



**PROVINCIA DI SAVONA**  
**DIFESA DEL SUOLO E TUTELA AMBIENTALE**

**VERIFICHE IDRAULICHE**

**Bacino: NIMBALTO**

**RIO CASAZZA**

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# **PROFILI DI RIGURGITO**

PER LE PORTATE

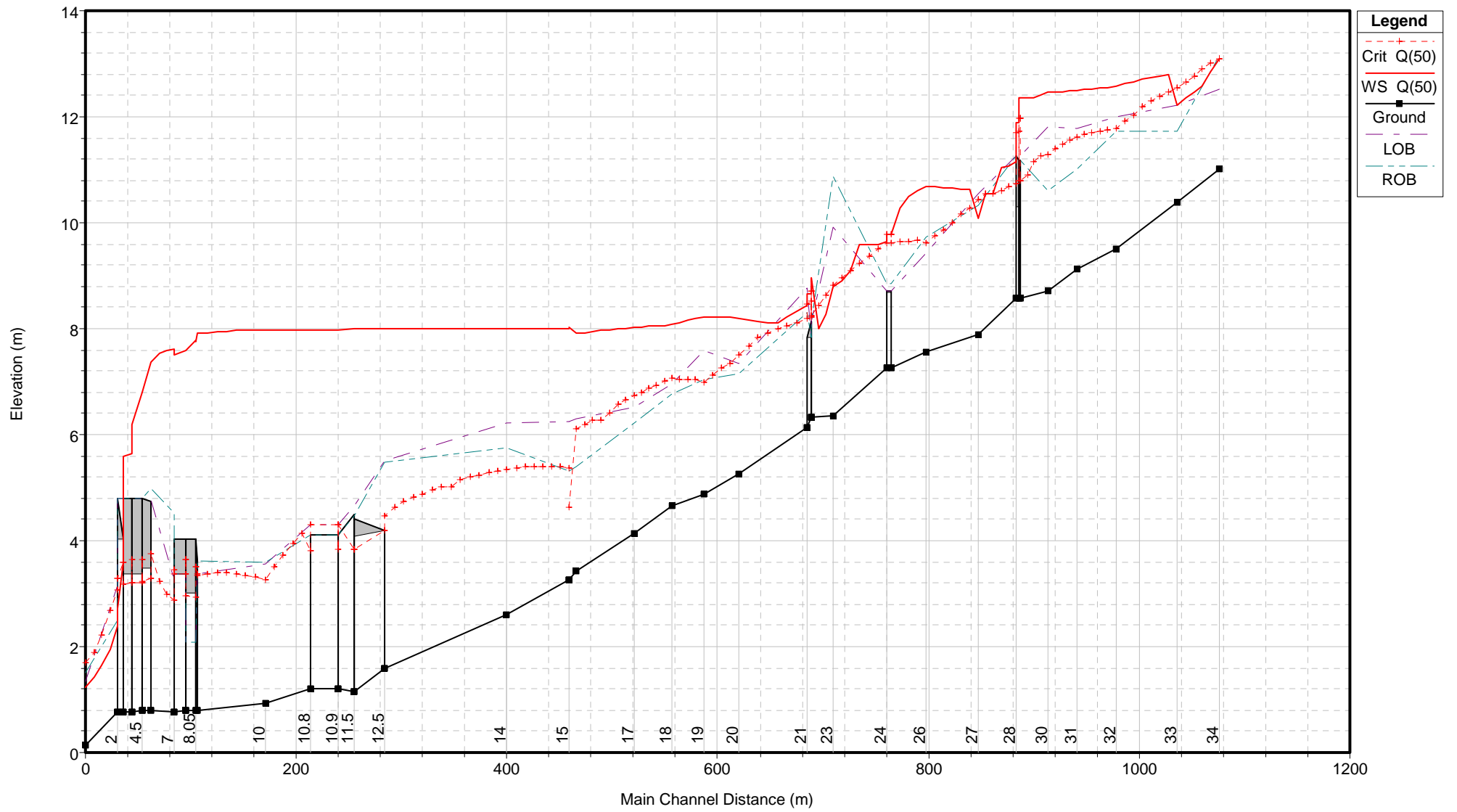
**T=50, 200, 500 ANNI**

**RIO CASAZZA**

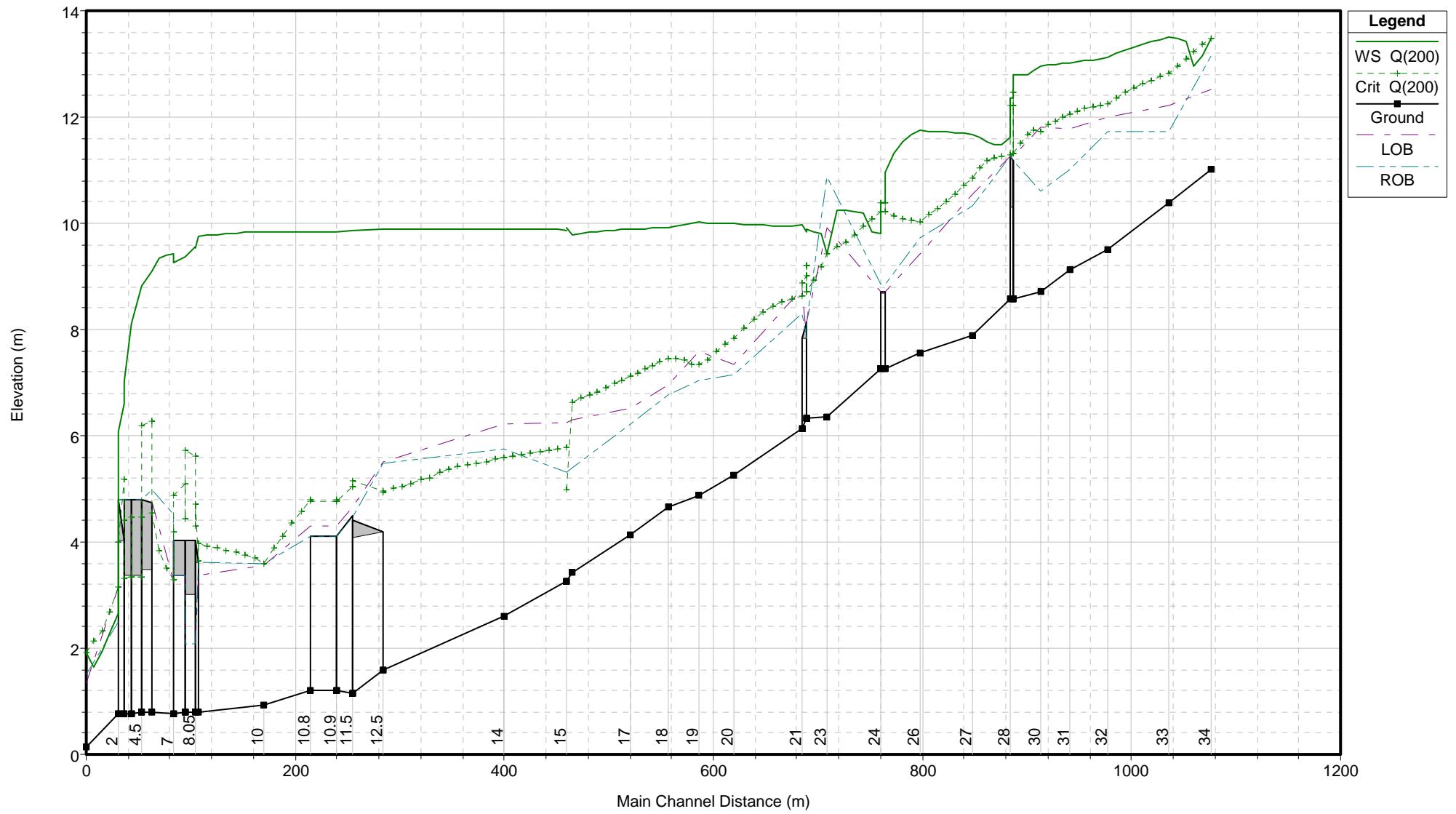
**Dalla sez. 1 alla sez. 34**



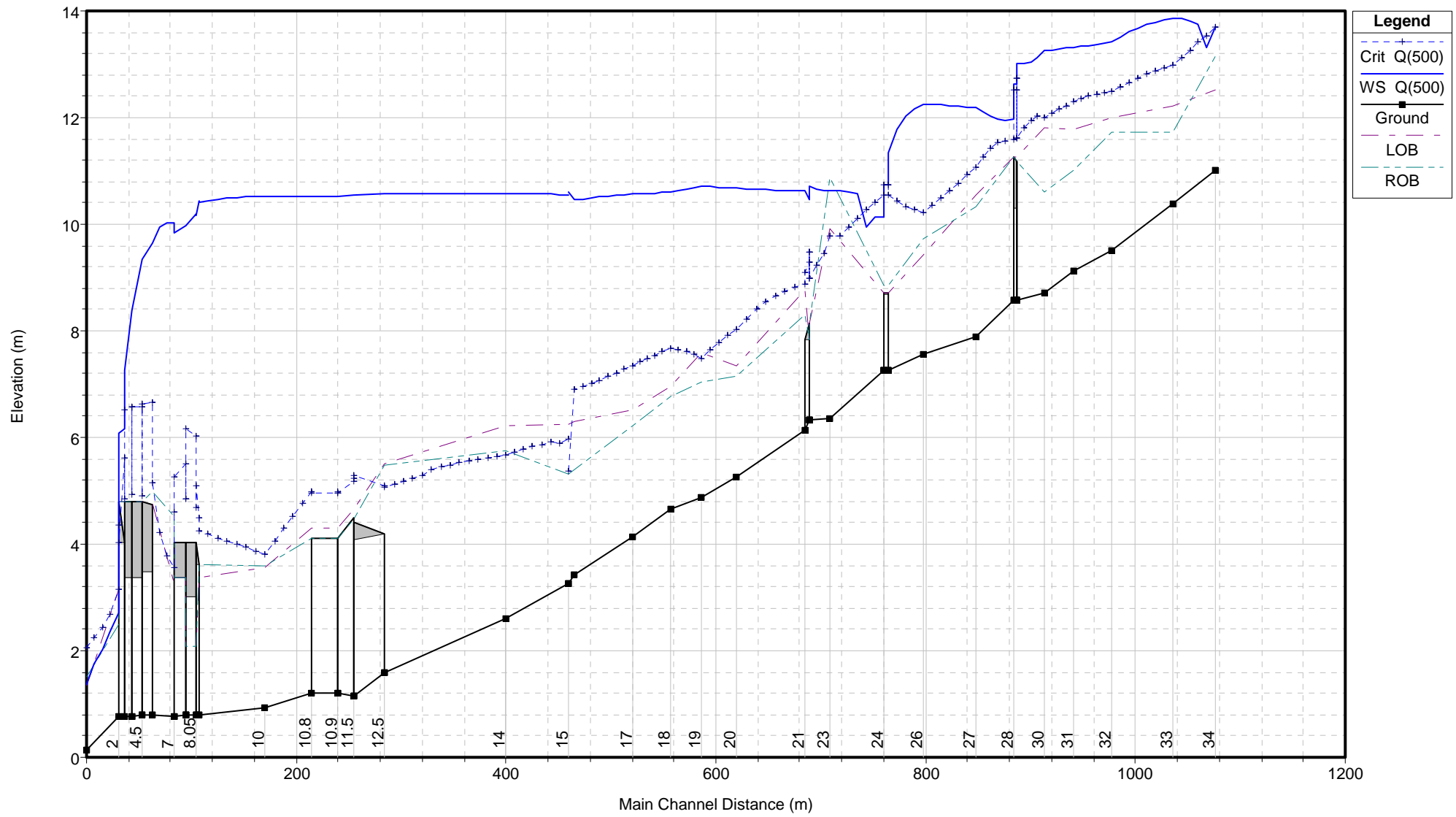
Rio Casazza – Profilo longitudinale di moto permanente per T=50 anni



Rio Casazza – Profilo longitudinale di moto permanente per T=200 anni



Rio Casazza – Profilo longitudinale di moto permanente per T=500 anni







**GEOMETRIA DELLE SEZIONI**

**E LIVELLI IDRICI**

PER LE PORTATE

**T=50, 200, 500 ANNI**

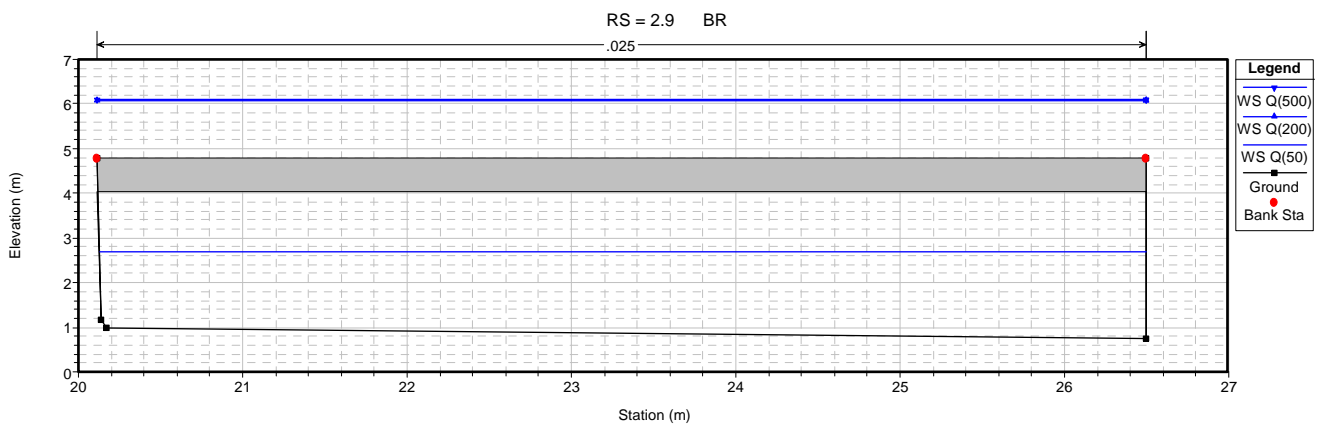
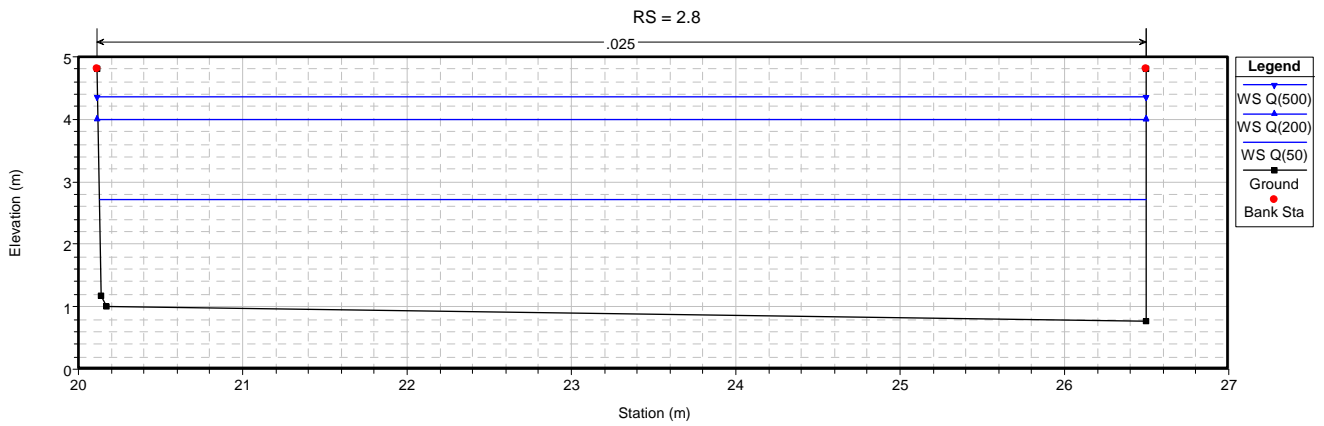
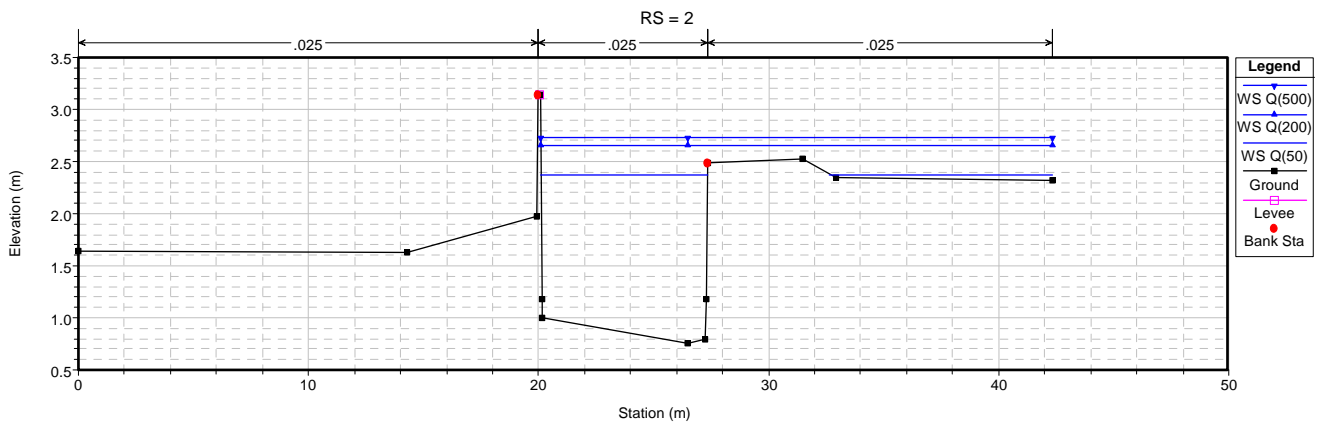
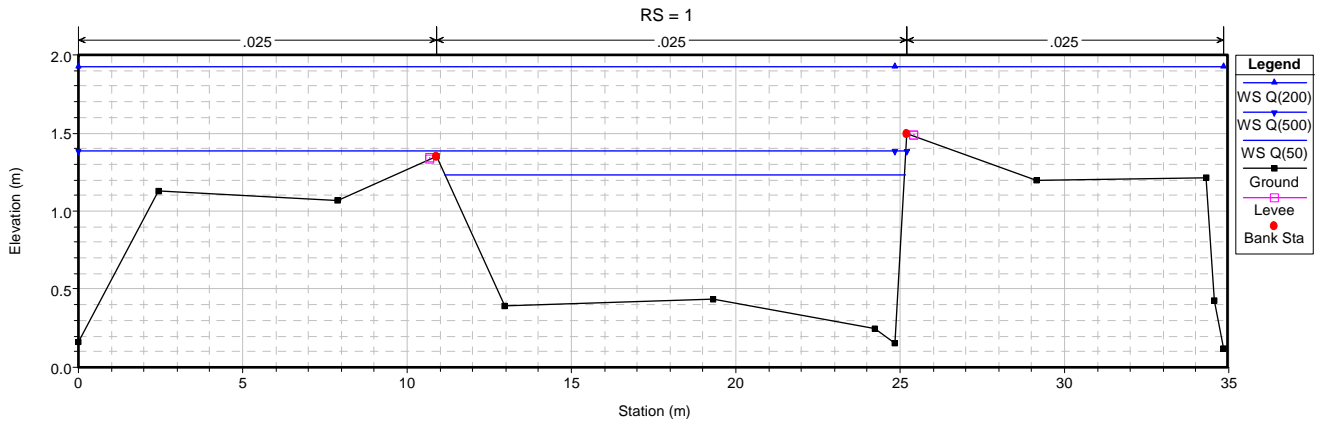
**RIO CASAZZA**

