

ANNEXURES



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1. T1

1.1 Annexures

1.1.1 ANNEXURE- A (BORELOG)

1.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

1.1.2.1 Specific Gravity

Sample Depth (m)		Specific Gravity (gm/cc)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	2.78	---	2.76	2.78	2.79	2.78	2.77	2.76	---
1.5	3	---	---	2.70	2.76	2.78	2.79	2.79	2.77	2.76	2.79
3	4.5	2.80	2.78	2.70	2.76	2.78	2.79	2.80	2.77	2.76	2.79
4.5	6	2.81	2.78	2.70	2.76	2.78	2.78	2.80	2.77	2.76	---
6	7.5	2.81	2.79	2.71	2.76	2.78	2.78	2.81	2.77	2.77	---
7.5	9	2.81	2.79	2.71	2.77	2.79	2.78	2.81	2.78	2.77	---
9	10.5	2.82	2.80	2.72	2.77	2.79	2.78	2.81	2.78	2.78	2.79
10.5	12	2.82	2.80	2.72	2.77	2.79	2.78	2.84	2.78	2.78	2.79
12	13.5	2.82	2.81	2.73	2.77	2.80	2.77	2.84	2.78	2.77	2.79
13.5	15	2.82	2.81	2.78	2.77	2.79	2.77	2.84	2.79	2.77	2.80
15	16.5	2.82	2.81	2.78	2.77	2.79	2.77	2.84	2.79	2.77	2.80
16.5	18	2.79	2.81	2.78	2.78	2.79	2.78	2.85	2.79	2.78	2.80
18	19.5	2.79	2.80	2.79	2.78	2.80	2.78	2.85	2.79	2.78	2.80
19.5	21	2.79	2.80	2.79	2.78	2.80	2.78	2.85	2.72	2.78	2.80
21	22.5	2.79	2.81	2.79	2.78	2.80	2.78	2.85	2.72	2.79	2.81
22.5	24	2.80	2.81	2.80	2.78	2.80	2.79	2.85	2.77	2.79	2.81
24	25.5	2.83	2.81	2.80	2.79	2.80	2.79	2.85	2.78	2.79	2.81
25.5	27	2.83	2.81	2.81	2.79	2.80	2.79	2.86	2.79	2.79	2.81
27	28.5	2.84	2.82	2.81	2.79	2.80	2.80	2.86	2.80	2.82	2.81
28.5	30	2.84	2.82	2.81	2.79	2.80	2.80	2.86	2.81	2.82	2.82
30	31.5		2.83	2.81	2.79	2.81	2.81	2.86	2.81	2.82	2.82
31.5	33		2.83	2.81	2.79	2.81	2.81	2.86	2.81	2.82	
33	34.5		2.83	2.82	2.80	2.81			2.81	2.83	
34.5	36		2.84	2.82	2.80	2.81			2.81	2.83	
36	37.5		2.84	2.82	2.80	2.82			2.81	2.83	
37.5	39		2.84	2.82		2.82			2.81	2.83	
39	40.5										
				2.82		2.82			2.82	2.83	
40.5	42					2.82			2.82	2.84	
42	43.5								2.82	2.84	
43.5	45									2.84	

