

FULLER ENGINEERING & LAND SURVEYING, LLC

525 John Street • Second Floor

Bridgeport, CT 06604

(203) 333-9465 (203) 336-1769 FAX

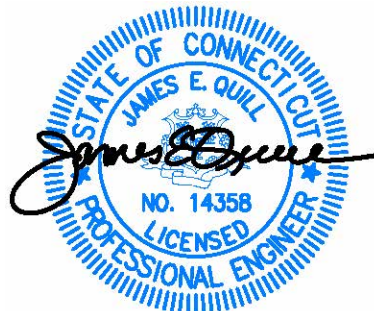
**SANITARY SEWER
&
WATER SYSTEM CALCULATIONS**

Project Name:

**Madison Place
Luxury Townhouse Development
18 Powerhouse Road &
145 CT Route 32
Montville, CT**

Information prepared for:

**JNE Holdings, LLC
&
Town of Montville
Department of Public Works / Engineering Department**



Dated: 18 March 2025

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Project: RESIDENTIAL DEVELOPMENT @ #145 ROUTE 32
MONTVILLE, CT

Date: 03-18-2025
0

SANITARY SEWER DESIGN FLOW TABLE (PROPOSED CONDITIONS)

| QTY | UNITS | GPD/UNIT | GPD/TOTAL | |
|-----|-----------------------------|--------------|------------------|------------|
| 0 | 1 BEDROOM UNIT | 150 | - | |
| 0 | 2 BEDROOM UNIT | 300 | - | |
| 11 | 3 BEDROOM UNIT | 450 | 4,950.00 | |
| | ADF (AVE DAILY FLOW) | TOTAL | 4,950.00 | GPD |
| | ADF (AVE DAILY FLOW) | TOTAL | 0.005 | MGD |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | DF = ADF X PEAKING FACTOR | | | |
| | DF = DESIGN FLOW | | | |
| | PF = PEAKING FACTOR | PF = 4.0 | | |
| | | | | |
| | DF = | | 19,800.00 | GPD |
| | (65000 GPD = 0.1 CFS) | | 0.0305 | CFS |

References: 1) CONNECTICUT PUBLIC HEALTH CODE

On-site Sewage Disposal Regulations and
Technical Standards for Subsurface Disposal Systems
Revised January 1, 2023

2) CONNECTICUT PUBLIC HEALTH CODE

Sections 19-13-B104a through 19-13-B104d

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CALCULATE THE CAPACITY OF SAN. SEWER PIPE

PIPE: PROPERTY TO MAIN

Pipe Diameter: **6** inches PVC
MANNINGS EQUATION

$$R = \frac{A}{P_w} \quad 0.125$$

| | | | |
|-------|------------------|-----------------------------------------|-----------|
| Where | R: | Hydraulic radius (ft) | |
| | A: | Cross-sectional area (ft ²) | 0.1963495 |
| | P _w : | Wetted Perimeter (ft) | 1.5707963 |

$$V = \frac{k R^{2/3} S^{1/2}}{n} \quad 4.789041382$$

| | | | |
|-------|----|------------------------------------------------------|-------|
| Where | V: | Mean Velocity (ft/s) | |
| | k: | 1.49 for U.S. customary units, or 1.0 for S.I. units | |
| | n: | Manning's roughness value | 0.011 |
| | R: | Hydraulic Radius (ft) | 0.125 |
| | S: | friction Slope (ft/ft) | 0.02 |

$$Q = VA \quad 0.940326076$$

| | | | |
|-------|----|-------------------------|--|
| Where | Q: | Flow Rate(cfs) | |
| | V: | Average velocity (ft/s) | |

Design Flow Calculated (SEE SAN SEWER DESIGN FLOW TABLE) = 0.0305 CFS

The Q capacity of the pipe is higher than the design flow therefore pipe is sufficient

| | | | |
|-------------|---|------------|----------------------------|
| 0.9403 CFS | > | 0.0305 CFS | <u>therefore OK</u> |
| 611,212 GPD | > | 19,800 GPD | |

Note: Existing units 1 and 7 are proposed to retain their ex-water sewer connections. However, they were included in this calculations

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WATER DEMAND CALCULATIONS

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TABLE AP103.3(2)LOAD VALUES ASSIGNED TO FIXTURES^a

