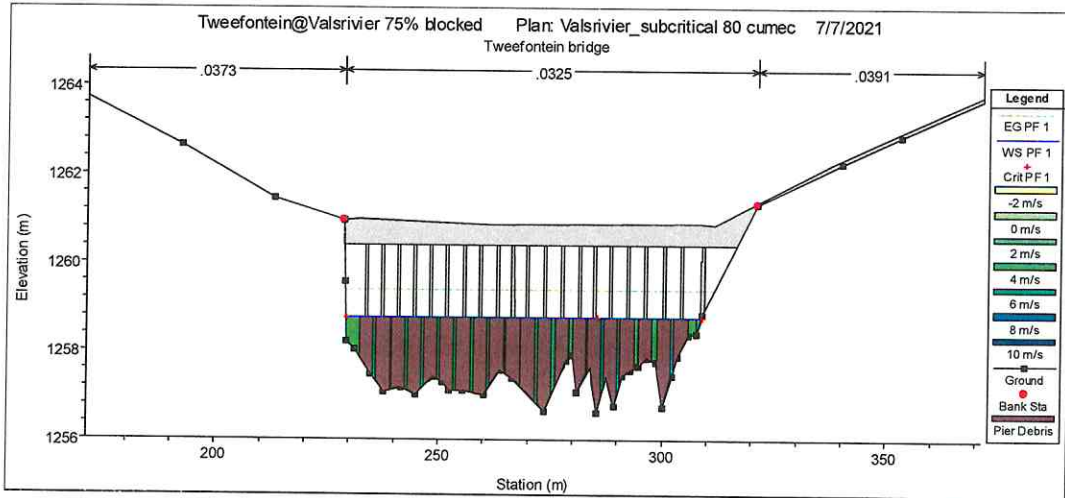




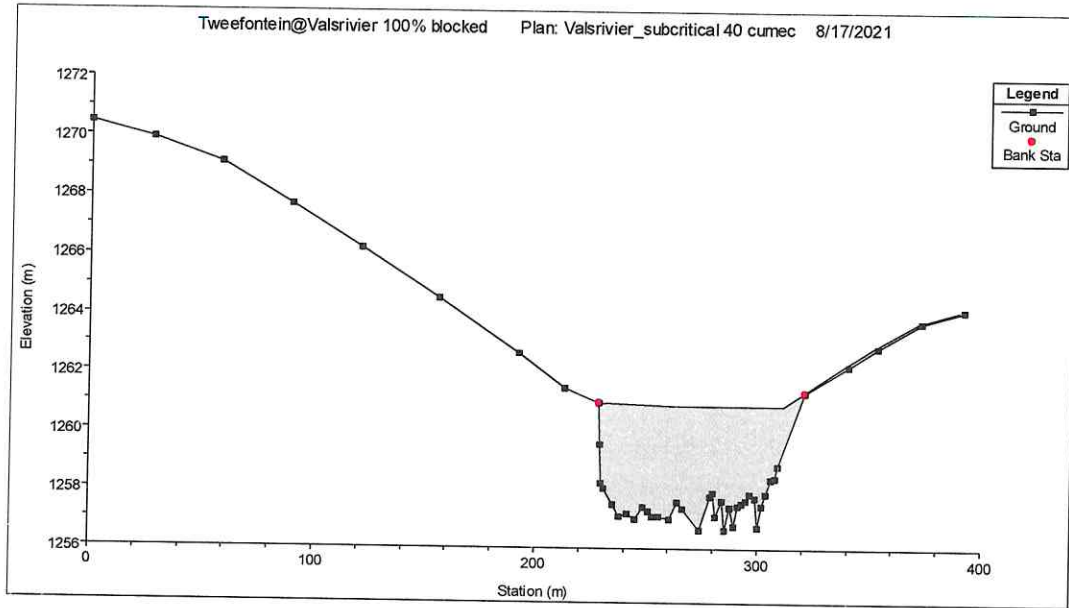
BRIDGE OPENING 75% BLOCKED



Discharge (m ³ /s)	Water Level (m)	Energy Level (m)	Discharge (m ³ /s)	Water Level (m)	Energy Level (m)
20.00	1261.21	1261.21	300.00	1262.85	1262.96
30.00	1261.33	1261.34	350.00	1263.04	1263.16
40.00	1261.45	1261.46	400.00	1263.22	1263.35
50.00	1261.54	1261.55	450.00	1263.39	1263.54
60.00	1261.62	1261.64	500.00	1263.55	1263.71
70.00	1261.70	1261.72	600.00	1263.83	1264.01
80.00	1261.77	1261.79	700.00	1264.09	1264.3
100.00	1261.90	1261.93	800.00	1264.33	1264.56
150.00	1262.18	1262.23	900.00	1264.56	1264.8
200.00	1262.42	1262.49	1000.00	1264.78	1265.04
250.00	1262.65	1262.74	1027.00		