1.1.2.2 Dry Density

Sample Depth (m)		Dry Density (gm/cc)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	2.75	---	2.68	2.69	2.68	2.74	2.68	2.70	---
1.5	3	---	---	2.67	2.68	2.69	2.68	2.74	2.69	2.70	2.78
3	4.5	2.78	2.75	2.67	2.68	2.69	2.68	2.75	2.70	2.70	2.78
4.5	6	2.79	2.76	2.67	2.68	2.70	2.69	2.75	2.71	2.70	---
6	7.5	2.79	2.77	2.68	2.68	2.70	2.69	2.76	2.71	2.71	---
7.5	9	2.79	2.77	2.68	2.69	2.70	2.69	2.77	2.71	2.71	---
9	10.5	2.80	2.78	2.68	2.70	2.71	2.69	2.78	2.72	2.72	2.78
10.5	12	2.80	2.78	2.69	2.71	2.71	2.70	2.81	2.72	2.72	2.78
12	13.5	2.81	2.80	2.69	2.72	2.71	2.70	2.81	2.72	2.73	2.78
13.5	15	2.81	2.80	2.76	2.72	2.74	2.70	2.81	2.72	2.73	2.79
15	16.5	2.81	2.80	2.75	2.72	2.74	2.70	2.81	2.73	2.74	2.79
16.5	18	2.76	2.80	2.75	2.73	2.74	2.74	2.81	2.73	2.74	2.79
18	19.5	2.76	2.79	2.76	2.73	2.75	2.75	2.81	2.73	2.74	2.79
19.5	21	2.77	2.79	2.70	2.73	2.75	2.75	2.82	2.65	2.75	2.79
21	22.5	2.77	2.80	2.71	2.74	2.75	2.76	2.82	2.66	2.75	2.79
22.5	24	2.78	2.80	2.74	2.74	2.76	2.76	2.82	2.74	2.76	2.79
24	25.5	2.81	2.80	2.73	2.75	2.76	2.77	2.82	2.74	2.76	2.79
25.5	27	2.81	2.80	2.72	2.75	2.77	2.77	2.82	2.76	2.76	2.79
27	28.5	2.82	2.81	2.71	2.75	2.77	2.77	2.83	2.78	2.80	2.79
28.5	30	2.83	2.81	2.70	2.75	2.77	2.78	2.83	2.79	2.80	2.80
30	31.5		2.82	2.71	2.76	2.78	2.78	2.83	2.79	2.80	2.80
31.5	33		2.82	2.76	2.76	2.78	2.78	2.83	2.79	2.80	
33	34.5		2.82	2.77	2.76	2.78			2.80	2.81	
34.5	36		2.83	2.77	2.77	2.78			2.80	2.81	
36	37.5		2.83	2.78	2.77	2.79			2.80	2.81	
37.5	39		2.83	2.77		2.79			2.80	2.81	
39	40.5		2.83	2.77		2.79			2.81	2.81	
40.5	42					2.79			2.81	2.81	
42	43.5								2.81	2.81	
43.5	45									2.81	

1.1.2.3 Water absorption Test

Sample Depth (m)		Water Absorption (%)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	0.58	---	0.35	0.32	0.34	0.24	0.35	0.38	---
1.5	3	---	---	0.42	0.34	0.30	0.33	0.24	0.34	0.37	0.24
3	4.5	0.14	0.55	0.40	0.32	0.29	0.32	0.23	0.33	0.35	0.23
4.5	6	0.12	0.49	0.39	0.31	0.28	0.31	0.21	0.33	0.35	---
6	7.5	0.11	0.45	0.37	0.31	0.28	0.30	0.21	0.30	0.34	---
7.5	9	0.10	0.41	0.35	0.30	0.27	0.29	0.19	0.32	0.32	---

