BF 08495 Highway 644 Over Redwater River
Hydrotechnical Summary

Channel Capacity:

S = 0.0002
B = 18 m, h = 2.5 m, T_h = 30 m
Use AT equation

At Bank Height: Y = 2.5 m, V = 0.7 m/s, Q = 45 cms
At Channel Capacity: Y = 3.5 m, V = 1.0 m/s, Q = 90 cms

Historical Highwater Data:

As constructed drawing 2272-P in 1958 notes a HWL 94.1', stream bed elevation 79' and bridge underside elevation approx. 96'; however, Q unknown. The channel was diverted with 50' wide bottom between piers.

The bridge steel girders were rehabilitated in 2015. Record drawing 34369-C in 2015 notes a HWL approx. 860 mm below underside of girder.

Based on the above information, the height between underside of girder and stream bed is approx. 5.2 m. The HWL is approx. 4.3 m.

WSC gauge 05EC003 (Gross DA approx. 1490 km^2, 1973 to 1978) is located approx. 200 m east of the bridge site, and reported max Q = 115 cms in April 1974.

WSC gauge 05EC005 (Gross DA approx. 1600 km^2, 1978 to present) is located approx. 7.3 km downstream of the bridge site, and reported max Q = 65.4 cms in April 1997.

Basin Runoff Potential:

Gross DA = 1,501 km^2, exceeds range of technique

Conclusion:

Based on the historical HWL, the estimated channel capacity at the bridge opening is consistent with the largest historical flow record. Therefore, historical observations govern. Recommended parameters:

Y = 4.3 m, V = 1.1 m/s, Q = 110 cms