

# ENGINEER'S REPORT

7 BREW COFFEE  
3999 MAPLE STREET  
AMHERST, NY



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PREPARED FOR:  
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3999 MAPLE STREET  
AMHERST, NY

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## 1.0 PROJECT NARRATIVE

### 1.1 Purpose and Project Background

The following report has been prepared to document the design and calculations for the water system, fire protection, sanitary sewers, and storm water management system for the proposed site development of a 7Brew Drive-thru Coffee shop. This project will be located at 3999 Maple St., as shown in Figure 1. These calculations are intended to represent the proposed site storm water management system, sanitary sewer system (including grease interceptor calculations), and water system, as detailed within the redevelopment plans prepared by The Mannik & Smith Group, Inc. dated 9/20/2024. The proposed project consists of the construction of a 900 square foot restaurant building, sidewalks, associated drives and drive-thru, parking, utility improvements to the site, and site landscaping. The proposed development will connect to existing water main along Maple Rd. and the proposed sanitary sewer lateral will connect the building to the Town of Amherst sanitary sewer infrastructure at the northeast corner of the site.

### 1.2 Existing Conditions

The existing site is a 0.95-acre parcel that is entirely impervious consisting of a large concrete parking lot and the debris of the previously-demolished building. The site is bordered on the north by Maple Rd, to the east by N Bailey Ave, to the south by Wegmans Supermarket, and an Olive Garden restaurant to the west, as shown in Figure 1. The site is tributary to the Town of Amherst storm sewer conveyance system, which, in turn, is tributary to the Niagara River/Lake Erie watershed, which ultimately discharges to Lake Erie.

Figure 1: Location Map



## **2.0 WATER SYSTEM**

### **2.1 Existing Water System**

The current water system is maintained by the Erie County Water Authority. Water valves and hydrants were identified during the survey, but no records were available for the main waterline. The water main shown on the plans assumes water main is connected directly between the surveyed water valves.

### **2.2 Proposed Usage**

The proposed development will employ 6 people with 2 lanes for ordering. The intended purpose of this building is to be strictly a drive-through facility with only employees occupying the building. All orders are taken in person by an employee at the car window, then orders are brought out to the customers' cars; no drive-through window is included or needed. No food is made on site, only drinks are created and served.

### **2.3 Fire Protection and Exterior Water System.**

Water service calculations are not able to be provided at this time due to unknown flow rates and static or dynamic pressures in the existing main. Fire flow data has been requested from Erie County Water Authority but has not yet been received. A previous use of this site included a functioning restaurant that had a much larger footprint and expected water usage than the proposed. Based on the proposed building size, an acceptable water service size can be as small as 5/8". Assuming reasonable flow and pressures in the existing water main exists, we are confident no problems will arise with a 1" water service.

The proposed building location allows for connection to the existing fire hydrant on the southwest corner of N Bailey Ave. As shown on the utility plans, the farthest part of the building is less than 150 feet from Maple Rd and the hydrant is less than 450 feet to the farthest part of the building as a hose would be laid (along pavement and around the building). Due to the small size of the building. No sprinkler system is to be installed, however a Knox Key Box will be included, as called out on the utility plans.

### **2.4 Cross Connection Control**

The water system will include a backflow preventor assembly in order to prevent water flowing from the building into the public water main and to be in conformance with the NYS Department of Health Cross-Connection Control Program. This assembly will sit inside the building and will follow the guidelines of both NYS Department of Health and Erie County Water Authority.

### **3.0 SANITARY SEWER SYSTEM**

#### **3.1 Existing Sanitary Sewer System**

This site lateral runs East to connect to an 8" sewer along N Bailey Ave. The 8" sewer connects to a 12" truck sewer that runs along Maple Rd. The Town of Amherst Sewer Maintenance Division is responsible for the existing separate sanitary sewer system.

#### **3.2 Hydraulic Loading**

Based on the NYS Design Standards for Intermediate Sized Wastewater Treatment Systems (Table B-3), the hydraulic loading rate for a restaurant with a drive-up window is 500 gpd. Since no other category fits the proposed use perfectly, the door that the employees will use to enter and exit while delivering the orders is assumed similar to 1 drive-through window.

#### **3.3 Sanitary System**

Domestic sanitary wastewater will be collected in under-slab pipes and exit the building on the east side. From this point a 4-inch lateral with a minimum slope of 1.0% will convey the flow east to an existing 8" sanitary line that runs along N Bailey Ave. Sewer cleanouts will be placed at every turn of the pipe.

#### **3.4 Grease Interceptor Calculations**

A 500-gallon grease interceptor is to be placed to the east of the building per plans, sized with the following calculations.

##### GPM x Grease Factor

- |  |                           |
|--|---------------------------|
| • (1) 3 Compartment Sink, 2" discharge pipe          | 33 x 1.0 = 33.00 GPM      |
| • (4) Floor Sink, 1.5" discharging pipe (use 1 gpm)  | 4.00 GPM                  |
| • (2) Hand Sink, 1" discharging pipe                 | 2 x 5.0 x 0.25 = 2.50 GPM |
| • (1) Mop Basin, 3" waste discharge pipe (use 6 gpm) | 6.00 GPM                  |
| • (4) Trench Drain, 1.5" discharge pipe (use 1 gpm)  | 4.00 GPM                  |

Total = 49.5 GPM x 30 minutes = 1485 gallons x 1/3 PFR = 495 gallons ~ 500 gallons

## **4.0 STORMWATER MANAGEMENT**

### **4.1 Stormwater Runoff Conveyance**

The stormwater management system for this project includes 3 curb inlets placed at designated low spots, laterals from roof drains, and pipes that interconnect the onsite structures to the Town of Amherst existing storm infrastructure. The AutoCAD Civil 3D Storm Sewers extension was used to design the pipe network that will convey stormwater runoff to the existing storm sewer system. Storm sewers were sized based on flow capacity and hydraulic grade line of the 25-year storm.

### **4.2 Post Construction Stormwater Management**

The proposed site does not require additional stormwater detention for quantity and quality purposes as the existing site is 100% impervious and does not have any existing detention or retention for stormwater, while the proposed site will decrease the amount of impervious area by adding islands, landscaping, and buffering. The final total impervious area will be 45.53% - a 54.47% reduction in impervious cover.

Hydraflow in AutoCAD Civil 3D was used to calculate the existing and proposed runoff flow. Using the TR55 method to find time of concentration values, the post-development flow was compared to the existing flow, accounting for the 10% escalation factor per the Boulevard Central District Final Generic Environmental Impact Statement (Section 3.3). As shown in the table, the pervious area, landscaping, and buffering in the proposed site will decrease the runoff substantially and no stormwater management ponds or structures are necessary.

<b>Storm Year</b>	<b>Existing Flow (cfs)</b>	<b>Proposed Flow (cfs)</b>	<b>Escalation Factor (10%)</b>
1	2.858	1.536	1.689
2	3.578	2.115	2.327
5	4.543	2.908	3.199
10	5.301	3.536	3.890
25	6.362	4.416	4.858
50	7.263	5.162	5.678
100	8.249	5.977	6.575