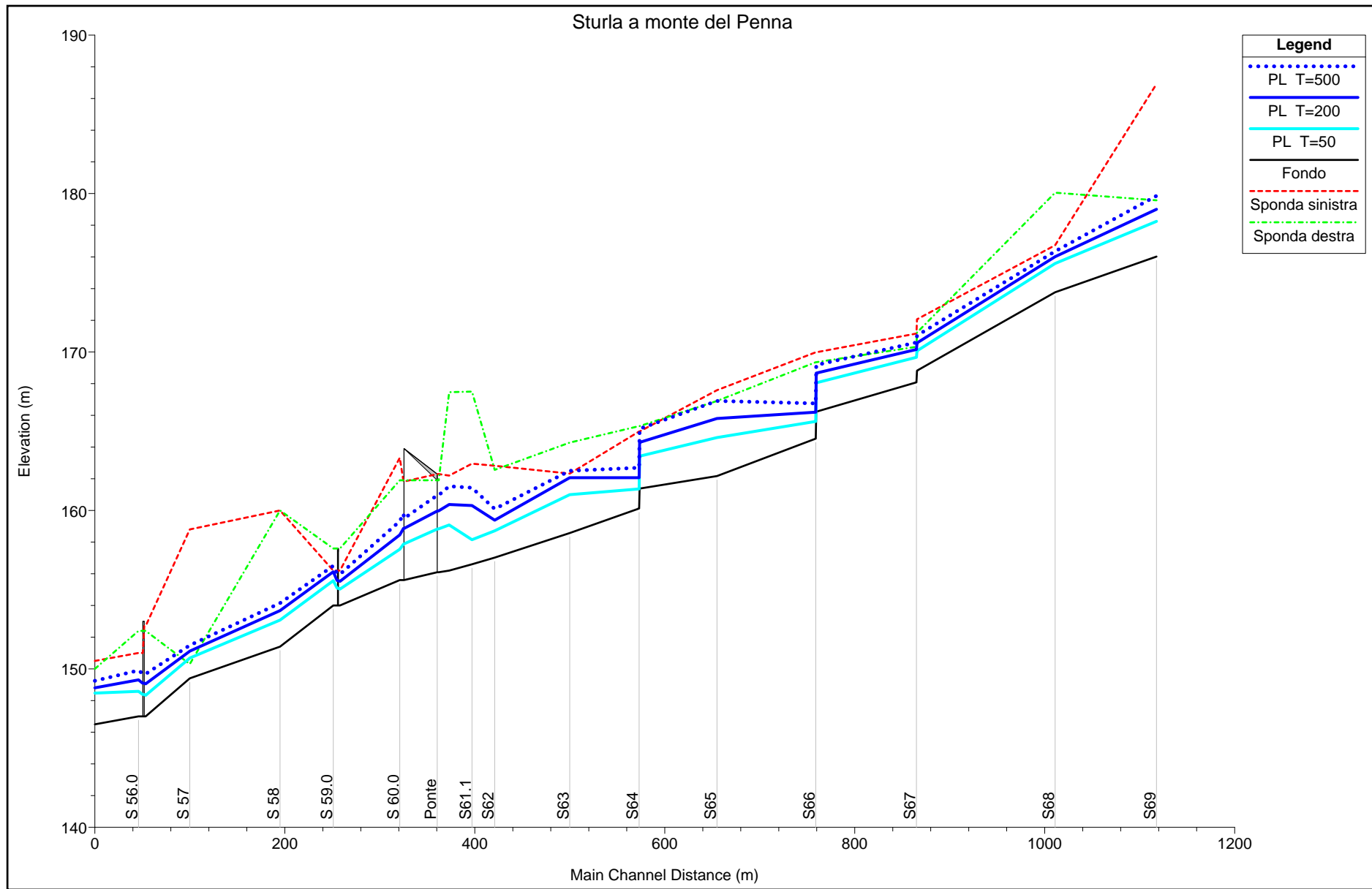


Torrente Sturla

**A monte della confluenza con il
Torrente Penna**

VERIFICHE IDRAULICHE



HEC-RAS Plan: pncnd River: Sturla Reach: pncnd

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
pncnd	69	T=50	134.00	176.02	186.91	8.67	179.57	1.33	178.24	178.24	179.05	0.011633	3.98	33.64	20.78	1.00
pncnd	69	T=200	238.00	176.02	186.91	7.91	179.57	0.57	179.00	179.00	180.18	0.011035	4.81	49.53	21.08	1.00
pncnd	69	T=500	347.00	176.02	186.91	7.05	179.57	-0.29	179.86	179.86	181.17	0.008847	5.10	70.82	35.40	0.91
pncnd	68	T=50	134.00	173.77	176.74	1.15	180.05	4.46	175.59	176.00	176.98	0.035760	5.23	25.63	25.75	1.67
pncnd	68	T=200	238.00	173.77	176.74	0.72	180.05	4.03	176.02	176.65	178.14	0.035372	6.46	36.83	26.26	1.74
pncnd	68	T=500	347.00	173.77	176.74	0.39	180.05	3.70	176.35	177.26	179.29	0.038006	7.59	45.69	26.66	1.85
pncnd	67.5	T=50	134.00	168.82	172.06	1.99	171.23	1.16	170.07	170.55	171.67	0.036899	5.62	23.86	21.23	1.69
pncnd	67.5	T=200	238.00	168.82	172.06	1.48	171.23	0.65	170.58	171.27	172.93	0.035946	6.81	34.97	22.12	1.73
pncnd	67.5	T=500	347.00	168.82	172.06	1.03	171.23	0.20	171.03	171.94	174.04	0.034284	7.68	45.20	22.48	1.73
pncnd	67	T=50	134.00	168.08	171.16	1.49	170.33	0.66	169.67	170.24	171.62	0.055996	6.19	21.66	21.91	1.99
pncnd	67	T=200	238.00	168.08	171.16	1.00	170.33	0.17	170.16	170.99	172.88	0.048296	7.31	32.57	22.45	1.94
pncnd	67	T=500	347.00	168.08	171.16	0.56	170.33	-0.27	170.60	171.67	173.98	0.043638	8.15	42.89	25.52	1.90
pncnd	66.5	T=50	134.00	166.23	169.98	1.93	169.35	1.30	168.05	168.09	168.88	0.012262	4.03	33.26	21.32	1.03
pncnd	66.5	T=200	238.00	166.23	169.98	1.31	169.35	0.68	168.67	168.85	169.99	0.013743	5.11	46.62	22.14	1.12
pncnd	66.5	T=500	347.00	166.23	169.98	0.80	169.35	0.17	169.18	169.51	170.99	0.015011	5.97	58.15	22.82	1.19
pncnd	66	T=50	134.00	164.53	169.98	4.36	169.35	3.73	165.62	166.43	168.65	0.091202	7.71	17.39	19.08	2.58
pncnd	66	T=200	238.00	164.53	169.98	3.78	169.35	3.15	166.20	167.25	169.76	0.059765	8.36	28.48	19.09	2.18
