CARMINAWOOD
DESIGN

ENGINEER'S REPORT

for

Proposed 5K Retail/Restaurant
7470 Transit Road
Town of Amherst, NY 14221

Prepared for

Benderson Development Company, LLC
570 Delaware Avenue,
City of Buffalo NY 14202

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

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Section 1 - Location & Description

This project is a redevelopment of a 0.76 acre site located on the east side of Transit Road just north of Tennyson Road, in the Town of Amherst, and is currently zoned G-B General Business. Construction will consist of a proposed 5,153 sf mixed use (1,153 SF Restaurant & 4,000 SF Retail) building with an associated parking area, utility, lighting, and landscaping improvements. Currently at the proposed site location there is an ex. restaurant building, with associated utilities & an ex. parking lot. The ex. building, associated utilities, and ex. parking lot areas are all to be removed within the scope of work for this site. The area to be disturbed for this project is approximately 0.70 acres total when construction is completed.

Section 2 - Water Service

Water service for the proposed building will be tapped off an ex. 6" ECWA water main, located along the north side of Tennyson Road. The proposed domestic service will be a 2" type 'k' copper, and it will run north approx. 15 LF into the proposed building. Inside the proposed building mechanical room the 2" domestic service will have a meter (by ECWA) and RPZ installed. Heat & lighting will be provided within the building to prevent freezing & for testing. Drainage due to testing or failure of the RPZ will be to the outside ground via a through-wall drain to the outside. Water inside the building will be used for typical domestic uses.

Domestic Summary:	
Peak Operating Demand:	3.03 gpm
Water Main:	6" on Tennyson Road
Static Pressure:	47 psi (ECWA)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ:	34.0 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed 6" sanitary sewer service will connect to the ex. 18" V.T.P. Town of Amherst sanitary sewer located within the middle of Tennyson Road. The proposed service will consist of approximately 51 LF of a 6" SDR-35 PVC sanitary sewer lateral at a min. slope of 1.0%.

Design Parameters

Retail:	0.1 gpd x 4,000 sf =	400 gpd
Restaurant:	35 gpd x 20 seats =	700 gpd

Total site sanitary demand:		= 1,100 gpd	
Peak sanitary demand:	1,100 gpd * 4.41	= 4,852 gpd	*use peaking factor of 4.41

The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC. Refer to Attachment A for peaking factor calculation.

Section 4 - Storm Sewer Service

The ex. site currently sheet drains in multiple directions within the parking lot areas to catch basin structures that collect and convey the stormwater to an ex. underground leech field storm system. Ex. building roof leaders are connected into this stormwater system. This ex. underground stormwater system, all associated catch basins, storm water piping, & ex. building roof leaders are all to be removed as part of the proposed site work.