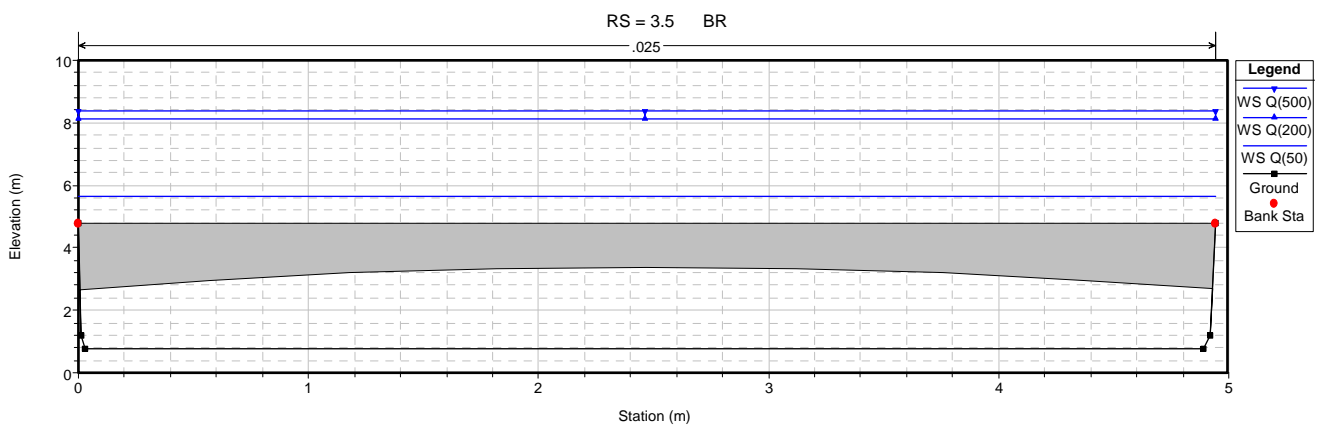
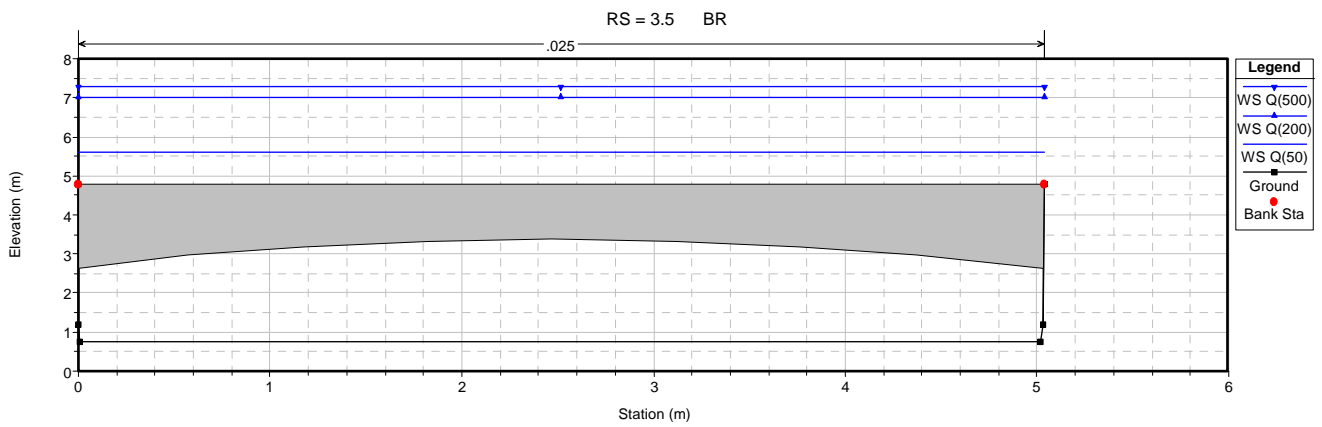
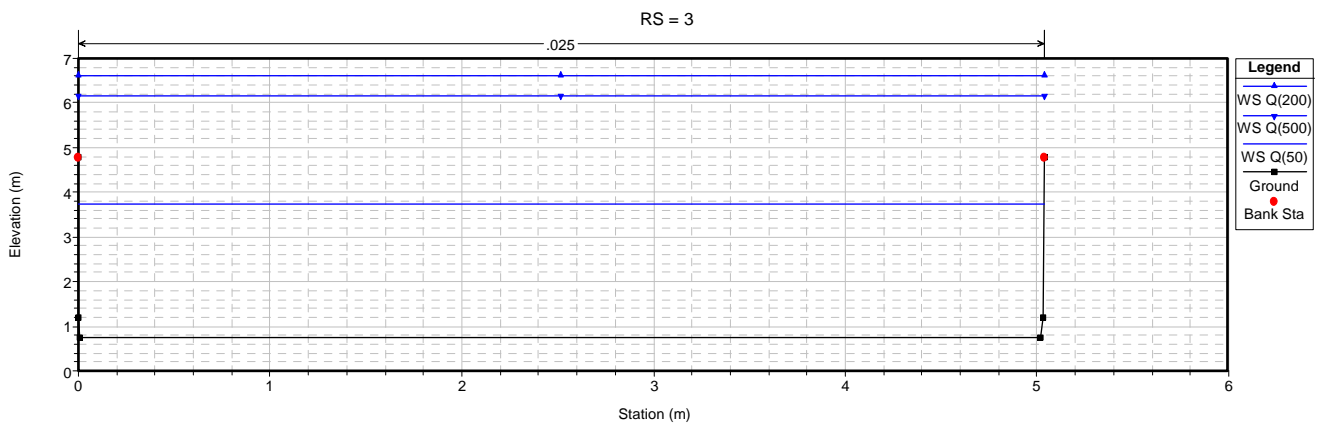
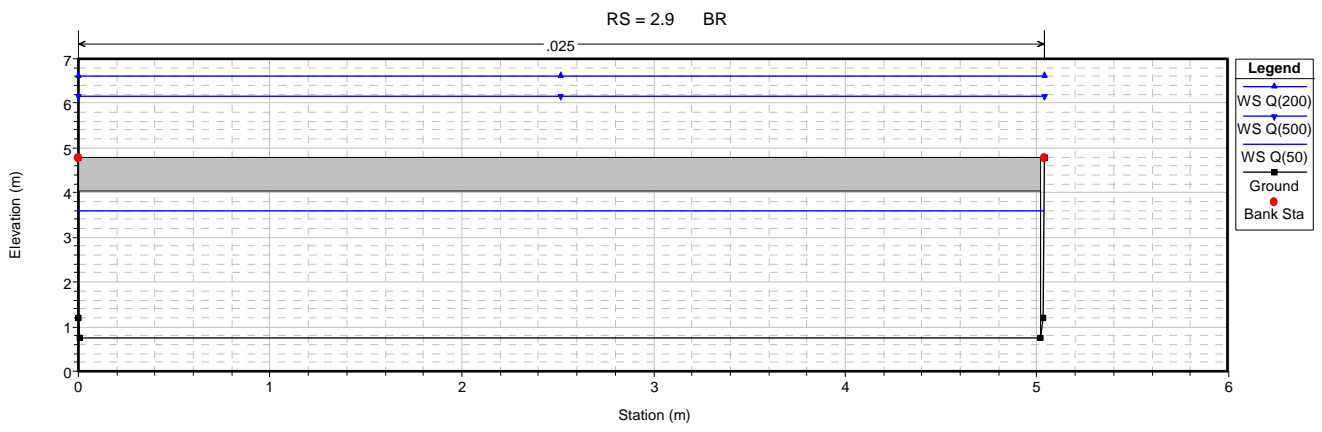
Dalla sez. 1 alla sez. 34

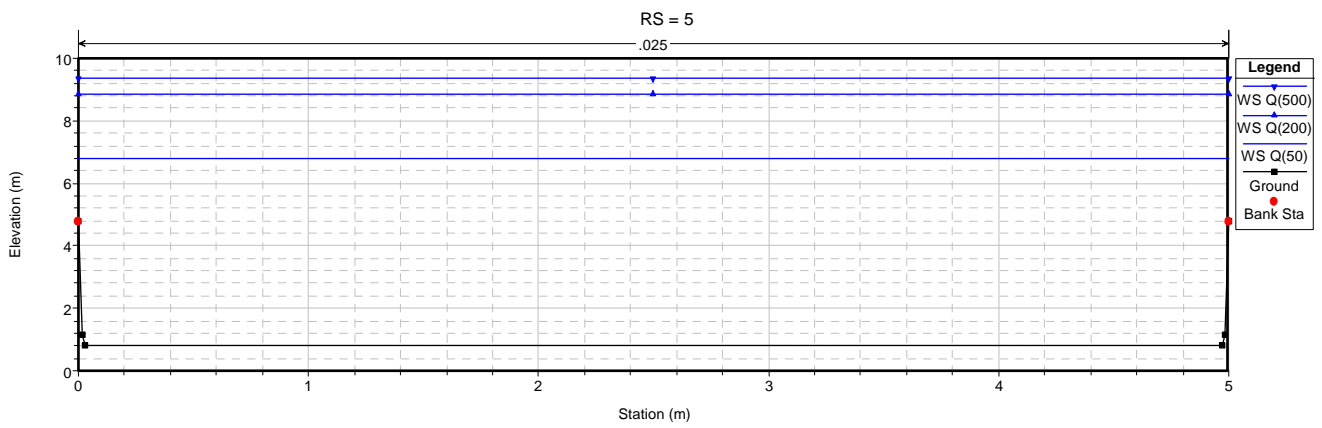
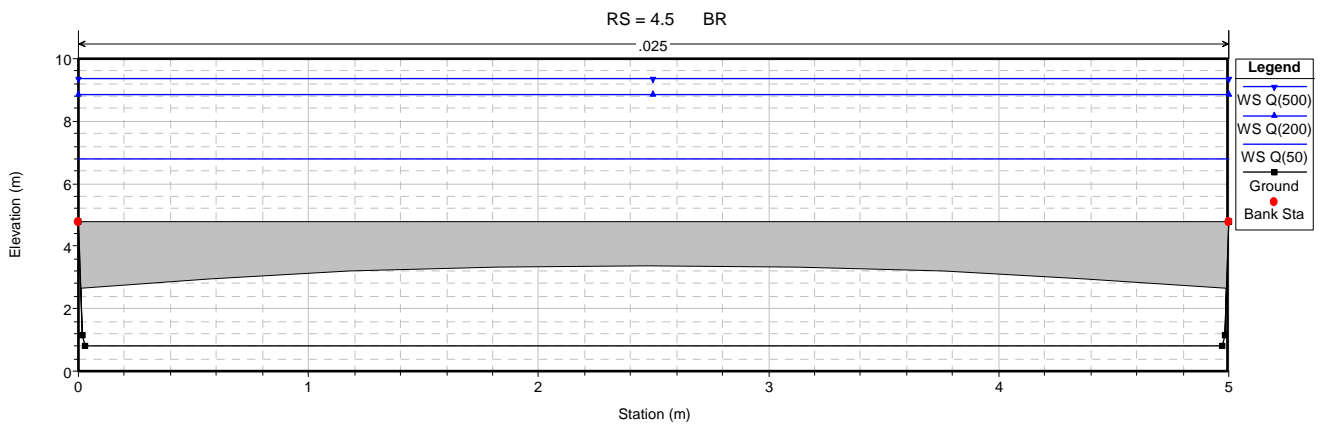
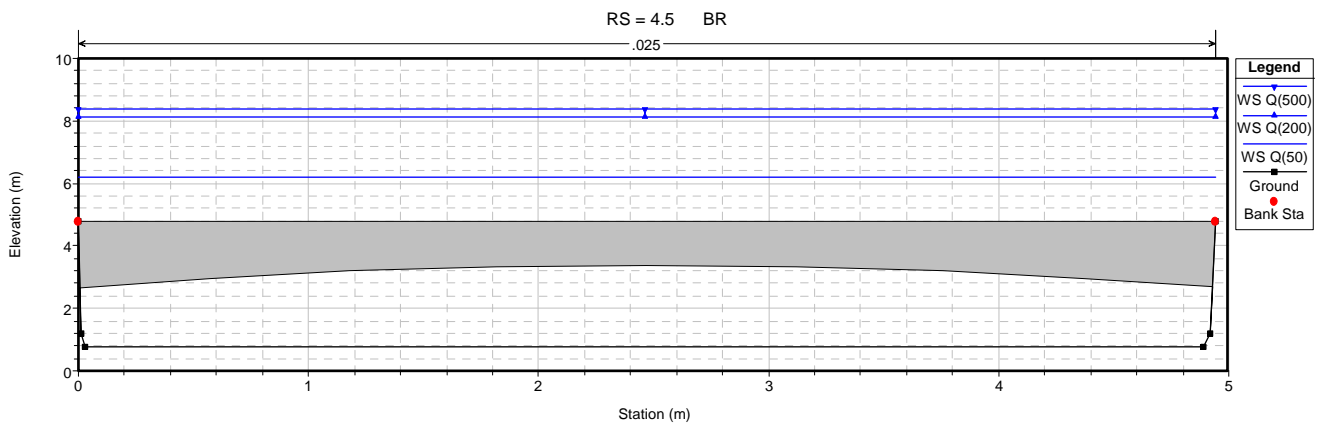
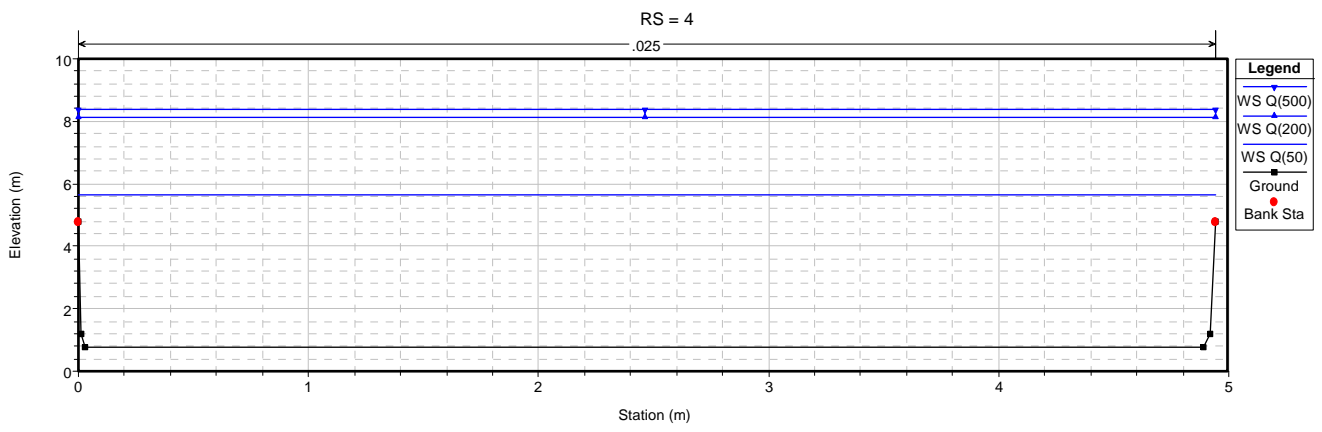


