

## *Philip G. Christiansen PE*

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Review of Memo of November 20, 2019 to Bonnie Sontag from Steven Lewis.

Re: Updates and Revisions to the site Plan for 2-6 Market Street

### **Stormwater Management**

The applicant has submitted a stormwater HydroCAD analysis of the site not a Stormwater Management Plan as stated in the letter. The conclusion of the analysis is that there isn't any increase in volume or rate of flow stormwater from the property. While the analysis is flawed the end result of the design is that less stormwater will flow in the streets because the roof drains are proposed to be directly tied to the street drainage piping system in Merrimac Street and as a result the project will lessen potential flooding in the streets.

Under existing conditions all of the runoff water from the 6150 square feet of the site flows onto the streets. Under proposed conditions the runoff from 3650 square feet (roof area) of the site will flow directly into the drainage piping system in Merrimac Street. This design is an overall improvement to Stormwater Management at this busy intersection.

See attached review of HydroCAD analysis for additional detailed comments.

### **Traffic Impacts**

The elimination of the uncontrolled driveway on Merrimac Street that serves the existing business is a great improvement to the flow of traffic on Merrimac Street. The design of the driveway entering from Market Street and exiting onto Summer Street is good and the proposal to install a warning sign and tone at the Market Street entrance is an improvement.

### **Parking Configuration**

As stated in the letter from Vanasse & Associates the "parking angle has been established at 60-degrees" but the angle measured from the plans is 63-degrees. The parking angle on the plans should be adjusted to comply with the Vanasse report. It is further discussed in the letter that 13.5 feet aisle width is needed behind a parking space at a 60-degree angle. References I have seen show a requirement of 16 to 18 feet of aisle width behind a 60-degree parking space. Vanasse should provide the reference for the 13.5 feet of aisle width requirement. The engineering plans for the project show a minimum of 13.7 feet for aisle width, the architectural plans show 14.6 feet in drawing AO.1 and I scale the distance from the engineering plans at 13.4 feet. The aisle width should be checked, and the same width should appear on all plans.

The limited aisle width coupled with the use of the Autostscker PL-6SR Parking Lift Platforms make entering and exiting P1/P2 and possibly P3/P4 problematic. The platform width is approximately seven feet. An individual would have to back out straight until the front wheels were clear of the raised metal on each side of the platform. See attached pdf with a car shown in blue. Vanasse should provide turning movement diagrams for vehicles entering and exiting P1 and P3 using the proper aisle width and specifying the type or size of car used.

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### **Retaining Walls**

There aren't any retaining wall details in the submitted plans. The applicant should specify if the wall is proposed to be on the applicant's property or on the property of the abutter on Summer Street. If easements are necessary for the construction of the wall they should be submitted to the Board prior to construction.

### **Roadway Improvements**

The wording of the engineer is that the driveway is "designed" yet designs of the drives are not in the plans. They should be included in the plan set.

### **Utilities**

The proposed utilities locations have been added to the plans. The existing utilities shown on the plans may be incorrect.

### **Architectural Elevations**

As stated, additions have been made to the architectural elevations. Windows in the commercial area are not detailed.

### **Soil Conditions**

The Mass Contingency Plan is not included in the revised submittal

### **Snow Removal**

Has the applicant made provisions for snow removal for "significant snowfall events"? Considering the limited aisle width, it would seem snow removal to an offsite location is necessary for all snowfall events.

### **Solid Waste Storage**

A dumpster location is shown on the plan

### **Demolition and Erosion Control**

A plan has been submitted entitled GRADING, EROSION AND SEDIMENT CONTROL PLAN. See specific comments below

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### **Construction Sequencing**

The applicant proposes to submit a Construction Management Plan to the City in advance of commencing construction. The Board should consider requiring the Plan as condition of approval for review and approval of the Board prior to commence of work or if the plan should be submitted prior to approval of the Site Plan.

### **Review of Vanasse & Associates letter of November 18, 2019**

See comments provided under Traffic Impacts and Parking Configuration

### **Millennium Engineering Inc letter of November 20, 2019**

### **Existing Conditions Plan**

As stated by the engineer spot grades and utilities have been added to the plan. The catch basins in Merrimac and Summer Streets are shown to connect into a sewer junction that is within the cross walk of Summer Street. A sewer manhole is shown within Merrimac Street northeast of the cross walk labeled SMH, Rim = 17.0. The engineer should clarify if the SMH is misplaced and should be located within the cross walk or if its location is correct and the sewer shown in Merrimac Street should be tied into it.

