standards:

1. Standard 4 – The Long Term Pollution Prevention Plan (LTPPP) requires additional revision to address the following items identified in the MA DEP ‘Checklist for Stormwater Report.’
 - a. Vehicle washing controls.

- b. Provisions for maintenance lawns and landscaped areas.
 - c. Winter road salt and sand use.
 - d. Training of personnel involved with implementing the LTPPP.
 - e. List of emergency contacts for implementing the LTPPP.
2. Standard 8 – The revised ‘Construction Period Pollution Prevention Plan’ (CPLPP) should be amended to include a Maintenance and Inspection Log Form.
3. Standard 9 – The ‘Long Term Stormwater Best Management Practices Operation and Maintenance Plan’ should be amended to provide the following items.
 - a. The ‘Stormwater Maintenance Log’ should be updated to include inspection of ‘Roof Leaders, Gutters, and Downspouts.’
 - b. Expand on the description of inspection and maintenance of ‘Roof Leaders, Gutters, and Downspouts’ to emphasize the significance of the Outlet Control Device(s) associated with Infiltration System 1, which are located on the building downspouts.
 - c. Inspection of the Infiltration Systems should be expanded to include recovery and removal of all Inspection Port covers (as shown on the site plans) in order to inspect the interior of the infiltration systems.
 - d. Specify cleaning of the leaching catch basin when the sump is 50 percent full (i.e., 2 feet of sediment depth) or at a specified time interval.
 - e. Coordinate the actual quantity of outlet control devices that require inspection and maintenance. The calculations and site plans indicate there are four devices, whereas the maintenance document indicates conflicting information.

Please feel free to contact me if you have any questions or require any clarification of the above comments and opinions.

Very truly yours,

R.E. Puff

Robert E. Puff, Jr., PE

cc: John Morin, PE (via email)
Will Schkuta, PE (via email)
Dan Powers (via email)