pncnd	66	T=500	347.00	164.53	169.98	3.23	169.35	2.60	166.75	167.97	170.76	0.047831	8.87	39.11	19.63	2.01
pncnd	65	T=50	134.00	162.17	167.59	2.99	166.91	2.31	164.60	163.82	164.85	0.002677	2.24	59.80	29.37	0.50
pncnd	65	T=200	238.00	162.17	167.59	1.79	166.91	1.11	165.80	164.44	166.12	0.001960	2.49	95.77	30.37	0.45
pncnd	65	T=500	347.00	162.17	167.59	0.68	166.91	0.00	166.91	164.99	167.27	0.001659	2.67	129.83	31.30	0.42
pncnd	64.5	T=50	134.00	161.38	164.98	1.56	165.32	1.90	163.42	163.42	164.36	0.013787	4.31	31.13	16.66	1.01
pncnd	64.5	T=200	238.00	161.38	164.98	0.69	165.32	1.03	164.29	164.29	165.68	0.013422	5.21	45.70	16.70	1.00
pncnd	64.5	T=500	347.00	161.38	164.98	-0.17	165.32	0.17	165.15	165.15	166.85	0.012477	5.77	60.70	20.90	0.97
pncnd	64	T=50	134.00	160.12	164.98	3.62	165.32	3.96	161.36	162.19	164.17	0.062492	7.42	18.05	14.57	2.13
pncnd	64	T=200	238.00	160.12	164.98	2.92	165.32	3.26	162.06	163.06	165.46	0.052800	8.17	29.14	16.18	1.94
pncnd	64	T=500	347.00	160.12	164.98	2.29	165.32	2.63	162.69	163.85	166.61	0.045204	8.78	39.54	16.64	1.82
pncnd	63	T=50	134.00	158.57	162.32	1.32	164.28	3.28	161.00	161.04	162.01	0.012428	4.46	30.03	15.82	1.03
pncnd	63	T=200	238.00	158.57	162.32	0.25	164.28	2.21	162.07	162.07	163.27	0.011378	4.85	49.04	20.54	1.00
pncnd	63	T=500	347.00	158.57	162.32	-0.18	164.28	1.78	162.50	162.79	164.28	0.014053	5.92	60.28	24.14	1.13
pncnd	62	T=50	134.00	157.02	162.82	4.11	162.56	3.85	158.71	159.23	160.47	0.030900	5.87	22.83	16.84	1.61
pncnd	62	T=200	238.00	157.02	162.82	3.44	162.56	3.18	159.38	160.09	161.80	0.028225	6.89	34.55	18.04	1.59
pncnd	62	T=500	347.00	157.02	162.82	2.73	162.56	2.47	160.09	160.82	162.78	0.023011	7.27	47.75	19.00	1.46
pncnd	61.1	T=50	134.00	156.60	162.95	4.80	167.50	9.35	158.15	158.57	159.69	0.028339	5.51	24.33	17.57	1.49
pncnd	61.1	T=200	238.00	156.60	162.95	2.64	167.50	7.19	160.31	159.42	161.03	0.004887	3.77	63.09	18.36	0.65
pncnd	61.1	T=500	347.00	156.60	162.95	1.52	167.50	6.07	161.43	160.18	162.30	0.004519	4.13	84.01	18.77	0.62

