

Intensity – Duration – Frequency (IDF) Curves

South of Bloomington Road: (Southern Quadrant)

$$I_5 = \frac{1045.41}{(t+4.9)^{0.83}} \text{ mm/hr}, \text{ where } t = 10 \text{ minutes, then } I = 111.10 \text{ mm/hr}$$

Use 10 minutes as an initial inlet time

$$I_{10} = \frac{1331.42}{(t+5.26)^{0.84}}$$

$$I_{25} = \left| \frac{1045.41}{(t+4.9)^{0.83}} \right| * 1.39 \text{ mm/hr}$$

Conversion factors as in MTO Drainage Manual
Design Chart B3-3

$$I_{50} = \left| \frac{1045.41}{(t+4.9)^{0.83}} \right| * 1.54 \text{ mm/hr}$$

$$I_{100} = \left| \frac{1045.41}{(t+4.9)^{0.83}} \right| * 1.69 \text{ mm/hr}$$

North of Bloomington Road: (Northern Quadrant)

$$I_5 = \frac{2464}{t + 16}, \text{ where } t = 10 \text{ minutes, then } I = 94.77 \text{ mm/hr}$$

Use 10 minutes as an initial inlet time

$$I_{10} = \left| \frac{2464}{t + 16} \right| * 1.18 \text{ mm/hr}$$

Conversion factors as in MTO Drainage Manual
Design Chart B3-3

$$I_{25} = \left| \frac{2464}{t + 16} \right| * 1.39 \text{ mm/hr}$$

$$I_{50} = \left| \frac{2464}{t + 16} \right| * 1.54 \text{ mm/hr}$$

$$I_{100} = \left| \frac{2464}{t + 16} \right| * 1.69 \text{ mm/hr}$$

Intensity – Duration – Frequency (IDF) Curve for 25mm Storm:

$$I_{25 \text{ mm}} = 722.949 / (T_c + 7.503)^{0.862}$$

Materials and Construction:

- Sewers beyond 1500mm in diameter must be concrete pipe
- Sewers smaller than 1500 mm diameter can be HDPE pipe provided they meet OPSS 1840. Pipe Class requirements are as follows:
- Up to 900mm – Class 320
- 1050mm – Class 140
- 1200mm – Class 125
- 1350mm – Class 110
- 1500mm – Class 95
- Refer to OPSD-802 and 806 or per recommendation from geo-technical consultants with respect to pipe bedding requirements
- All Structures as per OPSD 700 Series, unless noted otherwise
- Specify the class of all concrete pipe or gauge thickness of all CSP culverts based on the design cover for each pipe and ultimate road grade
- ***Prior to selecting an Oil Grit Separator (OGS) for the project, the designer shall have a thorough discussion with the PM and the Manager of Roads Maintenance of the Roads and Traffic Operations Branch in order to select an OGS unit that meets the Region's needs (e.g. procurement, cost of future maintenance, overall footprint within the ROW, spacing constraints during construction)***
- OGS unit manufacturers offer a variety of products that meet / balance these needs

Additional Design Criteria:

- Provide adequate cover above the type of inlet lead pipe used (steel, concrete, or plastic) to prevent a pipe failure from traffic loads. Refer to the OPSD 800 Series for additional information
- Provide a minimum of 1.2 metres of cover between the finished road grade and the top of the proposed pipe
- Ensure adequate cover above the pipe used (steel, concrete, or plastic) to prevent a pipe failure from frost. Refer to the OPSD 800 Series for additional information
- Show all existing sewers in the "background" of the plan view of all road design drawings and show existing sewers on profile section
- All new storm sewers require MOE Environmental Compliance Approval (ECA)