Sample Depth (m)		Water Absorption (%)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
9	10.5	0.10	0.38	0.34	0.29	0.27	0.29	0.18	0.31	0.31	0.23
10.5	12	0.09	0.15	0.33	0.29	0.26	0.28	0.13	0.31	0.31	0.21
12	13.5	0.08	0.13	0.33	0.29	0.26	0.27	0.13	0.30	0.30	0.21
13.5	15	0.07	0.13	0.31	0.28	0.23	0.26	0.13	0.29	0.30	0.19
15	16.5	0.05	0.12	0.30	0.27	0.23	0.24	0.12	0.29	0.30	0.19
16.5	18	0.21	0.12	0.29	0.25	0.22	0.23	0.10	0.27	0.29	0.18
18	19.5	0.20	0.11	0.28	0.25	0.21	0.21	0.10	0.26	0.28	0.19
19.5	21	0.19	0.11	0.28	0.24	0.22	0.21	0.10	0.42	0.27	0.19
21	22.5	0.19	0.10	0.26	0.24	0.22	0.19	0.10	0.41	0.26	0.17
22.5	24	0.18	0.10	0.24	0.23	0.22	0.18	0.09	0.24	0.28	0.20
24	25.5	0.11	0.10	0.22	0.21	0.20	0.17	0.09	0.23	0.27	0.20
25.5	27	0.10	0.09	0.21	0.20	0.21	0.17	0.09	0.21	0.26	0.19
27	28.5	0.10	0.09	0.20	0.20	0.22	0.16	0.09	0.20	0.15	0.17
28.5	30	0.09	0.09	0.15	0.19	0.20	0.15	0.08	0.18	0.14	0.16
30	31.5		0.08	0.13	0.18	0.19	0.15	0.08	0.17	0.13	0.16
31.5	33		0.08	0.13	0.17	0.21	0.14	0.08	0.17	0.14	
33	34.5		0.07	0.12	0.17	0.21			0.16	0.13	
34.5	36		0.07	0.11	0.16	0.19			0.16	0.13	
36	37.5		0.06	0.12	0.16	0.18			0.15	0.11	
37.5	39		0.06	0.10		0.18			0.15	0.12	
39	40.5		0.05	0.11		0.16			0.13	0.12	
40.5	42					0.15			0.12	0.11	
42	43.5								0.11	0.10	
43.5	45									0.10	

1.1.2.4 Porosity Test (%)

Sample Depth (m)		Porosity (%)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	1.08	---	2.90	3.24	3.94	1.44	3.25	2.17	---
1.5	3	---	----	1.11	2.90	3.24	3.94	1.79	2.89	2.17	0.36
3	4.5	0.71	1.08	1.11	2.90	3.24	3.94	1.79	2.53	2.17	0.36
4.5	6	0.71	0.72	1.11	2.90	2.88	3.24	1.79	2.17	2.17	----
6	7.5	0.71	0.72	1.11	2.90	2.88	3.24	1.78	2.17	2.17	----
7.5	9	0.71	0.72	1.11	2.89	3.23	3.24	1.42	2.52	2.17	----
9	10.5	0.71	0.71	1.47	2.53	2.87	3.24	1.07	2.16	2.16	0.36
10.5	12	0.71	0.71	1.10	2.17	2.87	2.88	1.06	2.16	2.16	0.36
12	13.5	0.35	0.36	1.47	1.81	3.21	2.53	1.06	2.16	1.44	0.36
13.5	15	0.35	0.36	0.72	1.81	1.79	2.53	1.06	2.51	1.44	0.36
15	16.5	0.35	0.36	1.08	1.81	1.79	2.53	1.06	2.15	1.08	0.36
16.5	18	1.08	0.36	1.08	1.80	1.79	1.44	1.40	2.15	1.44	0.36
18	19.5	1.08	0.36	1.08	1.80	1.79	1.08	1.40	2.15	1.44	0.36
19.5	21	0.72	0.36	3.23	1.80	1.79	1.08	1.05	2.57	1.08	0.36

Sample Depth (m)		Porosity (%)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
21	22.5	0.72	0.50	2.87	1.44	1.79	0.72	1.05	2.21	1.43	0.71
22.5	24	0.71	0.43	2.14	1.44	1.43	1.08	1.05	1.08	1.08	0.71
24	25.5	0.71	0.43	2.50	1.43	1.43	0.72	1.05	1.44	1.08	0.71
25.5	27	0.71	0.39	3.20	1.43	1.07	0.72	1.40	1.08	1.08	0.71
27	28.5	0.70	0.32	3.56	1.43	1.07	1.07	1.05	0.71	0.71	0.71
28.5	30	0.35	0.32	3.91	1.43	1.07	0.71	1.05	0.71	0.71	0.71
30	31.5		0.35	3.56	1.08	1.07	1.07	1.05	0.71	0.71	0.71
31.5	33		0.35	1.78	1.08	1.07	1.07	1.05	0.71	0.71	
33	34.5		0.35	1.77	1.43	1.07			0.36	0.71	
34.5	36		0.35	1.77	1.07	1.07			0.36	0.71	
36	37.5		0.35	1.42	1.07	1.06			0.36	0.71	
37.5	39		0.35	1.77		1.06			0.36	0.71	
39	40.5		0.35	1.77		1.06			0.35	0.71	
40.5	42					1.06			0.35	1.06	
42	43.5								0.35	1.06	
43.5	45									1.06	

