CIVE 716 EROSION AND SEDIMENTATION

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Computer problem #2 Due November 14, 2009

A. Solve computer problem 8.2 on p. 158 of the text *Erosion and Sedimentation* after considering that the bed material is uniform with a grain diameter of 0.5 mm. The channel geometry was previously defined in Computer Problem #1. Ignore part (b) of the problem and assume that the bed material is uniform. Also consider that the sediment inflow at the upstream end is that of steady-uniform flow. At the downstream end, the remaining water and sediment discharges are conveyed downstream of the dam. Provide five diagrams showing: (1) the type of bed form; (2) Manning n; (3) the water surface profile; (4) values of the transport parameter T; and (5) the total shear stress in Pa. Discuss the results in comparison with the water surface profile and shear stress calculation in the first computer problem.

B. Use the Einstein-Brown equation to calculate bedload in metric tons per meter per day for the entire reach in A. Use the total shear stress for the calculations. Compare the results with the sediment discharge by volume $q_{sv} \sim 18\ g^{0.5}\ d_s^{1.5}\ J_*^2$. Provide a diagram showing the sediment transport distribution over the entire reach from these two equations.
