BF 77547 Hwy 22X Over Bow River
Hydrotechnical Summary

Channel Capacity:

S = 0.002
B = 105 m, h = 4.0 m, T_h = 141 m
Use AT equation

Above parameters based on Bridge Conceptual Design Report (AE, June 2017)

At Bank Height: Y = 4.0 m, V = 2.7 m/s, Q = 1350 cms
At Channel Capacity: Y = 5.0 m, V = 3.2 m/s, Q = 2020 cms

Historical Highwater Data:

July 2013 estimated HWL ~ 998.54 m. AEP surveyed on June 3, 1982, HWL = 995.22 m. As constructed drawing 6480-C showed design Q = 3700 cms and design HWL = 999.44 m.

WSC Gauge 05BH004 (DA = 7870 km^2, 1911 – Now)
1915, reported Q ~ 1130 cms
1923, reported Q ~ 840 cms
1929, reported Q ~ 1320 cms, stage rise ~ 3.5 m and mean depth ~ 4 m
1932, reported Q ~ 1520 cms
2013, reported Q ~ 1840 cms

WSC Gauge 05BJ001 (DA ~ 1240 km^2, 1908 – Now)
1915, reported Q ~ 240 cms
1923, reported Q ~ 330 cms
1929, reported Q ~ 380 cms
1932, reported Q ~ 310 cms
2013, reported Q ~ 700 cms

Historic photos from Calgary show higher events in 1879, 1897, and 1902, with estimates of Q > 2000 cms.

Basin Runoff Potential:

Gross DA = 10700 km^2, runoff potential method is not applicable.

Golder Associates completed a hydrologic assessment in 2014 and a calibrated hydraulic model in 2015. The recommended 1:100 year flood peak = 3360 cms and the corresponding water elevation = 999.21 m.

Conclusion:

Historical observations govern. Recommended parameters:

Y = 6 m, V = 3.6 m/s, Q = 2700 cms