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## LARGE SCALE ROUGHNESS

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## ABSTRACT

Large scale roughness and intermediate scale roughness depend upon  $\frac{d}{D_{50}}$  and  $\frac{d}{D_{84}}$  where  $D_{50}$  = the size of the median axis which is bigger than or equal to 50% of median axis. Similarly  $D_{84}$  = The size of the median axis which is bigger than or equal to 84% of median axis. For large scale roughness  $\frac{d}{D_{50}}$  <2 and  $\frac{d}{D_{84}}$  <1.2 and for intermediate scale roughness 2<  $\frac{d}{D_{50}}$  <7.5 and 1.2 <  $\frac{d}{D_{84}}$  <4.

Subject Headings: Boulders, channels, Drag, Flow resistance, Flumes

**KEYWORDS:** Open Channel Flow, Flow Resistance, Friction Factor