1.1.2.5 Hardness Test

Sample Depth (m)		Mohr's Scale Hardness									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	5.00	---	5.00	5.00	5.00	5.00	5.00	5.00	---
1.5	3	---	----	6.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00
3	4.5	7.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00
4.5	6	7.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	----
6	7.5	7.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	----
7.5	9	7.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	----
9	10.5	7.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00
10.5	12	7.00	6.00	6.00	5.00	6.00	5.00	7.00	5.00	6.00	6.00
12	13.5	7.00	6.00	6.00	5.00	6.00	5.00	7.00	5.00	6.00	6.00
13.5	15	7.00	6.00	7.00	5.00	6.00	6.00	7.00	5.00	6.00	6.00
15	16.5	7.00	6.00	7.00	5.00	6.00	6.00	7.00	5.00	6.00	6.00
16.5	18	6.00	6.00	7.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00
18	19.5	6.00	7.00	7.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00
19.5	21	6.00	7.00	7.00	6.00	6.00	6.00	7.00	4.00	6.00	6.00
21	22.5	6.00	7.00	7.00	6.00	6.00	7.00	7.00	4.00	6.00	6.00
22.5	24	6.00	7.00	7.00	6.00	7.00	7.00	7.00	6.00	6.00	6.00
24	25.5	7.00	7.00	7.00	6.00	7.00	7.00	7.00	6.00	6.00	7.00
25.5	27	7.00	7.00	7.00	6.00	7.00	7.00	7.00	6.00	6.00	7.00
27	28.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00
28.5	30	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
30	31.5		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
31.5	33		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00



Sample Depth (m)		Mohr's Scale Hardness									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
33	34.5		7.00	7.00	7.00	7.00			7.00	7.00	
34.5	36		7.00	7.00	7.00	7.00			7.00	7.00	
36	37.5		7.00	7.00	7.00	7.00			7.00	7.00	
37.5	39		7.00	7.00		7.00			7.00	7.00	
39	40.5		8.00	7.00		7.00			7.00	7.00	
40.5	42					7.00			7.00	7.00	
42	43.5								7.00	7.00	
43.5	45									7.00	

