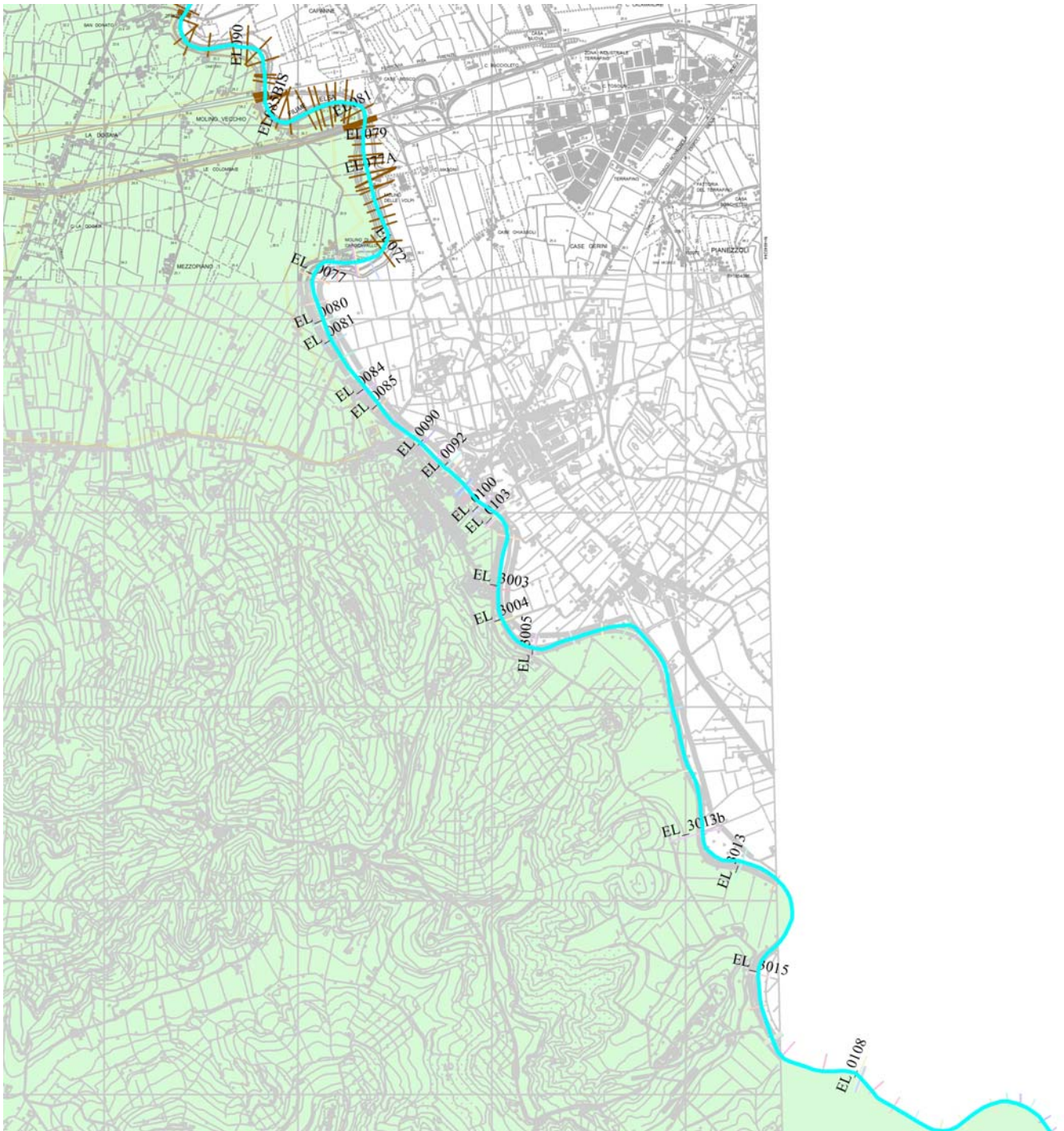


HEC RAS

FIUME ELSA  
TR20 ANNI E TR 200 ANNI

MOTO PERMANENTE



Planimetria con sezioni



**Principali grandezze idrauliche F. Elsa per TR=200 anni**

Reach sezione	River Sta	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)	Top Width (m)	Froude # Chl	Length Chnl (m)	L. Levee Frbrd (m)	R. Levee Frbrd (m)
3015	109	661	29.94	38.5	34.56	1.84	100.17	0.21	572	-3.13	0.32
3014	108	661	29.61	37.9	35.39	3.07	88.05	0.36	200	-1.23	-0.33
3013	107	661	29.93	37.83	34.96	2.14	115.21	0.28	646	-1.92	-0.25
3012	106	661	29.83	37.49	35.25	1.96	133.7	0.23	322	-2.35	-0.76
3011	105	661	30.14	37.13	34.88	2.43	81.12	0.32	245	-2.62	-0.79
3010	104	661	29.85	36.47	35.08	3.73	59.2	0.48	216	-2.66	-0.43
3009	103	661	29.69	36.32	34.47	2.61	83.05	0.35	61	-2.58	-0.55
3008	102	661	29.97	36.34	34.57	2.14	121.31	0.29	121	-2.63	-0.63
3007	101	661	30.08	35.96	34.6	3.07	82.81	0.42	160	-2.07	-0.38
3006	100	661	30.2	35.85	34.09	2.36	91.98	0.34	201	-3.07	-0.5
3005	99	661	30.16	35.7	34.12	2.1	135.06	0.3	230	-1.03	-0.62
3004	98	661	30.54	35	33.93	3.12	80.45	0.54	167	2.35	-0.15
3003	97	661	30.43	34.67	33.25	2.57	79.43	0.45	268	2.73	-0.1
3002	96	661	29.87	32.91	32.91	4.3	88.05	0.98	174.2	0.81	0.8
102	93	661	26.8	32.97	29.18	1.63	99.04	0.21	123.5	0.08	0.16
100	92	661	25.73	32.96	29.2	1.37	167.8	0.18	50	-0.08	-2.46
1031	91.6	661	25.83	32.95	28.9	1.33	144.3	0.17	26.3	-0.27	-0.25
1032	91.5	661	26.19	32.86	29.13	1.75	70.31	0.23	39	-0.38	-3.58
3001b	91.3	661	26.03	32.85	29.09	1.68	87.88	0.22	0.5	-1.29	-0.28
	91.25	Bridge									
3001d	91.1	661	26.03	32.78	29.09	1.7	87.88	0.22	62	-1.22	-0.21
*0095	91	661	26.26	32.75	28.97	1.69	84.09	0.22	41.8	-0.16	0.72
*0093	90	661	25.01	32.77	29.78	1.57	135.99	0.2	70	-0.42	-0.03
*0092	89	661	25.14	32.74	30.15	1.64	139.52	0.21	102	-2.15	-0.1
*0091	88	661	25.07	32.7	30.19	1.6	143.18	0.21	84.1	-0.53	-0.04
*0090	87	661	24.95	32.6	30.11	1.99	127.02	0.25	84	-0.64	-0.33
3001f	86.6	661	25.79	32.45	29.63	2.12	112.78	0.3	0.5	-0.26	-0.3
	86.45	Bridge									
3001g	86.4	661	25.79	32.33	29.64	2.18	112.78	0.31	23	-0.14	-0.33
3001h	86.2	661	25.79	32.27	29.63	2.43	110.18	0.33	100.8	-0.54	-0.27
*0086	86	661	25.24	31.8	30.2	3.5	65.14	0.48	108.2	0.26	0.11
*0085	85	661	25.1	31.69	30.16	3.06	73.74	0.41	106.7	0.21	0.67
*0084	84	661	24.76	31.55	30.11	2.91	84.22	0.4	104.5	0.01	0.27
*0083	83	661	24.84	31.35	29.96	2.99	78.84	0.42	93.3	0.15	0.39
*0082	82	661	25.11	31.26	29.58	2.66	83.39	0.38	111.3	0.06	0.33
*0081	81	661	25.02	31.13	29.82	2.64	104.94	0.37	111.2	-0.09	0.15
*0080	80	661	24.81	30.83	29.72	3.01	87.34	0.45	80.1	0.17	0.23
*0079	79	661	25.05	30.83	29.51	2.34	118.54	0.34	147.9	0.22	-0.07
*0077	78	661	24.85	30.77	29.51	1.81	166.34	0.27	130.8	-0.13	-0.17
*0075	76	661	25.12	29.32	29.32	5.04	60.33	0.87	51.9	1.02	0.82
*0072	74	661	23.82	29.53	26.89	1.71	139.34	0.24	59.7	0.61	0.56
*0071	73	661	22.11	29.53	25.46	1.27	144.31	0.16	85.35	0.65	0.58
*072	71	661	23.32	29.46	27.55	1.72	152.32	0.24	57.79	-0.17	0.22
*073	70	661	20.55	29.34	27.31	2.16	115	0.28	82.06	0.62	0.18
*074	69	661	22.67	29.07	27.11	2.81	76.78	0.39	40.56	-0.06	0.33
*074a	68	661	22.86	28.69	27.23	3.63	54.5	0.51	49.78	0.18	0.52
*075	67	661	22.58	28.58	26.85	3.5	55.17	0.5	47.17	0.34	0.8