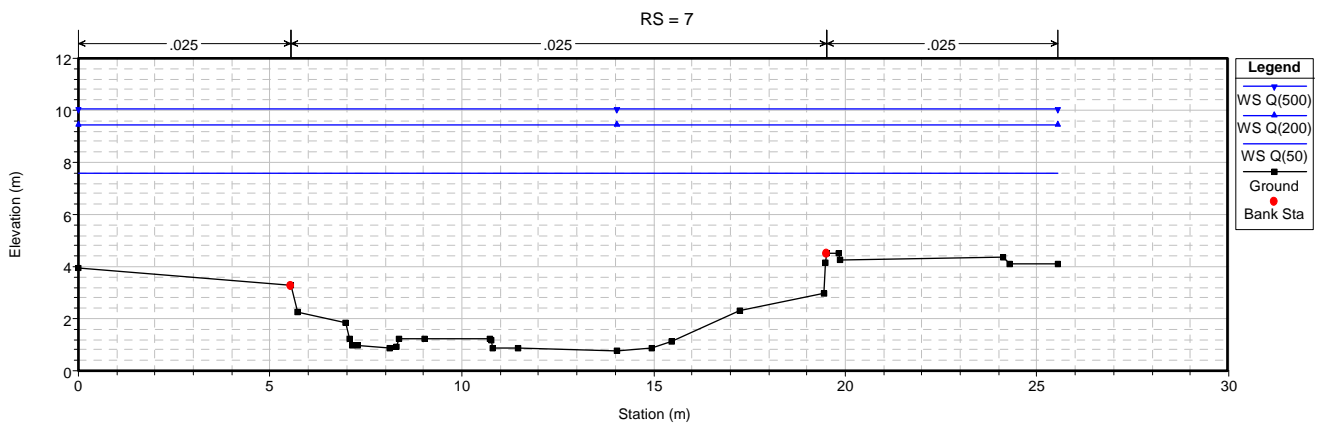
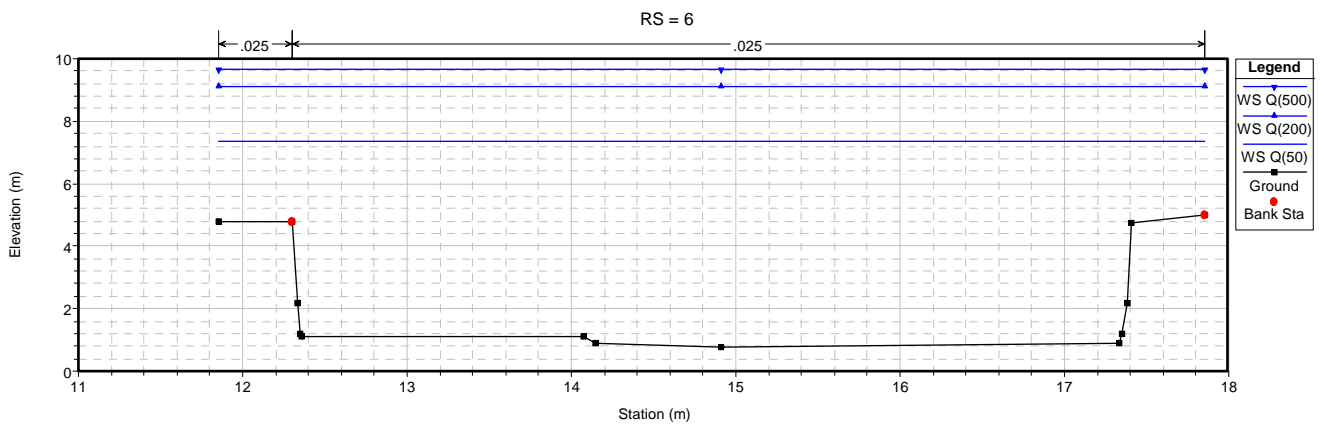
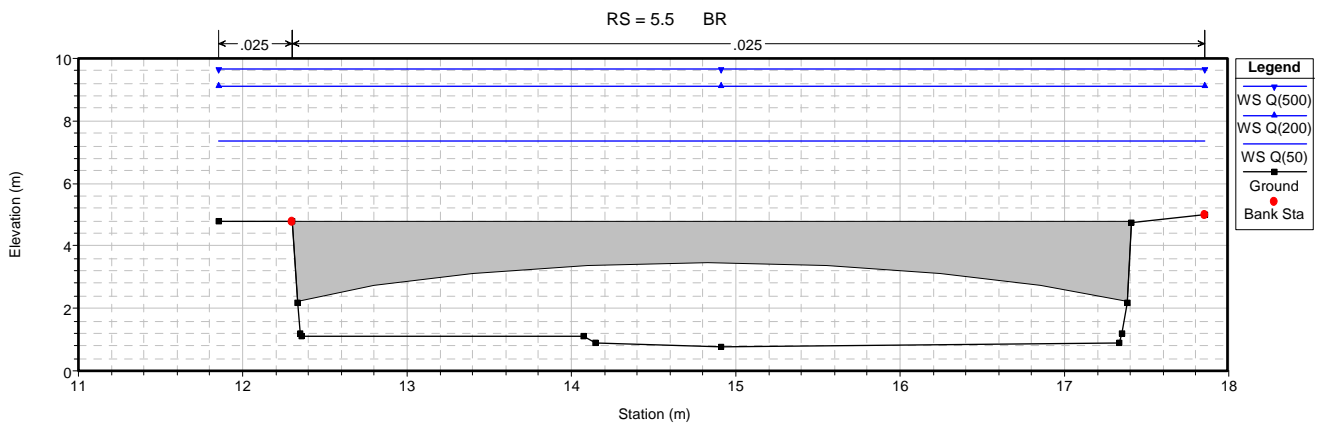
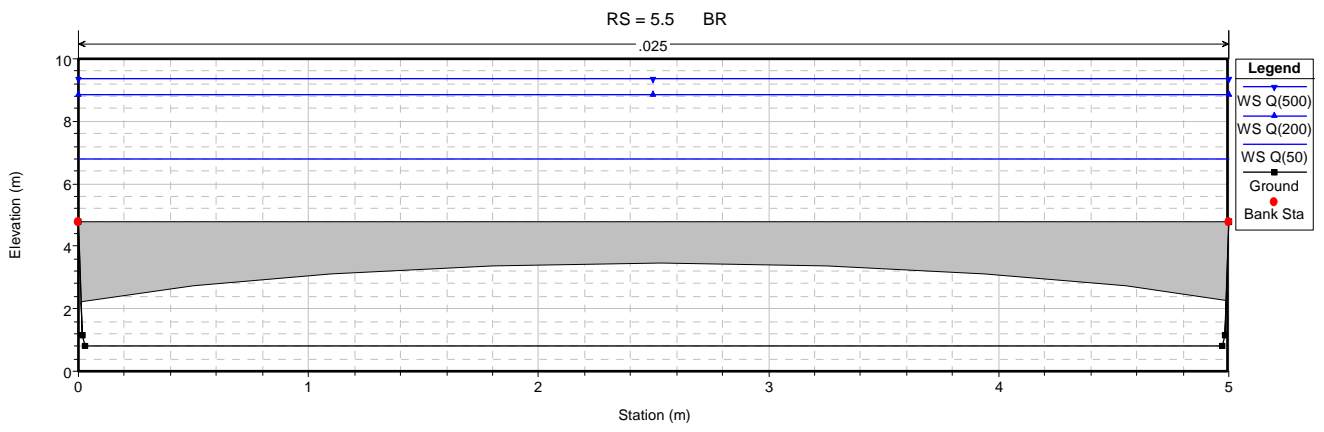
# RIO CASAZZA

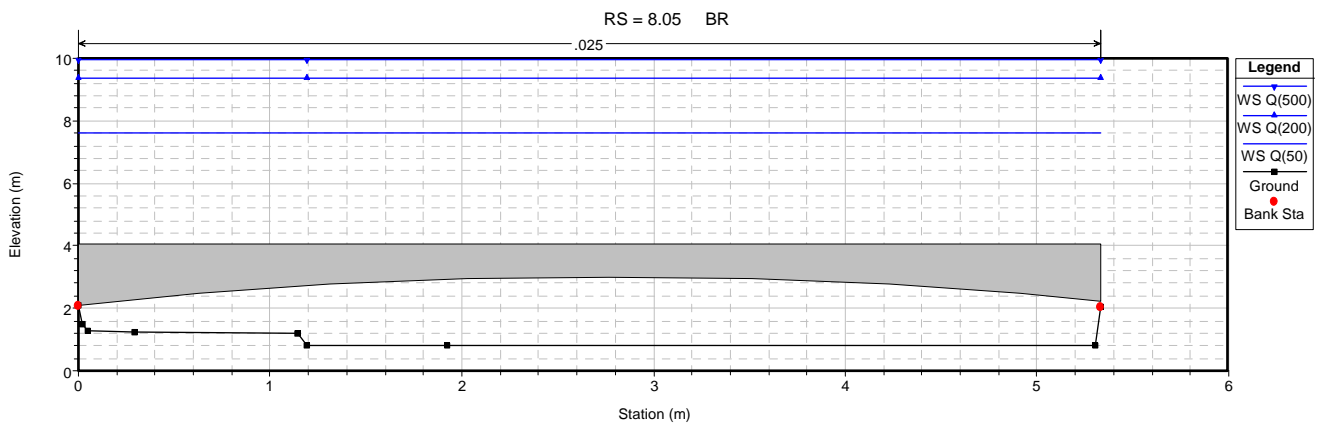
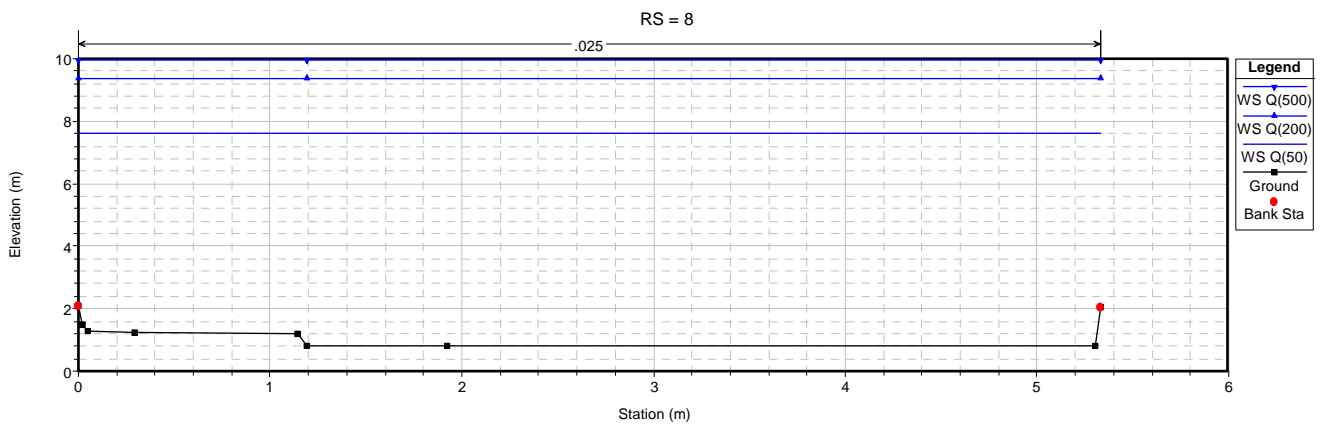
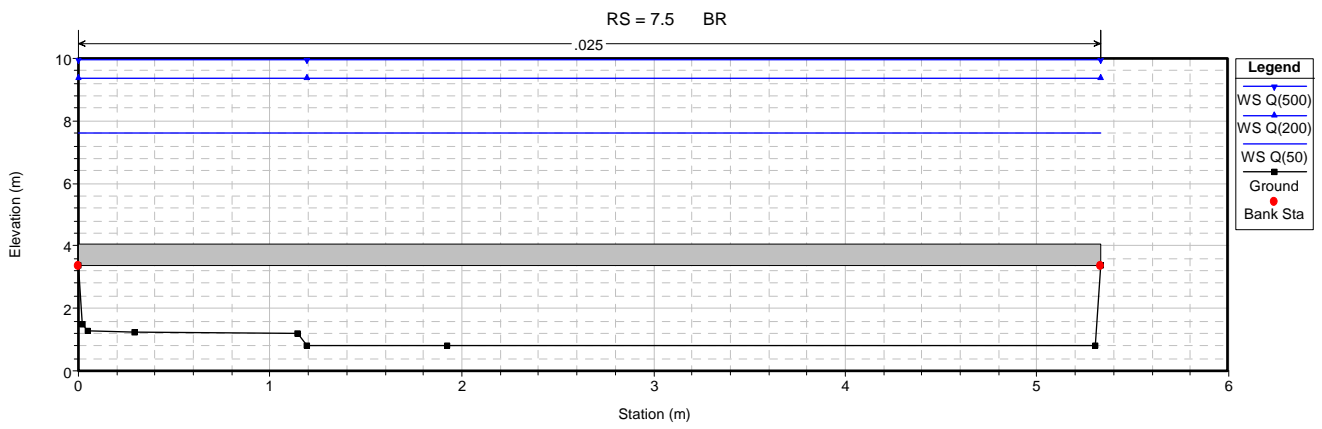
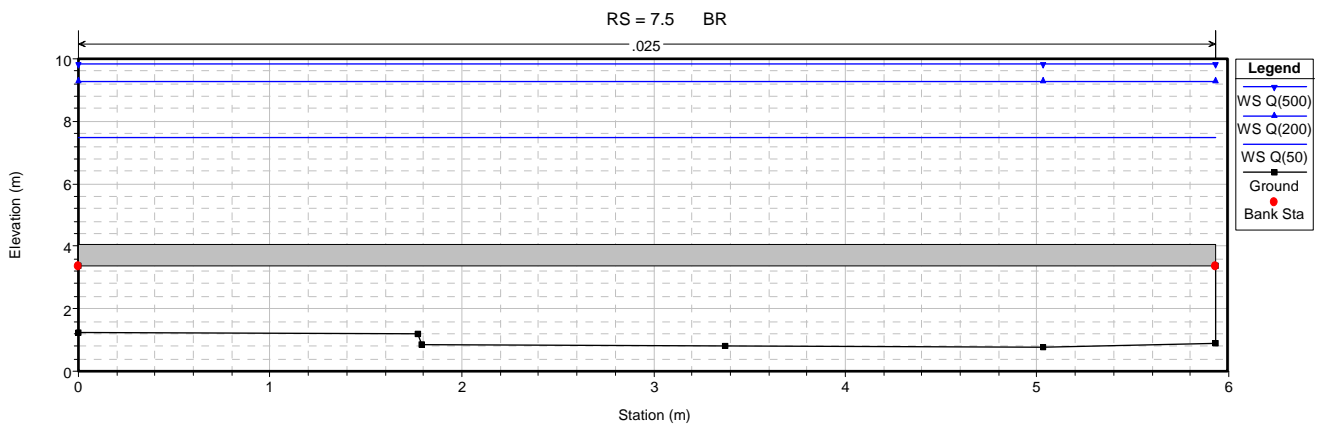
## Sezioni trasversali

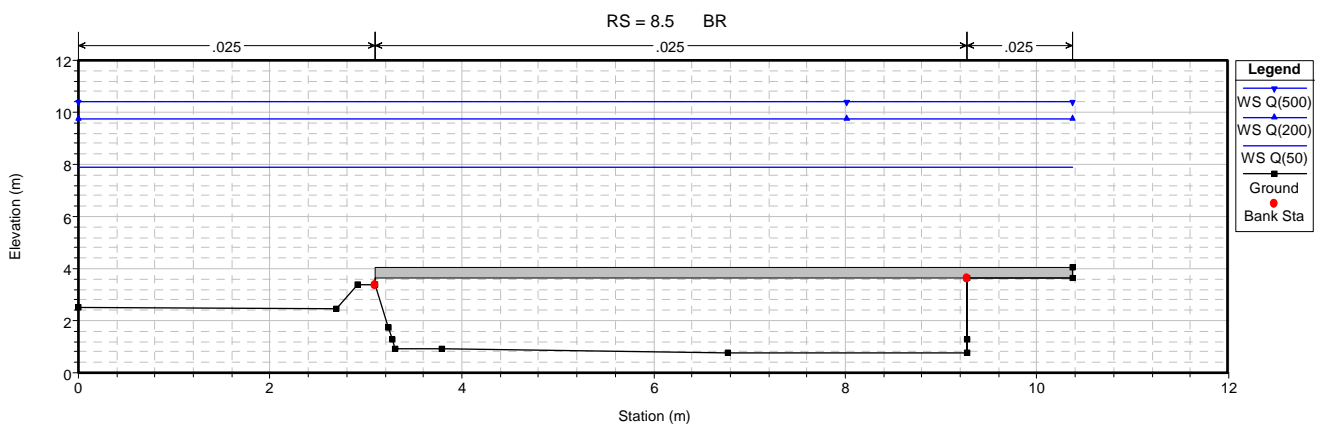
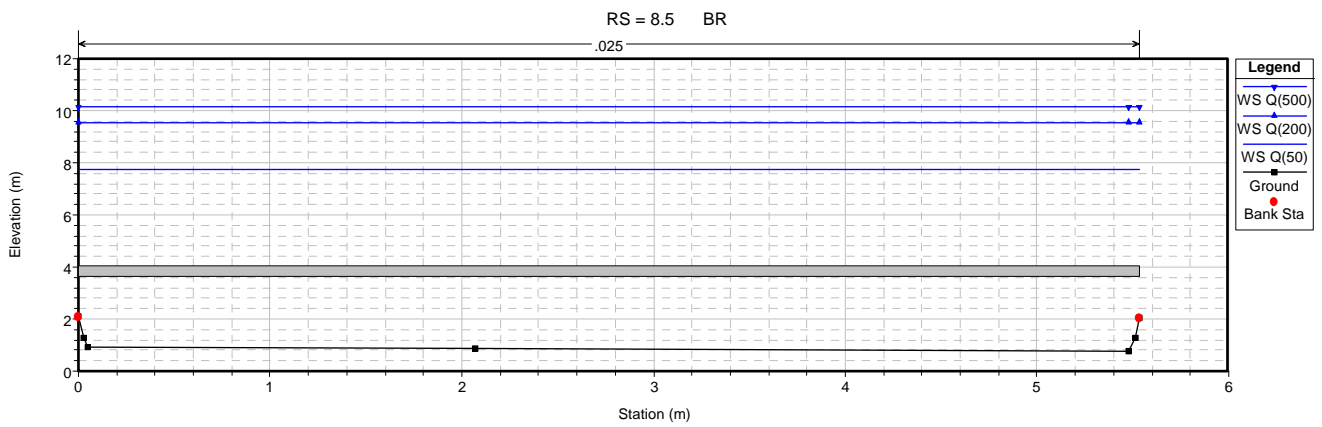
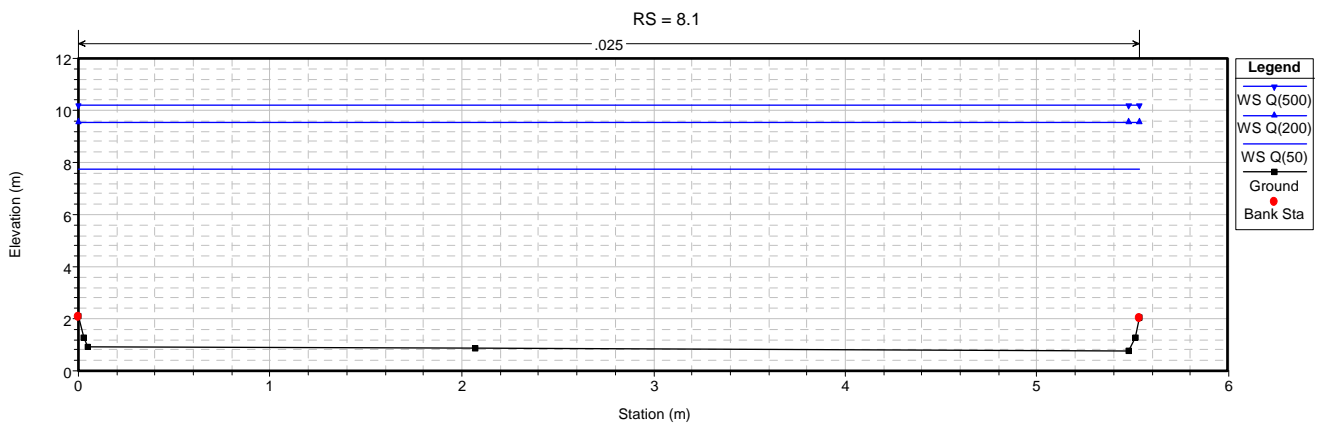
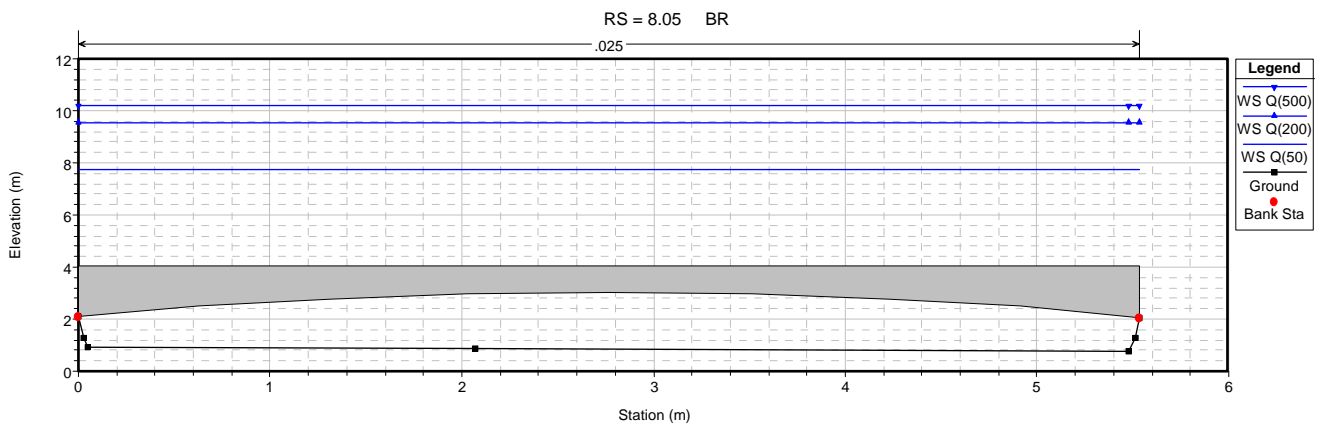