BRIDGE OPENING 100% BLOCKED



Discharge (m ³ /s)	Water Level (m)	Energy Level (m)	Discharge (m ³ /s)	Water Level (m)	Energy Level (m)
20.00	1261.29	1261.3	300.00	1262.98	1263.07
30.00	1261.42	1261.43	350.00	1263.17	1263.28
40.00	1261.53	1261.54	400.00	1263.35	1263.47
50.00	1261.62	1261.63	450.00	1263.51	1263.64
60.00	1261.71	1261.72	500.00	1263.66	1263.81
70.00	1261.79	1261.81	600.00	1263.94	1264.11
80.00	1261.86	1261.89	700.00	1264.20	1264.39
100.00	1262.00	1262.03	800.00	1264.43	1264.65
150.00	1262.30	1262.34	900.00	1264.65	1264.88
200.00	1262.55	1262.61	1000.00	1264.86	1265.11
250.00	1262.78	1262.85	1027.00	1264.91	1265.17



ADDENDUM B:

SENSITIVITY ANALYSIS - Chezy k roughness parameter

ADDENDUM B: SENSITIVITY ANALYSIS – CHEZY K ROUGHNESS PARAMETER

River Station	Chezy k values used in backwater analysis									
	k				0.8k				1.2k	
	E.G. Elevation (m)	Froude no.	E.G. Elevation (m)	Froude	E.G. Elevation (m)	Froude no.	(EG 1.2k - EG 1.0k)	(Froude 1.2k - Froude 1.0k)	(EG 0.8k - EG 1.0k)	(Froude 1.0k - Froude 0.8k)
55	1261.79	0.19	1261.77	0.19	1261.81	0.18	0.02	-0.01	-0.02	0.00
54	1261.75	0.36	1261.72	0.37	1261.77	0.35	0.02	-0.01	-0.02	-0.01
53	1261.58	0.56	1261.56	0.59	1261.59	0.53	0.01	-0.03	-0.01	-0.03
52	1261.28	0.60	1261.26	0.64	1261.29	0.56	0.01	-0.04	-0.01	-0.04
50	1260.40	0.68	1260.38	0.72	1260.42	0.65	0.02	-0.03	-0.02	-0.04
47	1259.74	0.57	1259.71	0.61	1259.76	0.54	0.02	-0.03	-0.02	-0.04
46	1259.64	0.32	1259.62	0.33	1259.67	0.32	0.03	0.00	-0.03	-0.01
45	1259.58	0.29	1259.55	0.29	1259.60	0.28	0.02	-0.01	-0.02	0.00
41	1259.31	0.74	1259.29	0.78	1259.33	0.71	0.02	-0.03	-0.02	-0.04
39.1	1259.19	0.13	1259.16	0.14	1259.21	0.13	0.02	0.00	-0.02	-0.01
38.9	1259.18	0.11	1259.15	0.11	1259.20	0.11	0.02	0.00	-0.02	0.00
38	1259.14	0.51	1259.12	0.55	1259.17	0.48	0.03	-0.03	-0.03	-0.04
34	1258.20	0.94	1258.20	0.94	1258.20	0.94	0.00	0.00	0.00	0.00
31	1257.01	0.36	1257.00	0.37	1257.04	0.36	0.03	0.00	-0.03	-0.01
29	1256.93	0.45	1256.92	0.45	1256.95	0.44	0.02	-0.01	-0.02	0.00
28	1256.88	0.33	1256.87	0.33	1256.90	0.33	0.02	0.00	-0.02	0.00
27	1256.83	0.37	1256.82	0.37	1256.84	0.36	0.01	-0.01	-0.01	0.00
25	1256.67	0.91	1256.67	0.97	1256.68	0.86	0.01	-0.05	-0.01	-0.06
23	1256.49	0.28	1256.47	0.28	1256.51	0.27	0.02	-0.01	-0.02	0.00