*076	66	661	22.56	28.39	26.93	3.69	57.62	0.53	57.07	0.58	0.69
*076a	65	661	22.57	28.17	27.19	3.82	60.53	0.57	14.64	1.03	0.7
*077b	64	661	22.82	28.14	27.13	3.67	65.74	0.58	34.75	1.07	0.39
*079	62	661	22.18	28.52	24.7	1.38	178.35	0.18	87.97	0.63	-1.05
*078	61	661	21.31	28.36	25.34	2	98.03	0.28	29	0.27	0.87
*078b	60	661	21.89	28.21	25.79	2.59	95.79	0.35	20	0.38	0.98
*078a	59	661	19.64	28.24	24.58	2.2	95.81	0.28	56.67	0.35	0.92
*079	58	661	19.82	28.06	25.16	2.71	79.02	0.36	41.91	0.49	1.01
*079a	57	661	20.49	28.03	25.19	2.64	90.12	0.34	45.25	0.97	0.87
*080	56	661	19.82	28	24.98	2.51	107.43	0.33	48.77	0.83	0.86
*080b	54	661	19.93	27.95	24.81	2.52	114.4	0.32	0.5	1.2	0.99
	53.5	Bridge									
*080d	52	661	19.93	27.9	24.81	2.56	114.23	0.33	17.95	1.25	1.04
*081	51	661	18.22	27.93	24.14	2.32	130.68	0.28	59.44	0.76	0.89
*082	50	661	18.94	27.81	25.27	2.62	124.76	0.34	28.14	1.24	0.62
*082a	49	661	19.26	27.69	25.27	2.84	102.41	0.38	51.75	1.08	0.77
*083	48	661	19.73	27.66	25.45	2.63	110.41	0.37	30.71	0.59	1.1
*083a	47	661	17.84	27.59	24.71	2.82	123.88	0.35	51.29	0.64	1.03
*084	46	661	17.21	27.76	23.71	1.25	212.47	0.15	26.25	-0.49	-0.36
*084a	45	661	18.63	27.59	24.33	2.2	154.87	0.28	44.86	0.67	0.88
*085	44	661	18.74	27.51	24.97	2.54	175.26	0.31	101.73	0.64	0.79
*085a	43	661	18.92	27.4	26.05	2.54	182.03	0.32	61.97	0.6	0.85
*085bis	42	661	19.4	27.34	24.8	2.36	177.05	0.31	148	0.62	0.95
*086	41	661	18.63	26.03	24.74	4.86	70.4	0.65	20.7	1.43	0.14
*086b	39	661	20.07	25.66	24.97	5.21	28.21	0.78	0.5	3.66	3.56
	38.5	Bridge									
*086d	37	661	20.07	25.1	24.97	5.93	28.12	0.95	81.42	4.22	4.12
*087	36	661	18.4	25.67	23.49	3.25	56.9	0.44	12.28	1.35	2.43
*087a	35	661	17.52	25.74	22.65	2.82	63.86	0.35	72.17	1.06	2.27
*088	34	661	18.42	25.85	22.18	1.9	99.87	0.24	61.31	1.16	2.22
*089	33	661	18.5	25.82	22.67	1.93	122.62	0.25	60.61	1.12	2.1
*090	32	661	18.26	25.74	22.98	2.16	130.12	0.28	76	1.29	1.96
*091	31	661	14.56	25.43	21.9	2.93	84.25	0.36	125.22	2.24	2.11
*092	30	661	11.78	25.43	20	2.25	65.11	0.25	107	0.8	0.78
*092a	29	661	14.91	25.22	21.42	2.71	91.16	0.33	42	1.64	1.85
*093	28	661	13.89	25	21.76	3.15	79.97	0.41	99.25	1.52	2.05
*093b	27	661	15.88	24.79	21.72	3.22	60.49	0.42	26.22	1.35	2.15
*093a	26	661	15.38	24.69	21.58	3.52	54.21	0.4	0.5	2.89	2.84
	24.5	Bridge									
*093d	23	661	15.38	24.67	21.6	3.16	54.13	0.41	22.31	2.91	2.86
*094	22	661	16.46	24.69	21.71	2.98	70.92	0.38	97.11	1.45	2.19
*095	21	661	16.69	24.41	21.87	3.29	96.07	0.43	46.37	1.47	2.19
*096	20	661	15.96	24.34	22.57	3.28	96.28	0.45	83	1.44	2.06
*097	19	661	16.54	24.05	22.73	3.6	93.56	0.51	47.63	1.76	1.95
*097a	18	661	16.89	23.21	21.89	4.83	26.72	0.66	35.07	2.3	2.61
*097b	17	661	17.24	23.05	23.05	4.87	74.02	0.73	18	0.38	2.7
*097c	15	661	15.56	23.67	20.58	1.33	180.09	0.15	23.67	1.87	2.2
*097d	14	661	12.51	23.69	16.74	0.91	189.29	0.09	33.69	2.06	2.06
*098	13	661	11.57	23.69	16.43	0.77	213.56	0.08	73.4	2.1	2.02
*099	12	661	14.43	23.67	18.26	1.01	159.64	0.12	125.94	1.87	2.2
*100	11	661	13.91	23.54	18.79	1.67	120.38	0.22	17.64	2.07	2



*100a	10	661	14.08	23.51	18.78	1.77	104.97	0.23	27.71	1.91	2.09
*100c	7	661	12.82	23.51	17.47	1.64	67.08	0.21	57.4	1.93	2.14
*101	6	661	12.54	23.46	17.67	1.76	54.72	0.21	102.13	1.86	2.1
*102	5	661	12.15	23.41	17.29	1.79	53.93	0.22	11.52	1.78	2.35
*102a	4	661	12.46	23.4	17.15	1.79	52.99	0.22	18	1.9	2.35
*102c	1	661	11.62	23.41	17.09	1.68	55.24	0.2	42.8	1.76	2.47
*103	0.5	661	11.55	23.43	16.66	1.49	106.32	0.15		0	0.41

**Principali grandezze idrauliche F. Elsa per TR=20 anni**

	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Vel Chnl	Top Width	Froude # Chl	Length Chnl	L. Levee Frbrd	R. Levee Frbrd
sezione		(m3/s)	(m)	(m)	(m)	(m/s)	(m)		(m)	(m)	(m)
3015	109	465	29.94	37.64	33.83	1.6	99	0.2	572	-2.27	1.18
3014	108	465	29.61	37.08	34.66	2.79	73.75	0.35	200	-0.41	0.49
3013	107	465	29.93	37	34.1	1.96	105.26	0.27	646	-1.09	0.58
3012	106	465	29.83	36.64	33.98	1.85	121.93	0.23	322	-1.5	0.09
3011	105	465	30.14	36.31	33.85	2.17	71.06	0.31	245	-1.8	0.03
3010	104	465	29.85	35.78	34.35	3.16	52.46	0.43	216	-1.97	0.26
3009	103	465	29.69	35.62	33.43	2.25	76.03	0.33	61	-1.88	0.15
3008	102	465	29.97	35.62	34.16	1.96	110.92	0.28	121	-1.91	0.09
3007	101	465	30.08	35.31	33.66	2.66	76.08	0.39	160	-1.42	0.27
3006	100	465	30.2	35.21	33.61	2.03	90.16	0.31	201	-2.43	0.14
3005	99	465	30.16	35.04	33.71	1.92	128.2	0.3	230	-0.37	0.04
3004	98	465	30.54	34.42	33.43	2.76	63.82	0.52	167	2.93	0.43
3003	97	465	30.43	34.12	32.83	2.17	78.07	0.41	268	3.28	0.45
3002	96	465	29.87	32.52	32.52	3.83	86.23	0.97	174.2	1.2	1.19
102	93	465	26.8	32.26	28.7	1.34	96.92	0.18	123.5	0.79	0.87
100	92	465	25.73	32.24	28.69	1.24	137.79	0.17	50	0.64	-1.74
1031	91.6	465	25.83	32.23	28.46	1.15	101.16	0.16	26.3	0.45	0.47
1032	91.5	465	26.19	32.19	28.65	1.39	69.54	0.19	39	0.29	-2.91
3001b	91.3	465	26.03	32.18	28.62	1.36	86.82	0.19	0.5	-0.62	0.39
	91.25	Bridge									
3001d	91.1	465	26.03	32.15	28.62	1.36	87.59	0.19	62	-0.59	0.42
*0095	91	465	26.26	32.13	28.5	1.36	64.42	0.19	41.8	0.46	1.34
*0093	90	465	25.01	31.97	29.04	2.15	60.1	0.29	70	0.38	0.77
*0092	89	465	25.14	31.87	29.19	2.34	61.54	0.32	102	-1.28	0.77
*0091	88	465	25.07	31.76	29.31	2.35	60.13	0.33	84.1	0.41	0.9
*0090	87	465	24.95	31.66	29.29	2.42	57.53	0.33	84	0.3	0.61
3001f	86.6	465	25.79	31.65	29.02	1.81	71.97	0.28	0.5	0.54	0.5
	86.45	Bridge									
3001g	86.4	465	25.79	31.58	29.02	1.83	71.76	0.29	23	0.61	0.42
3001h	86.2	465	25.79	31.55	28.97	1.99	71.53	0.29	100.8	0.18	0.45
*0086	86	465	25.24	31.18	29.1	2.94	62.19	0.42	108.2	0.88	0.73
*0085	85	465	25.1	31.08	28.87	2.59	71.71	0.37	106.7	0.82	1.28
*0084	84	465	24.76	30.95	28.74	2.48	81.96	0.36	104.5	0.61	0.87
*0083	83	465	24.84	30.8	28.75	2.5	77.04	0.37	93.3	0.7	0.94
*0082	82	465	25.11	30.73	28.54	2.2	81.55	0.33	111.3	0.59	0.86
*0081	81	465	25.02	30.55	28.98	2.46	87.7	0.37	111.2	0.49	0.73
*0080	80	465	24.81	30.37	29.16	2.5	85.69	0.39	80.1	0.63	0.69
*0079	79	465	25.05	30.25	28.45	2.45	85.11	0.38	147.9	0.8	0.51