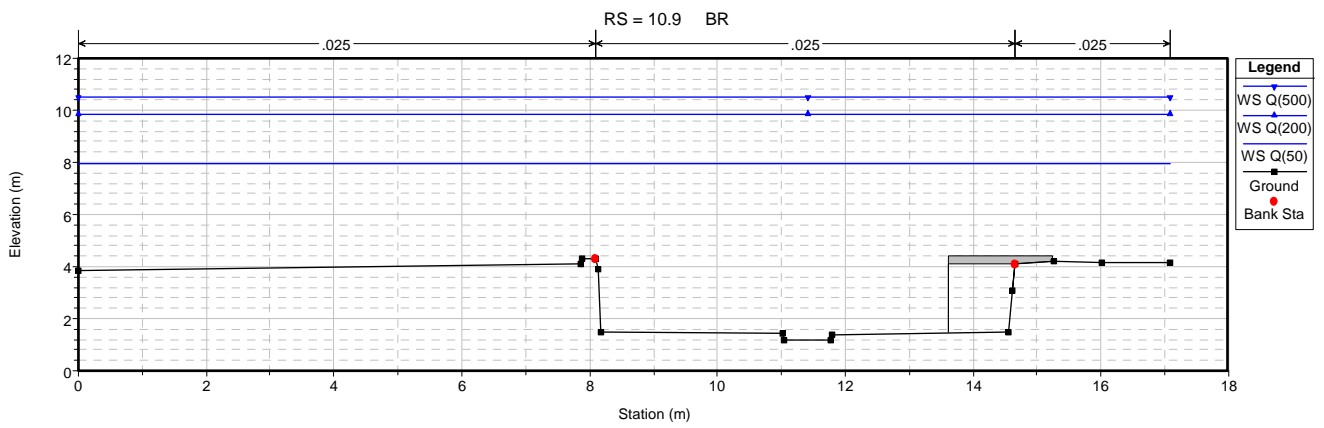
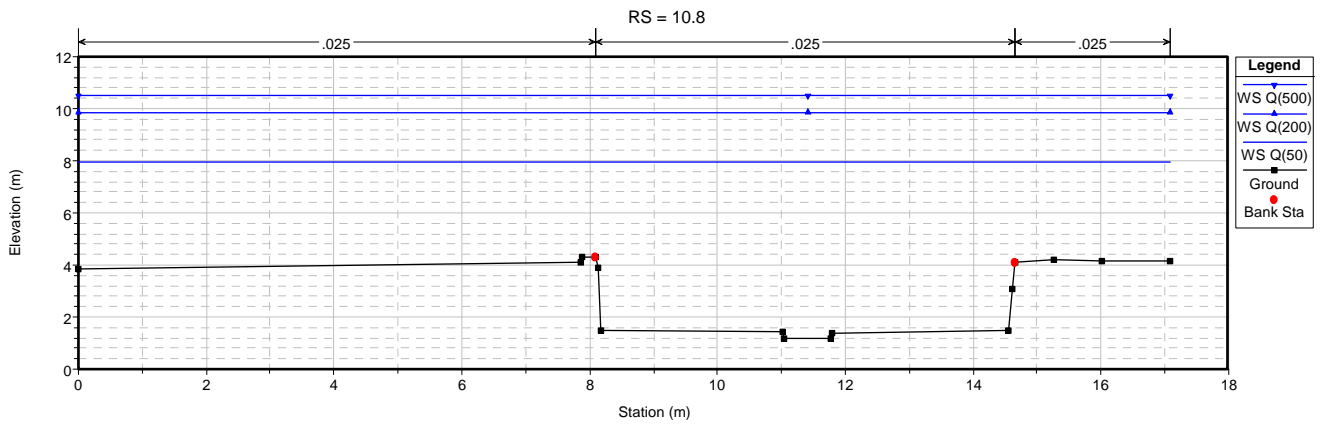
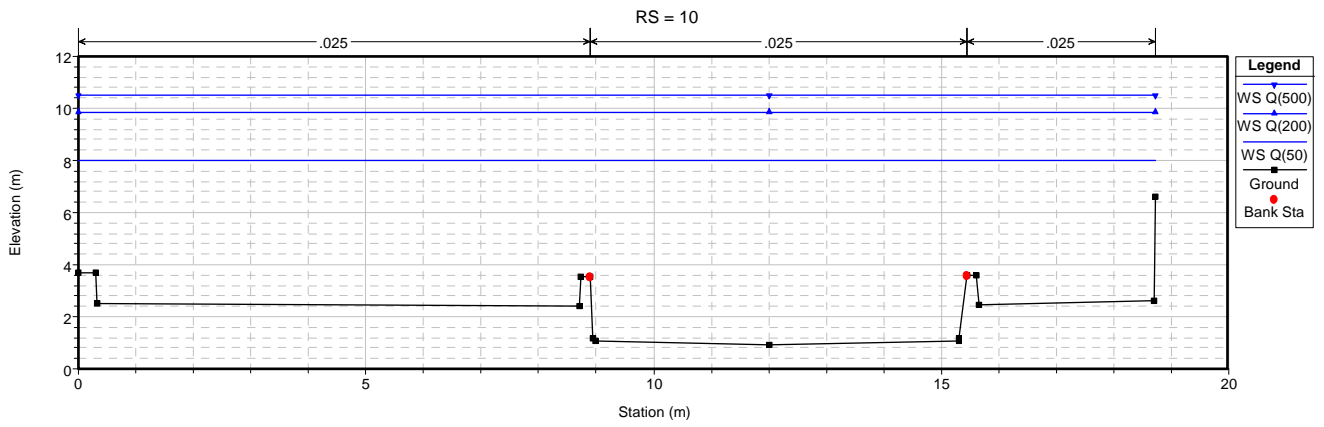
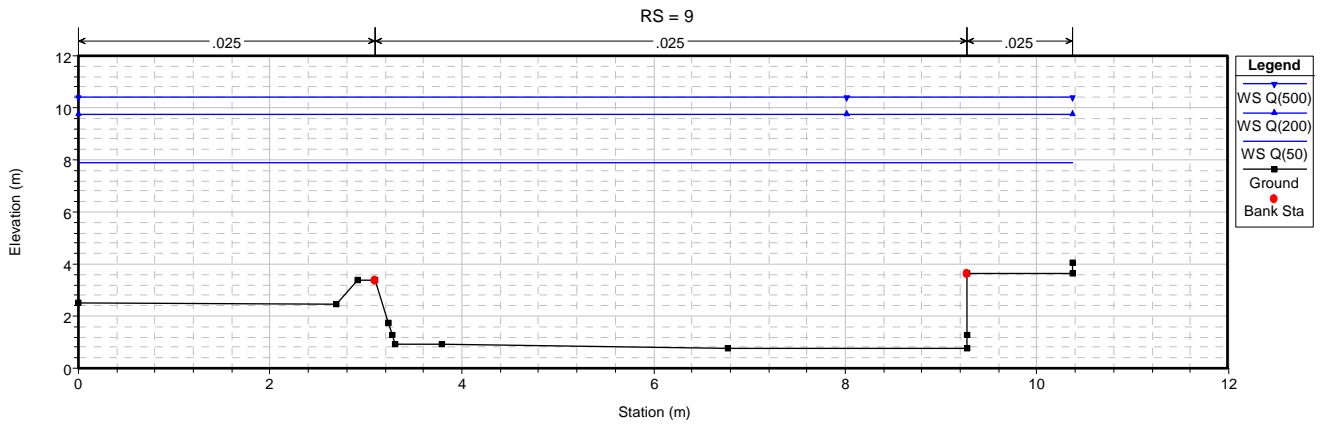


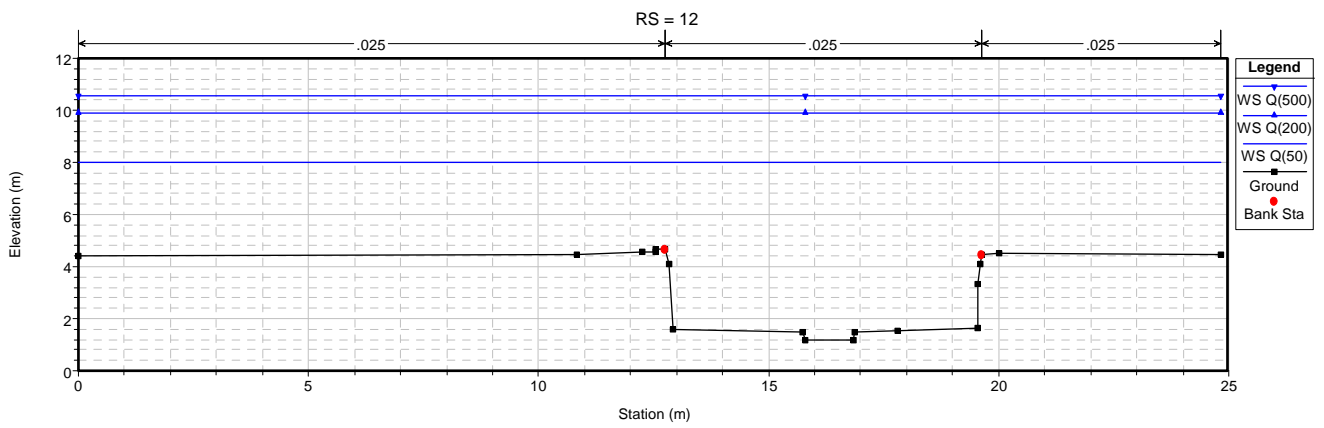
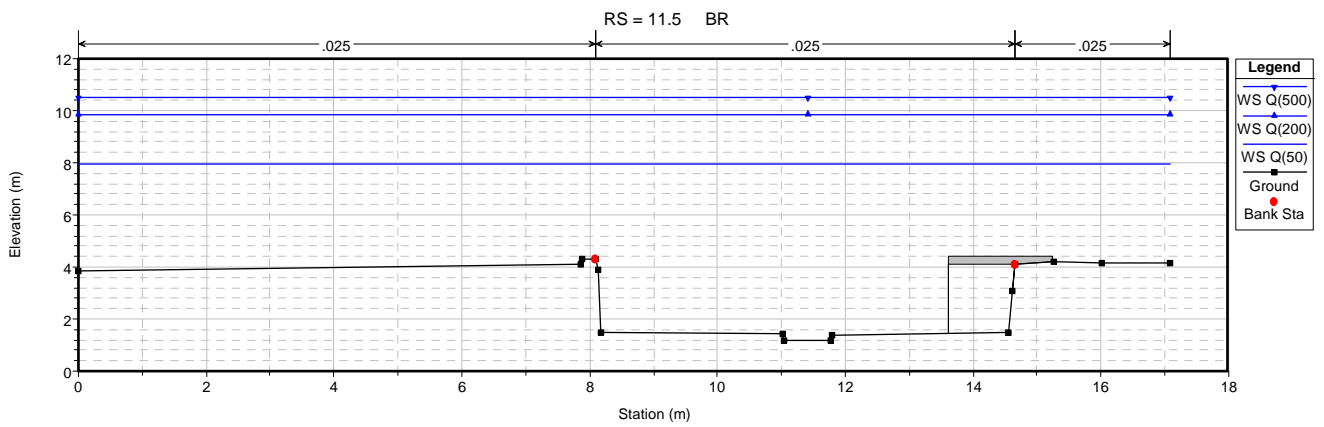
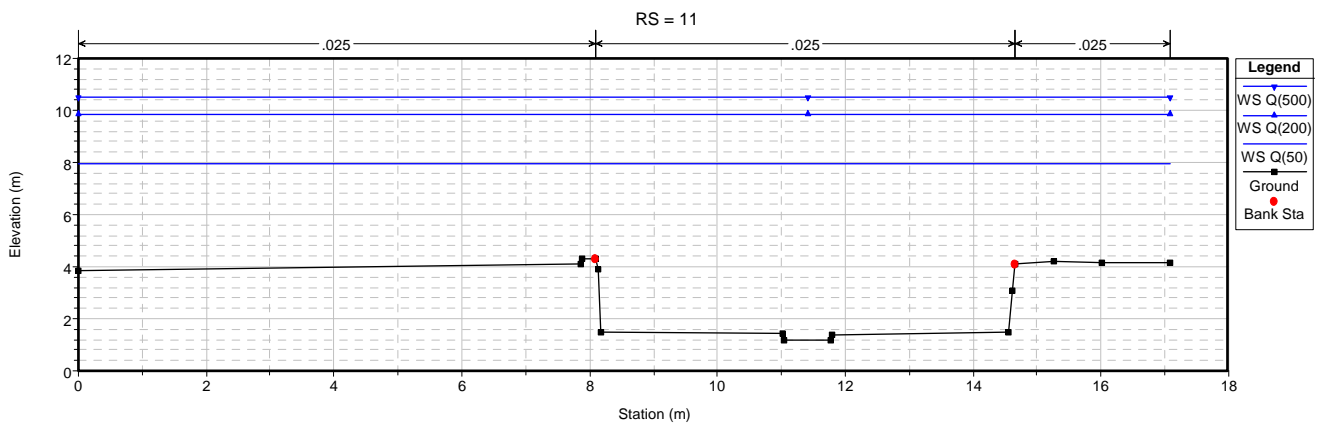
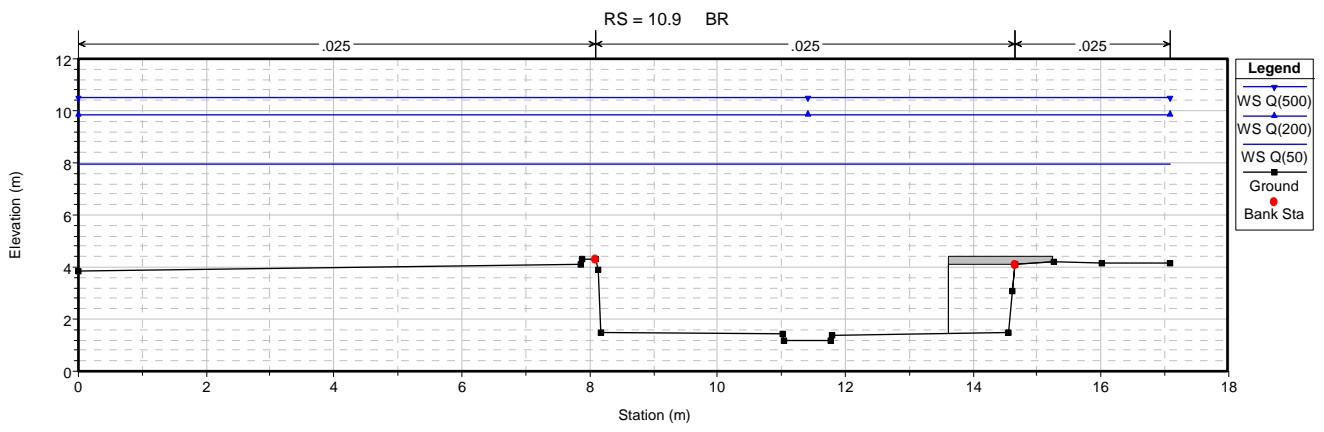


