

y	A	R	$R^{4/3}$	V	$\alpha V^2/2g$	E	ΔE	S_f	S_f	$S_o - S_f$	Δx	x
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13
6	72	2.68	3.72	0.42	0.0031	6.0031	-	0.00002	-	-	-	-
5.5	60.5	2.46	3.31	0.5	0.004	5.504	0.499	0.00003	0.000025	0.00698	71.5	71.5
5	50	2.24	2.92	0.6	0.0064	5.0064	0.4976	0.00005	0.00004	0.00696	71.49	142.99
4.5	40.5	2.01	2.54	0.74	0.0098	4.5098	0.4966	0.00009	0.00007	0.00693	71.64	214.63
4	32	1.79	2.17	0.94	0.0157	4.0157	0.4941	0.00016	0.000127	0.00687	71.89	286.52
3.5	24.5	1.57	1.82	1.22	0.0268	3.5268	0.4889	0.00033	0.000246	0.00675	72.38	358.9
3	18	1.34	1.48	1.67	0.0496	3.0496	0.4772	0.00076	0.000547	0.00645	73.95	432.85
2.5	12.5	1.12	1.16	2.4	0.1029	2.6029	0.4467	0.00201	0.001387	0.00561	79.58	512.43
2	8	0.89	0.86	3.75	0.2511	2.2511	0.3518	0.00663	0.00432	0.00268	131.27	643.7

The step computations are carried out as shown in the above table. The values in each column of the table are explained as follows:

- Col. 1. Depth of flow (ft) assigned from 6 to 2 feet
- Col. 2. Water area (ft²) corresponding to depth y in Col. 1
- Col. 3. Hydraulic radius (ft) corresponding to y in Col. 1
- Col. 4. Four-thirds power of the hydraulic radius
- Col. 5. Mean velocity (fps) obtained by dividing Q (30 cfs) by the water area in Col. 2
- Col. 6. Velocity head (ft)
- Col. 7. Specific energy (ft) obtained by adding the velocity head in Col. 6 to depth of flow in Col. 1
- Col. 8. Change of specific energy (ft) equal to the difference between the E value in Col. 7 and that of the previous step.
- Col. 9. Friction slope S_f , computed from V as given in Col. 5 and $R^{4/3}$ in Col. 4
- Col. 10. Average friction slope between the steps, equal to the arithmetic mean of the friction slope just computed in Col. 9 and that of the previous step
- Col. 11. Difference between the bottom slope, S_o , and the average friction slope, S_f
- Col. 12. Length of the reach (ft) between the consecutive steps;
Computed by $x = E/(S_o - S_f)$ or by dividing the value in Col. 8 by the value in Col. 11
- Col. 13. Distance from the beginning point to the section under consideration. This is equal to the cumulative sum of the values in Col. 12 computed for previous steps.



Figure F.16. Open Channel Flow Profile Computation (Example)