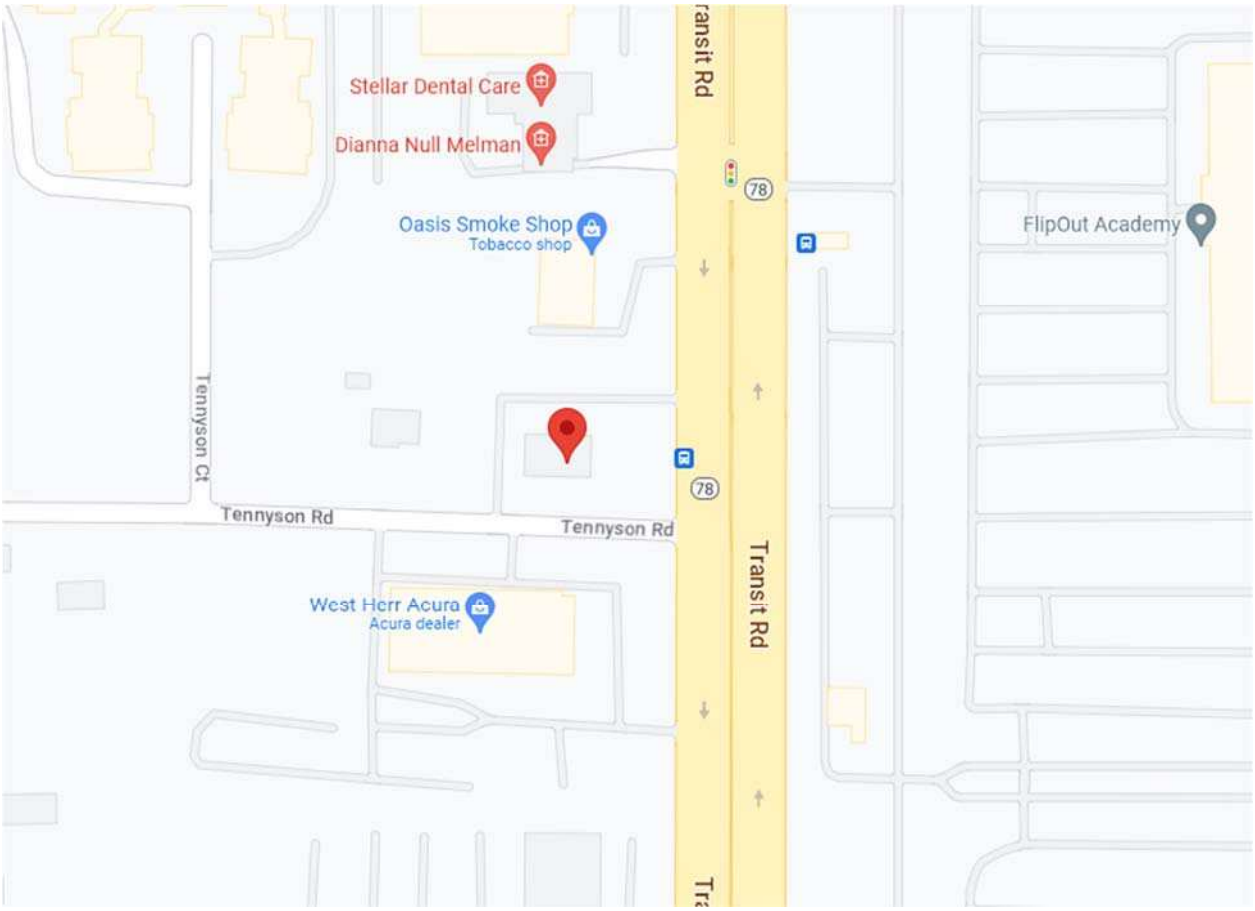
The proposed onsite storm sewer system for this development project consists of smooth interior and perforated HDPE pipes connected by a series of catch basins. Proposed building roof leaders will be connected into the perforated HDPE piping installed around the perimeter of the proposed building. The stormwater system will ultimately outlet into the ex. Town of Amherst stormwater catch basin located along the south side of Tennyson Road.

Appendix A

Site Location Map

Appendix A

Site Location Map



Appendix B

Sanitary Sewer and Water Demand Calculations

CARMINA WOOD DESIGN
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 22.311 Date: 11/6/2023
Project Name: Proposed 5K Bldg Rev. _/_/_
Project Address: 7470 Transit Road, Amherst NY
Subject: Sanitary Sewage & Water Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Average Daily Flow
Proposed 5K Building:

Retail =	0.1	gpd	x	4,000	sf	=	400	gpd	*Retail = 0.1 gpd/SF
Restaurant =	35	gpd	x	20	seats	=	700	gpd	*Restaurant = 35 gpd/seat

Total Site Sanitary Demand: = 1,100 gpd

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 1,100 gpd / 100 gpcd = 11 per capita

Population (P) = 11 people

Peaking Factor : (18 +ÖP) / (4 + ÖP) where P is in thousands

Peaking Factor = 4.41

Peak Sanitary Demand = 1,100 x 4.41 = 4,852 gpd

Water Demand Calculations (domestic):

Proposed 5K Building:

1,100 gpd x 1.1 = 1,210 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

1,210 gpd x 1day/12hr x 1hr/60min = 1.68 gpm

1.68 gpm x 1.8 = 3.03 gpm Q_{peak}

Headlosses:

Q_{peak} = 3.03 gpm
Pipe = 2 inch Type 'K' Copper C = 130
Length = 15 LF

$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(15)(3.03)^{1.85}}{(130)^{1.85}\,(2)^{4.866}} = 0.01 \text{ ft} = 0.00 \text{ psi}$$

Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.00 psi
Static Pressure = 47 psi (Per ECWA flow test 02/05/2021)
Residual Pressure Following RPZ = 47.0 - 13.0 = 34.00 psi