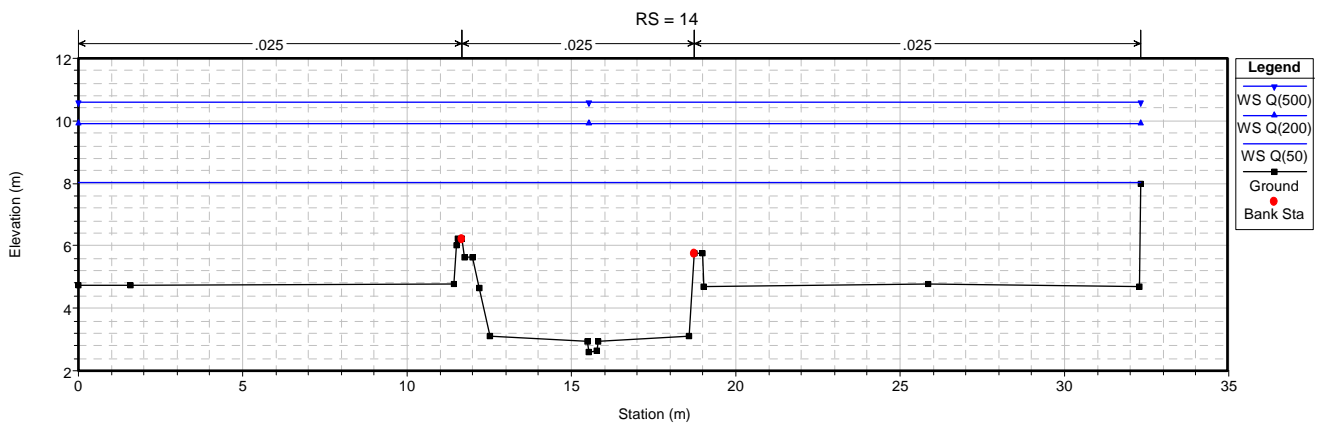
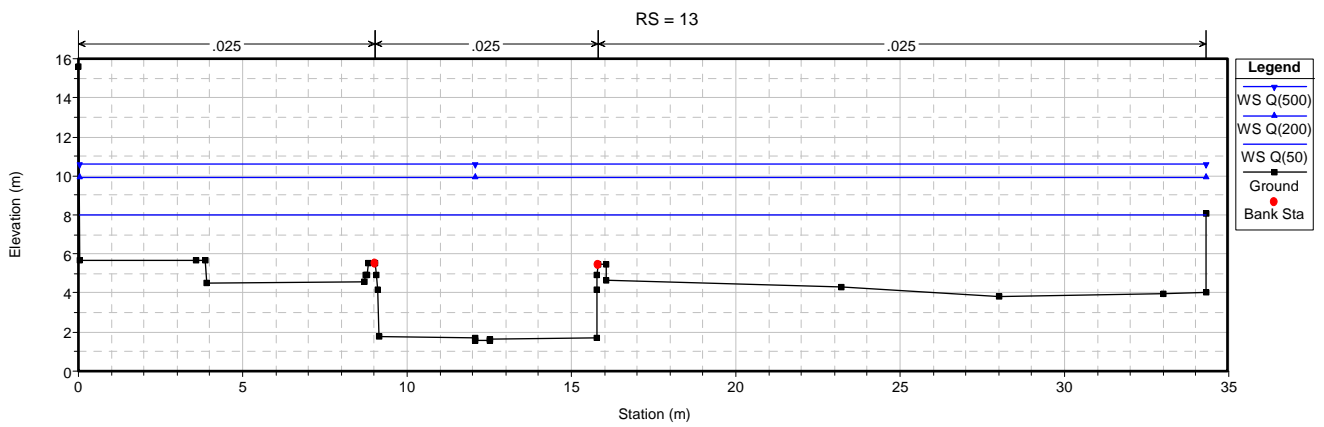
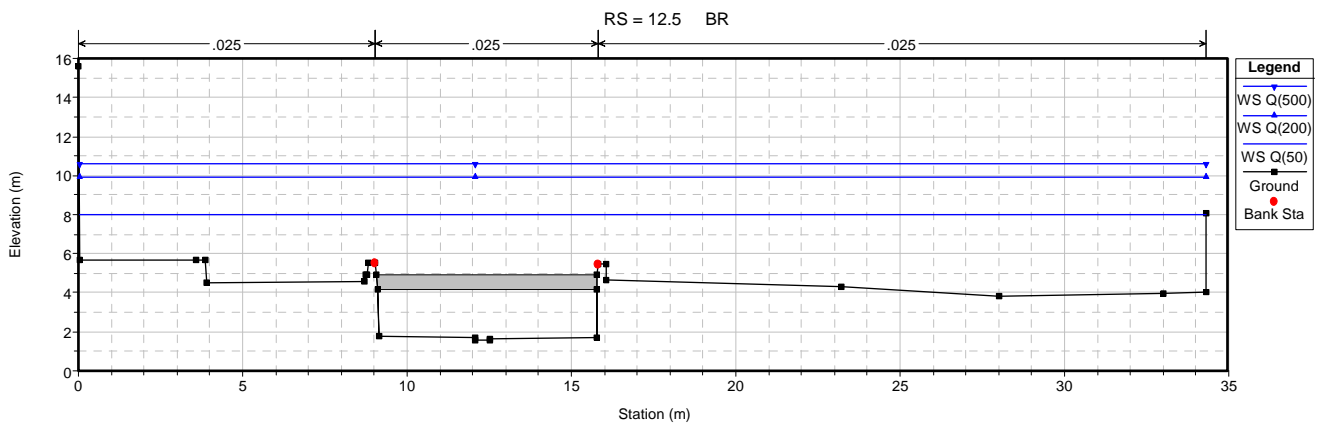
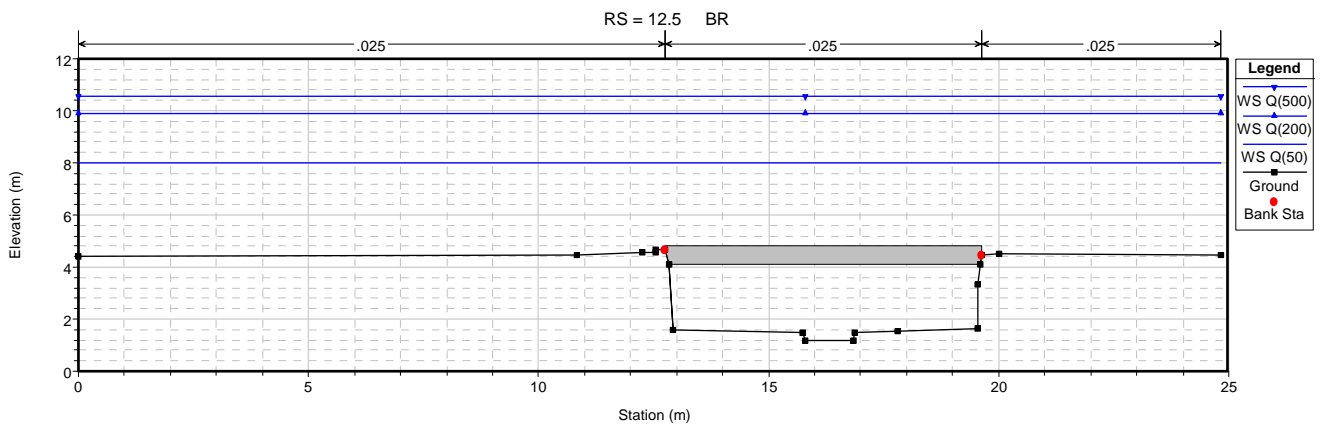


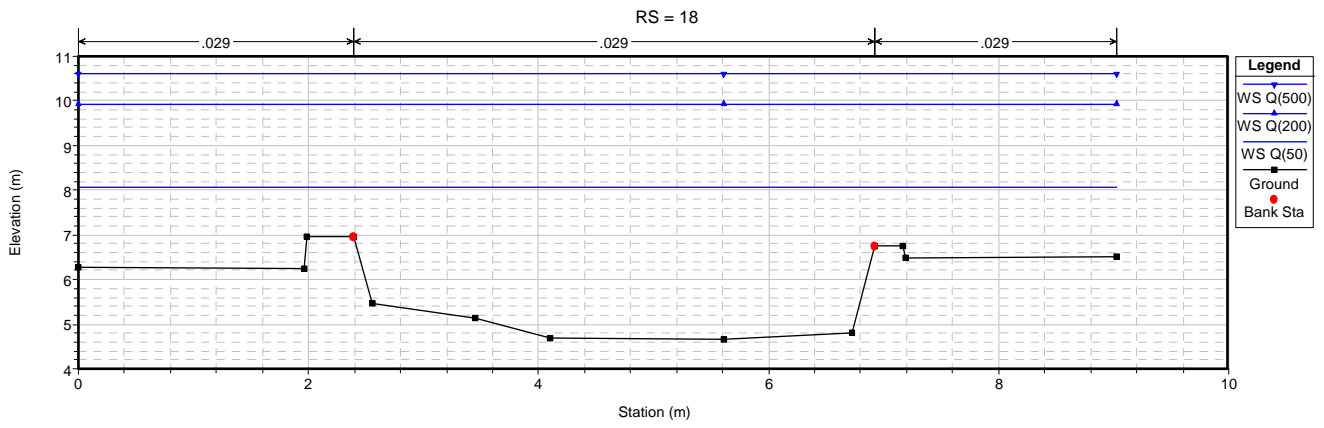
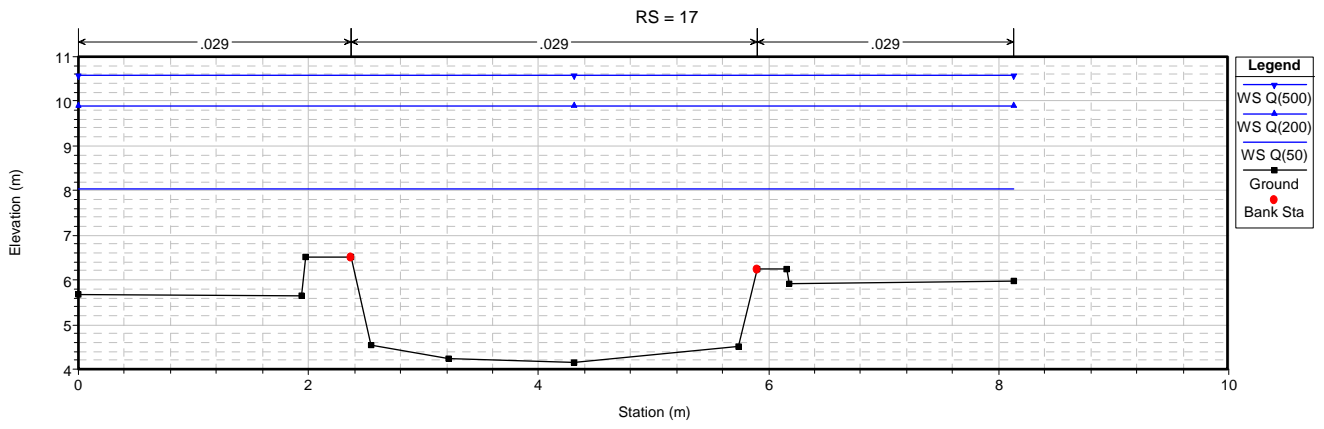
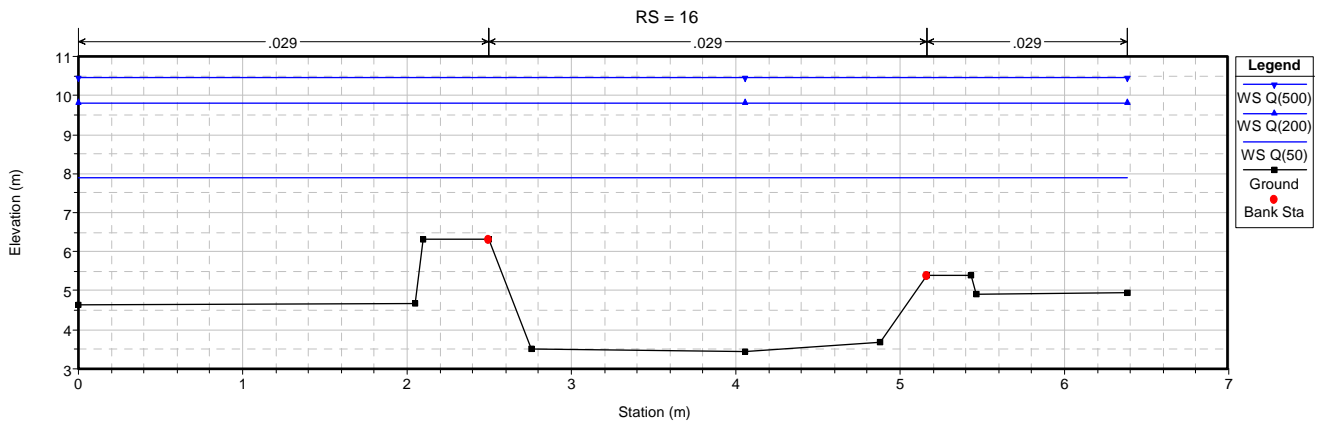
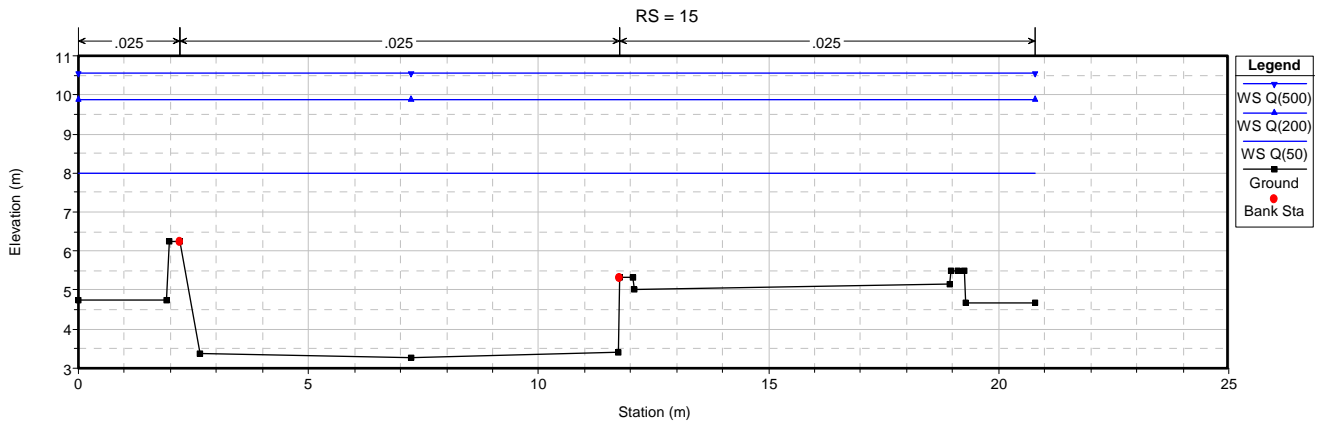


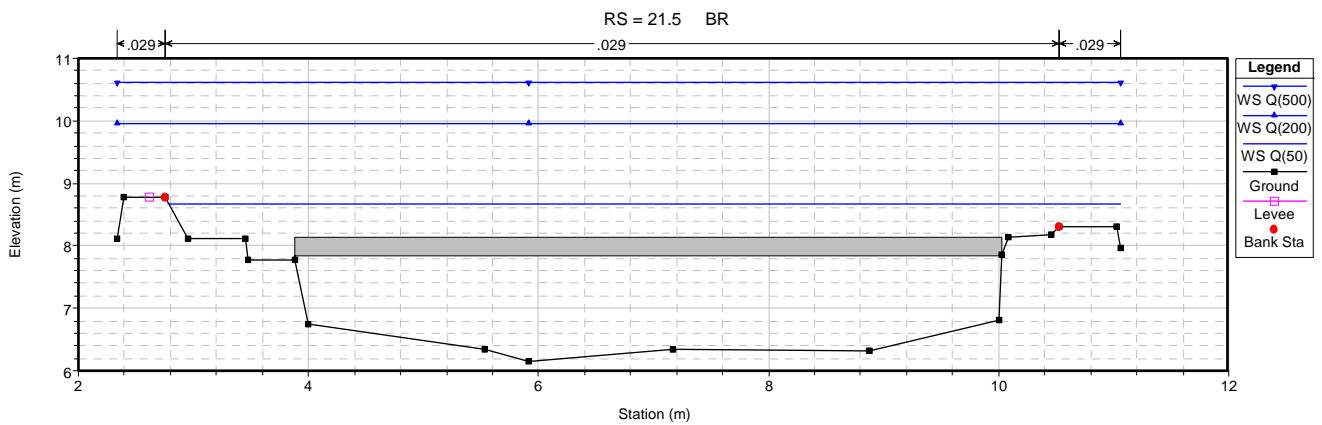
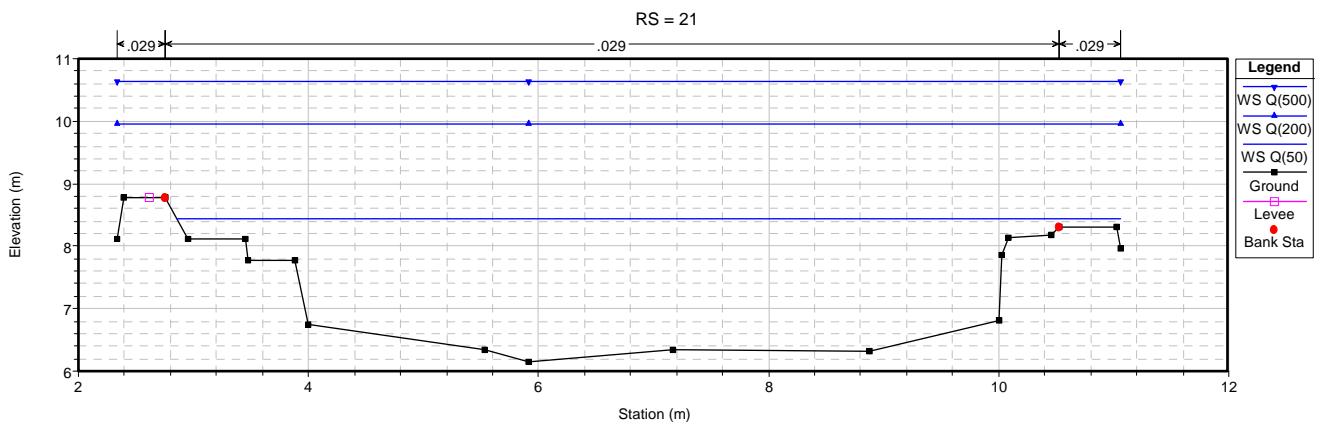
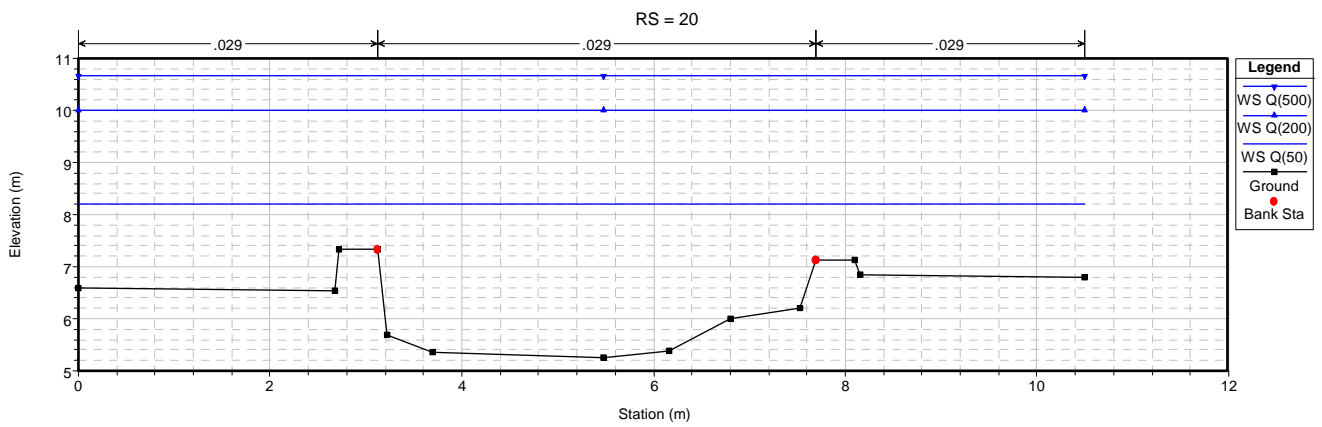
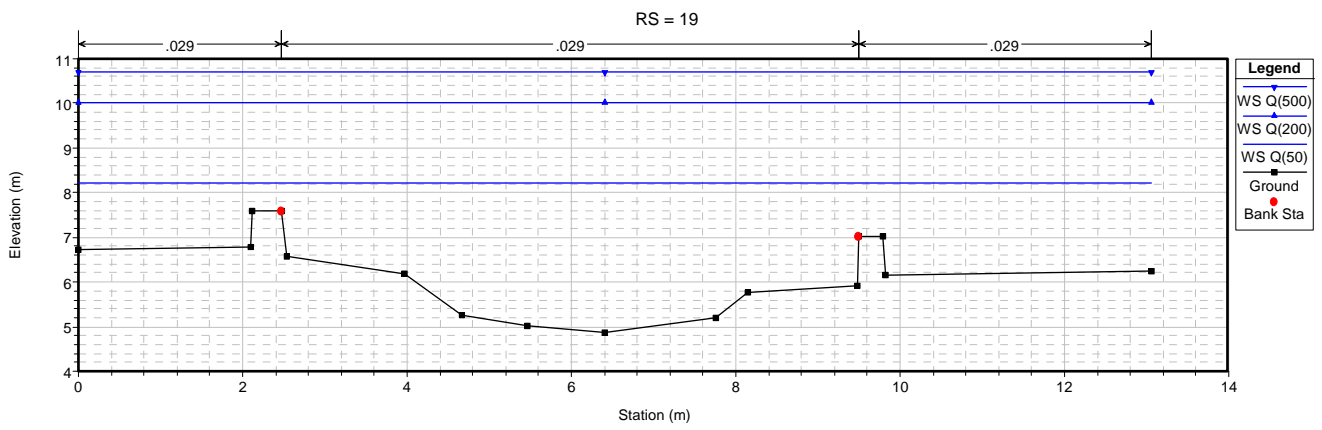


