Appendix D

Utility Information

Appendix D.1

Utility Calculations

Infrastructure

The study area is well served with utilities and each municipal or private provider was contacted to determine their respective utility capacity and ability to serve the proposed development.

Water: The Buffalo Division of Water provided record maps of the corridor and from those we prepared an exhibit that indicates pipe sizes and general locations. The smaller pipes were installed as early as 1870 through 1914, with larger pipes installed in 1973, 1979, 1994 and 2004. Available hydrant flow test data indicate an average static pressure of from 36 to 46 psi at a residual flow rate of 850+- gpm at from 35 to 44 psi. The tallest office building will likely require a fire pump to serve the highest floors, but the available flow at ground level should be sufficient to serve the new development for domestic and fire-fighting needs.

Sanitary Sewer: The gravity sanitary sewer system includes pipes that range in size from 10" to 24" in diameter; each of sufficient size to serve the office, skilled nursing, and medical buildings at the locations proposed. The city of Buffalo has "combined" sewers, meaning that they convey storm water and sanitary sewage in the same piping network to the city's treatment plant. However, in this particular area of the city, there are parallel storm sewers into which roof runoff and parking area drainage will be directed. Therefore, each new structure will have separate storm and sanitary sewer laterals.

Electric Service: The National Grid engineering department is aware of the proposed structures and has determined that the service to the area has to be upgraded to meet the demands of the development. As of this writing, they are working on preliminary design and will continue as the building plans progress and are formally submitted.

Gas Service: The National Fuel Gas Company indicated that their present gas distribution system includes a 12" medium to high pressure gas main on North Street. This main should be of sufficient capacity and pressure to serve the GVI and the Skilled Nursing facility. The Medical Office Building will likely require an extension of the higher pressure service from the 12" main (mentioned above) south along Ellicott Street.

The propose Project's water supply demand and sanitary sewer demand calculations are attached.

SANITARY SEWER LOADING & WATER DEMAND CALCULATIONS

REFERENCE: NYSDEC "DESIGN STDS. FOR WASTEWATER TREATMENT WORKS, 1988"

↳ TABLE 3: EXPECTED HYDRAULIC LOADING RATES

FACILITY

1) MEDICAL OFFICE BUILDING (MOB) = 300,000 SF

SEWER LOADING RATE = 0.10 GPD/SF

SEWER DESIGN FLOW = 300,000 SF × 0.10 GPD/SF × 0.80 (WATER SAVING REDUCTION FACTOR)

= 24,000 GPD

WATER DEMAND ≈ SEWER DESIGN FLOW = 24,000 GPD

$$\text{PEAK OPERATING DEMAND} = \frac{24{,}000\ \text{GPD}}{(9\ \text{HR/DAY})(60\ \text{MIN/HR})} \times 4\ (\text{PEAK FACTOR}) = 177.7 \approx 178\ \text{GPM}$$

2) SKILLED NURSING FACILITY (SNF) = 200,000 SF W/ 300 BEDS

SEWER LOADING RATE ⇒ HOSPITAL = 175 GPD/BED

SEWER DESIGN FLOW = 175 GPD/BED × 300 BEDS × 0.80 (WATER SAVING REDUCTION FACTOR)

= 42,000 GPD

WATER DEMAND ≈ SEWER DESIGN FLOW = 42,000 GPD

$$\text{PEAK OPERATING DEMAND} = \frac{42{,}000\ \text{GPD}}{(24\ \text{HR/DAY})(60\ \text{MIN/HR})} \times 4\ (\text{PEAK FACTOR})$$

= 116.6 ≈ 117 GPM

3) GLOBAL VASCULAR INSTITUTE (GVI): CLINICAL CARE = 300,000 SF
UB RESEARCH = 160,000 SF
UB OFFICE = 40,000 SF
OUTPATIENT CLINIC = 15,000 SF W/100 BEDS

SEWER LOADING RATE: OFFICE = 0.10 GPD/SF
HOSPITAL = 175 GPD/BED

SEWER DESIGN FLOW = OFFICE FLOW + BEDS

$= [500{,}000\ SF(0.10\ GPD/SF) \times 0.80\ \text{WATER SAVING RED. FACTOR}]$
$+ [100\ BEDS(175\ GPD/BED \times 0.80\ \text{WATER SAVING RED. FACTOR}]$

$= 40{,}000 + 14{,}000$
$= \underline{54{,}000\ GPD}$

WATER DEMAND ≅ SEWER DESIGN FLOW = 54,000 GPD

PEAK OPERATING DEMAND = OFFICE + BEDS

$= \left[\frac{(40{,}000\ GPD)}{(9\ HR/DAY)(60\ MIN/HR)} + \frac{14{,}000\ GPD}{(24\ HR/DAY)(60\ MIN/HR)}\right] \times 4\ \text{PEAK FACTOR}$

$= 335.2 \approx 336\ GPM$

	DAILY WATER USE	PEAK DEMAND
MEDICAL OFFICE BLDG.	24,000 GPD	178 GPM (9HR WORK DAY)
SKILLED NURSING FAC.	42,000 GPD (24HR)	117 GPM
GLOBAL VASCULAR INST.	54,000 GPD (24HR)	336 GPM

PEAK WATER DEMAND IS MET BY EXIST. WATER DISTR. SYSTEM
WATER DEMAND ≅ SEWAGE FLOW < 1 CFS. EXIST. SAN. SEWERS HAVE CAPACITY

Appendix D.2

Utility Maps

SUMMER STREET

NORTH STREET

ELLICOTT STREET

GOODRICH

GLOBAL VASCULAR INSTITUTE (GVI)
(APPROX. 500,000 GSF)

SKILLED NURSING FACILITY (SNF)
(APPROX. 200,000 GSF)

MEDICAL OFFICE BUILDING (MOD)
(APPROX. 200,000-250,000 GSF)

HIGH STREET

ALLEN STREET

MICHIGAN STREET

CARLTON ST

VIRGINIA STREET

MAIN STREET

WASHINGTON STREET

ELLICOTT STREET

GOODELL STREET

VIRGINIA STREET

OAK STREET

ELM STREET

MICHIGAN STREET

E. TUPPER STREET

LEGEND

- BUFFALO NIAGARA MEDICAL CAMPUS BOUNDARY
- NORTH END DEVELOPMENT
- SANITARY SEWER
- STORM SEWER

BUFFALO NIAGARA MEDICAL CAMPUS - NORTH END

INFRASTRUCTURE-PUBLIC SANITARY & STORM SEWER

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150 0 150 300 Ft.
150'

SUMMER STREET

NORTH STREET

ELLICOTT STREET

GLOBAL VASCULAR INSTITUTE (GVI)
(APPROX. 500,000 GSF)

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HIGH STREET

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GOODELL STREET

VIRGINIA STREET

OAK STREET

ELM STREET

MICHIGAN STREET

E. TUPPER STREET

LEGEND

- BUFFALO NIAGARA MEDICAL CAMPUS BOUNDARY
- NORTH END DEVELOPMENT
- 12" WATER MAIN
- HYDRANT

BUFFALO NIAGARA MEDICAL CAMPUS - NORTH END INFRASTRUCTURE-PUBLIC WATER

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