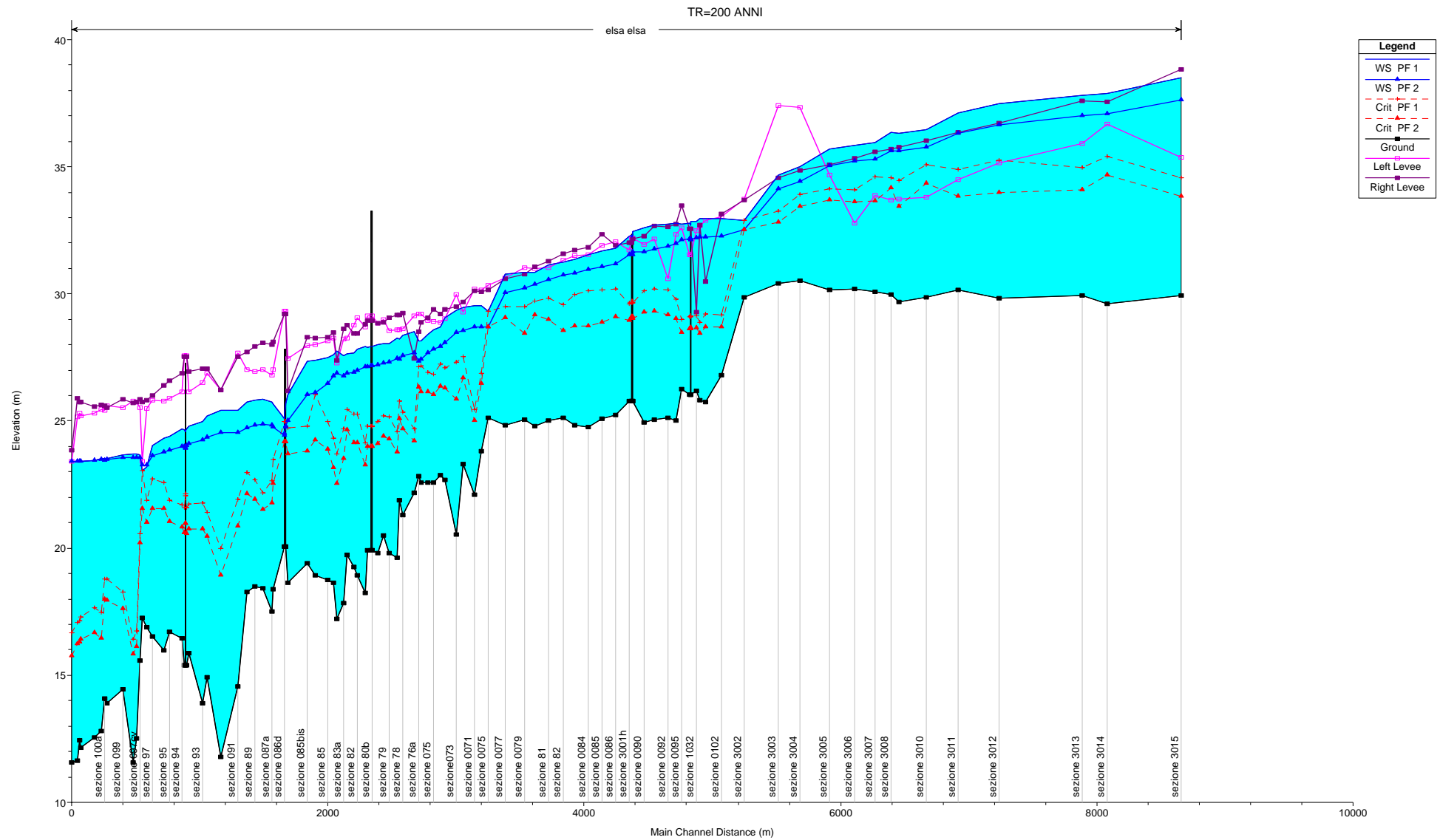




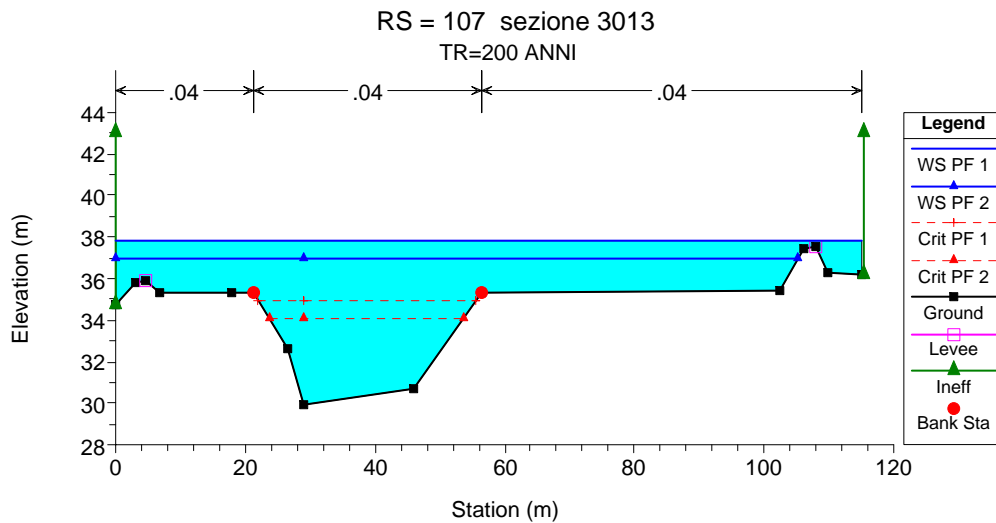
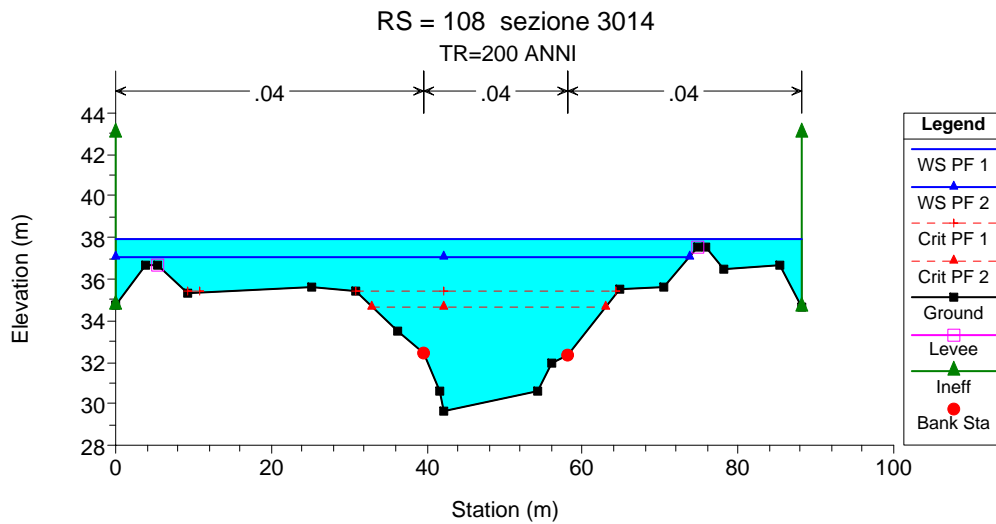
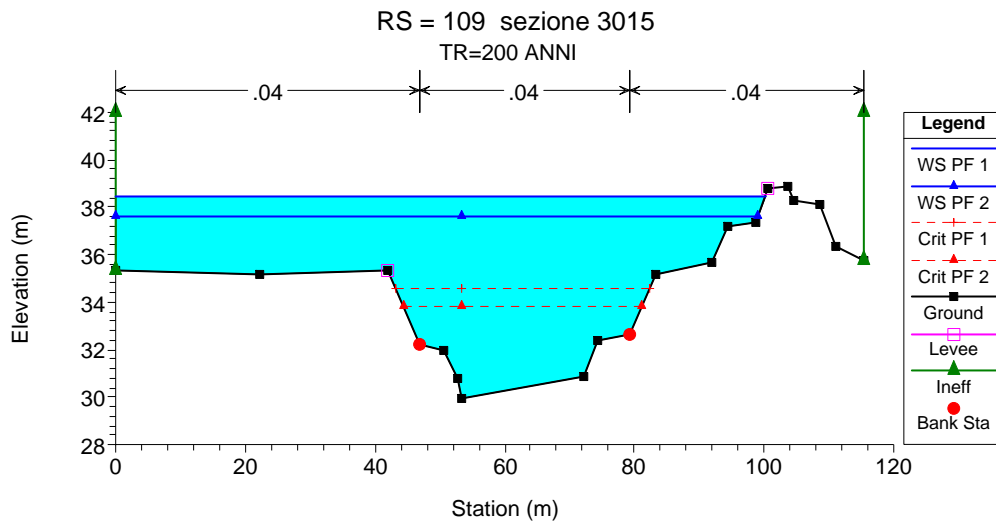
*0077	78	465	24.85	30.03	29.08	2.42	104.65	0.39	130.8	0.61	0.57
*0075	76	465	25.12	28.7	28.7	4.59	58.05	0.88	51.9	1.64	1.44
*0072	74	465	23.82	28.68	26.48	1.64	135.67	0.25	59.7	1.46	1.41
*0071	73	465	22.11	28.69	25.03	1.09	137.69	0.15	85.35	1.49	1.42
*072	71	465	23.32	28.54	26.69	1.95	123.7	0.31	57.79	0.75	1.14
*073	70	465	20.55	28.47	25.84	2.04	110.38	0.29	82.06	1.49	1.05
*074	69	465	22.67	28.07	26.29	2.97	51.37	0.46	40.56	0.94	1.33
*074a	68	465	22.86	27.93	26.37	3.12	51.63	0.48	49.78	0.94	1.28
*075	67	465	22.58	27.84	26.03	2.99	52.5	0.46	47.17	1.08	1.54
*076	66	465	22.56	27.66	26.13	3.19	55.09	0.5	57.07	1.31	1.42
*076a	65	465	22.57	27.41	26.16	3.4	57.84	0.56	14.64	1.79	1.46
*077b	64	465	22.82	27.37	26.35	3.34	61.27	0.59	34.75	1.84	1.16
*079	62	465	22.18	27.69	24.21	1.24	174.29	0.17	87.97	1.46	-0.22
*078	61	465	21.31	27.56	24.68	1.75	95.33	0.27	29	1.07	1.67
*078b	60	465	21.89	27.41	25.1	2.33	92.71	0.35	20	1.18	1.78
*078a	59	465	19.64	27.45	23.76	1.89	92.83	0.26	56.67	1.14	1.71
*079	58	465	19.82	27.3	24.29	2.33	76.2	0.33	41.91	1.25	1.77
*079a	57	465	20.49	27.26	24.4	2.32	87.47	0.32	45.25	1.74	1.64
*080	56	465	19.82	27.22	24.12	2.27	104.52	0.32	48.77	1.61	1.64
*080b	54	465	19.93	27.17	23.98	2.26	111.58	0.31	0.5	1.98	1.77
	53.5	Bridge									
*080d	52	465	19.93	27.13	23.98	2.29	111.43	0.31	17.95	2.02	1.81
*081	51	465	18.22	27.15	23.25	2.12	127.97	0.27	59.44	1.54	1.67
*082	50	465	18.94	27	24.13	2.51	121.24	0.35	28.14	2.05	1.43