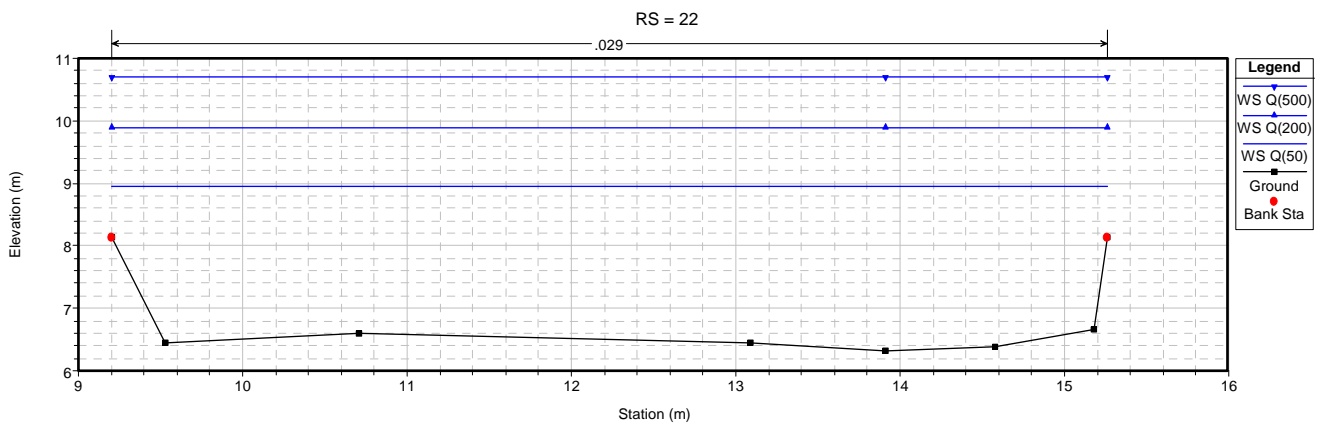
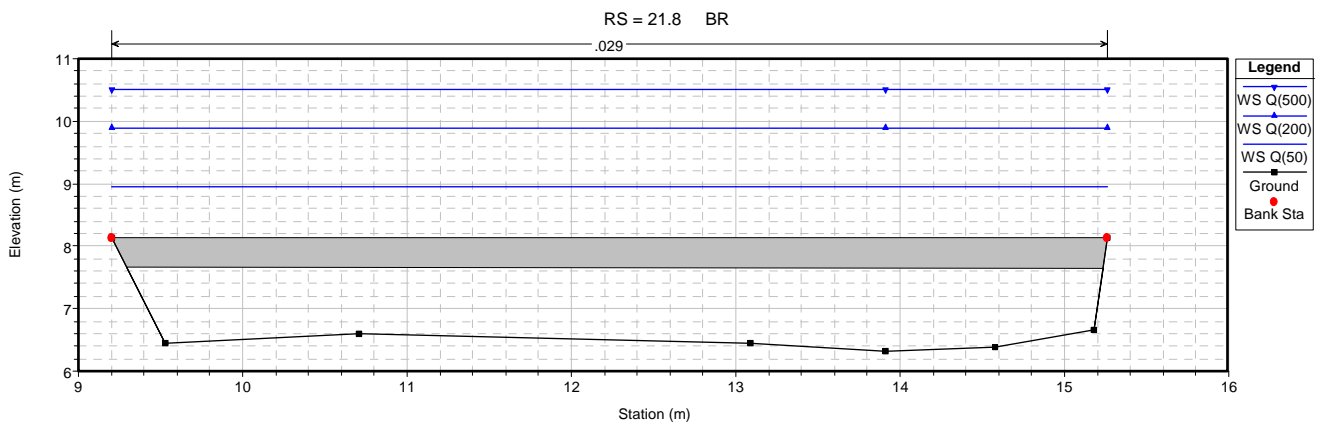
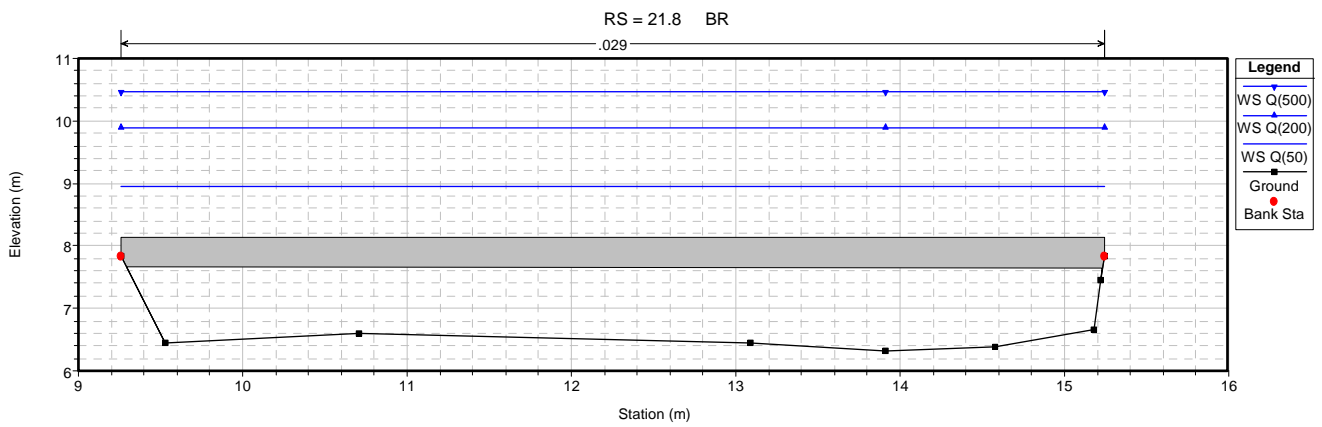
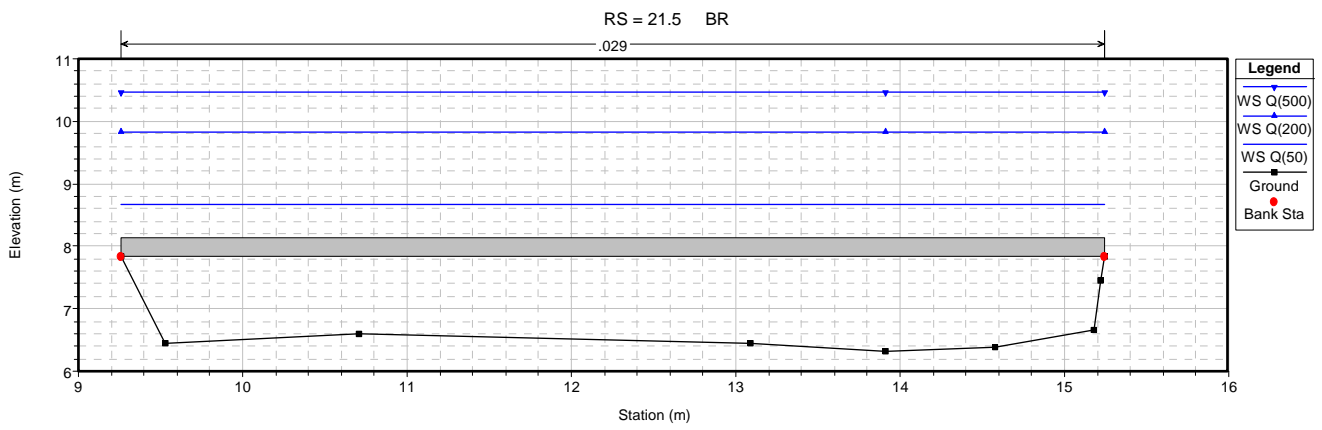


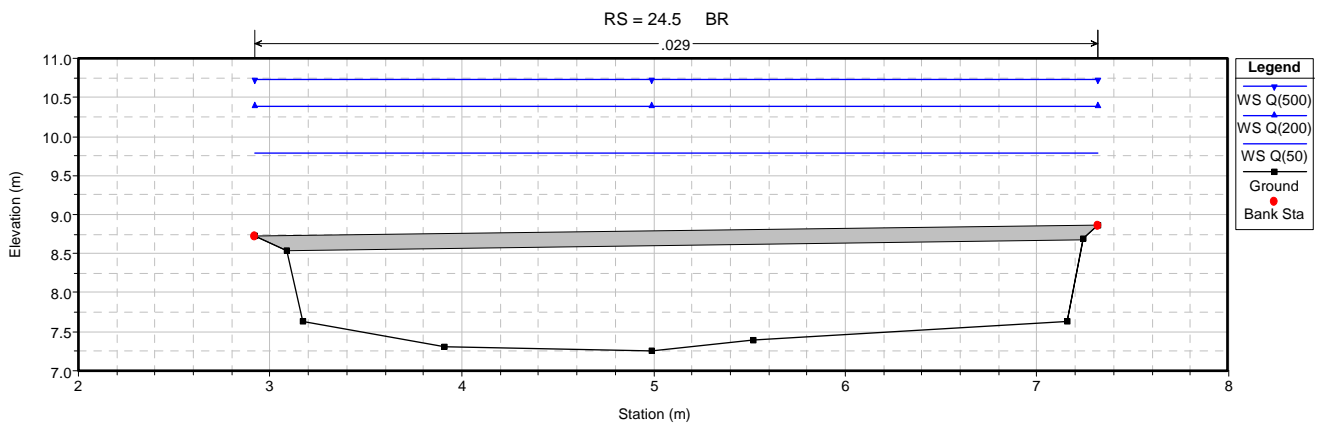
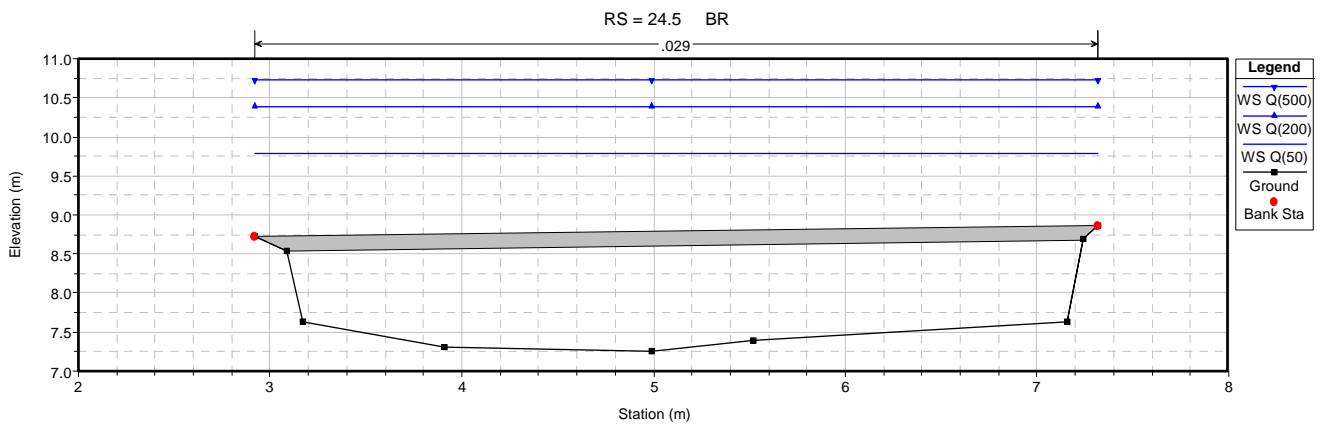
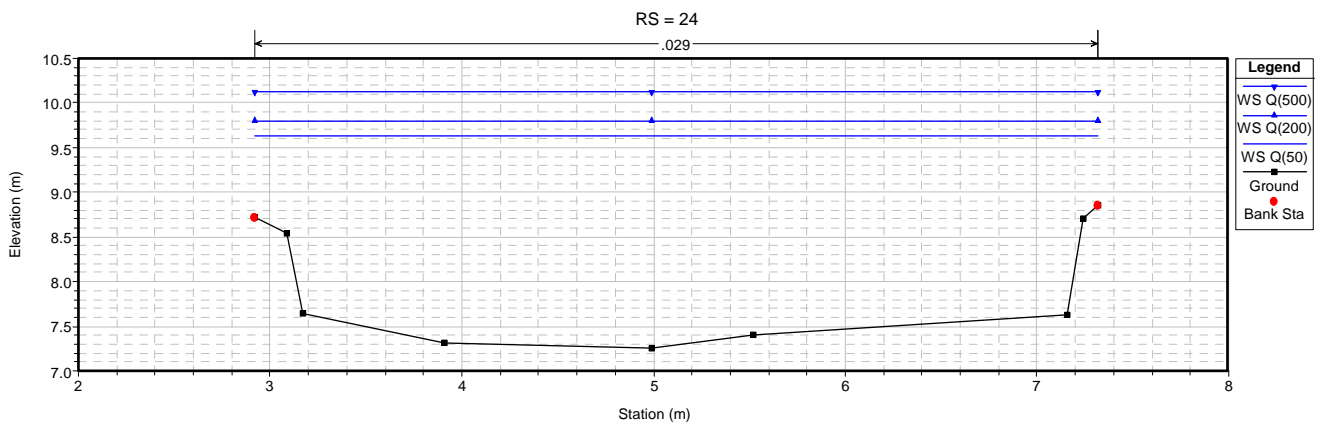
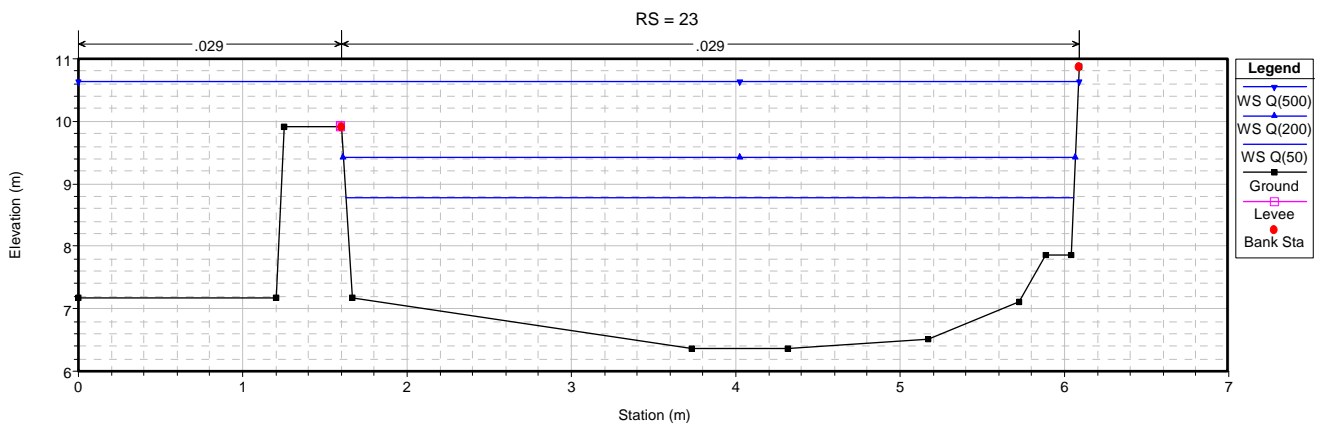