River Station	Chezy k values used in backwater analysis									
	k		0.8k		0.8k		1.2k			
	E.G. Elevation (m)	Froude no.	E.G. Elevation (m)	Froude no.	E.G. Elevation (m)	Froude no.	(EG 1.2k - EG 1.0k)	(Froude 1.2k - Froude 1.0k)	(EG 0.8k - EG 1.0k)	(Froude 1.0k - Froude 0.8k)
21	1256.45	0.23	1256.43	0.24	1256.46	0.23	0.01	0.00	-0.01	-0.01
20	1256.35	0.34	1256.34	0.34	1256.37	0.33	0.02	-0.01	-0.02	0.00
19	1256.28	0.17	1256.27	0.17	1256.29	0.17	0.01	0.00	-0.01	0.00
17	1256.26	0.09	1256.25	0.09	1256.27	0.09	0.01	0.00	-0.01	0.00
15	1256.26	0.10	1256.25	0.10	1256.27	0.10	0.01	0.00	-0.01	0.00
14	1256.25	0.17	1256.24	0.17	1256.26	0.17	0.01	0.00	-0.01	0.00
13	1256.24	0.28	1256.23	0.28	1256.25	0.28	0.01	0.00	-0.01	0.00
11	1256.12	0.99	1256.12	0.99	1256.12	0.98	0.00	-0.01	0.00	0.00
10	1255.94	0.30	1255.93	0.30	1255.96	0.29	0.02	-0.01	-0.02	0.00
9	1255.89	0.23	1255.88	0.23	1255.90	0.23	0.01	0.00	-0.01	0.00
8	1255.86	0.41	1255.85	0.41	1255.87	0.41	0.01	0.00	-0.01	0.00
7	1255.75	1.00	1255.75	1.00	1255.75	1.00	0.00	0.00	0.00	0.00
6	1255.43	1.36	1255.45	1.42	1255.40	0.77	-0.03	-0.59	0.03	-0.06
4	1255.30	0.11	1255.29	0.11	1255.30	0.11	0.00	0.00	0.00	0.00
3	1255.29	0.17	1255.28	0.17	1255.29	0.17	0.00	0.00	0.00	0.00
2	1255.28	0.12	1255.28	0.12	1255.28	0.12	0.00	0.00	0.00	0.00
1	1255.27	0.10	1255.27	0.10	1255.27	0.10	0.00	0.00	0.00	0.00
0	1255.26	0.13	1255.26	0.13	1255.26	0.13	0.00	0.00	0.00	0.00



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TwEEfontein Gauging Weir Structure – Preliminary Design Report

ADDENDUM C:

STABILITY ANALYSIS

ADDENDUM C: STABILITY ANALYSIS – TWEEFONTEIN GAUGING STRUCTURE

CUT-OFF WALL STABILITY ANALYSIS (HIGH)

Stress Plane 1260.485	Horizontal Forces				Vertical Forces						
	U/S H2O	D/S H2O	Sediment	Add. Force	U/S H2O	Uplift H2O	Sediment	Structure			
Force (kN)	-149.173	19.173	-27.066	0.000	0.000	-37.171	0.000	214.275			
Lever (m)	1.697	0.659	1.305	0.000	0.000	2.186	0.000	2.135			
M (kNm)	-253.166	12.636	-35.322	0.000	0.000	-81.238	0.000	457.478			
Sum of F/M	H Force (kN)	-157.066	Ov. M (kNm)	-369.727	V Force (kN)	177.104	Res. M (kNm)	470.114			
Eccentricity	1.09	m	Tension !!!	Stress distribution:	Heel =	-52.0	kPa	Toe =	158.8	kPa	
Safety Factors	Against Overturning		1.3	Achor steel needed to counter tensile force	Anchor steel to resist tensile force of:				21.3	kN/m	
	Against Sliding		22.0		Bar Ø	20	mm	25	mm	32	mm
					# of	0.7	/m	0.4	/m	0.3	/m

CUT-OFF WALL STABILITY ANALYSIS (LOW)

Stress Plane 1263.700	Horizontal Forces				Vertical Forces						
	U/S H2O	D/S H2O	Sediment	Add. Force	U/S H2O	Uplift H2O	Sediment	Structure			
Force (kN)	-19.620	0.000	-0.865	0.000	0.000	0.000	0.000	29.736			
Lever (m)	0.458	0.000	0.233	0.000	0.000	0.000	0.000	0.885			
M (kNm)	-8.993	0.000	-0.202	0.000	0.000	0.000	0.000	26.327			
Sum of F/M	H Force (kN)	-20.485	Ov. M (kNm)	-9.194	V Force (kN)	29.736	Res. M (kNm)	26.327			
Eccentricity	0.19	m	Stress distribution:	Heel =	5.2	kPa	Toe =	33.8	kPa		
Safety Factors	Against Overturning		2.9	No anchor steel required	Anchor steel to resist tensile force of:				0.0	kN/m	
	Against Sliding		75.7		Bar Ø	20	mm	25	mm	32	mm
					# of	0.0	/m	0.0	/m	0.0	/m