*082a	49	465	19.26	26.92	24.13	2.59	98.95	0.37	51.75	1.85	1.54
*083	48	465	19.73	26.87	24.64	2.44	107.55	0.37	30.71	1.38	1.89
*083a	47	465	17.84	26.76	23.52	2.72	120.76	0.36	51.29	1.47	1.86
*084	46	465	17.21	26.89	22.52	1.63	141.89	0.2	26.25	0.38	0.51
*084a	45	465	18.63	26.76	23.17	2.12	151.93	0.29	44.86	1.5	1.71
*085	44	465	18.74	26.48	23.89	2.98	172.16	0.4	101.73	1.67	1.82
*085a	43	465	18.92	26.11	24.27	3.4	116.8	0.48	61.97	1.89	2.14
*085bis	42	465	19.4	26.06	23.82	2.87	107.84	0.42	148	1.9	2.23
*086	41	465	18.63	25.03	23.71	4.3	26.95	0.63	20.7	2.43	1.14
*086b	39	465	20.07	24.79	24.17	4.54	28.06	0.76	0.5	4.53	4.43
	38.5	Bridge									
*086d	37	465	20.07	24.45	24.17	5	28.01	0.88	81.42	4.87	4.77
*087	36	465	18.4	24.77	22.54	2.8	47.91	0.41	12.28	2.25	3.33
*087a	35	465	17.52	24.83	21.79	2.38	49.46	0.32	72.17	1.97	3.18
*088	34	465	18.42	24.88	21.52	1.67	89.68	0.23	61.31	2.12	3.19
*089	33	465	18.5	24.82	21.92	1.84	119.63	0.26	60.61	2.12	3.1
*090	32	465	18.26	24.74	22.15	2.04	102.44	0.29	76	2.29	2.96
*091	31	465	14.56	24.53	20.87	2.49	54.28	0.33	125.22	3.14	3.01
*092	30	465	11.78	24.53	18.92	1.86	62.56	0.22	107	1.7	1.68
*092a	29	465	14.91	24.38	20.45	2.23	53.65	0.29	42	2.48	2.69
*093	28	465	13.89	24.24	20.74	2.55	38.05	0.34	99.25	2.28	2.81
*093b	27	465	15.88	24.1	20.76	2.58	38.52	0.35	26.22	2.04	2.84
*093a	26	465	15.38	24.03	20.57	2.79	43.73	0.33	0.5	3.55	3.5
	24.5	Bridge									
*093d	23	465	15.38	24	20.62	2.53	43.11	0.35	22.31	3.58	3.53
*094	22	465	16.46	24	20.81	2.45	61.1	0.33	97.11	2.14	2.88
*095	21	465	16.69	23.85	21.04	2.56	47.22	0.35	46.37	2.03	2.75