1.1.2.6 Compression test

Sample Depth (m)		Unconfined Compression test (N/mm ² or MPa)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	9.87	---	7.34	9.44	8.82	11.38	9.40	8.24	---
1.5	3	---	----	11.46	7.46	9.56	9.01	11.58	9.87	8.51	----
3	4.5	28.44	10.72	11.58	7.73	9.71	9.87	11.70	10.22	8.74	----
4.5	6	29.61	11.46	11.70	7.81	9.95	10.41	12.01	10.45	8.98	----
6	7.5	33.66	11.66	11.89	7.97	10.22	10.84	12.16	10.57	9.25	----
7.5	9	34.18	11.85	12.08	9.40	11.11	11.19	12.28	10.69	9.44	----
9	10.5	34.97	12.28	12.40	10.30	11.70	11.50	12.43	11.00	9.79	----
10.5	12	36.02	18.42	12.43	11.07	11.93	11.70	55.29	11.31	10.06	----
12	13.5	37.03	21.44	12.47	11.31	12.12	11.89	62.69	11.81	10.10	----
13.5	15	23.23	22.07	22.46	11.50	28.09	12.05	63.39	11.97	10.30	----
15	16.5	23.35	22.58	22.61	11.70	29.30	12.24	64.75	12.22	10.96	----
16.5	18	24.60	23.39	26.24	22.46	29.88	23.71	65.53	12.28	11.00	----
18	19.5	28.55	25.71	26.76	22.54	30.62	24.54	66.62	12.44	11.27	----
19.5	21	41.65	27.11	27.81	22.89	31.86	25.30	67.80	4.58	11.70	----
21	22.5	43.05	28.07	28.02	23.00	32.21	26.24	69.77	4.76	13.49	----
22.5	24	43.88	30.82	29.60	26.24	33.75	26.76	69.94	18.47	13.53	13.83
24	25.5	44.58	32.92	30.60	26.77	34.23	27.29	70.90	19.78	13.75	14.42
25.5	27	47.41	34.97	31.56	27.46	34.53	28.16	72.17	21.65	13.97	15.39
27	28.5	48.16	37.72	41.69	27.72	35.01	29.16	75.14	24.10	44.75	16.36
28.5	30	49.42	38.51	43.05	28.02	35.23	30.60	76.66	44.36	48.42	17.64
30	31.5		39.12	43.88	29.43	35.71	31.65	78.63	45.36	52.30	18.88
31.5	33		39.77	47.54	30.08	36.99	33.79	80.90	54.92	54.92	
33	34.5		40.30	49.86	30.60	37.20			57.80	57.80	
34.5	36		41.34	54.75	32.92	37.38			64.53	63.57	
36	37.5		41.56	56.93	35.63	38.20			70.03	66.54	
37.5	39		42.13	60.64		38.90			72.39	72.12	
39	40.5		42.70	63.57		39.12			74.31	76.58	
40.5	42					39.82			76.58	82.34	
42	43.5								80.16	85.48	
43.5	45									89.28	

1.1.2.7 Point Load Test

Sample Depth (m)		Point Load Index (Is(50)) In N/mm ²									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	0.36	---	0.25	0.32	0.25	0.36	0.32	0.32	---
1.5	3	---	----	0.36	0.29	0.36	0.29	0.39	0.39	0.36	0.25
3	4.5	1.14	0.39	0.39	0.29	0.36	0.32	0.43	0.43	0.32	0.36
4.5	6	1.18	0.39	0.43	0.27	0.32	0.36	0.46	0.43	0.33	----
6	7.5	1.28	0.43	0.43	0.28	0.39	0.39	0.50	0.46	0.40	----
7.5	9	1.35	0.46	0.46	0.29	0.43	0.40	0.53	0.43	0.36	----
9	10.5	1.39	0.50	0.43	0.36	0.46	0.43	0.54	0.46	0.39	0.32
10.5	12	1.43	0.71	0.46	0.39	0.46	0.46	2.42	0.47	0.40	0.29
12	13.5	1.50	0.82	0.50	0.43	0.53	0.47	2.71	0.50	0.43	0.32
13.5	15	0.86	0.89	0.82	0.46	1.14	0.50	2.74	0.50	0.44	0.36
15	16.5	0.89	0.93	0.89	0.47	1.18	0.53	2.78	0.53	0.39	0.39
16.5	18	0.96	0.96	1.03	0.89	1.21	0.89	2.85	0.53	0.46	0.43
18	19.5	1.14	1.07	1.07	0.93	1.25	0.93	2.89	0.50	0.43	0.46
19.5	21	1.60	1.10	1.10	0.97	1.28	0.96	2.92	0.14	0.46	0.50
21	22.5	1.68	1.14	1.14	0.98	1.32	1.03	2.96	0.18	0.58	0.53
22.5	24	1.71	1.25	1.18	1.03	1.39	1.07	2.99	0.75	0.57	0.57
24	25.5	1.78	1.35	1.25	1.05	1.43	1.10	3.06	0.78	0.58	0.61
25.5	27	1.89	1.43	1.32	1.07	1.46	1.14	3.17	0.82	0.59	0.64
27	28.5	2.00	1.46	1.75	1.10	1.50	1.18	3.24	0.96	1.78	0.68
28.5	30	2.03	1.50	1.78	1.14	1.53	1.21	3.35	1.82	2.10	0.71
30	31.5		1.53	1.85	1.18	1.57	1.25	3.42	1.89	2.31	0.75
31.5	33		1.57	2.00	1.21	1.60	1.39	3.53	2.35	2.35	
33	34.5		1.60	2.07	1.25	1.60			2.46	2.46	
34.5	36		1.64	2.21	1.35	1.57			2.82	2.78	
36	37.5		1.68	2.28	1.46	1.60			3.06	2.89	
37.5	39		1.71	2.49		1.64			3.21	3.14	
39	40.5		1.78	2.71		1.68			3.31	3.35	
40.5	42					1.71			3.35	3.64	
42	43.5								3.39	3.71	
43.5	45									3.88	