LOW NOTCH WEIR STABILITY ANALYSIS (HIGH)

Stress Plane 1260.350	Horizontal Forces				Vertical Forces			
	U/S H2O	D/S H2O	Sediment	Add. Force	U/S H2O	Uplift H2O	Sediment	Structure
Force (kN)	-107.775	21.879	-1.947	0.000	0.000	-75.151	0.000	270.756
Lever (m)	1.077	0.704	0.350	0.000	0.000	3.851	0.000	3.029
M (kNm)	-116.026	15.403	-0.681	0.000	0.000	-289.423	0.000	820.116
Sum of F/M	H Force (kN)	-87.843	Ov. M (kNm)	-406.130	V Force (kN)	195.605	Res. M (kNm)	835.519
Eccentricity	0.80 m			Stress distribution:	Heel = 6.4 kPa	Toe = 58.8 kPa		
Safety Factors	Against Overturning		2.1	No anchor steel required	Anchor steel to resist tensile force of: 0.0 kN/m			
	Against Sliding		70.1		Bar Ø 20 mm 25 mm 32 mm # of 0.0 /m 0.0 /m 0.0 /m			

LOW NOTCH WEIR STABILITY ANALYSIS (LOW)

Stress Plane 1261.200	Horizontal Forces				Vertical Forces			
	U/S H2O	D/S H2O	Sediment	Add. Force	U/S H2O	Uplift H2O	Sediment	Structure
Force (kN)	-62.539	7.812	-0.071	0.000	0.000	-44.544	0.000	150.682
Lever (m)	0.706	0.421	0.067	0.000	0.000	4.000	0.000	3.052
M (kNm)	-44.145	3.286	-0.005	0.000	0.000	-178.177	0.000	459.893
Sum of F/M	H Force (kN)	-54.797	Ov. M (kNm)	-222.327	V Force (kN)	106.137	Res. M (kNm)	463.179
Eccentricity	0.73 m			Stress distribution:	Heel = 4.8 kPa	Toe = 30.6 kPa		
Safety Factors	Against Overturning		2.1	No anchor steel required	Anchor steel to resist tensile force of: 0.0 kN/m			
	Against Sliding		111.0		Bar Ø 20 mm 25 mm 32 mm # of 0.0 /m 0.0 /m 0.0 /m			

HIGH NOTCH WEIR STABILITY ANALYSIS (HIGH)

Stress Plane	Horizontal Forces				Vertical Forces			
	U/S H2O	D/S H2O	Sediment	Add. Force	U/S H2O	Uplift H2O	Sediment	Structure
1260.350								
Force (kN)	-117.634	21.879	-3.973	0.000	0.000	-63.879	0.000	273.970
Lever (m)	1.196	0.704	0.500	0.000	0.000	3.274	0.000	2.568
M (kNm)	-140.652	15.403	-1.987	0.000	0.000	-209.108	0.000	703.443
Sum of F/M	H Force (kN)	-99.728	Ov. M (kNm)	-351.746	V Force (kN)	210.091	Res. M (kNm)	718.845
Eccentricity	0.80 m			Stress distribution:	Heel = 2.3 kPa	Toe = 80.1 kPa		
Safety Factors	Against Overturning		2.0	No anchor steel required	Anchor steel to resist tensile force of: 0.0 kN/m			
	Against Sliding		52.8		Bar Ø 20 mm 25 mm 32 mm # of 0.0 /m 0.0 /m 0.0 /m			

HIGH NOTCH WEIR STABILITY ANALYSIS (LOW)

Stress Plane	Horizontal Forces				Vertical Forces			
	U/S H2O	D/S H2O	Sediment	Add. Force	U/S H2O	Uplift H2O	Sediment	Structure
1261.200								
Force (kN)	-72.398	7.812	-0.746	0.000	0.000	-37.863	0.000	171.907
Lever (m)	0.834	0.421	0.217	0.000	0.000	3.400	0.000	2.578
M (kNm)	-60.390	3.286	-0.162	0.000	0.000	-128.733	0.000	443.181
Sum of F/M	H Force (kN)	-65.332	Ov. M (kNm)	-189.285	V Force (kN)	134.044	Res. M (kNm)	446.467
Eccentricity	0.63 m			Stress distribution:	Heel = 6.8 kPa	Toe = 45.8 kPa		
Safety Factors	Against Overturning		2.4	No anchor steel required	Anchor steel to resist tensile force of: 0.0 kN/m			
	Against Sliding		79.7		Bar Ø 20 mm 25 mm 32 mm # of 0.0 /m 0.0 /m 0.0 /m			