| FIXTURE | OCCUPANCY | TYPE OF SUPPLY CONTROL | LOAD VALUES, IN WATER SUPPLY FIXTURE UNITS (w.s.f.u.) | | | No. | Total |
|-------------------------|-------------------|-----------------------------------|-------------------------------------------------------|------|-------|--------------|--------------|
| | | | Cold | Hot | Total | | |
| Bathroom group | Private | Flush tank | 2.7 | 1.5 | 3.6 | 33.0 | 118.8 |
| Bathroom group | Private | Flushometer valve | 6.0 | 3.0 | 8.0 | | |
| Bathtub | Private | Faucet | 1.0 | 1.0 | 1.4 | | |
| Bathtub | Public | Faucet | 3.0 | 3.0 | 4.0 | | |
| Bidet | Private | Faucet | 1.5 | 1.5 | 2.0 | | |
| Combination fixture | Private | Faucet | 2.25 | 2.25 | 3.0 | | |
| Dishwashing machine | Private | Automatic | — | 1.4 | 1.4 | 11.0 | 15.4 |
| Drinking fountain | Offices, etc. | $\frac{3}{8}$ " valve | 0.25 | — | 0.25 | | |
| Kitchen sink | Private | Faucet | 1.0 | 1.0 | 1.4 | 11.0 | 15.4 |
| Kitchen sink | Hotel, restaurant | Faucet | 3.0 | 3.0 | 4.0 | | |
| Laundry trays (1 to 3) | Private | Faucet | 1.0 | 1.0 | 1.4 | | |
| Lavatory | Private | Faucet | 0.5 | 0.5 | 0.7 | | |
| Lavatory | Public | Faucet | 1.5 | 1.5 | 2.0 | | |
| Service sink | Offices, etc. | Faucet | 2.25 | 2.25 | 3.0 | | |
| Shower head | Public | Mixing valve | 3.0 | 3.0 | 4.0 | | |
| Shower head | Private | Mixing valve | 1.0 | 1.0 | 1.4 | | |
| Urinal | Public | 1" flushometer valve | 10.0 | — | 10.0 | | |
| Urinal | Public | $\frac{3}{4}$ " flushometer valve | 5.0 | — | 5.0 | | |
| Urinal | Public | Flush tank | 3.0 | — | 3.0 | | |
| Washing machine (8 lb) | Private | Automatic | 1.0 | 1.0 | 1.4 | 11.0 | 15.4 |
| Washing machine (8 lb) | Public | Automatic | 2.25 | 2.25 | 3.0 | | |
| Washing machine (15 lb) | Public | Automatic | 3.0 | 3.0 | 4.0 | | |
| Water closet | Private | Flushometer valve | 6.0 | — | 6.0 | | |
| Water closet | Private | Flush tank | 2.2 | — | 2.2 | | |
| Water closet | Public | Flushometer valve | 10.0 | — | 10.0 | | |
| Water closet | Public | Flush tank | 5.0 | — | 5.0 | | |
| Water closet | Public or private | Flushometer tank | 2.0 | — | 2.0 | | |
| Hose Bibb | | | 1.0 | -- | 1.0 | 3.0 | 3.0 |
| | | | | | | TOTAL | 168.0 |

* BATHROOM GROUP. A group of fixtures, including or excluding a bidet, consisting of a water closet, lavatory, and bathtub or shower. Such fixtures are located together on the same floor level.
(2022 CT Building Code)

** Fire Service Provided by Existing Hydrant on Power House Rd

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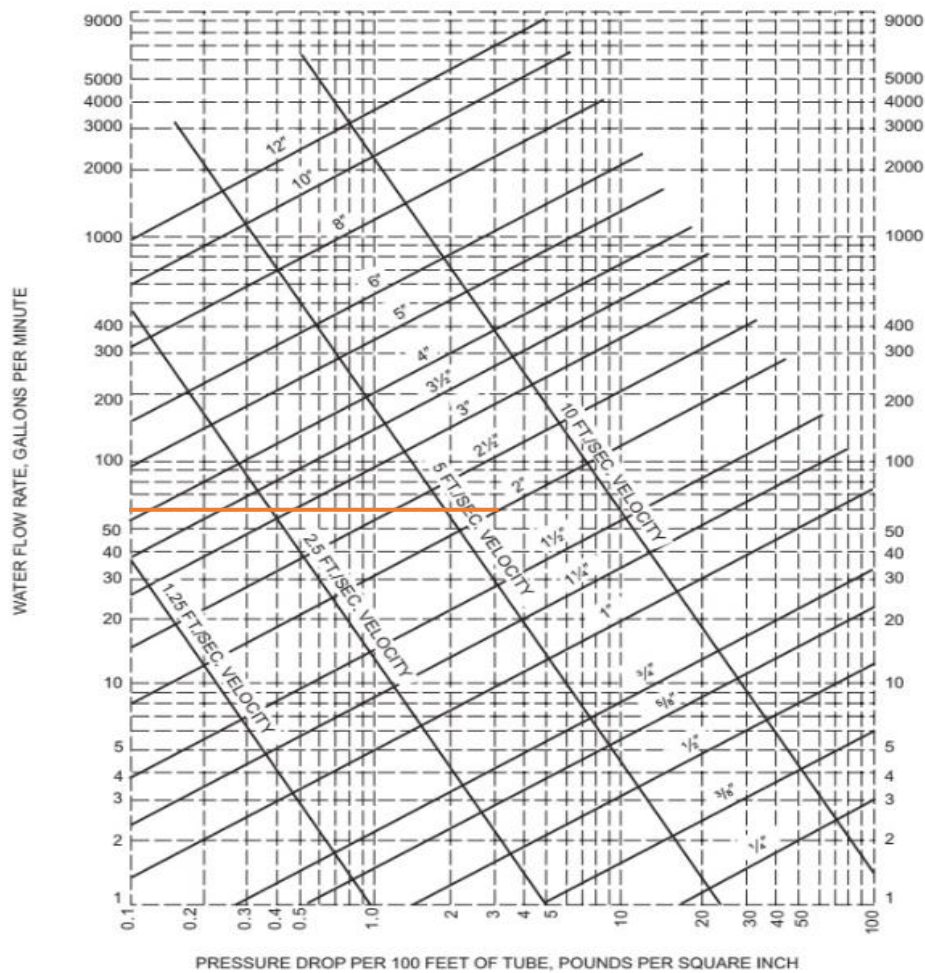
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WATER DEMAND CALCULATIONS

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TABLE AP103.3(3) TABLE FOR ESTIMATING DEMAND

| SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS | | |
|----------------------------------------------|--------|---------|
| Load | Demand | |
| (w.s.f.u.) | (gpm) | (cfm) |
| 160 | 57.0 | 7.61976 |
| 180 | 61.0 | 8.15448 |



2 in Pipe recommended

* Based on (2022 CT Connecticut State Building Code)