HEC-RAS Plan: pncnd River: Sturla Reach: pncnd (Continued)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
pncnd	61	T=50	134.00	156.20	162.20	3.12	167.46	8.38	159.08	158.07	159.43	0.003092	2.63	51.03	18.50	0.50
pncnd	61	T=200	238.00	156.20	162.20	1.82	167.46	7.08	160.38		160.87	0.003161	3.10	76.75	20.61	0.51
pncnd	61	T=500	347.00	156.20	162.20	0.67	167.46	5.93	161.53		162.13	0.003028	3.45	100.55	20.75	0.50
pncnd	60.3	T=50	134.00	156.10	162.29	3.45	161.90	3.06	158.84		159.37	0.005078	3.24	41.34	15.10	0.63
pncnd	60.3	T=200	238.00	156.10	162.29	2.32	161.90	1.93	159.97		160.79	0.005784	4.00	59.53	16.10	0.66
pncnd	60.3	T=500	347.00	156.10	162.29	1.33	161.90	0.94	160.96		162.04	0.006198	4.60	75.48	16.10	0.68
pncnd	60.2	T=50	134.00	156.10	162.29	3.46	161.90	3.07	158.83	158.10	159.37	0.005137	3.25	41.18	15.10	0.63
pncnd	60.2	T=200	238.00	156.10	162.29	2.33	161.90	1.94	159.96	159.09	160.78	0.005844	4.01	59.32	16.10	0.67
pncnd	60.2	T=500	347.00	156.10	162.29	1.34	161.90	0.95	160.95	159.89	162.04	0.006244	4.61	75.28	16.10	0.68
pncnd	60.11		Bridge													
pncnd	60.1	T=50	134.00	155.60	161.82	3.95	161.90	4.03	157.87	157.55	158.59	0.008068	3.75	35.78	15.75	0.79
pncnd	60.1	T=200	238.00	155.60	161.82	2.95	161.90	3.03	158.87	158.46	159.96	0.008562	4.62	51.51	15.75	0.82
pncnd	60.1	T=500	347.00	155.60	161.82	2.02	161.90	2.10	159.80	159.32	161.17	0.008895	5.19	66.90	16.65	0.83
pncnd	60	T=50	134.00	155.60	163.32	5.77	161.90	4.35	157.55	157.55	158.52	0.012942	4.37	30.65	15.75	1.00
pncnd	60	T=200	238.00	155.60	163.32	4.87	161.90	3.45	158.45	158.45	159.88	0.012816	5.30	44.95	15.75	1.00
pncnd	60	T=500	347.00	155.60	163.32	4.00	161.90	2.58	159.32	159.32	161.09	0.012926	5.89	58.87	16.65	1.00
pncnd	59.3	T=50	134.00	154.00	156.20	1.17	157.60	2.57	155.03	155.60	156.98	0.050951	6.19	21.66	21.00	1.94
pncnd	59.3	T=200	238.00	154.00	156.20	0.68	157.60	2.08	155.52	156.35	158.35	0.046658	7.46	31.92	21.01	1.93
pncnd	59.3	T=500	347.00	154.00	156.20	0.23	157.60	1.63	155.97	157.03	159.54	0.043598	8.37	41.46	21.01	1.90
pncnd	59.2	T=50	134.00	154.00	156.20	1.14	157.60	2.54	155.06	155.60	156.90	0.046269	6.00	22.32	21.00	1.86
pncnd	59.2	T=200	238.00	154.00	156.20	0.65	157.60	2.05	155.55	156.35	158.27	0.043921	7.31	32.54	21.01	1.88
pncnd	59.2	T=500	347.00	154.00	156.20	0.20	157.60	1.60	156.00	157.03	159.47	0.041675	8.25	42.06	21.01	1.86
pncnd	59.11		Bridge													
pncnd	59.1	T=50	134.00	154.00	156.20	1.10	157.60	2.50	155.10	155.60	156.81	0.041166	5.79	23.15	21.00	1.76
pncnd	59.1	T=200	238.00	154.00	156.20	0.62	157.60	2.02	155.58	156.35	158.19	0.040895	7.15	33.28	21.01	1.81
pncnd	59.1	T=500	347.00	154.00	156.20	0.16	157.60	1.56	156.04	157.03	159.39	0.039522	8.11	42.78	21.01	1.81
pncnd	59	T=50	134.00	154.00	156.20	0.63	157.60	2.03	155.57	155.75	156.60	0.018062	4.49	29.82	21.01	1.20
pncnd	59	T=200	238.00	154.00	156.20	0.07	157.60	1.47	156.13	156.51	157.80	0.019962	5.72	41.62	21.01	1.30
pncnd	59	T=500	347.00	154.00	156.20	-0.30	157.60	1.10	156.50	157.18	159.01	0.024519	7.02	49.41	21.01	1.46
pncnd	58	T=50	134.00	151.40	160.00	6.92	160.00	6.92	153.08	153.67	155.01	0.043593	6.16	21.75	18.97	1.84
pncnd	58	T=200	238.00	151.40	160.00	6.33	160.00	6.33	153.67	154.45	156.21	0.037742	7.06	33.71	21.12	1.78
pncnd	58	T=500	347.00	151.40	160.00	5.85	160.00	5.85	154.15	155.11	157.30	0.036261	7.86	44.16	22.55	1.79
pncnd	57	T=50	134.00	149.40	158.80	8.12	150.30	-0.38	150.68	150.98	151.80	0.023418	4.69	28.68	24.73	1.37
pncnd	57	T=200	238.00	149.40	158.80	7.68	150.30	-0.82	151.12	151.65	152.97	0.027463	6.03	39.96	26.67	1.53
pncnd	57	T=500	347.00	149.40	158.80	7.31	150.30	-1.19	151.49	152.33	154.03	0.029224	7.10	49.94	27.47	1.62

