BF 00723 Hwy 581 Over Rosebud River
Hydrotechnical Summary

Channel Capacity :

S = 0.001
B = 6 m, h = 2.0 m, T_h = 14 m
Use n = 0.045.

At Bank Height : Y = 2.0 m, V = 0.9 m/s, Q = 17 cms
At Channel Capacity : Y = 3.0 m, V = 1.2 m/s, Q = 45 cms

Historical Highwater Data :

A 1969 report notes a HWM with Y = 2.4m, and a 1997 BIM report notes a HWM u/s (Y ~ 3.0m accounting for burial and headloss). The 1981 design was based on Y = 3.0m and Q = 56cms.

WSC Gauge 05CE006 (DA = 753km^2, 1957 – Now) reports Q = 40 – 45cms in April 1969 and 1971 (rating curve shows a rise in stage of 2.4m for Q = 34cms). The largest storms in the database for this area are in May 1923 and June 1928 and 1970 with rainfall in the 110 to 120mm range.

Basin Runoff Potential :

d = 40mm/20hrs and d = 35mm/40hrs, use q = 0.4 cms/km^2.
Gross DA = 334 km^2.
Q_p = 135 cms.

Conclusion :

The channel capacity estimate is consistent with historic observations and is within the basin runoff potential.

Recommended parameters : Y = 3.0 m, V = 1.2 m/s, Q = 45 cms.