

Maximum Allowable Flow Discharge (CFS) For ShearForce10 on Cohesive Soils*

Channel Bed Slope	Max Flow Depth (Ft)	Channel Bottom Width (Ft)														
		0	1	2	3	4	5	6	7	8	9	10	15	20	25	30
1%	19.2	7,894	8,487	9,088	9,699	10,317	10,944	11,577	12,218	12,864	13,517	14,176	17,548	21,026	24,591	28,224
2%	9.6	1,758	2,024	2,297	2,578	2,865	3,157	3,454	3,755	4,061	4,370	4,682	6,285	7,938	9,627	11,342
3%	6.4	730	897	1,071	1,250	1,434	1,623	1,815	2,010	2,208	2,408	2,610	3,646	4,711	5,793	6,888
4%	4.8	391	512	638	769	904	1,043	1,184	1,327	1,472	1,619	1,768	2,525	3,301	4,087	4,879
5%	3.8	241	335	433	536	643	752	863	976	1,090	1,205	1,322	1,915	2,520	3,131	3,747
6%	3.2	163	238	319	404	492	581	673	765	859	954	1,049	1,534	2,027	2,524	3,024
7%	2.7	116	180	249	320	395	471	548	626	705	785	866	1,274	1,688	2,105	2,524
8%	2.4	87	142	201	264	328	394	460	528	597	666	735	1,086	1,442	1,800	2,159
9%	2.1	68	116	168	223	279	337	396	456	516	576	637	945	1,256	1,569	1,882
10%	1.9	54	97	143	192	243	294	347	400	453	507	561	834	1,110	1,387	1,665
11%	1.7	44	82	124	169	214	261	308	356	404	452	501	746	993	1,241	1,490
12%	1.6	36	71	109	150	191	234	276	320	363	407	451	673	897	1,121	1,346
13%	1.5	30	62	98	135	173	211	251	290	330	370	410	613	817	1,022	1,227
14%	1.4	26	55	88	122	157	193	229	265	302	339	376	562	749	937	1,125
15%	1.3	22	50	80	111	144	177	211	244	278	312	347	519	691	865	1,038
16%	1.2	19	45	73	103	133	164	195	226	258	289	321	481	641	802	963
17%	1.1	17	41	67	95	123	152	181	210	240	269	299	448	598	748	898
18%	1.1	15	37	62	88	115	142	169	197	224	252	280	419	559	699	840
19%	1.0	13	34	58	82	107	133	159	184	210	236	262	394	525	657	789
20%	1.0	10	27	45	64	84	104	124	145	165	185	206	309	412	516	619
21%	0.9	9	25	42	61	79	98	117	137	156	175	195	292	389	487	585
22%	0.9	8	23	40	57	75	93	111	129	148	166	184	276	369	462	554
23%	0.8	7	22	37	54	71	88	105	123	140	157	175	263	350	438	526
24%	0.8	7	20	35	51	67	84	100	117	133	150	166	250	333	417	501
25%	0.8	6	19	34	49	64	80	95	111	127	143	159	238	318	398	478
26%	0.7	6	18	32	47	61	76	91	106	121	136	152	228	304	380	456
27%	0.7	5	17	31	44	59	73	87	102	116	131	145	218	291	364	437
28%	0.7	5	16	29	42	56	70	84	97	111	125	139	209	279	349	419
29%	0.7	4	16	28	41	54	67	80	93	107	120	133	200	268	335	402
30%	0.6	4	15	27	39	52	64	77	90	103	115	128	193	257	322	386

*Assumes Worst Case Triangular and Trapezoidal Channels with 1:1 Sideslopes. Design values are derived from ASTM D6460 large-scale channel testing on Loam soils under 4 consecutive 30 min flow events in 2ft wide, 20% gradient test flumes. A safety factor (SF) of 1.25 - 2.0 may be applied in channel lining designs to account for longer flow durations and more erodible soils.

Maximum Allowable Flow Discharge (CFS) For ShearForce10 on Non-Cohesive Soils*																
Channel Bed Slope	Max Flow Depth (Ft)	Channel Bottom Width (Ft)														
		0	1	2	3	4	5	6	7	8	9	10	15	20	25	30
1%	16.0	4,854	5,292	5,738	6,192	6,652	7,119	7,592	8,071	8,555	9,044	9,538	12,067	14,679	17,356	20,082
2%	8.0	1,081	1,278	1,481	1,691	1,905	2,124	2,347	2,573	2,802	3,034	3,269	4,472	5,711	6,974	8,255
3%	5.3	449	573	702	836	975	1,116	1,260	1,407	1,555	1,706	1,857	2,633	3,429	4,236	5,050
4%	4.0	241	330	424	523	624	728	834	941	1,050	1,161	1,272	1,838	2,416	3,000	3,589
5%	3.2	148	218	292	369	449	531	614	699	784	870	958	1,400	1,850	2,304	2,760
6%	2.7	100	156	217	281	346	414	482	551	622	692	763	1,125	1,491	1,859	2,230
7%	2.3	72	119	170	224	280	337	395	453	513	572	632	936	1,243	1,552	1,862
8%	2.0	54	94	139	186	234	283	333	384	435	486	538	799	1,063	1,328	1,594
9%	1.8	42	77	117	158	200	244	288	332	377	422	467	696	926	1,157	1,389
10%	1.6	33	65	100	137	175	213	252	292	332	372	412	615	819	1,024	1,229
11%	1.5	27	56	87	120	155	189	225	260	296	332	368	550	733	916	1,100
12%	1.3	22	48	77	107	138	170	202	234	267	299	332	496	662	828	994
13%	1.2	19	43	69	97	125	154	183	213	242	272	302	452	603	754	906
14%	1.1	16	38	62	88	114	141	168	195	222	249	277	415	553	692	831
15%	1.1	14	34	57	81	105	129	154	179	205	230	255	383	510	639	767
16%	1.0	12	31	52	74	97	120	143	166	190	213	237	355	474	592	711
17%	0.9	9	24	40	57	75	93	111	129	147	165	184	276	368	460	552
18%	0.9	8	22	37	53	70	87	104	121	138	155	172	258	344	430	517
19%	0.8	7	20	35	50	65	81	97	113	129	145	161	242	323	404	485
20%	0.8	6	19	32	47	62	76	91	106	122	137	152	228	304	381	457
21%	0.8	6	17	30	44	58	72	86	101	115	129	144	215	288	360	432
22%	0.7	5	16	29	42	55	68	82	95	109	122	136	204	272	341	409
23%	0.7	5	15	27	39	52	65	78	90	103	116	129	194	259	324	389
24%	0.7	4	14	26	37	49	62	74	86	98	111	123	184	246	308	370
25%	0.6	4	14	24	36	47	59	70	82	94	105	117	176	235	294	353
26%	0.6	3	13	23	34	45	56	67	78	89	101	112	168	224	281	337
27%	0.6	3	12	22	33	43	54	64	75	86	96	107	161	215	269	322
28%	0.6	3	12	21	31	41	51	62	72	82	92	103	154	206	257	309
29%	0.6	3	11	20	30	40	49	59	69	79	89	99	148	198	247	297
30%	0.5	3	11	19	29	38	47	57	66	76	85	95	142	190	238	285

*Assumes Worst Case Triangular and Trapezoidal Channels with 1:1 Sideslopes. Design values are derived from ASTM D6460 large-scale channel testing on Loam soils under 4 consecutive 30 min flow events in 2ft wide, 20% gradient test flumes. A safety factor (SF) of 1.25 - 2.0 may be applied in channel lining designs to account for longer flow durations and more erodible soils.