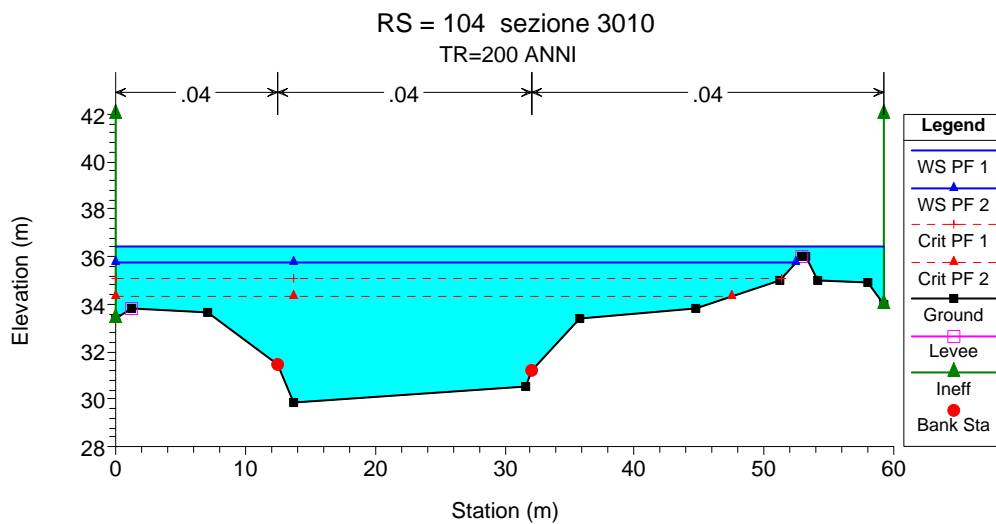
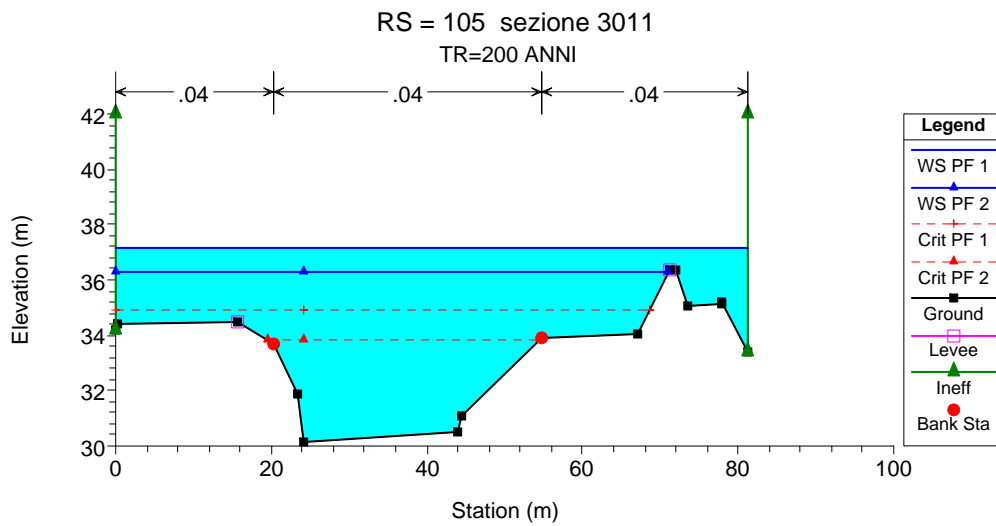
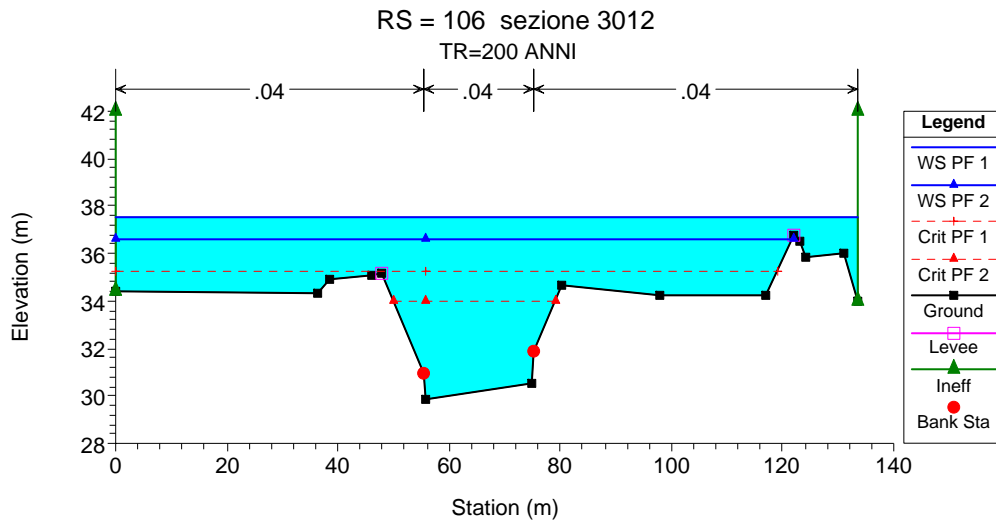


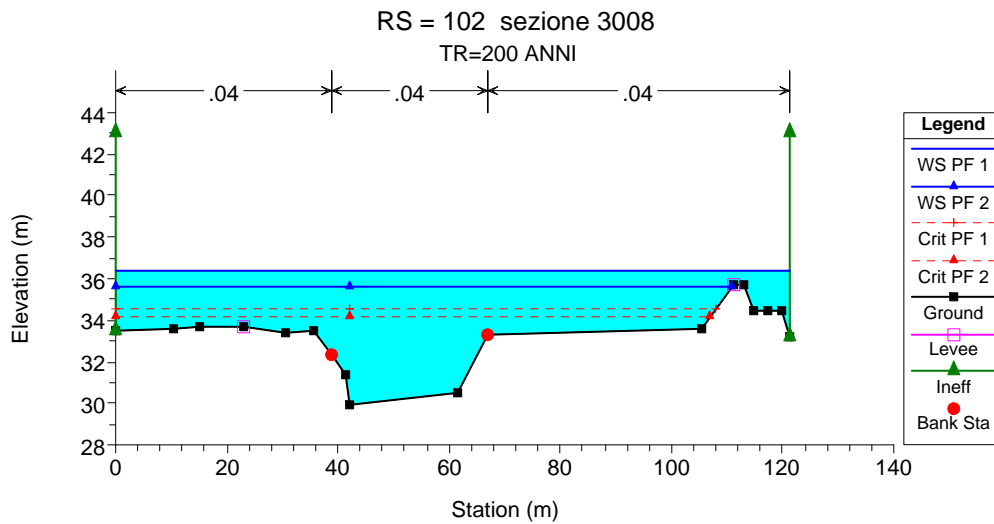
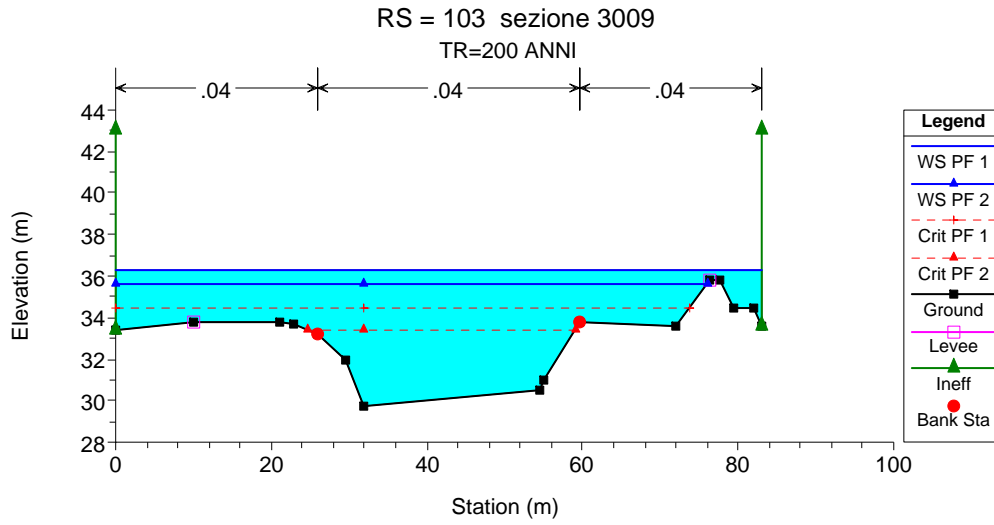
*096	20	465	15.96	23.8	21.55	2.6	58.71	0.38	83	1.98	2.6
*097	19	465	16.54	23.62	21.56	2.78	58.03	0.41	47.63	2.19	2.38
*097a	18	465	16.89	23.27	21.01	3.35	27.43	0.46	35.07	2.24	2.55
*097b	17	465	17.24	23.27	21.56	3.15	88.64	0.46	18	0.16	2.48
*097c	15	465	15.56	23.55	20.21	0.97	173.31	0.11	23.67	1.99	2.32
*097d	14	465	12.51	23.56	16.13	0.66	181.79	0.07	33.69	2.19	2.19
*098	13	465	11.57	23.56	15.81	0.55	194.32	0.06	73.4	2.23	2.15
*099	12	465	14.43	23.55	17.62	0.73	157.41	0.08	125.94	1.99	2.32
*100	11	465	13.91	23.48	17.93	1.19	119.33	0.16	17.64	2.13	2.06
*100a	10	465	14.08	23.47	17.99	1.25	103.31	0.16	27.71	1.95	2.13
*100c	7	465	12.82	23.47	16.45	1.16	65.96	0.15	57.4	1.97	2.18
*101	6	465	12.54	23.45	16.69	1.24	54.4	0.15	102.13	1.87	2.11
*102	5	465	12.15	23.42	16.41	1.26	54.07	0.15	11.52	1.77	2.34
*102a	4	465	12.46	23.42	16.29	1.26	53.03	0.15	18	1.88	2.33
*102c	1	465	11.62	23.42	16.24	1.18	55.26	0.14	42.8	1.75	2.46
*103	0.5	465	11.55	23.43	15.77	1.05	106.32	0.11		0	0.41

