

**REFERENCE REACH DATA
AVERAGE VALUES FOR STABLE STREAMS**

Due to variables such as geology, vegetation, land-use, sediment load, sediment grain size and runoff characteristics, there is natural variability to hydraulic geometry relationships so that natural channels are stable within a range of dimensions. The following values are based on measured observations from streams. These relationships can be used as a preliminary guide to stability in stream reaches, but other techniques and local data should also be considered.

Average Values for C4 Streams

Pools	Ratio Pool Slope / avg. slope	0.20 - .30
	Ratio Pool depth / mean depth	2.5 - 3.5 (median 3.0)
	Ratio Pool width / avg. width	1.3 - 1.7 (median 1.5)
Riffles	Ratio Riffle slope / avg. slope	1.5 - 2.0
	Ratio Riffle max depth / mean depth	1.2 - 1.5
Runs	Ratio run slope / avg. slope	0.5 - 0.8
	Ratio run depth / avg. depth	1.9 - 2.2
	Ratio width to depth Ratio of runs / W/D (riffle)	0.4 - 0.5
Glides	Ratio glide slope / avg. slope	0.3 - 0.5
	Ratio glide depth / avg. depth	1.4 - 1.8
	Ratio of glide width / avg. width	1.5 - 1.7
	Ratio of glide width / depth ratio of glide/W/D ratio	1.1 - 1.3

Average Values for C3, C4, and B3 Streams

	C3	C4	B3
W/D	12 – 25 (avg. 20)	12 – 18 (avg. 15)	12 – 20 (avg. 16)
R_c/W	3.0 - 3.5	2.5 - 3.0	N/A
R_c/W High Bedload V. Coarse Composite Banks	3.5 - 4.5	3.0 - 4.0	N/A
Pool to Pool Spacing	7 - 8 W	5 - 7 W	B_c 1 - 2% 4 - 5W 2 - 4% 3 - 4W 4 - 6% 2 - 3W 6 - 8% 1.5 - 2W 8+% 1 - 1.5 W
L_M/W	12 - 14	9 - 14	N/A
L_M/W (High Bedload Stress)	12	11 - 14	N/A

Indicators of Instability

- Width/depth ratio is less than 10 and entrenchment ratio is less than 1.4.
- If sinuosity is less than 1.2, it is likely the stream has been channelized to cause instability.

R_c = radius of curvature
W = bankfull width

D = bankfull mean depth
 L_m = meander wavelength

B_c = subcategory of
B3 stream type