HEC-RAS Plan: pncnd River: Sturla Reach: pncnd (Continued)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
pncnd	56.3	T=50	134.00	147.00	152.70	4.37	152.40	4.07	148.33	148.93	150.33	0.039298	6.26	21.40	16.87	1.77
pncnd	56.3	T=200	238.00	147.00	152.70	3.65	152.40	3.35	149.05	149.80	151.56	0.030005	7.02	33.92	17.72	1.62
pncnd	56.3	T=500	347.00	147.00	152.70	3.02	152.40	2.72	149.68	150.56	152.68	0.026888	7.68	45.21	18.46	1.57
pncnd	56.2	T=50	134.00	147.00	152.70	4.34	152.40	4.04	148.36	148.93	150.26	0.036249	6.10	21.96	16.91	1.71
pncnd	56.2	T=200	238.00	147.00	152.70	3.61	152.40	3.31	149.09	149.80	151.50	0.028317	6.88	34.58	17.77	1.57
pncnd	56.2	T=500	347.00	147.00	152.70	2.98	152.40	2.68	149.72	150.56	152.63	0.025670	7.56	45.92	18.50	1.53
pncnd	56.11		Bridge													
pncnd	56.1	T=50	134.00	147.00	151.00	2.60	152.40	4.00	148.40	148.93	150.17	0.032888	5.90	22.71	17.21	1.64
pncnd	56.1	T=200	238.00	147.00	151.00	1.90	152.40	3.30	149.10	149.78	151.43	0.026979	6.76	35.23	18.17	1.55
pncnd	56.1	T=500	347.00	147.00	151.00	1.29	152.40	2.69	149.71	150.53	152.55	0.025000	7.47	46.47	19.00	1.52
pncnd	56	T=50	134.00	147.00	151.00	2.42	152.40	3.82	148.58	148.92	149.94	0.021844	5.17	25.92	17.46	1.35
pncnd	56	T=200	238.00	147.00	151.00	1.70	152.40	3.10	149.30	149.78	151.22	0.020121	6.13	38.83	18.44	1.35
pncnd	56	T=500	347.00	147.00	151.00	1.10	152.40	2.50	149.90	150.54	152.34	0.019983	6.92	50.12	19.26	1.37
pncnd	55	T=50	134.00	146.50	150.50	2.03	150.00	1.53	148.47	148.28	149.13	0.008117	3.60	37.19	20.60	0.86
pncnd	55	T=200	238.00	146.50	150.50	1.70	150.00	1.20	148.80	149.07	150.28	0.015232	5.40	44.11	21.11	1.19
pncnd	55	T=500	347.00	146.50	150.50	1.25	150.00	0.75	149.25	149.76	151.38	0.017950	6.47	53.65	21.79	1.32