1.1.2.8 Brazilian tensile test

Sample Depth (m)		Tensile Strength (Brazilian test) (N/mm ²)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	1.02	---	0.74	0.98	0.90	1.14	0.96	0.83	---
1.5	3	---	----	1.18	0.78	1.05	0.92	1.18	1.00	0.88	----
3	4.5	2.89	1.09	1.20	0.82	1.09	1.05	1.20	1.06	0.90	----
4.5	6	2.98	1.19	1.22	0.85	1.12	1.09	1.25	1.11	0.93	
6	7.5	3.39	1.20	1.25	0.87	1.14	1.10	1.29	1.23	0.95	

Sample Depth (m)		Tensile Strength (Brazilian test) (N/mm ²)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
7.5	9	3.45	1.22	1.26	0.96	1.19	1.14	1.30	1.28	0.97	----
9	10.5	3.55	1.25	1.27	1.05	1.23	1.18	1.38	1.30	1.00	----
10.5	12	3.62	1.89	1.28	1.15	1.25	1.20	5.62	1.32	1.05	----
12	13.5	3.78	2.19	1.32	1.16	1.28	1.23	6.78	1.35	1.08	----
13.5	15	2.35	2.25	2.28	1.19	2.84	1.25	6.89	1.41	1.12	----
15	16.5	2.36	2.29	2.30	1.20	2.95	1.28	7.01	1.43	1.16	----
16.5	18	2.49	2.36	2.64	2.29	3.02	2.39	7.23	1.45	1.20	----
18	19.5	2.89	2.59	2.72	2.30	3.09	2.48	7.36	1.42	1.22	----
19.5	21	4.19	2.74	2.82	2.32	3.22	2.55	7.89	0.49	1.28	----
21	22.5	4.32	2.84	2.84	2.35	3.26	2.69	8.00	0.52	1.43	----
22.5	24	4.42	3.10	2.99	2.64	3.39	2.72	8.11	1.94	1.46	1.45
24	25.5	4.49	3.33	3.09	2.72	3.45	2.78	8.24	2.01	1.54	1.48
25.5	27	4.78	3.53	3.18	2.78	3.49	2.90	8.56	2.20	1.58	1.61
27	28.5	4.89	3.79	4.18	2.82	3.52	2.95	9.11	2.49	5.01	1.70
28.5	30	4.98	3.89	4.32	2.85	3.54	3.09	9.24	4.62	5.13	1.82
30	31.5		3.94	4.42	2.96	3.59	3.19	9.58	4.69	5.59	1.95
31.5	33		4.02	4.79	3.05	3.72	3.42	10.00	5.53	6.02	
33	34.5		4.05	5.01	3.09	3.77			5.85	6.25	
34.5	36		4.18	5.50	3.30	3.79			6.58	6.87	
36	37.5		4.19	5.72	3.58	3.85			7.65	7.63	
37.5	39		4.23	6.09		3.92			8.02	8.54	
39	40.5		4.29	6.39		3.93			8.15	9.12	
40.5	42					4.05			8.32	9.86	
42	43.5								8.96	10.01	
43.5	45									10.20	

