

**ENGINEER'S REPORT
FOR
PROPOSED RETAIL BUILDING
4548-4564 MAIN STREET
TOWN OF AMHERST, NEW YORK
PROP # 5202**

April 16, 2025



GENERAL

This project is a redevelopment of three parcels with a total of 0.79-acres that were previously occupied with two commercial buildings totaling 12,150 S.F. with an associated parking lot, utility and drainage infrastructure. The project is located along Rt. 5 Main Street between Fruehauf Ave and Chateau Terrace in the Town of Amherst. The property abuts general commercial properties along Main Street property and abuts residential properties along the North property line. The existing buildings have been demolished with the existing foundations remaining in place until future construction.

Existing Conditions:

The site was occupied by multi-tenant buildings with associated parking lots. The buildings have been demolished with the foundation remaining. The site currently is sheet draining any runoff from pavement surface into the existing on-site drainage structures.

The site contains two existing domestic water services. A ¾" domestic service is located along Main St. that is tapped off the existing 8" water main along the Southside of Main St. A 2" domestic service is tapped off the 6" water main along Fruehauf Ave. The existing water services will be abandoned as part of this project.

Existing Sanitary Sewers are located along Main Street that discharges into Town of Amherst sewer district #1.

PROJECT OVERVIEW

The proposed project (*Figure 1*) consists of; demolition of the existing multi-tenant building foundations, pavement areas and the clearing of land; construction of a proposed 12,285 S.F. retail building with associated parking garage, drainage, utility, lighting and landscaping improvements.

PROPOSED FACILITIES

Storm Water

Refer to the stormwater report prepared by Carmina Word Design.

Water System

The existing water services to the site are to be abandoned for this proposed project. The proposed development will provide a new water service tap to the 6" main along Chateau Terrace. The proposed domestic and fire services will be backflowed within the proposed building.

Disinfection of the water services following installation will be continuous feed, according to AWWA C-651, latest revision.

Summary: (Refer to Figure 2)

Proposed Building:	12,285 S.F.
Operating Demand Increase:	3.27 gpm
Peak Demand Increase:	5.88 gpm
Water Main:	6" main along Chateau Terrace
Static Pressure:	64 PSI
Head Loss Friction:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.6 psi (+)
Bends Loss:	0 psi
Required Pressure after RPZ:	20 psi
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Proposed Pressure after RPZ:	50.6 PSI
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Sanitary Sewer:

Sanitary services will provide a new sanitary lateral connection to an existing manhole along Fruehauf Ave. The proposed building will be provided a 2,000 Gal grease trap with new 6" SDR-35 PVC lateral sanitary connection.

Summary:

Proposed New Building S.F.:	12,285 S.F.
Proposed Flow: Retail	0.1 GPD * 12,285 SF = 1,229 GPD
	15 GPD * 25 Employees = 375 GPD
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Total Sanitary Flow:	1,604 GPD
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FIGURES:

- 1 *Site Location Plan & Engineering Plan*
- 2 *Sanitary & Water Calculations*
- 3 *Stormwater Report*
- 4 *Flow Test performed by ECWA*

APPENDICES:

- A *FEMA Flood Areas*

FIGURE 1

*SITE LOCATION PLAN
ENGINEERING PLANS*



FIGURE 2

SANITARY & WATER CALCULATIONS

SANITARY SEWER CALCULATIONS:

Design GPD: Retail = 0.1 GPD/ S.F. + 15gpd/Employee
 Proposed = 12,285 S.F. Retail building @ 1 Employee per 500SF
 = 0.1 GPD * 12,285 S.F.
 = 1,229 GPD + 15GPD * 25 Employees

SANITARY FLOW = **1,604 GPD**

PEAK SANITARY DEMAND

Total Demand = 1,604 GPD
 Per Population = 30 Per Capita

Peak Factor: $(18+VP) / (4+VP)$ P in Thousands

Peak Factor = 4.37

Peak Sanitary Demand = 1604 x 4.37 = 7,009 gpd = 4.87gpm

WATER CALCULATIONS:
 = 1.1 Usage Factor * (GPD)
 = 1,604 * 1.1 = 1,764 GPD
 = GPD / 9hr / 60min
 ASSUMED 9HR SHIFT = 1764 / 9 / 60
 = **3.27 GPM**

PEAK FACTOR:
 = GPM X 1.8
 = 3.27 X 1.8
 Q = **5.88 GPM PEAK**

HEADLOSS FRICTION: = $\frac{(10.44) X (L) X (Q)^{1.85}}{(C)^{1.85} X (D)^{4.866}}$

Q = GPMIn
 L = LENGTH OF PIPE = $\frac{(10.44) X (40) X (5.88)^{1.85}}{(140)^{1.85} X (6)^{4.866}}$
 C = DESIGN COEF OF PIPE
 D = PIPE DIAMETER
 = **0 PSI**