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Twefontein Gauging Weir Structure – Preliminary Design Report

ADDENDUM D:

RIP-RAP DESIGN

ADDENDUM D: RIP-RAP DESIGN – TWEEFONTEIN GAUGING STRUCTURE

Parameters

		D ₅₀ ass.	400 mm	(moderately rounded)	
K _U	0.0059	θ	7.1	SF	2.5
		φ	40	S ₁	2.65
		K ₁	0.981338	C	3.00
			8.028		

Q	RL H _a	RL H _b	RL h ₁	RL h ₂	ΔH	Subm %	v _{ΔH}	v _a	v̄ _{a1}	v̄ _{a2}	d _{avg}	D ₅₀ va1	D ₅₀ va2	Elevation	Max
20	1263.22	1261.21	1263.22	1261.21	2.01	0.00%	6.282	0.28	1.33	0.93	1.63	0.0333	0.0115	1261.2100	0.033
30	1263.35	1261.34	1263.34	1261.33	2.01	0.00%	6.272	0.37	1.52	0.98	1.75	0.0487	0.0130	1261.3400	0.049
40	1263.45	1261.46	1263.45	1261.45	1.99	0.00%	6.256	0.45	1.68	1.02	1.87	0.0629	0.0142	1261.4600	0.063
50	1263.55	1261.55	1263.55	1261.54	2.00	0.00%	6.271	0.52	1.81	1.05	1.96	0.0766	0.0151	1261.5500	0.077
60	1263.65	1261.64	1263.64	1261.62	2.01	0.00%	6.275	0.58	1.91	1.08	2.04	0.0886	0.0159	1261.6400	0.089
70	1263.74	1261.72	1263.72	1261.70	2.02	0.00%	6.288	0.64	2.01	1.10	2.12	0.1010	0.0166	1261.7200	0.101
80	1263.82	1261.79	1263.80	1261.77	2.03	0.00%	6.309	0.69	2.09	1.12	2.19	0.1118	0.0171	1261.7900	0.112
100	1263.98	1261.93	1263.95	1261.90	2.05	0.00%	6.335	0.79	2.24	1.15	2.32	0.1339	0.0181	1261.9300	0.134
150	1264.33	1262.23	1264.28	1262.18	2.10	0.00%	6.414	1.01	2.55	1.21	2.6	0.1864	0.0201	1262.2300	0.186
200	1264.64	1262.49	1264.57	1262.42	2.15	0.00%	6.496	1.18	2.77	1.25	2.83	0.2299	0.0214	1262.4900	0.230
250	1264.87	1262.72	1264.78	1262.63	2.15	0.92%	6.495	1.32	2.93	1.29	3.05	0.2619	0.0222	1262.7200	0.262
300	1265.04	1262.93	1264.94	1262.82	2.11	9.83%	6.435	1.45	3.05	1.31	3.24	0.2886	0.0228	1262.9300	0.289
350	1265.19	1263.12	1265.07	1263.00	2.07	16.86%	6.375	1.56	3.15	1.33	3.42	0.3091	0.0232	1263.1200	0.309
400	1265.32	1263.31	1265.19	1263.17	2.01	23.25%	6.286	1.65	3.22	1.35	3.59	0.3213	0.0234	1263.3100	0.321
450	1265.45	1263.49	1265.30	1263.33	1.96	28.77%	6.195	1.73	3.27	1.36	3.75	0.3301	0.0235	1263.4900	0.330
500	1265.56	1263.65	1265.40	1263.48	1.91	33.23%	6.119	1.81	3.33	1.37	3.9	0.3401	0.0237	1263.6500	0.340
600	1265.76	1263.95	1265.57	1263.77	1.80	41.12%	5.949	1.94	3.40	1.39	4.19	0.3491	0.0238	1263.9600	0.349
700	1265.95	1264.24	1265.73	1264.03	1.71	47.42%	5.788	2.06	3.45	1.40	4.45	0.3557	0.0238	1264.2400	0.356
800	1266.12	1264.51	1265.87	1264.28	1.61	52.99%	5.612	2.15	3.47	1.41	4.7	0.3524	0.0236	1264.5100	0.352
900	1266.27	1264.76	1265.99	1264.51	1.51	57.67%	5.447	2.23	3.49	1.42	4.93	0.3474	0.0235	1264.7600	0.348
1000	1266.42	1265.02	1266.11	1264.76	1.40	62.42%	5.235	2.29	3.46	1.42	5.18	0.3324	0.0230	1265.0200	0.332