1.1.2.9 Modulus of elasticity test

Sample Depth (m)		Modulus of Elasticity (GPa)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	----	---	----	----	----	----	----	----	---
1.5	3	---	----	----	----	----	----	----	----	----	----
3	4.5	----	----	----	----	----	----	----	----	----	----
4.5	6	----	----	----	----	----	----	----	----	----	----
6	7.5	36.20	----	----	----	----	----	----	----	----	----
7.5	9	37.20	----	----	----	----	----	----	----	----	----
9	10.5	37.60	----	----	----	----	----	----	----	----	----
10.5	12	38.40	----	----	----	----	----	48.90	----	----	----
12	13.5	----	33.20	----	----	----	----	50.60	----	----	----
13.5	15	34.90	----	----	----	----	----	51.80	----	----	----
15	16.5	----	----	----	----	----	----	52.40	26.40	23.70	----
16.5	18	----	----	33.90	----	----	34.60	52.60	----	----	----
18	19.5	35.20	35.40	34.50	----	----	36.40	53.20	27.60	----	----

Sample Depth (m)		Modulus of Elasticity (GPa)									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
19.5	21	39.60	35.80	34.80	----	----	36.80	53.90	21.40	----	----
21	22.5	40.20	36.10	----	32.80	39.40	37.10	54.40	21.80	27.30	----
22.5	24	40.60	36.40	36.90	35.20	41.60	37.60	54.90	32.70	27.80	----
24	25.5	41.90	37.10	38.00	35.70	42.20	38.20	54.70	33.30	----	----
25.5	27	43.10	37.70	38.60	36.10	42.60	39.40	55.70	34.60	28.20	----
27	28.5	43.60	38.60	46.40	36.80	43.80	39.60	56.30	34.60	43.70	----
28.5	30	44.60	39.20	48.20	----	44.00	40.40	57.20	39.80	45.20	----
30	31.5		40.60	48.50	40.20	44.40	42.60	57.60	43.40	47.60	----
31.5	33		40.80	50.20	40.40	45.70	43.80	58.60	46.20	48.20	
33	34.5		42.40	50.80	42.50	46.40			48.20	50.30	
34.5	36		43.20	52.40	44.30	----			51.30	52.60	
36	37.5		43.50	52.80	45.90	47.70			52.40	53.40	
37.5	39		44.40	53.70		48.30			52.70	54.10	
39	40.5		44.90	54.20		48.90			54.60	54.70	
40.5	42					49.70			55.30	55.40	
42	43.5								56.70	56.10	
43.5	45									56.90	

1.1.2.10 Abrasion test

Sample Depth (m)		Abrasion Value									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	0.96	---	0.78	0.82	0.89	1.06	0.92	0.78	---
1.5	3	---	----	1.02	0.81	0.85	0.93	1.08	0.98	0.82	0.65
3	4.5	1.54	1.04	1.04	0.83	0.89	0.97	1.11	1.00	0.84	0.69
4.5	6	1.57	1.08	1.05	0.86	0.93	1.03	1.09	1.04	0.88	----
6	7.5	1.65	1.10	1.08	0.91	0.99	1.05	1.13	1.08	0.92	----
7.5	9	1.71	1.13	1.12	0.95	1.05	1.04	1.12	1.06	0.95	----
9	10.5	1.74	1.15	1.10	1.02	1.07	1.06	1.14	1.07	0.98	0.71
10.5	12	1.76	1.23	1.13	1.08	1.09	1.08	2.35	1.10	1.05	0.74
12	13.5	1.82	1.31	1.14	1.05	1.12	1.10	2.52	1.12	1.08	0.77
13.5	15	1.36	1.33	1.36	1.11	1.52	1.14	2.56	1.13	1.10	0.81
15	16.5	1.41	1.36	1.41	1.13	1.54	1.16	2.61	1.12	1.06	0.84
16.5	18	1.44	1.39	1.45	1.32	1.59	1.36	2.65	1.15	1.09	0.87
18	19.5	1.58	1.44	1.48	1.36	1.61	1.42	2.68	1.14	1.12	0.92
19.5	21	1.92	1.48	1.52	1.39	1.64	1.45	2.70	0.69	1.10	0.98
21	22.5	1.95	1.54	1.54	1.42	1.67	1.48	2.73	0.71	1.14	1.02
22.5	24	1.98	1.59	1.57	1.46	1.69	1.52	2.75	1.22	1.09	1.09
24	25.5	2.02	1.64	1.60	1.49	1.72	1.54	2.76	1.26	1.13	1.12
25.5	27	2.08	1.67	1.63	1.52	1.74	1.57	2.81	1.31	1.15	1.16
27	28.5	2.12	1.72	1.87	1.54	1.76	1.60	2.83	1.38	2.03	1.21
28.5	30	2.15	1.79	1.95	1.57	1.79	1.62	2.86	1.96	2.13	1.24
30	31.5		1.84	2.04	1.59	1.82	1.64	2.91	2.03	2.20	1.27