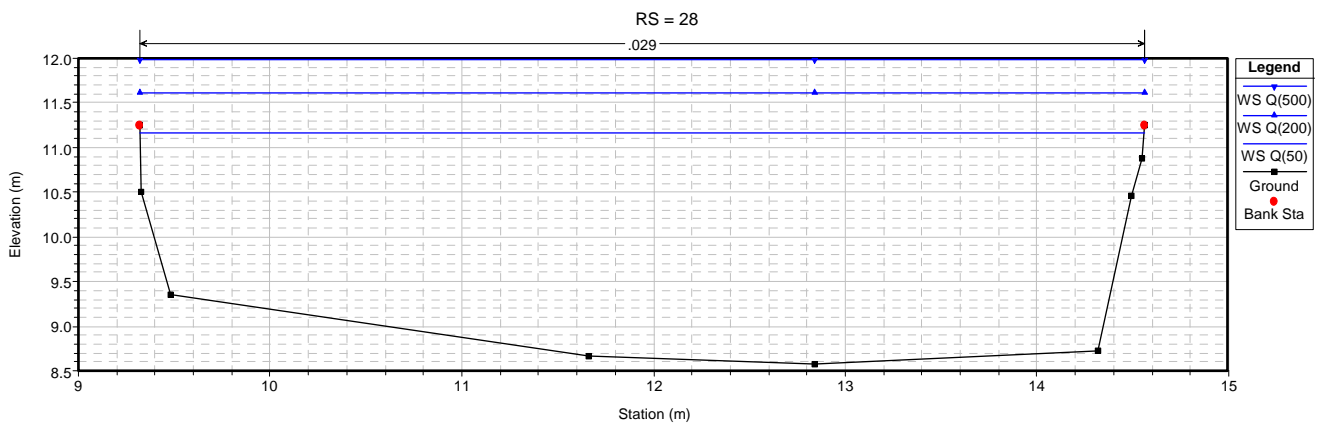
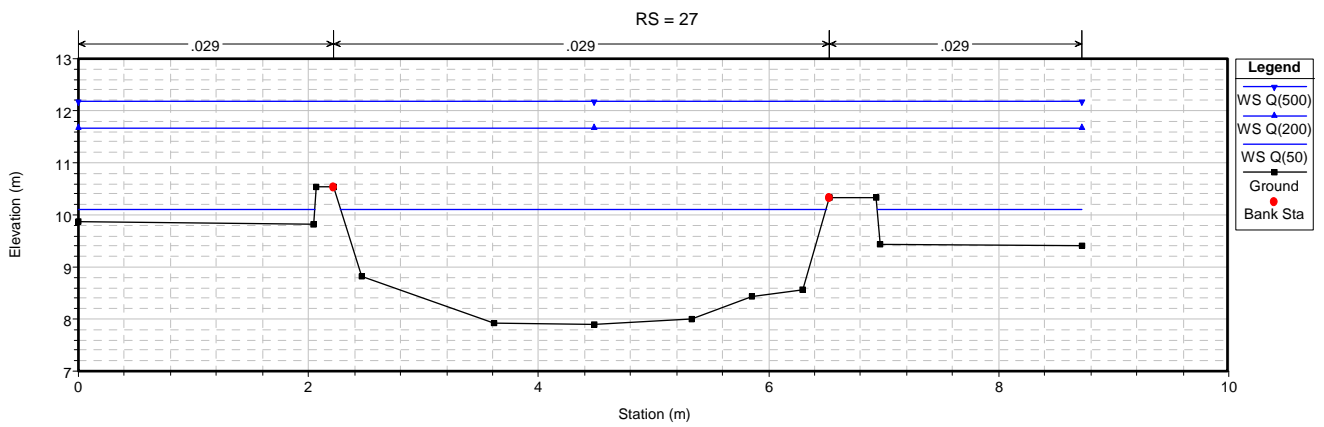
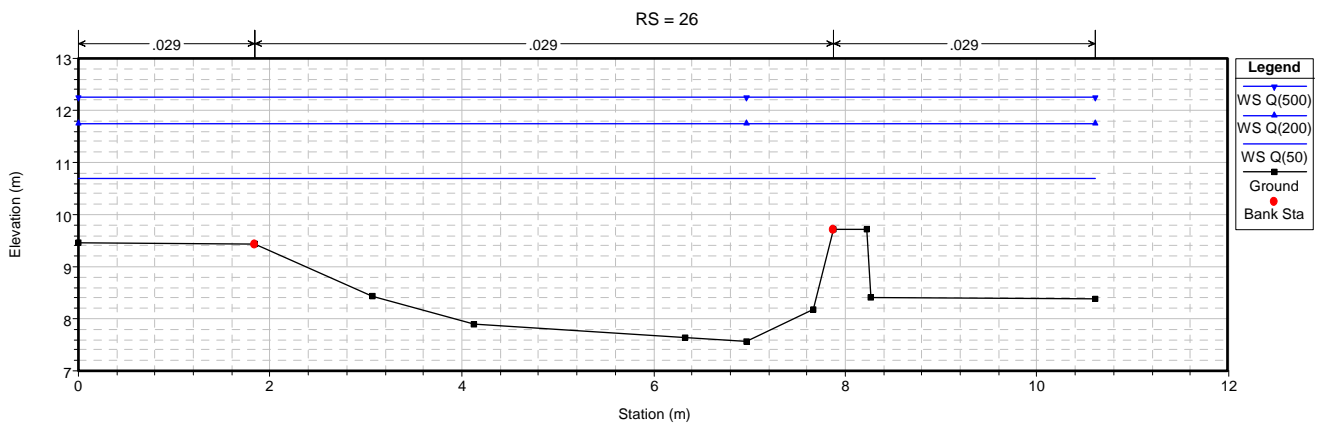
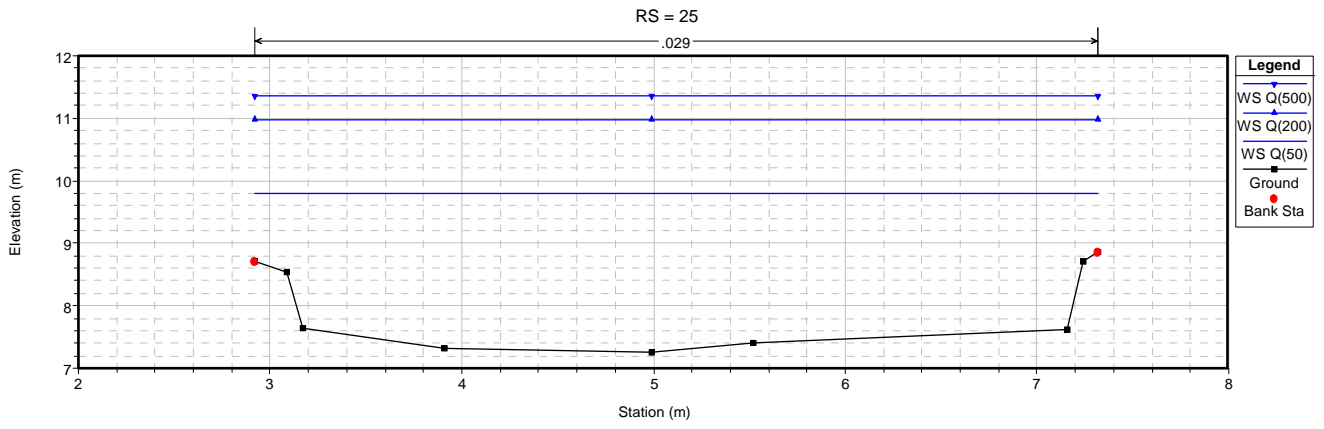




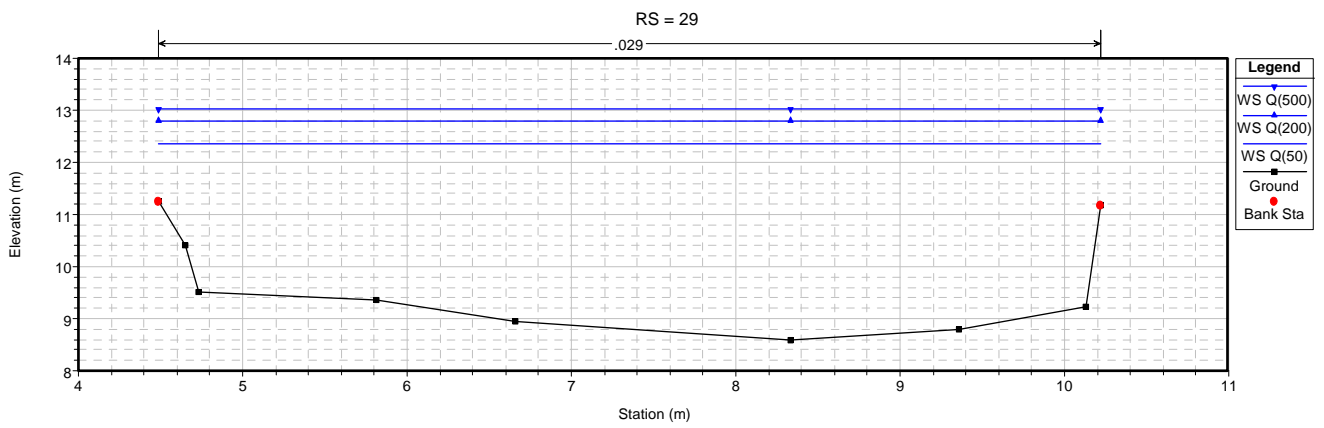
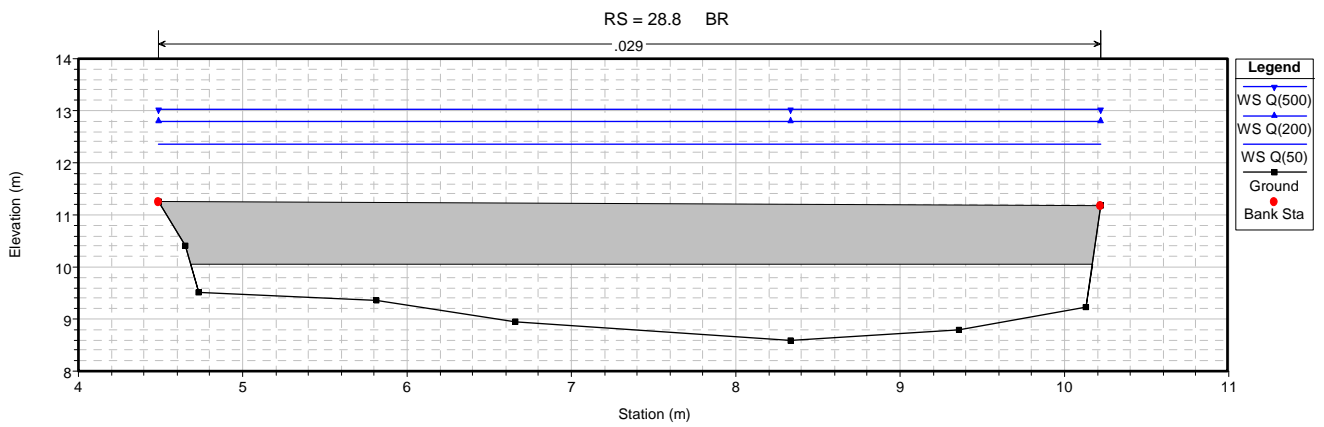
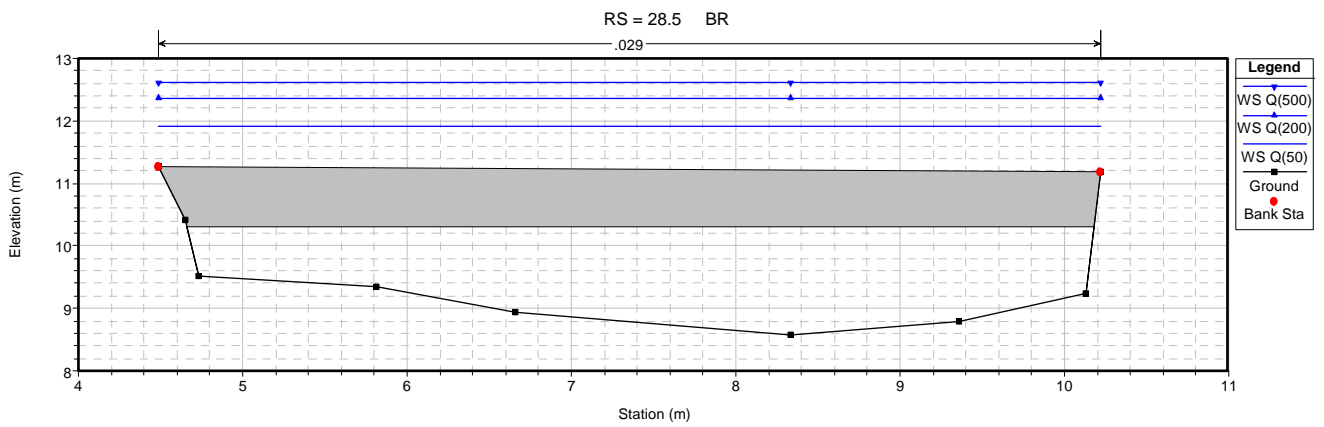
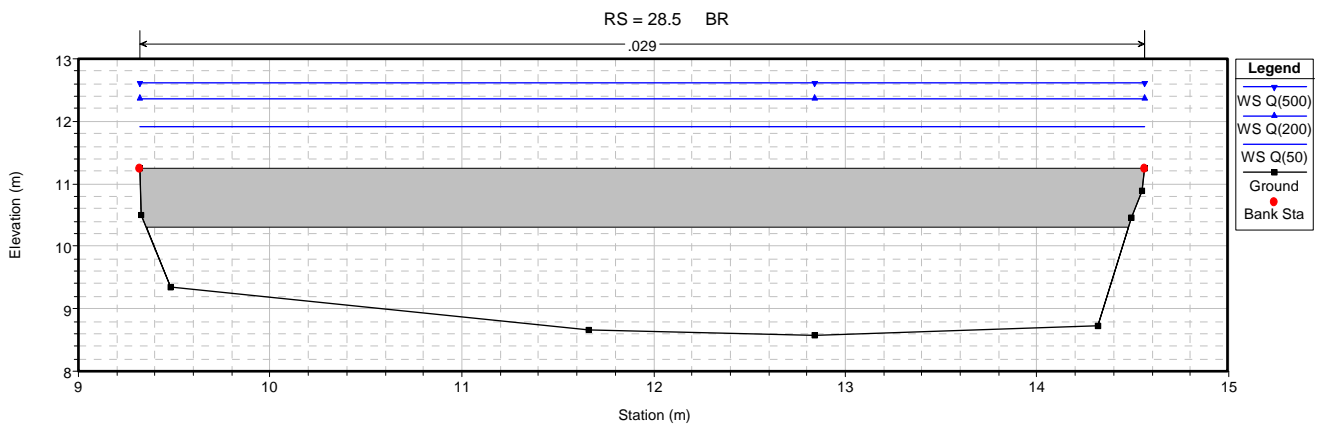


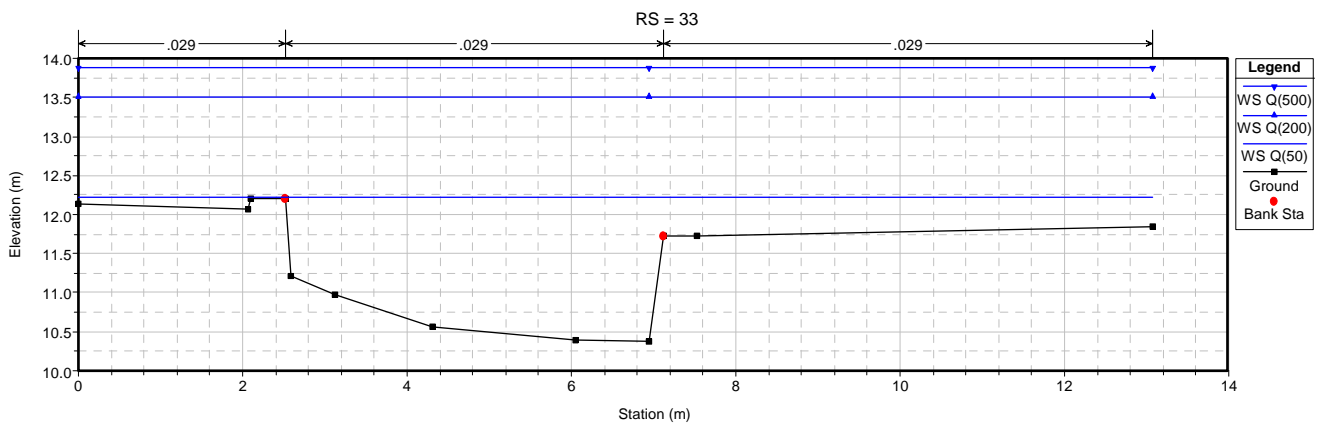
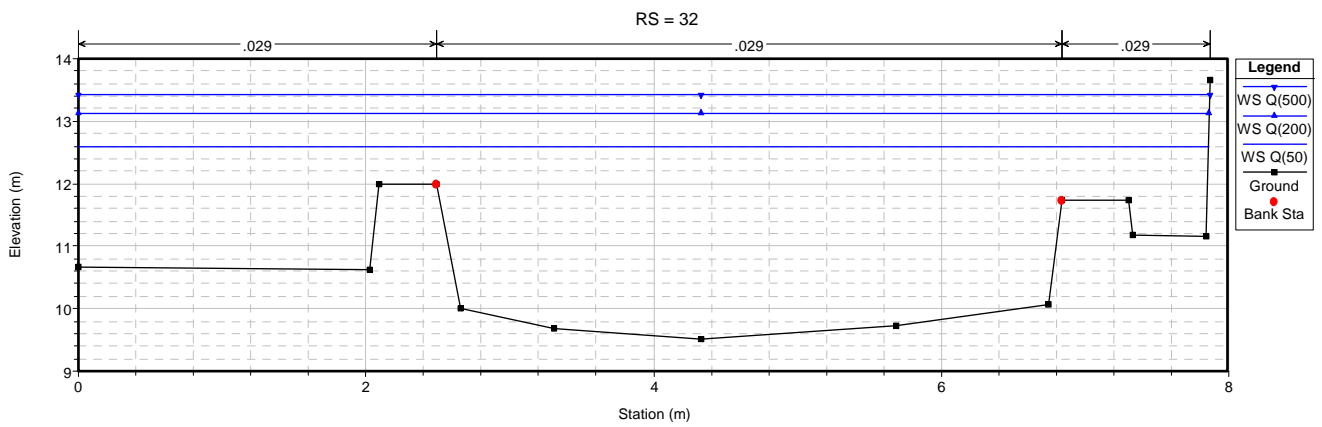
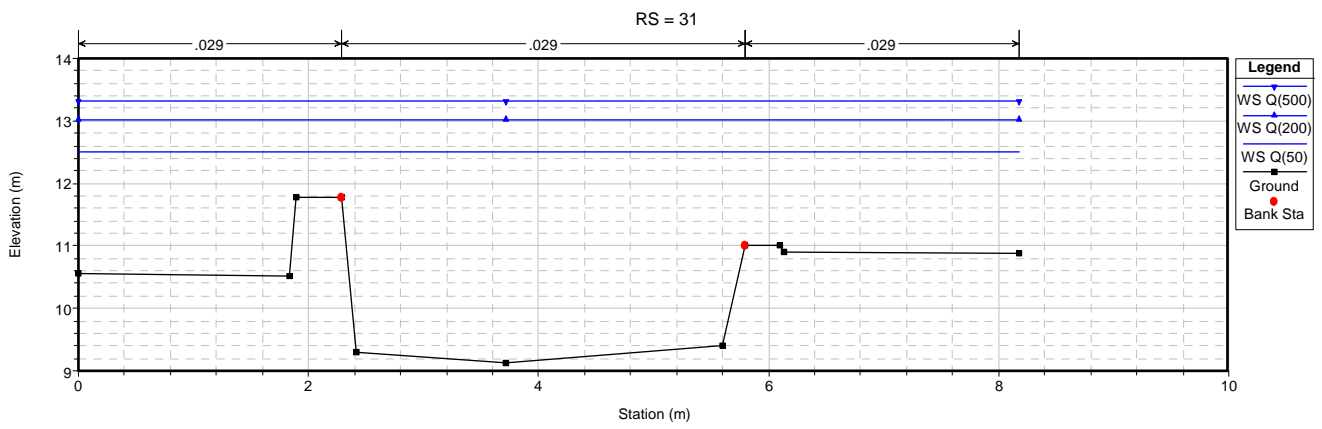
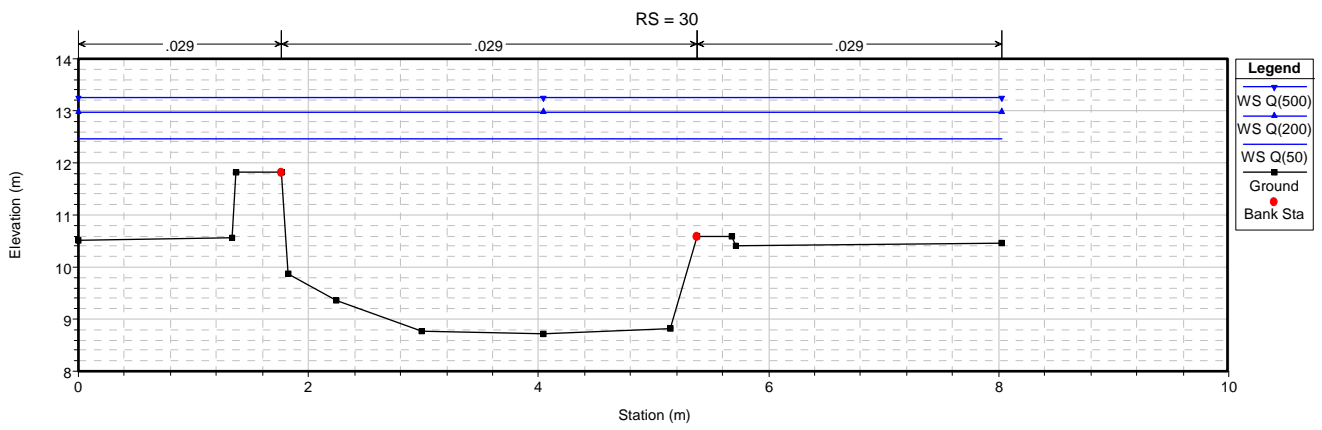


