BF 73077 Hwy 10 Over Red Deer River
Hydrotechnical Summary

Channel Capacity :

S = 0.0004
B = 90 m, h = 5.5 m, T_h = 150 m
Use AT equation

At Bank Height : Y = 5.5 m, V = 1.7 m/s, Q = 1100 cms
At Channel Capacity : Y = 6.5 m, V = 1.9 m/s, Q = 1500 cms

Historical Highwater Data :

The 1981 design is based on Y ~ 7.5m and high ice (1948) at Y ~ 6.5m. HW was observed in 1940 (Y ~ 6m).

WSC Gauge 05CC002 (DA = 11,600km^2, 1913 – Now) reports Q ~ 1900cms in June 1915 (gauged at Q ~ 1600cms, stage increase ~ 5m), and Q ~ 1500cms in August 1954 and June 2005 (~20% attenuation from Dickson Dam). Gauge 05CD004 (DA = 15,100km^2, 1944 – 1958) reports Q ~ 1500cms in August 1954. Gauge 05CE001 (DA = 24800km^2, 1916 – 1930, 1959 – Now) reports Q ~ 1450cms in June 2005 (gauged at Q ~ 1050cms) and Q ~ 1200cms in June 1923.

Basin Runoff Potential :

DA = 29510km^2, beyond range of basin runoff potential technique.

Conclusion :

Historic observations govern. Recommended parameters :

Y = 7.5 m, V = 2.1 m/s, Q = 2000 cms.
HW EL 676.5 m (Dwg. 9123-P)