### **Site Plan**

Sewer, water, drain and gas proposed locations are shown on the revised plan. Electric is not shown. Will it be overhead or underground?

Connecting the roof drainage to the City's drainage system keeps the water off the streets and lessens potential flooding during major storms. However, the drainage system as shown ties into the sewer system which means inflow is being added to the sewer system. Jamie Tuccolo of the DPS sewer Division should be consulted about the proposed connection. There are several manholes within the intersection of Summer and Merrimac Streets that are not shown on the plan

The plan should specify if all of the curbing shown on the plan is proposed to be new or if existing curb is to be left in placed or reset.

Ramps for Handicapped access should be shown.

The brick sidewalk should be shown.

The paved areas on site should be labeled.

The lamp posts locations should be shown.

The wall elevations are on the Grading Plan not the Site Plan.

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The downspout locations are shown but the invert elevations are not.

The engineer has verified the building outline on the plan represents the walls not the overhangs.

The curb line at the intersection of Merrimac and Summer Streets has been adjusted.

A fence line has been added to the site plan, but details are not provided. If the fence is to be placed on the abutter's property an easement document should be submitted to the Board.

The snow removal note is not on sheet 5.

### **Erosion and Sedimentation Control**

The location of proposed erosion control has been placed on the plan sheet entitled GRADING EROSION AND SEDIMENTATION CONTROL PLAN Sheet 3 of 5. There is a note on that plan specifying a 2" thick layer of straw mulch is to be placed over the soil after the existing building is removed. Catch basin inlet protection has been added to the detail sheet but should be referenced at the three catch basins shown on sheet 3 of 5.

Demolition and construction on a small site within a City are difficult and need to be properly planned. An erosion control plan should work in conjunction with a demolition phasing plan and a construction phasing plan. The staked silt fence and haybales shown in the details cannot be installed until after the asphalt is removed and does not encompass the entire work area. See comments regarding a sequencing plan below.

### **Detail Sheet**

The following details were not added to the plan

Retaining wall detail  
Granite curb transition detail  
Driveway apron detail  
Fence detail

The lamppost detail was added as a literature document to the architectural plans

A concrete sidewalk detail was added to the detail sheets, but it appears from the architects plans that the sidewalk will be brick.

### **Comments on Text Presentation**

The engineering and architectural drawings have been modified to both show angled parking and the lift system has been changed from a Model No 2LP to an Autostacker model PI-6SR. The

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plans show 12 angled parking spaces and one parallel space. See comments above concerning the accessibility of the parking spaces.

The engineer suggests the rear wall of the existing building will be part of the retaining wall along the southerly property line. The remainder of the wall will be designed by a structural engineer. Plans of the design and phasing of demolition and construction will be submitted to the building inspector prior to the commencement of work.

The demolition of the building and the wall construction are critical in determining the number of parking spaces on site. If the rear wall of the existing building cannot be used and a new wall needs to be built it will most likely encroach on the parking aisle width thereby reducing the number of available parking spaces. If that is the case the applicant will need additional spaces in the parking garage and require a larger payment to ITIF.

The engineer proposes to submit a demolition plan and sequence when the demolition application permit request is submitted to the building inspector and the construction plan and sequence will be submitted to the building inspector at the time of the submittal of the building permit.

### **Stormwater Calculations**

As previously stated, the proposed drainage design is an improvement over the existing conditions. While the analysis has flaws as noted below it is not necessary that it be rerun.

The rainfall rates that should be used for the analysis as most recently approved by Jon-Eric White, City Engineer are

2-year	10-year	100 year
2.63 inches	4.83 inches	8.94 inches

These rates should be used in future work.

Using a 6-minute time of concentration is not appropriate for such a small and intensely developed parcel and the times of concentration which can be calculated within the HydroCAD program should be used.

The proposed roof area as shown in the calculations as 2270 square feet when it scales from the plans to be 3650 square feet.

### **Architectural Plans**

The aisle width shown on Plan AO.1 do not agree with the aisle width shown on the engineering plans

Dimensional information and window types have been added to the plans

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Brochures of the lights to be used, the car lift system and the vehicle warning system have been added to the submittal

The architectural plans clearly show a brick sidewalk and granite curbing not shown on the engineering plan.