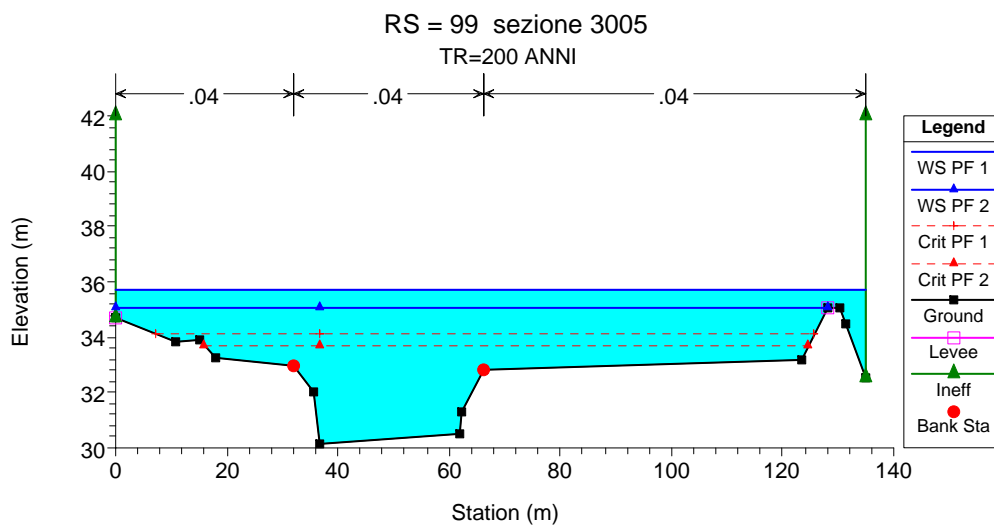
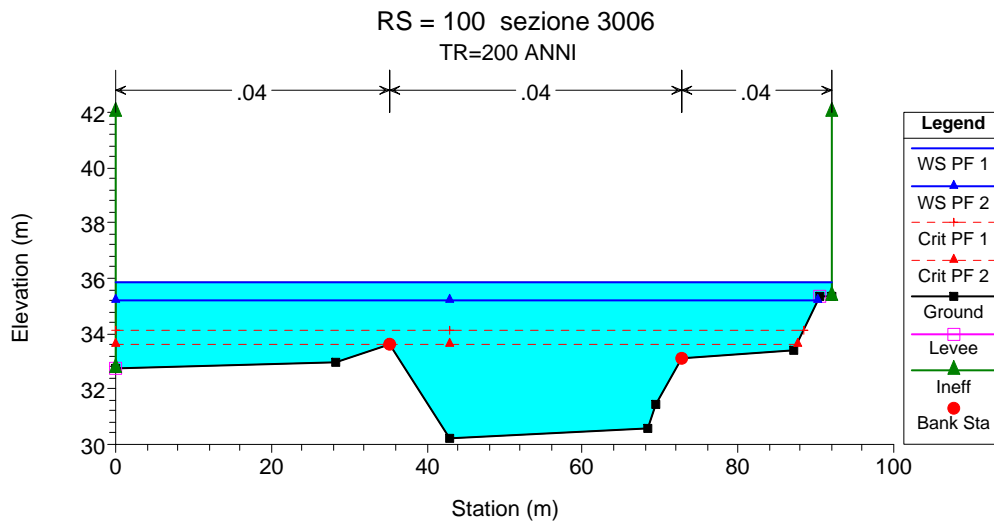
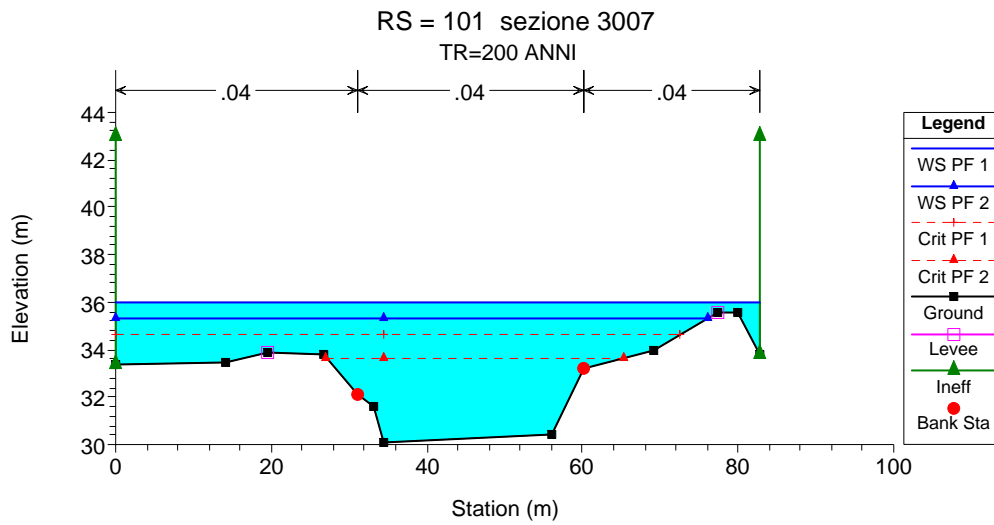


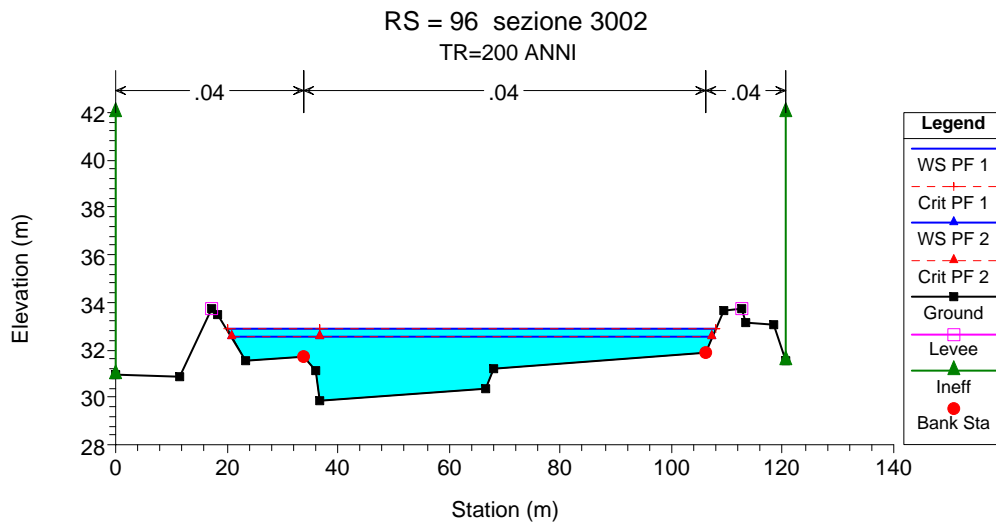
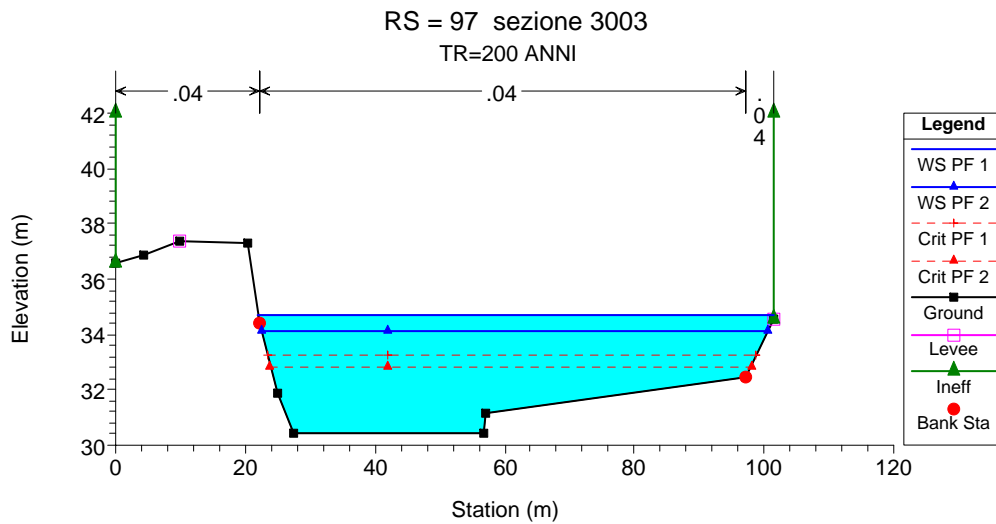
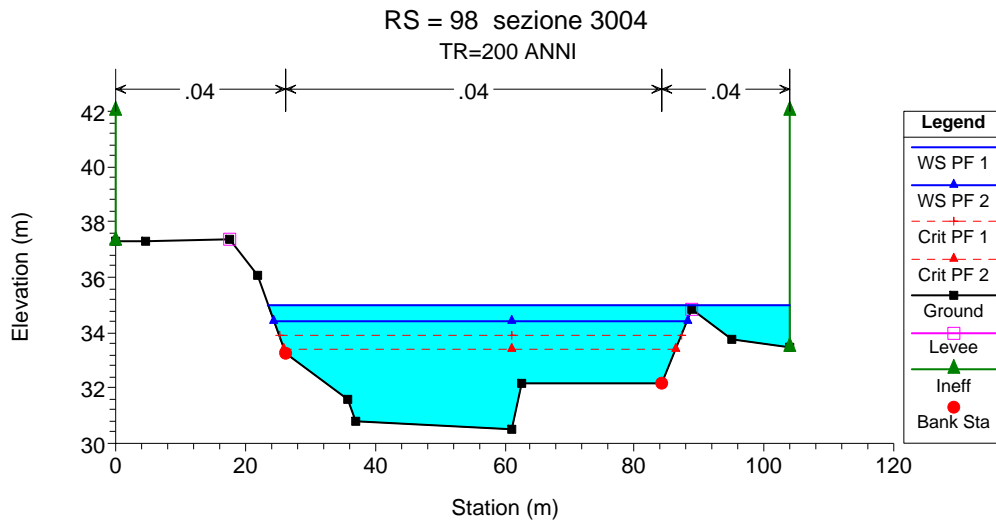