ELEVATION LOSS: = (BUILDING INTAKE - HYDRANT HEIGHT) X 0.433
 = (683.5 - 685.0) X 0.433
 = **0.6 PSI (+)**

LOSS THROUGH RPZ & METER:

RPZ = 12 PSI (STANDARD)
 METER = 1 (STANDARD)
 = **13 PSI**

LOSS DUE TO BENDS:

RESISTANCE EQUIVALENT LENGTH METHOD)

TOTAL = **0 FT ADDITIONAL PIPE**

STATIC PRESSURE @ HYDRANT:

= **64 PSI**

PRESSURE AFTER RPZ / METER / BENDS / ELEVATION / HEADLOSS:

= 64 PSI - 13 PSI + 0.6 PSI
 (HYD) (RPZ) (ELEVATION)
 = **50.6 PSI**

REQUIRED RESIDUAL PRESSURE = 20 PSI

PROPOSED RESIDUAL PRESSURE = 50.6 psi

THEREFORE PROPOSED > REQUIRED
 50.6 PSI (GREATER) 20 PSI

FIGURE 3

Stormwater Report

Section 1 - Location & Description

This redevelopment project will consist of the construction of a 2-story commercial use building that will include retail space and multi-level parking. The site is located on the north side of Main Street (NY-5), between Fruehauf Ave and Chateau Terrace in the Town of Amherst. The existing site is currently occupied by a 3-story vacant building located along the Main Street frontage. Existing surface parking is located north behind the existing building. Both the existing building and parking areas will be removed as part of this project. The project area is approximately 0.79 acres, all of which is to be disturbed for construction.

Section 2 - Storm Sewer Service

The existing side streets, Fruehauf Ave and Chateau Terrace, slope from south to north. Existing closed stormwater drainage systems are located along Main Street (NYSDOT) and Chateau Terrace (Town of Amherst). The existing northeast parking lot area sheet drains to the north and northeast to Chateau Terrace. The existing northwest parking lot is generally flat and drains to an existing closed stormwater drainage system with unknown outlet. Existing stormwater runoff collected and conveyed from the site is ultimately tributary to Ellicott Creek and the Niagara River.

The proposed dry detention basin is designed to attenuate proposed runoff to existing conditions prior to discharge via an 8" outlet control pipe connecting to the existing storm sewer system on Chateau Terrace.

Detention Pond Summary (dry):

Top of basin elevation = 674.50

Bottom of basin elevation = 672.90

Design Criteria:

Detention: Comparison of the existing 10-year vs. the proposed 25-year runoff

Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)*	Result (cfs)
10-year	3.46	1.13	-2.34
25-year	4.25	1.27	-2.98

*Proposed runoff flowrate is the total of the multiple subcatchments as shown in Attachment A of this report.

FIGURE 4

Flow Test by ECWA

Hydrant FLOW Test

Print Date: 4/16/2020

Residual Hydrant: J07E24 **Test Date/Time: 11/21/2019 13:15**

Location.....: 4301 MAIN ST
 TOWN OF AMHERST

1ST HYD E/O GETZVILLE RD
AMHERST CENTRAL H.S.

Size of Main/Branch: 8"/6" Fire District: 22021 SNYDER FD 7 Water District: 184 ECWA AREA-TOWN OF AMHERST

Performed By: DWP/CDB Comments: HYDRANT FLOW TEST REQUESTED BY DAVID SCHLANT M/E ENGINEERING
PHONE: 716-845-5092; EMAIL: DMSCHLANT2@MEENGINEERING.COM

CW #43608

Dischrg Coef: 090 Elvtn Usgs(ft): Static(psi): 64 Residual(psi): 54 Required Residual Pressure(psi): 20
Gallons Used..: 4,500 Total Flow(gpm): 1,500 Flow at Req'd Resid Pressure: 3,339

Flow Hydrants:

Flow Hyd Location	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
J07 E21 2 BRANTWOOD RD	6"/6"	1:	2.50	20.0	750	
1ST HYD S/O MAIN ST		2:	2.50	20.0	750	
C/O MAIN ST		3:				Total Flow: 1,500

APPENDIX A

FEMA Flood Areas

National Flood Hazard Layer FIRMette

78°47'13"W 42°58'N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
Zone A, V, A99
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*

Future Conditions 1% Annual Chance Flood Hazard *Zone X*
 Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
 Area with Flood Risk due to Levee *Zone D*

OTHER AREAS OF FLOOD HAZARD

NO SCREEN *Zone X*
 Area of Minimal Flood Hazard *Zone X*
 Effective LOMRMs *Zone D*
 Area of Undetermined Flood Hazard *Zone D*

OTHER AREAS

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation

- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study

OTHER FEATURES

- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/11/2021 at 10:16 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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