Parameters

K_U	0.0059	D_{50} ass.	400 mm	(moderately rounded)	
		θ	7.1	SF	3
		ϕ	40	S_1	2.65
		K_1	0.981338	C	3.95
			8.028		

Q	RL H_a	RL H_b	RL h_a	RL h_b	ΔH	Subm %	$v_{\Delta H}$	v_a	\bar{v}_{a1}	\bar{v}_{a2}	d_{avg}	D_{50} va1	D_{50} va2	Elevation	Max
20	1263.22	1261.21	1263.22	1261.21	2.01	0.00%	6.282	0.28	1.33	0.93	1.63	0.0438	0.0151	1261.2100	0.044
30	1263.35	1261.34	1263.34	1261.33	2.01	0.00%	6.272	0.37	1.52	0.98	1.75	0.0640	0.0171	1261.3400	0.064
40	1263.45	1261.46	1263.45	1261.45	1.99	0.00%	6.256	0.45	1.68	1.02	1.87	0.0827	0.0186	1261.4600	0.083
50	1263.55	1261.55	1263.55	1261.54	2.00	0.00%	6.271	0.52	1.81	1.05	1.96	0.1008	0.0199	1261.5500	0.101
60	1263.65	1261.64	1263.64	1261.62	2.01	0.00%	6.275	0.58	1.91	1.08	2.04	0.1165	0.0209	1261.6400	0.117
70	1263.74	1261.72	1263.72	1261.70	2.02	0.00%	6.288	0.64	2.01	1.10	2.12	0.1328	0.0218	1261.7200	0.133
80	1263.82	1261.79	1263.80	1261.77	2.03	0.00%	6.309	0.69	2.09	1.12	2.19	0.1470	0.0225	1261.7900	0.147
100	1263.98	1261.93	1263.95	1261.90	2.05	0.00%	6.335	0.79	2.24	1.15	2.32	0.1761	0.0238	1261.9300	0.176
150	1264.33	1262.23	1264.28	1262.18	2.10	0.00%	6.414	1.01	2.55	1.21	2.6	0.2450	0.0264	1262.2300	0.245
200	1264.64	1262.49	1264.57	1262.42	2.15	0.00%	6.496	1.18	2.77	1.25	2.83	0.3022	0.0281	1262.4900	0.302
250	1264.87	1262.72	1264.78	1262.63	2.15	0.92%	6.495	1.32	2.93	1.29	3.05	0.3443	0.0291	1262.7200	0.344
300	1265.04	1262.93	1264.94	1262.82	2.11	9.83%	6.435	1.45	3.05	1.31	3.24	0.3794	0.0300	1262.9300	0.379
350	1265.19	1263.12	1265.07	1263.00	2.07	16.86%	6.375	1.56	3.15	1.33	3.42	0.4063	0.0305	1263.1200	0.406
400	1265.32	1263.31	1265.19	1263.17	2.01	23.25%	6.286	1.65	3.22	1.35	3.59	0.4223	0.0308	1263.3100	0.422
450	1265.45	1263.49	1265.30	1263.33	1.96	28.77%	6.195	1.73	3.27	1.36	3.75	0.4340	0.0309	1263.4900	0.434
500	1265.56	1263.65	1265.40	1263.48	1.91	33.23%	6.119	1.81	3.33	1.37	3.9	0.4471	0.0312	1263.6500	0.447
600	1265.76	1263.96	1265.57	1263.77	1.80	41.12%	5.949	1.94	3.40	1.39	4.19	0.4589	0.0312	1263.9600	0.459
700	1265.95	1264.24	1265.73	1264.03	1.71	47.42%	5.788	2.06	3.45	1.40	4.45	0.4675	0.0313	1264.2400	0.468
800	1266.12	1264.51	1265.87	1264.28	1.61	52.99%	5.612	2.15	3.47	1.41	4.7	0.4632	0.0311	1264.5100	0.463
900	1266.27	1264.76	1265.99	1264.51	1.51	57.67%	5.447	2.23	3.49	1.42	4.93	0.4567	0.0308	1264.7600	0.457
1000	1266.42	1265.02	1266.11	1264.76	1.40	62.42%	5.235	2.29	3.46	1.42	5.18	0.4369	0.0303	1265.0200	0.437



