Engineering Report
Water and Sanitary Sewer

For

Proposed 39 Units Apartments Building
Albany, NY

Prepared For:

242 Spruce Street LLC

04/16/21

INFOCUS
Architectural, Structural, MEP and Fire Protection Engineering Consultant
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Project Description

242 Spruce Street LLC is proposing the construction of alternation 37 apartments in an existing 3-story building with a new story vertical extension located at 242 Spruce Street, Albany, NY. Each apartment will contain one to three bedrooms and one washing machine per apartment. In addition to the apartments, the proposal is to have a café, gym, retail, indoor and outdoor parking space. This report calculated the anticipated water and sewer demand.

Existing Conditions

Water Distribution

There will be a new 3" water line entering the building that is to be tapped into an existing a 6" public watermain under Spruce Street.

Sanitary Distribution

There is presently an 30" sanitary line under Spruce Street. The size of the new sewer line leaving the building to be determined. The size of the sewer line shall be a minimum of 6" in diameter. It shall also be verified that the waste line and roof drains are disconnected, or they shall be disconnected and routed separately.

Sewer and Water Usage

Current use

Currently, the entire building are gutted and not being occupied. Therefore the current water/sewer usage of the building is far below historic use and below the demand that the building was designed for.

The square footage of all four floor is 70,219 square feet not including the stairwells, corridor and parking garage. Per the 2015 International Building Code (IBC), Table 1004.1.2, the occupant load for Use B-Business is 1 person per 100 square feet. This would result in an occupant load of 702 people. Per the NYS design standards for Intermediate Size Wastewater Treatment Systems, Table B-3, 15 gallons per day should be used for office buildings per occupant; this equates to 10,530 gallons per days.

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Table 1 below provides information on the anticipated average portable water use and wastewater flow rates for the project. Average water use and average wastewater flow are estimated to be equal for this project.

Description	Use Rate	Total Use(gpd)
37 Apartments	110 gpd/bedroom [1]	4,070
Café occupancy 14	35gpd/per seat [1]	490
Gym Occupancy 22	20 gpd/per patron [1]	440
Retails Occupancy 47	35gpd/per seat [1]	1,645
Total Water Flow		**6,645**

1. *Hydraulic Load Rates taken from Table B-3 of NYS Design Standards for Intermediate Sized Wastewater Treatment Systems. Hydraulic Load Rates taken from Table B-3 of NYS Design Standards for intermediate Sized Wastewater Treatment Systems, for Concert Hall/rea/Assembly Hall/Theater/Stadium/skating Rink since Rec Room and Conference Room no in Table.*

Summary of Design Flows

Average values for water consumption and sewer flows are based on a full, 24 hours day. Peaking factor for instantaneous water use ins estimated to be 10 times the average. Peaking factor for sanitary sewer flow is 4.0 times the average. [2]

Average daily demand for water usage is estimated to be 6,645 /(24hrs* 60 min/hr) = 4.6 gpm. Instantaneous peak flow is estimate 4.6X 10 = 46 gpm.

Average daily flow for wastewater is anticipated to be 4.6 gpm. Instantaneous peak flow is estimated at 18.4 gpm.

[2] PF= 2.5 $Q^{0.145}$ with a maximum of 4, where PF= peak flow and Q = flow in gallons per days.

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Proposed Conditions

Water Distribution

The Building is currently not sprinklered and will need to be sprinklered since it is proposed to install apartments. Therefore, it is proposed to install a new 3" water line entering the building with an existing 6" line which will be able to meet the peak water supply demand of 46 gpm.

Sanitary Sewer

The units loading for the building was determined to be 551. Per Table 710 .1 (1) of the 2018 International Plumbing Code, the minimum waster line size serving the building shall be 6". Therefore, a new sewer line of 6" is proposed.

FIXTURE TYPE	LOAD VALUES (Water Supply Fixture Units) Table E103.3(2)						
	Quantity	Cold	Hot	Total	Qty x cold	Qty x hot	Qty x Total
Bathroom group (private, flush tank)	0	2.7	1.5	3.6	0	0	0
Bathroom group (private, flush valve)		6	3	8	0	0	0
Bathtub (private)	30	1	1	1.4	30	30	42
Bathtub (public)	0	3	3	4	0	0	0
Bidet (private)		1.5	1.5	2	0	0	0
Dishwasher (private)	37	0	1.4	1.4	0	51.8	51.8
Drinking fountain	2	0.25	0	0.25	0.5	0	0.5
Kitchen sink (private)	37	1	1	1.4	37	37	51.8
Kitchen sink (Hotel, restaurant)	1	3	3	4	3	3	4
Laundry trays (1 to 3, private)		1	1	1.4	0	0	0
Lavatory (private)	45	0.5	0.5	0.7	22.5	22.5	31.5
Lavatory (public)	3	1.5	1.5	2	4.5	4.5	6
Service sink (offices)		2.25	2.25	3	0	0	0
Shower head (public)		3	3	4	0	0	0
Shower head (private, mixing valve)	15	1	1	1.4	15	15	21
Urinal (public, 1" flush valve)	2	10	0	10	20	0	20
Urinal (public, 3/4" flush valve)		5	0	5	0	0	0
Urinal (public, flush tank)		3	0	3	0	0	0
Washing machine (8lb, private)	37	1	1	1.4	37	37	51.8
Washing machine (8lb, public)		2.25	2.25	3	0	0	0
Washing machine (15lb, public)		3	3	4	0	0	0
Water closet (private, flush valve)	45	6	0	6	270	0	270

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Water closet (private, flush valve)		2.2	0	2.2	0	0	0
Water closet (public, flush valve)		10	0	10	0	0	0
Water closet (public, flush valve)		5	0	5	0	0	0
Water closet (flushometer tank)		2	0	2	0	0	0
Boiler		6.206	0	2	0	0	0
Hobart Dishwasher		0.833	0	2	0	0	0
Glass Machine		0.833	0	2	0	0	0
Glass Machine		0.833	0	2	0	0	0
	Total				**439.5**	**200.8**	**550.4**

Results and Conclusions

The current water usage of the building is not representative of its past usage or its designed usage. Based on the size of the building, the water usage should have been anticipated to be 10,530 gallons per day. The estimated usage for the proposed apartment fit-up is 6,645 gallons per days. This is a 3,885 gallon per day decreased in the estimated daily water consumption.

The existing main sewer line existing the building shall be verified to be at least 6" in diameter. It shall also be verified that building waste and roof drains are disconnected and routed separately.

Sincerely yours,

Wu (Woody) Chen P.E.
Principal
04/16/2021

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