BF 01517 Hwy 55 Over Tawatinaw River
Hydrotechnical Summary

Channel Capacity :

S = 0.0015
B = 7 m, h = 3.0 m, T = 14 m
Use n = 0.04

At Bank Height : Y = 3.0 m, V = 1.5 m/s, Q = 50 cms
At Channel Capacity : Y = 4.0 m, V = 2.0 m/s, Q = 90 cms

Historical Highwater Data :

HW has been observed at this site in 1956 due to backwater from an ice jam on the Athabasca River just d/s with water 0.6m over the deck (Y = 6.5m). This value appears to be the basis for the 1959 design of the current bridge. Drawings for BF09905 on the Athabasca River just d/s refer to highwater in May 1963 close to the elevation used for the design of this bridge. HW was also observed in 1971 with photos showing scour, and the west approach was washed out in 1921. There is little HW data for u/s bridges, but past design values are all within the channel capacity values.

There are no WSC gauges on the Tawatinaw River. Nearby gauges suggest large runoff events in April 1971, 1974, 1979 and 1997. The largest storms for this area in the database are July 1953 and June 1970 with about 100mm of rainfall.

Basin Runoff Potential :

d = 40 mm, T_p = 20 hrs, q = 0.55 cms/km^2.
Gross DA = 780 km^2.
Q_p = 430 cms.

Conclusion :

Backwater from the Athabasca River governs highwater elevation. For non-backwater conditions, the channel capacity estimate is consistent with historic observations and is within the basin runoff potential.

Recomm. parameters : Y = 6.5 m (4.0m - no BW), V = 2.0 m/s, Q = 90 cms.