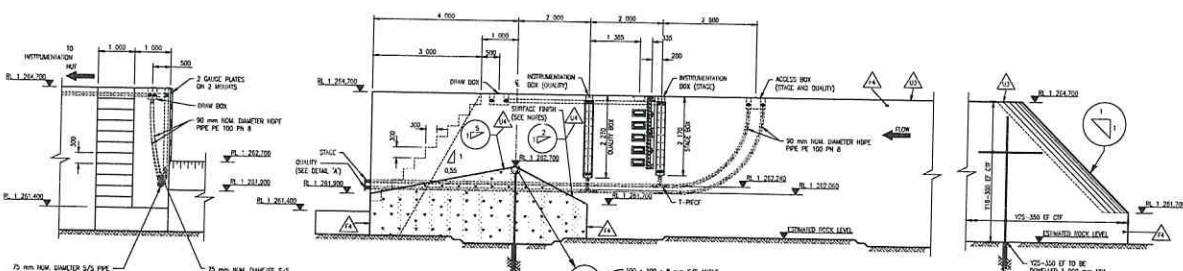
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Twefontein Gauging Weir Structure – Preliminary Design Report

ADDENDUM E:

**ENGINEERING DRAWINGS - Twefontein Gauging
Structure**



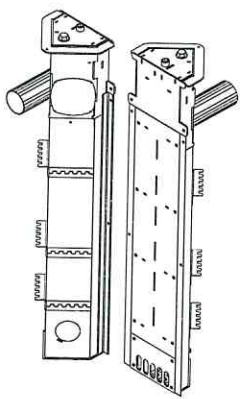
SECTION 05-05
D/S ELEVATION
SCALE 1:50

SECTION 05-05
(WITH SUITABLE ROCK FOUNDATION)
SCALE 1:50

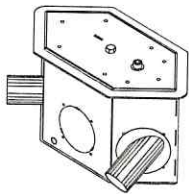
BULLNOSE REINFORCEMENT
SCALE 1:50

REINFORCEMENT
(To SANS 1023 With Actual Arrangement)
S - Plain mild steel (S20, S25, S30, S35)
S₁-S₂₀ with 2.00 mm x 10 mm x 10 mm x 10 mm x 10 mm
S₂ - Galvanized mild steel
S₃-S₂₅ with 4.00 mm x 10 mm x 10 mm x 10 mm x 10 mm
S₄ - High yield steel
Plain: Plain steel
Plain: Plain steel

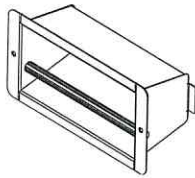
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S₅₀₀ - S₂₅₁₅
S₅₀₁ - S₂₅₂₀
S



DRAW BOX
N/S



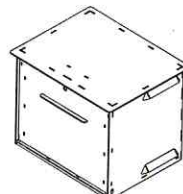
FLUSH STEP
N/S



GAUGE PLATE MOUNT
N/S

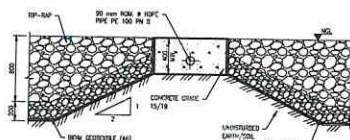
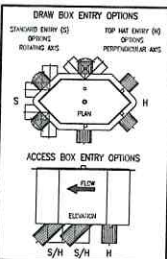


FTC2 CABINET
N/S

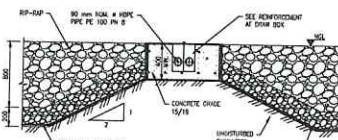


SECURITY DOOR
N/S

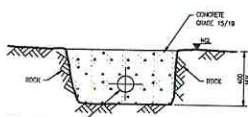
NOTES:
1. PARTS PROTECTED BY COBES, COBETS, FLUSH STEPS, GAGES AND SECURITY DOORS MUST BE OBTAINABLE FROM INTERLOCK SYSTEMS AS PER INSTRUMENTATION CONTRACT. CONTACT TEL. NUMBER: (011) 264-2547. SERIAL DRAWINGS AVAILABLE ON REQUEST.



