BF 73410 Hwy 35 Over Steen River
Hydrotechnical Summary

Channel Capacity :

S = 0.0005
B = 15 m, h = 4.5 m, T = 30 m
Use AT equation

At Bank Height : Y = 4.5 m, V = 1.5 m/s, Q = 150 cms
At Channel Capacity : Y = 5.5 m, V = 1.8 m/s, Q = 240 cms

Historical Highwater Data :

HW has been observed in 1947 (well above banks, BW from Hay River), May 1957 (Y = 6.7m), and May 1963 (Y = 6.7m, BW from Hay River). A 1953 report notes a HWM with Y = 7.2m. The 1960 design was based on Y = 7.6m and Q = 180cms. A 1998 photo shows marks on the nose plate to Y = 6m.

WSC gauge 07OB004 (DA = 2610m^2, 1975 – Now) reports Q = 105cms in August 1993 (stage rise = 3m). The largest storms for this area in the database are June 1988 with about 100mm of rainfall, and August 1993 with about 80mm.

Basin Runoff Potential :

d = 40mm, T_p = 20hrs, q = 0.55 cms/km^2.
Gross DA = 2715 km^2.
Q_p = 1495 cms.

Conclusion :

Design depth will be governed by backwater from the Hay River and based on historic observations. Design velocity and discharge will be based on open channel flow and based on channel capacity. These numbers are within the basin runoff potential.

Recomm. parameters : Y = 7.5 m (5.5m with no BW), V = 1.8 m/s, Q = 240 cms.