



CITY OF GREATER SUDBURY

**SUPPLEMENTAL DESIGN CRITERIA
FOR SANITARY SEWERS, STORM SEWERS AND FORCEMAINS**

FOR ALTERATIONS AUTHORIZED UNDER ENVIRONMENTAL COMPLIANCE APPROVAL

City of Greater Sudbury

Supplemental Design Criteria for Sanitary Sewers, Storm Sewers and Force mains for Alterations Authorized under Environmental Compliance Approval

2.0. Design Of Sanitary Sewers

2.1. Design Flows

2.1.1. Residential Flows

Delete the following:

1. The average daily residential flows of 225 to 450 L/cap/day shall be used in the design for sizing the pipe.

Add in the following:

1. The average daily residential flows used for sizing the pipe are to follow the community flows from the below table for the community the system will be connected to.

RECOMMENDED DESIGN FLOWS BY LOCATION							
LOCATION	PER CAPITA FLOW RATE	UNITS OF PEAK EXTRANEOUS FLOW					
	ℓ/cap/day	ℓ/ha/s			ℓ/ha/day		ℓ/ha/day
		Existing		New	Existing		New
Azilda	360	0.26		0.26	22450		22450
Capreol	500	0.39		0.39	33700		33700
Chelmsford	360	0.39		0.39	33700		33700
Coniston	410	0.39		0.39	33700		33700
Copper Cliff	500	0.26		0.39	22450		33700
Dowling	360	0.39		0.39	33700		33700
Falconbridge	410	0.39		0.39	33700		33700
Garson	360	0.13		0.13	11250		11250
Levack	410	0.26		0.26	22450		22450
Lively	410	0.39		0.39	33700		33700
Mikkola	360	0.39		0.39	33700		33700
Onaping	410	0.39		0.39	33700		33700
Sudbury	410	0.39 Over 40 ha	0.52 under 40 ha	0.20	33700 over 40 ha	44900 under 40 ha	17280
Valley East	360	0.39		0.39	33700		33700
Walden	450	0.21		0.21	18050		18050

2.1.2. Commercial Flows, #2

Delete the following:

1. The minimum allowance for commercial flows shall be 28 m³/ha/day.
Actual flow monitoring data (covering at least 2 years) at the subject site or a similar site observed locally can be used.

2.1.5. Extraneous Flow, #1

Delete the following:

of up to 0.28 L/s/ha.

Add in the following:

found in table from section 2.1.1. above.

2.8. Pipe Cover and Frost Protection

2.8.1 Delete in its entirety.

Add in the following:

In general, sanitary sewers shall be installed at sufficient depth to receive sewage from basements by gravity drainage and to prevent freezing and damage due to frost.

Depth of cover shall be maintained at 2.0 m. Exceptions may be made to this only with the approval of the Water/Wastewater Engineer.

2.10. Sanitary Maintenance Holes

2.10.1. Delete the following:

for Sewers up to 400 mm in diameter, and 150 m for Sewers between 450 mm to 750 mm in diameter

2.10.4. Delete the following:

25 mm

Replace with the following:

30 mm

Delete the following:

50 mm

Replace with the following:

60 mm

2.10.6. Delete the following:

610 mm

Replace with the following:

600 mm

2.11. Inverted Siphons

Delete in its entirety.

Add in the following:

Inverted Siphons are not permitted.

2.12. Service Connections (Service Laterals)

2.12.3. Delete the following:

1%

Replace with the following:

2%

Delete the following:

(2% slope is recommended).

2.12.7. Delete in its entirety.

5.0. Storm Sewers

5.1. Design of Storm Sewers

5.1.3. Delete in its entirety and replace with the following.

Storm sewers shall be designed, using the rainfall intensity, duration, and frequency (IDF) curves described by the following equations:

a. 2-year return period

$$\text{Rainfall Intensity (mm/hr)} = \frac{429.375}{(T(\text{min})+4.25)^{0.7325}}$$

b. 5-year return period

$$\text{Rainfall Intensity (mm/hr)} = \frac{600.938}{(T(\text{min})+4.00)^{0.7325}}$$

c. 10-year return period

$$\text{Rainfall Intensity (mm/hr)} = \frac{726.563}{(T(\text{min})+3.938)^{0.74}}$$

d. 25-year return period

$$\text{Rainfall Intensity (mm/hr)} = \frac{847.03}{(T(\text{min})+3.938)^{0.74}}$$

e. 50-year return period

$$\text{Rainfall Intensity (mm/hr)} = \frac{986.25}{(T(\text{min})+3.75)^{0.7375}}$$

f. 100-year return period

$$\text{Rainfall Intensity (mm/hr)} = \frac{1092.988}{(T(\text{min})+3.656)^{0.735}}$$

5.1.4. Delete in its entirety and replace with the following.

In the design of conveyance drainage system, local climate data is to be used to establish design storm frequency criteria. The storm frequency to be used in the design of storm sewers (minor system) will vary depending on the nature of the area being serviced, and the consequences of more intense storms being experienced.

The range for frequencies used in Greater Sudbury is as follows:

a) Residential Areas

2 years for local streets
5 years for trunk storm sewers – collector streets
25 years for arterial roads

b) Commercial Areas

5 years for local streets
10 years for trunk storm sewers – collector streets
25 years for arterial roads

5.1.7. Delete the following:

Maximum depths of flows at the surface and maximum hydraulic grade lines in the Storm Sewers shall be verified for up to the 100-year design storm.

Replace with:

Maximum depths of flows at the surface and maximum hydraulic grade lines in the Storm Sewers shall be verified for up to the 100-year design storm or Regional (Timmins Storm) whichever is greater.

5.2. Runoff Calculations

5.2.4. Delete the following:

(e.g., 50 or 100-year storm)

Replace with the following:

(e.g., 100-year storm or Regional storm (Timmins))

5.4. Pipe Diameter

5.4.1. Delete the following:

250 mm

Replace with the following:

300 mm

Delete the last 2 sentences in their entirety.

5.9. Pipe Cover and Frost Protection

5.9.1. Delete in its entirety.

Add the following:

A minimum depth of 1.5 metres to the obvert from the finished road or ground surface elevation.

5.10. Storm Maintenance Holes

5.10.1. Delete the last 2 sentences in their entirety.

5.10.2. Delete in its entirety and replace with the following.

Maximum maintenance holes spacing shall follow the following intervals to facilitate maintenance operations:

- i) Sizes 300 mm to 1050 mm – linear spacing not to exceed 100 m.
- ii) Sizes greater than 1050 mm – no limit on spacing.

5.11. Catch Basins

5.11.3. Delete the following:
250 mm

Replace with the following:
300 mm

5.12. Inverted Siphons

Delete in its entirety.

Add the following:
Inverted siphons are not permitted.

5.13. Service Connections (Service Laterals)

Delete in its entirety.

Add in the following:
Service connections are not permitted.

6.0. Third Pipe Collection System

Delete in its entirety.

Add in the following:
Third Pipe Collection System is not permitted.