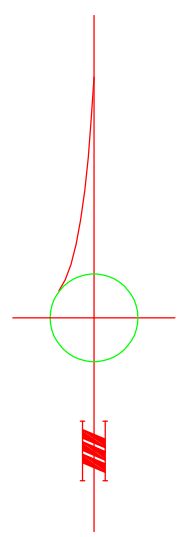
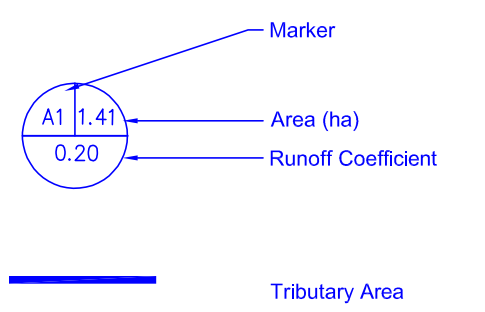


NOT FOR CONSTRUCTION

LEGEND



Flows - Design Sheet - Q1 & Q3

**Runoff Equation**  $Q = KCIA$  (l/s)

where, K = conversion factor = 2.78  
 C = runoff coefficient  
 I = rainfall intensity (mm/hr)  
 A = area (ha)

**Areas** C  
 1.41 ha 0.20  
 0.11 ha 0.50  
**Total Area** C  
 1.52 ha 0.22

$I = A/(T_c + B)^2$   
 I = Rainfall Intensity (mm/hr)  
 T = Time of concentration (hour) = 18.4 min = 0.31 hr

Return Period	A	B	C	I	Q	Q
2 year	662	7.5	0.79	130.56 mm/hr	122.32 L/s	0.12 m <sup>3</sup> /s
5 year	1098	10.1	0.83	157.12 mm/hr	147.20 L/s	0.15 m <sup>3</sup> /s
10 year	1560	13.0	0.86	168.43 mm/hr	157.80 L/s	0.16 m <sup>3</sup> /s
25 year	2010	14.0	0.88	193.34 mm/hr	181.13 L/s	0.18 m <sup>3</sup> /s
50 year	2200	14.6	0.87	209.69 mm/hr	196.45 L/s	0.20 m <sup>3</sup> /s
100 year	2507	14.8	0.88	229.87 mm/hr	215.36 L/s	0.22 m <sup>3</sup> /s

10 year		PIPE DATA						% Load
Q	Size	Grade	Cap	Vel	Length	Time		
(L/sec)	(mm)	(%)	(L/sec)	(m/sec)	(m)	(min)		
157.80	525	1.00	232.95	1.08	15.00	0.23	68%	

100 year		PIPE DATA						% Load
Q	Size	Grade	Cap	Vel	Length	Time		
(L/sec)	(mm)	(%)	(L/sec)	(m/sec)	(m)	(min)		
215.36	525	1.00	232.95	1.08	15.00	0.23	92%	

Design calculations according to Twp. of Cavan Monaghan Municipal Servicing Standards, City of Peterborough Airport Atmospheric Environment Weather Station, and MTO Drainage Manual

Flows - Design Sheet - Q2

**Runoff Equation**  $Q = KCIA$  (l/s)

where, K = conversion factor = 2.78  
 C = runoff coefficient  
 I = rainfall intensity (mm/hr)  
 A = area (ha)

**Areas** C  
 1.04 ha 0.20  
**Total Area** C  
 1.04 ha 0.20

$I = A/(T_c + B)^2$   
 I = Rainfall Intensity (mm/hr)  
 T = Time of concentration (hour) = 17.5 min = 0.29 hr

Return Period	A	B	C	I	Q	Q
2 year	662	7.5	0.79	130.76 mm/hr	75.61 L/s	0.08 m <sup>3</sup> /s
5 year	1098	10.1	0.83	157.31 mm/hr	90.96 L/s	0.09 m <sup>3</sup> /s
10 year	1560	13.0	0.86	168.60 mm/hr	97.49 L/s	0.10 m <sup>3</sup> /s
25 year	2010	14.0	0.88	193.52 mm/hr	111.90 L/s	0.11 m <sup>3</sup> /s
50 year	2200	14.6	0.87	209.88 mm/hr	121.36 L/s	0.12 m <sup>3</sup> /s
100 year	2507	14.8	0.88	230.07 mm/hr	133.04 L/s	0.13 m <sup>3</sup> /s

10 year		PIPE DATA						% Load
Q	Size	Grade	Cap	Vel	Length	Time		
(L/sec)	(mm)	(%)	(L/sec)	(m/sec)	(m)	(min)		
97.49	450	1.00	154.43	0.97	11.00	0.19	63%	

100 year		PIPE DATA						% Load
Q	Size	Grade	Cap	Vel	Length	Time		
(L/sec)	(mm)	(%)	(L/sec)	(m/sec)	(m)	(min)		
133.04	450	1.00	154.43	0.97	11.00	0.19	86%	

Design calculations according to Twp. of Cavan Monaghan Municipal Servicing Standards, City of Peterborough Airport Atmospheric Environment Weather Station, and MTO Drainage Manual

**Time of Concentration & Time to Peak Calculation - Airport Method**

PROJECT: 14 Scout Crescent Date: May-24

**Input:**  
 Drainage Area = 1.52 ha A1 = 1.41; A3 = 0.11  
 Runoff Coefficient (C) = 0.22  
 Watershed Length = 215.0 m  
 High Point = 293.15 m  
 Low Point = 286.95 m  
 Watershed Slope = 0.12186 %  
 = 12.19 %

**Output:**  
 $t_c = 3.26 * (1.1-C) * L^{0.5} * S_w^{-0.33}$  where:  $t_c$  = time of concentration, minutes  
 C = runoff coefficient  
 L = watershed length, m  
 S<sub>w</sub> = watershed slope, %  
 = 18.4 min  
 = 0.31 hr  
 $t_p = 0.67 * t_c$  where:  $t_p$  = time to peak, hr  
 = 0.21 hr

**Time of Concentration & Time to Peak Calculation - Airport Method**

PROJECT: 14 Scout Crescent Date: May-24

**Input:**  
 Drainage Area = 1.04 ha A2 = 1.04  
 Runoff Coefficient (C) = 0.20  
 Watershed Length = 198 m  
 High Point = 293 m  
 Low Point = 267 m  
 Watershed Slope = 0.133704 %  
 = 13.37 %

**Output:**  
 $t_c = 3.26 * (1.1-C) * L^{0.5} * S_w^{-0.33}$  where:  $t_c$  = time of concentration, minutes  
 C = runoff coefficient  
 L = watershed length, m  
 S<sub>w</sub> = watershed slope, %  
 = 17.5 min  
 = 0.29 hr  
 $t_p = 0.67 * t_c$  where:  $t_p$  = time to peak, hr  
 = 0.20 hr