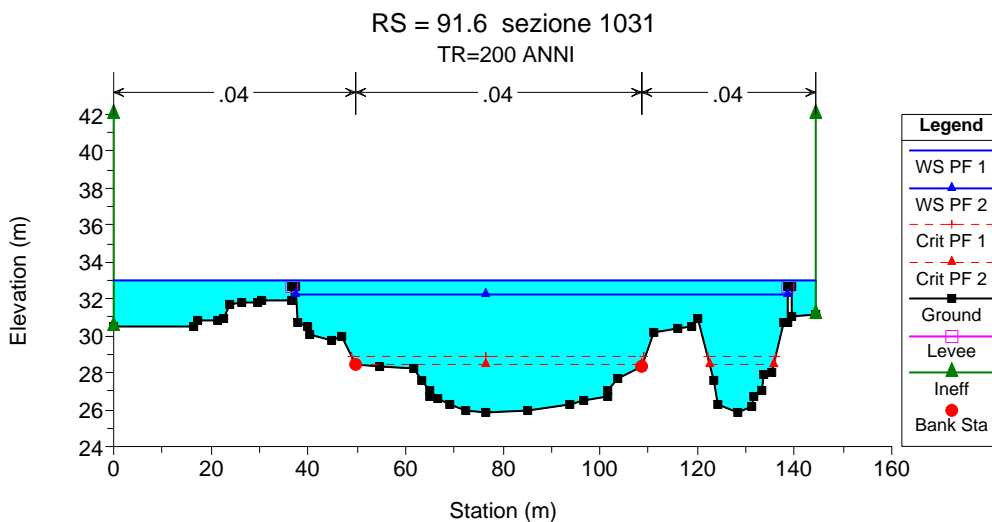
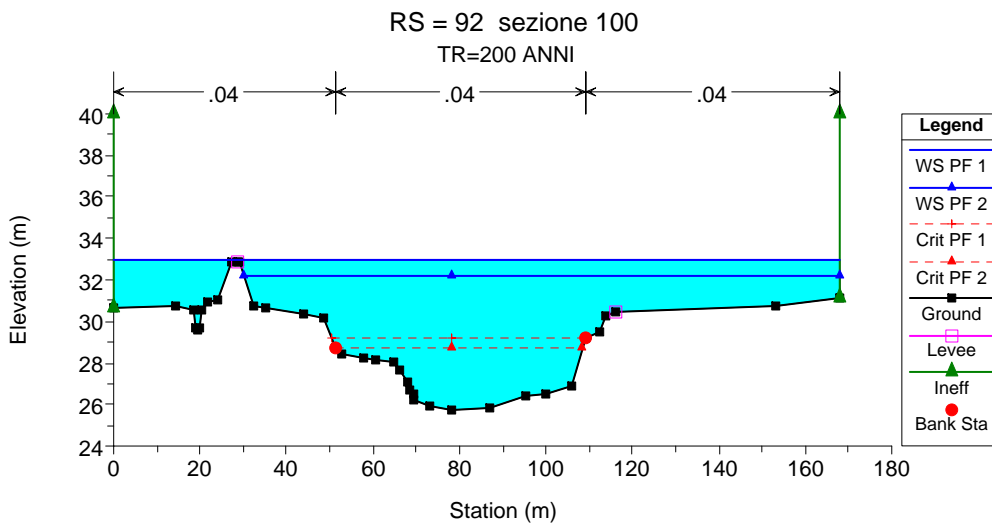
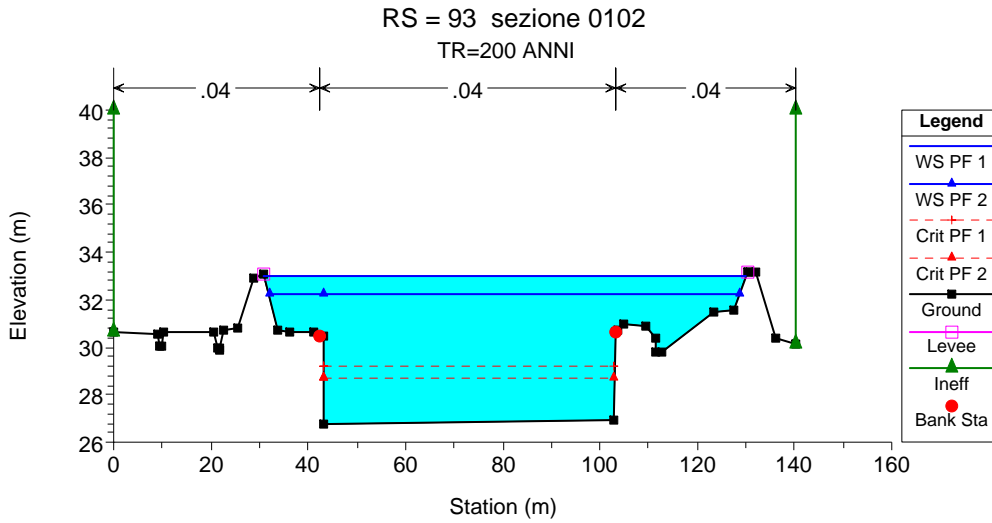




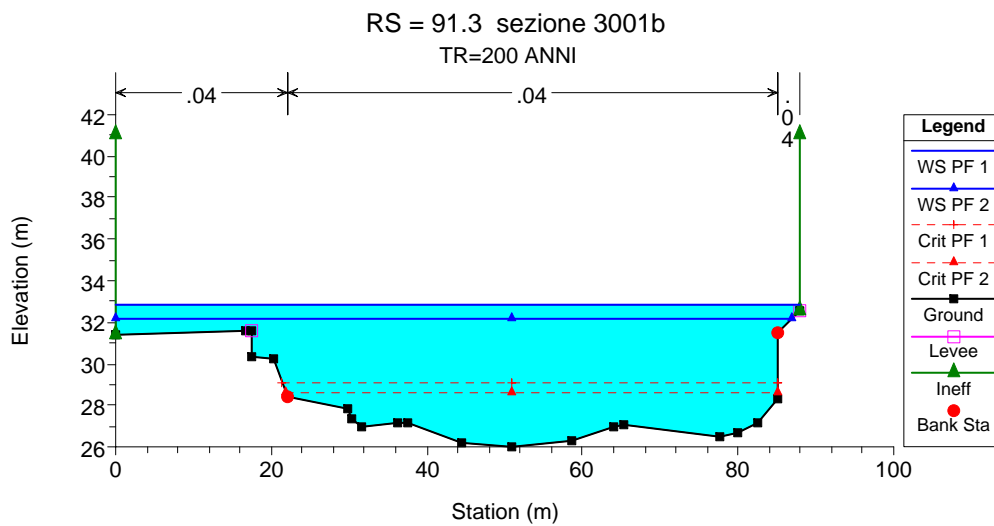
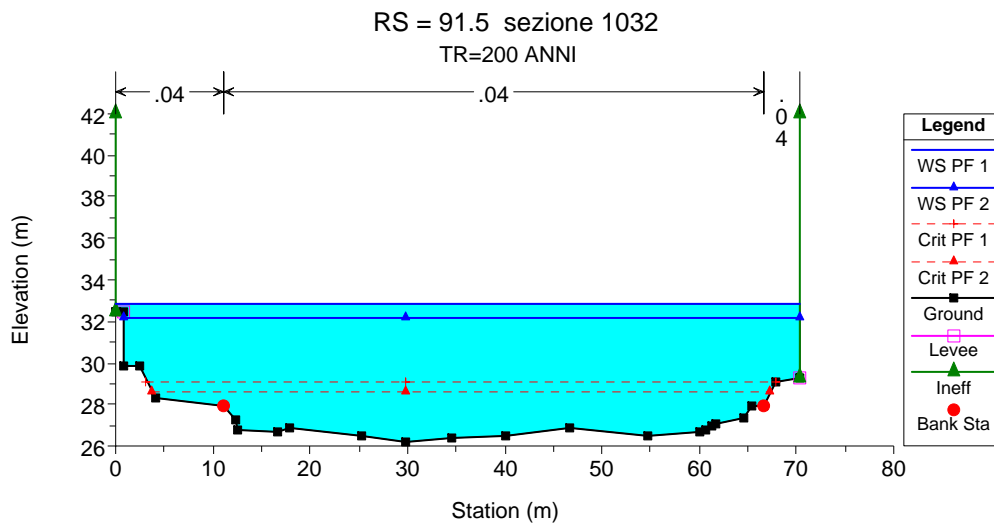