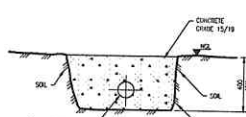
CONDUIT PIPE PROTECTION
(ON RIP-RAP PROTECTED EMBANKMENTS)
N/S



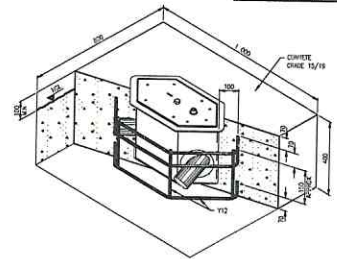
INSTALLATION OF DRAW BOX
(ON RIP-RAP PROTECTED EMBANKMENTS)
N/S



CONDUIT PIPE PROTECTION
(IN ROCK)
N/S



CONDUIT PIPE PROTECTION
(IN SOIL)
N/S



REINFORCEMENT AT DRAW BOX
N/S

INSTALLATION DETAILS OF GAUGE PLATE MOUNTS		INSTALLATION DETAILS OF FLUSH STEPS	
DIMENSIONS (mm)	"See Standard"	DIMENSIONS (mm)	"Standard"
MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L	MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L
NUMBER OF UNITS	2	NUMBER OF UNITS	7

INSTALLATION DETAILS OF SECURITY DOOR		INSTALLATION DETAILS OF RAIN-GAUGE FUNNEL (RG2)	
INSTALLATION	INSTRUMENTATION HUT	INSTALLATION	INSTRUMENTATION HUT
DIMENSIONS (mm)	1 540 x 810	DIMENSIONS (mm)	"Standard"
MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L	MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L
NUMBER OF UNITS	1	NUMBER OF UNITS	0

INSTALLATION DETAILS OF U/S PRESSURE TRANSDUCER INSTRUMENTATION BOX		INSTALLATION DETAILS OF D/S PRESSURE TRANSDUCER INSTRUMENTATION BOX		INSTALLATION DETAILS OF WATER QUALITY INSTRUMENTATION BOX	
INSTALLATION	WEIR	INSTALLATION	D/S OF WEIR	INSTALLATION	WEIR
LENGTH (mm)	2 170 mm	LENGTH (mm)	6 000	LENGTH (mm)	2 270 mm
CONDUIT PIPE #	HDPE 100 PN 8 PIPE NOM # 90 mm/OD 81 mm	CONDUIT PIPE #	HDPE 100 PN 8 PIPE NOM # 90 mm/OD 81 mm	CONDUIT PIPE #	HDPE 100 PN 8 PIPE NOM # 90 mm/OD 81 mm
MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L	MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L	MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L
NUMBER OF UNITS	1	NUMBER OF UNITS	0	NUMBER OF UNITS	1

INSTALLATION DETAILS OF DRAW BOXES		INSTALLATION DETAILS OF ACCESS BOXES		INSTALLATION DETAILS OF FTC CABINETS	
ENTRY UNITS	X (S) & X (D)	ENTRY UNITS	Z (S) & Z (D)	INSTALLATION	WEIR WELL
DIMENSIONS (mm)	"Standard"	DIMENSIONS (mm)	"Standard"	DIMENSIONS (mm)	"Standard"
CONDUIT PIPE #	HDPE 100 PN 8 PIPE NOM # 90 mm/OD 81 mm	CONDUIT PIPE #	HDPE 100 PN 8 PIPE NOM # 90 mm/OD 81 mm	WELL PIPE #	250 mm OD CLASS 4 uPVC
MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L	MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L	MATERIAL CLASSIFICATION	STAINLESS STEEL 304 L
NUMBER OF UNITS	4	NUMBER OF UNITS	1	NUMBER OF UNITS	0

LIST OF DRAWINGS			
2/2	INSTRUMENTATION HUT	-	179 479/22
3/7	SECTION & DETAIL	-	179 479/22
4/7	SECTION & DETAIL	-	179 479/22
3/7	PLAN & DETAIL (R)	-	179 479/22
2/7	PLAN & DETAIL (L)	-	179 479/22
1/7	GENERAL LAYOUT - SECURITY	-	179 479/22
Sheet	Quantity	Price	Rs. No.

REGION				HYDROLOGICAL SERVICES			
ROOFTOP		AIR		WELL		WEIR	
NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8
HEAD OFFICE HYDROLOGICAL SERVICES PUNE 411 007 PHONE NO. 2611				REGIONAL OFFICE NEW GAUGING WEIR @ TWEENFONTEIN PUNE 411 007 PHONE NO. 2611			
DESIGNER: <i>[Signature]</i> CHECKED: <i>[Signature]</i> APPROVED: <i>[Signature]</i>				PROJECT NO.: <i>[Blank]</i> SHEET NO.: <i>[Blank]</i> DRAWING DATE: <i>[Blank]</i>			
1:500 SCALE / 1:1000 SCALE				6 x 7 179 479/22 00			

