BF 07806 Hwy 840 Over Rosebud River
Hydrotechnical Summary

Channel Capacity :

S = 0.002
B = 15 m, h = 4.5 m, T_h = 30 m
Use AT equation

At Bank Height : Y = 4.5 m, V = 2.6 m/s, Q = 270 cms
At Channel Capacity : Y = 5.5 m, V = 3.1 m/s, Q = 410 cms

Historical Highwater Data :

HW was noted in 1948 (washout, Y ~ 4.5 - 5.0m), and April 1971 (drift to bottom chord, Y ~ 5m). A 1961 report notes a HWM with Y ~ 5m). The 1985 design was based on Y = 6.5m and Q = 290cms. Several ice related washouts were noted between 1916 and 1921.

WSC Gauge 05CE003 (DA = 4000km^2, 1922 – 1930, 1936) reports Q = 80cms in March 1925. Gauge 05CE005 (DA = 3580km^2, 1966 – Now) reports Q ~ 200cms in April 1971 (gauged at Q = 170cms with 4.5m stage increase). The largest storm for this area in the database is June 1970, with about 100mm of rainfall over the basin.

Basin Runoff Potential :

d = 35mm, T_p = 40 hrs, q = 0.25 cms/km^2.
Gross DA = 3463 km^2, beyond the scope of the runoff depth.

Conclusion :

The channel capacity estimate is consistent with historic observations.

Recommended parameters : Y = 5.5 m, V = 3.1 m/s, Q = 410 cms.