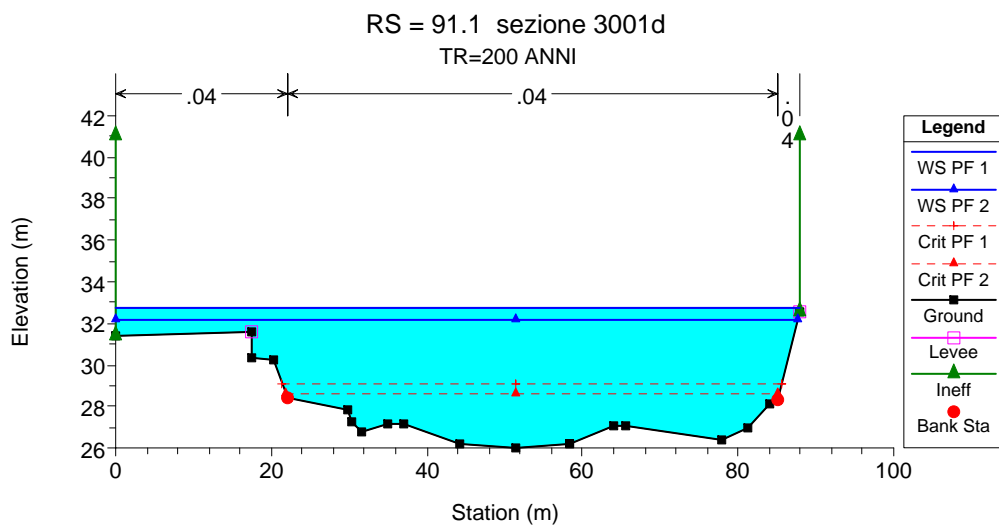
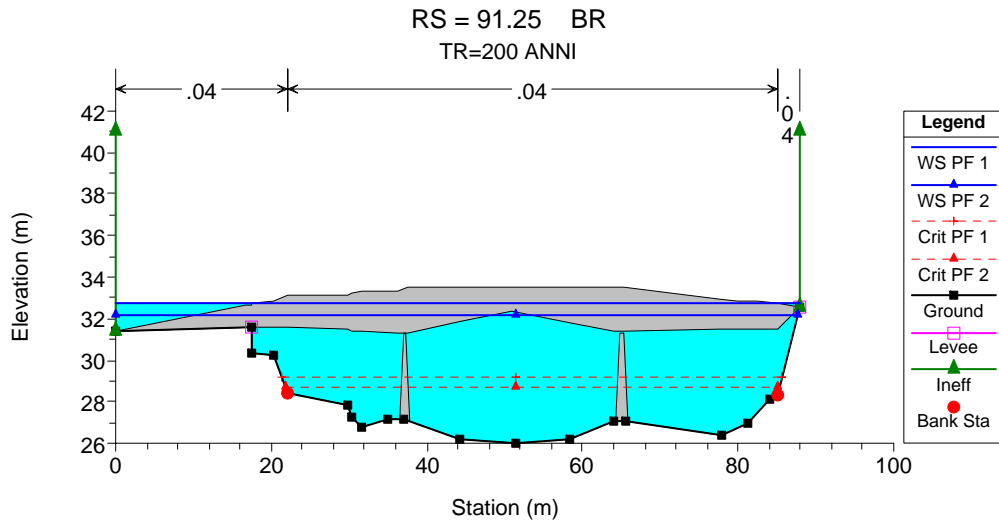
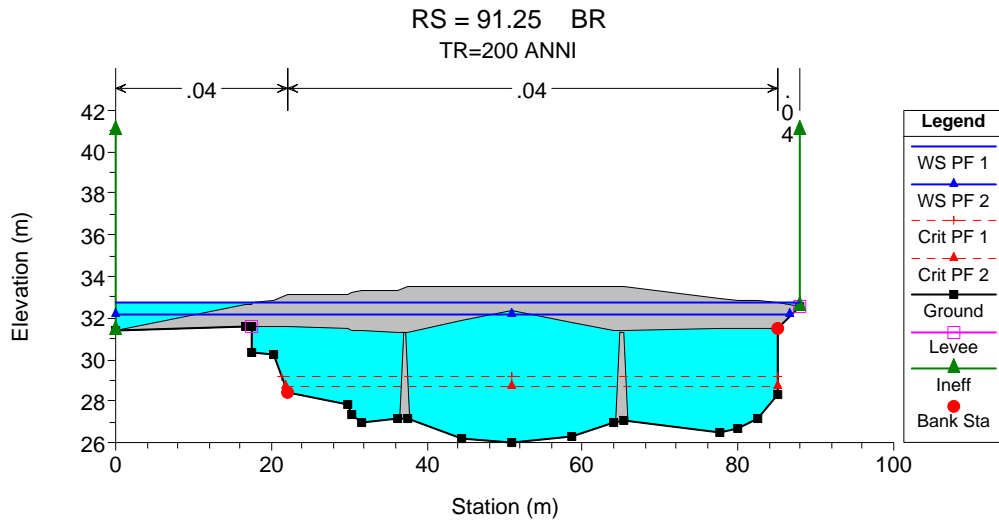






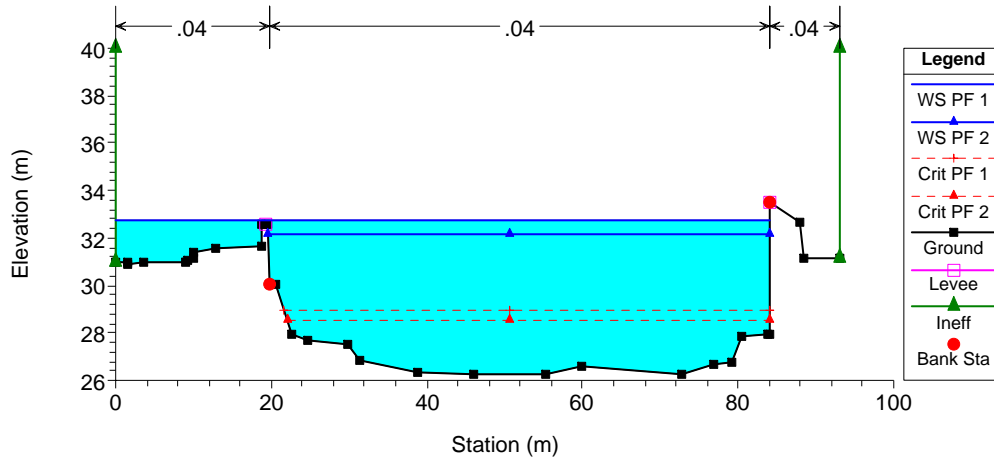




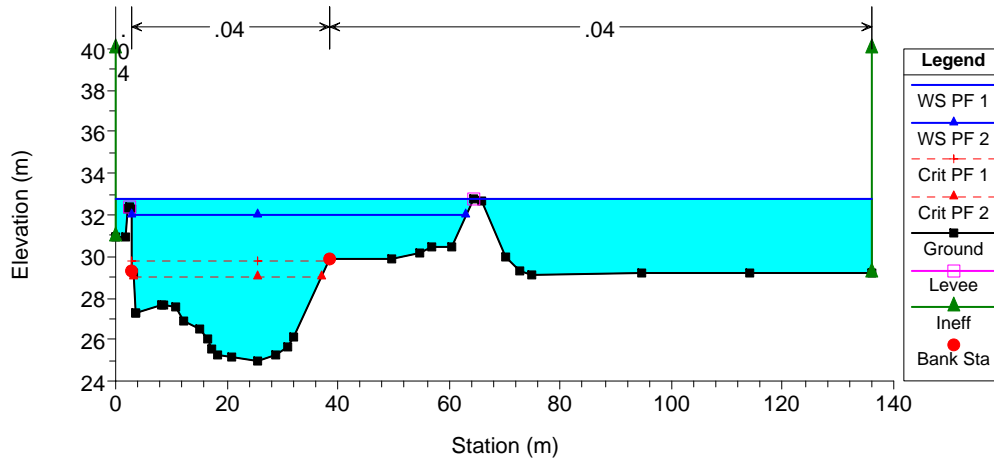




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 TR=200 ANNI



RS = 90 sezione 0093  
 TR=200 ANNI



RS = 89 sezione 0092  
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