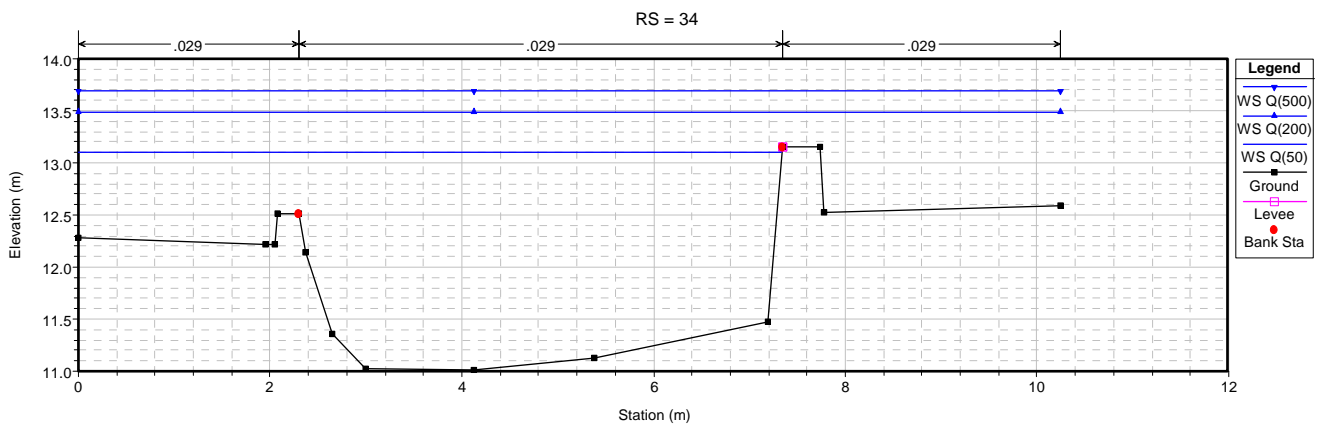














**TABELLE DELLE GRANDEZZE**

**IDRAULICHE SIGNIFICATIVE**

PER LE PORTATE

**T=50, 200, 500 ANNI**

**RIO CASAZZA**

Dalla sez. 1 alla sez. 34



### Rio Casazza T=50 anni

Sezioni	Portata totale (m <sup>3</sup> /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m)	Velocità (m/s)	Area bagnata (m <sup>2</sup> )	N° Froude
34	42	11.01	12.51	13.15	13.11	13.11	13.86	3.99	11.31	0.93
33	42	10.38	12.21	11.72	12.22	12.54	13.26	4.83	10.11	1.23
32	42	9.52	11.99	11.73	12.58	11.78	12.92	2.76	17.53	0.53
31	42	9.13	11.77	11	12.49	11.63	12.78	2.59	18.8	0.47
30	42	8.71	11.82	10.59	12.45	11.3	12.69	2.34	20.62	0.4
29	42	8.58	11.26	11.18	12.36	10.8	12.62	2.22	18.92	0.39
28.8	Bridge									
28.7	42	8.58	11.26	11.18	11.9	10.8	12.24	2.58	16.28	0.49
28.5	Bridge									
28	42	8.57	11.25	11.25	11.16	10.75	11.79	3.53	11.91	0.75
27	42	7.9	10.54	10.33	10.09	10.43	11.27	4.99	9.35	1.18
26	42	7.57	9.43	9.73	10.68	9.63	10.87	2.08	23.53	0.41
25	42	7.26	8.72	8.86	9.79	9.62	10.69	4.2	10	0.89
24.5	Bridge									
24	42	7.26	8.72	8.86	9.64	9.62	10.67	4.51	9.32	0.99
23	42	6.36	9.92	10.88	8.78	8.83	9.88	4.64	9.06	1.03
22	42	6.33	8.14	8.13	8.96	8.24	9.38	2.87	14.65	0.59
21.8	Bridge									
21.7	42	6.33	7.84	7.84	8.67	8.23	9.21	3.27	12.85	0.71
21.5	Bridge									
21	42	6.15	8.78	8.31	8.43	8.2	8.97	3.26	12.92	0.81
20	42	5.25	7.34	7.14	8.2	7.51	8.44	2.41	20.44	0.48
19	42	4.87	7.6	7.03	8.23	7	8.35	1.66	28.97	0.33
18	42	4.65	6.96	6.76	8.07	7.08	8.29	2.27	21.44	0.41
17	42	4.15	6.52	6.23	8.03	6.73	8.22	2.18	22.59	0.37
16	42	3.43	6.3	5.41	7.9	6.11	8.11	2.27	21.94	0.36
15.5	42	3.26	6.25	5.31	8.04	4.62	8.05	0.63	78.36	0.09
15	75	3.26	6.25	5.31	8	5.38	8.05	1.13	77.52	0.17
14	75	2.61	6.21	5.74	8.01	5.34	8.03	0.68	115.74	0.1
13	75	1.58	5.51	5.49	8.01	4.46	8.02	0.56	139.5	0.07
12.5	Bridge									
12	75	1.16	4.65	4.47	7.99	3.83	8.02	0.78	107.63	0.1
11.5	Bridge									
11	75	1.2	4.29	4.12	7.97	3.83	8.02	1.01	84.06	0.13
10.9	Bridge									
10.8	75	1.2	4.29	4.12	7.97	3.82	8.01	1.01	83.97	0.13
10	75	0.94	3.56	3.58	7.98	3.26	8	0.77	111.53	0.09
9	75	0.79	3.36	3.63	7.91	3.33	7.99	1.36	64.72	0.16
8.5	Bridge									
8.1	75	0.79	2.09	2.07	7.77	3.52	7.97	1.96	38.2	0.24
8.05	Bridge									
8	75	0.8	2.09	2.07	7.6	3.64	7.82	2.11	35.61	0.26
7.9	75	0.8	3.37	3.37	7.6	3.64	7.82	2.11	35.58	0.26
7.5	Bridge									
7.2	75	0.76	3.37	3.37	7.49	3.46	7.68	1.93	38.89	0.24
7	75	0.76	3.26	4.53	7.61	2.87	7.63	0.67	128.22	0.09
6	75	0.79	4.77	4.98	7.36	3.76	7.61	2.2	34.88	0.28
5.5	Bridge									
5	75	0.8	4.8	4.8	6.79	3.65	7.11	2.51	29.85	0.33
4.5	Bridge									
4	75	0.78	4.8	4.8	5.65	3.65	6.15	3.13	23.98	0.45

**Rio Casazza T=50 anni**

Sezioni	Portata totale (m <sup>3</sup> /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m)	Velocità (m/s)	Area bagnata (m <sup>2</sup> )	N° Froude
<b>3.5</b>	Bridge									
<b>3</b>	75	0.76	4.8	4.8	3.73	3.58	5.01	5.02	14.93	0.93
<b>2.9</b>	Bridge									
<b>2.8</b>	75	0.76	4.8	4.8	2.71	3.29	4.83	6.45	11.62	1.53
<b>2</b>	75	0.76	3.14	2.49	2.37	3.06	4.8	6.92	11.19	1.81
<b>1</b>	75	0.15	1.35	1.5	1.23	1.69	3.56	6.77	11.08	2.43



### Rio Casazza T=200 anni

Sezioni	Portata totale (m <sup>3</sup> /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m)	Velocità (m/s)	Area bagnata (m <sup>2</sup> )	N° Froude
34	61	11.01	12.51	13.15	13.49	13.49	14.28	4.25	16.57	0.9
33	61	10.38	12.21	11.72	13.5	12.82	13.78	2.62	26.83	0.5
32	61	9.52	11.99	11.73	13.12	12.25	13.58	3.28	21.73	0.57
31	61	9.13	11.77	11	13.02	12.07	13.42	3.08	23.14	0.51
30	61	8.71	11.82	10.59	12.97	11.72	13.32	2.87	24.76	0.46
29	61	8.58	11.26	11.18	12.8	11.32	13.21	2.85	21.4	0.47
28.8	Bridge									
28.7	61	8.58	11.26	11.18	12.35	11.32	12.89	3.24	18.85	0.57
28.5	Bridge									
28	61	8.57	11.25	11.25	11.6	11.28	12.54	4.29	14.23	0.83
27	61	7.9	10.54	10.33	11.68	10.85	12.09	3.12	22.98	0.54
26	61	7.57	9.43	9.73	11.74	10.03	11.93	2.1	34.76	0.35
25	61	7.26	8.72	8.86	10.97	10.22	11.79	4.02	15.17	0.69
24.5	Bridge									
24	61	7.26	8.72	8.86	9.8	10.22	11.68	6.08	10.04	1.28
23	61	6.36	9.92	10.88	9.42	9.42	10.76	5.13	11.9	1
22	61	6.33	8.14	8.13	9.9	8.72	10.35	3	20.35	0.52
21.8	Bridge									
21.7	61	6.33	7.84	7.84	9.83	8.72	10.31	3.08	19.79	0.54
21.5	Bridge									
21	61	6.15	8.78	8.31	9.96	8.63	10.26	2.43	26.16	0.43
20	61	5.25	7.34	7.14	9.99	7.84	10.13	1.88	39.27	0.29
19	61	4.87	7.6	7.03	10.02	7.34	10.1	1.39	52.32	0.21
18	61	4.65	6.96	6.76	9.92	7.46	10.07	1.94	38.13	0.28
17	61	4.15	6.52	6.23	9.89	7.13	10.05	1.99	37.76	0.27
16	61	3.43	6.3	5.41	9.79	6.63	9.98	2.24	33.97	0.29
15.5	61	3.26	6.25	5.31	9.91	4.98	9.93	0.61	117.35	0.08
15	110	3.26	6.25	5.31	9.87	5.78	9.93	1.11	116.54	0.14
14	110	2.61	6.21	5.74	9.89	5.59	9.91	0.65	176.51	0.08
13	110	1.58	5.51	5.49	9.89	4.94	9.91	0.54	204.01	0.06
12.5	Bridge									
12	110	1.16	4.65	4.47	9.88	5.05	9.9	0.79	154.36	0.09
11.5	Bridge									
11	110	1.2	4.29	4.12	9.84	4.79	9.89	1.09	115.87	0.12
10.9	Bridge									
10.8	110	1.2	4.29	4.12	9.83	4.79	9.88	1.09	115.8	0.12
10	110	0.94	3.56	3.58	9.84	3.59	9.87	0.89	146.43	0.1
9	110	0.79	3.36	3.63	9.75	3.96	9.86	1.58	83.81	0.17
8.5	Bridge									
8.1	110	0.79	2.09	2.07	9.56	4.29	9.82	2.29	48.11	0.25
8.05	Bridge									
8	110	0.8	2.09	2.07	9.36	4.43	9.67	2.44	45.02	0.27
7.9	110	0.8	3.37	3.37	9.36	4.44	9.67	2.45	44.99	0.27
7.5	Bridge									
7.2	110	0.76	3.37	3.37	9.25	4.2	9.51	2.23	49.33	0.25
7	110	0.76	3.26	4.53	9.42	3.3	9.44	0.74	174.23	0.08
6	110	0.79	4.77	4.98	9.09	4.56	9.41	2.51	45.24	0.29
5.5	Bridge									
5	110	0.8	4.8	4.8	8.83	4.47	9.21	2.75	40.05	0.31
4.5	Bridge									
4	110	0.78	4.8	4.8	8.11	4.48	8.58	3.05	36.11	0.36

### Rio Casazza T=200 anni

Sezioni	Portata totale (m <sup>3</sup> /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m)	Velocità (m/s)	Area bagnata (m <sup>2</sup> )	N° Froude
<b>3.5</b>	Bridge									
<b>3</b>	110	0.76	4.8	4.8	6.6	4.4	7.31	3.74	29.39	0.49
<b>2.9</b>	Bridge									
<b>2.8</b>	110	0.76	4.8	4.8	3.99	3.99	5.56	5.55	19.82	1.01
<b>2</b>	110	0.76	3.14	2.49	2.65	3.14	5.44	7.74	16.78	1.86
<b>1</b>	110	0.15	1.35	1.5	1.92	1.92	2.43	3.51	37.49	0.92

### Rio Casazza T=500 anni

Sezioni	Portata totale (m <sup>3</sup> /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m)	Velocità (m/s)	Area bagnata (m <sup>2</sup> )	N° Froude
34	73	11.01	12.51	13.15	13.69	13.69	14.58	4.55	18.61	0.93
33	73	10.38	12.21	11.72	13.87	12.99	14.16	2.65	31.77	0.47
32	73	9.52	11.99	11.73	13.42	12.49	13.97	3.56	24.08	0.6
31	73	9.13	11.77	11	13.32	12.3	13.79	3.36	25.58	0.54
30	73	8.71	11.82	10.59	13.26	12	13.68	3.16	27.09	0.49
29	73	8.58	11.26	11.18	13.03	11.61	13.55	3.22	22.71	0.52
28.8	Bridge									
28.7	73	8.58	11.26	11.18	12.62	11.61	13.28	3.58	20.38	0.61
28.5	Bridge									
28	73	8.57	11.25	11.25	11.98	11.58	13.01	4.51	16.2	0.82
27	73	7.9	10.54	10.33	12.19	11.07	12.6	3.17	27.4	0.51
26	73	7.57	9.43	9.73	12.25	10.22	12.46	2.2	40.18	0.35
25	73	7.26	8.72	8.86	11.36	10.55	12.31	4.32	16.88	0.7
24.5	Bridge									
24	73	7.26	8.72	8.86	10.12	10.55	12.19	6.37	11.47	1.26
23	73	6.36	9.92	10.88	10.64	9.77	11.28	3.72	21.85	0.6
22	73	6.33	8.14	8.13	10.71	8.99	11.13	2.89	25.25	0.45
21.8	Bridge									
21.7	73	6.33	7.84	7.84	10.6	9	11.05	2.99	24.38	0.47
21.5	Bridge									
21	73	6.15	8.78	8.31	10.64	8.87	10.93	2.39	32.11	0.39
20	73	5.25	7.34	7.14	10.68	8.04	10.82	1.94	46.47	0.27
19	73	4.87	7.6	7.03	10.71	7.49	10.79	1.44	61.32	0.2
18	73	4.65	6.96	6.76	10.6	7.67	10.77	2.03	44.28	0.27
17	73	4.15	6.52	6.23	10.57	7.35	10.74	2.11	43.27	0.27
16	73	3.43	6.3	5.41	10.45	6.91	10.68	2.43	38.21	0.3
15.5	73	3.26	6.25	5.31	10.6	5.37	10.62	0.66	131.57	0.08
15	130	3.26	6.25	5.31	10.55	5.97	10.61	1.18	130.66	0.14
14	130	2.61	6.21	5.74	10.58	5.68	10.6	0.68	198.57	0.08
13	130	1.58	5.51	5.49	10.57	5.07	10.59	0.58	227.43	0.06
12.5	Bridge									
12	130	1.16	4.65	4.47	10.56	5.23	10.59	0.84	171.28	0.09
11.5	Bridge									
11	130	1.2	4.29	4.12	10.52	5	10.58	1.18	127.65	0.13
10.9	Bridge									
10.8	130	1.2	4.29	4.12	10.52	5	10.58	1.18	127.57	0.13
10	130	0.94	3.56	3.58	10.53	3.8	10.57	0.98	159.36	0.1
9	130	0.79	3.36	3.63	10.42	4.25	10.55	1.75	90.77	0.18
8.5	Bridge									
8.1	130	0.79	2.09	2.07	10.19	4.69	10.51	2.52	51.59	0.26
8.05	Bridge									
8	130	0.8	2.09	2.07	9.97	4.85	10.34	2.7	48.23	0.29
7.9	130	0.8	3.37	3.37	9.97	4.85	10.34	2.7	48.2	0.29
7.5	Bridge									
7.2	130	0.76	3.37	3.37	9.84	4.59	10.15	2.46	52.82	0.26
7	130	0.76	3.26	4.53	10.04	3.55	10.07	0.81	190.18	0.09
6	130	0.79	4.77	4.98	9.64	5.15	10.03	2.76	48.57	0.31
5.5	Bridge									
5	130	0.8	4.8	4.8	9.34	4.92	9.81	3.05	42.6	0.33
4.5	Bridge									
4	130	0.78	4.8	4.8	8.38	4.93	8.99	3.47	37.45	0.4

**Rio Casazza T=500 anni**

Sezioni	Portata totale (m <sup>3</sup> /s)	Fondo alveo (m)	Argine sinistro (m)	Argine destro (m)	Pelo libero (m)	Profondità critica (m)	Energia (m)	Velocità (m/s)	Area bagnata (m <sup>2</sup> )	N° Froude
<b>3.5</b>	Bridge									
<b>3</b>	130	0.76	4.8	4.8	6.17	4.84	7.33	4.78	27.22	0.66
<b>2.9</b>	Bridge									
<b>2.8</b>	130	0.76	4.8	4.8	4.36	4.36	6.11	5.87	22.16	1.01
<b>2</b>	130	0.76	3.14	2.49	2.73	3.14	5.96	8.45	18.39	1.99
<b>1</b>	130	0.15	1.35	1.5	1.38	2.04	4.76	8.57	17.05	2.84