Sample Depth (m)		Abrasion Value									
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
31.5	33		1.87	2.12	1.62	1.84	1.69	2.94	2.29	2.27	
33	34.5		1.91	2.18	1.64	1.88			2.36	2.39	
34.5	36		1.93	2.35	1.69	1.86			2.62	2.65	
36	37.5		1.96	2.43	1.74	1.89			2.75	2.71	
37.5	39		1.94	2.49		1.87			2.78	2.76	
39	40.5		1.99	2.57		1.92			2.81	2.84	
40.5	42					1.89			2.89	2.95	
42	43.5								2.96	3.06	
43.5	45									3.14	

1.1.3 ANNEXURE- C (RMR LOGS)

1.1.3.1 BH01

Tunnel: 1		BH: 01			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	2	4	3	2	3	14	10	-2	32	Class 4 (POOR)
1.5	3.0	2	3	5	2	4	3	2	3	14	10	-2	32	Class 4 (POOR)
3.0	4.5	4	3	5	2	4	3	2	3	14	10	-2	34	Class 4 (POOR)
4.5	6.0	4	3	5	2	4	5	4	5	20	10	-2	40	Class 4 (POOR)
6.0	7.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
7.5	9.0	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
9.0	10.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
10.5	12.0	4	8	5	4	4	5	4	5	22	10	-2	47	Class 3 (FAIR)
12.0	13.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
13.5	15.0	2	3	5	4	4	5	4	5	22	10	-2	40	Class 4 (POOR)
15.0	16.5	2	3	5	4	4	5	4	5	22	10	-2	40	Class 4 (POOR)
16.5	18.0	2	3	5	4	4	5	4	5	22	10	-2	40	Class 4 (POOR)
18.0	19.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
19.5	21.0	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
21.0	22.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
22.5	24.0	4	8	5	4	4	5	4	5	22	10	-2	47	Class 3 (FAIR)
24.0	25.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3 (FAIR)
25.5	27.0	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
27.0	28.5	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
28.5	29.0	4	13	8	4	4	5	4	5	22	10	-2	55	Class 3 (FAIR)

1.1.3.2 Bh2

Tunnel: 1		BH: 2			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)

Tunnel: 1		BH: 2		T1BH02	TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
7.5	9.0	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
13.5	15.0	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
15.0	16.5	2	3	10	2	4	5	4	5	20	15	-2	48	Class 3 (FAIR)
16.5	18.0	2	3	10	2	4	5	4	5	20	15	-2	48	Class 3 (FAIR)
18.0	19.5	4	3	10	2	4	5	4	5	20	15	-2	50	Class 3 (FAIR)
19.5	21.0	4	3	10	2	4	5	4	5	20	15	-2	50	Class 3 (FAIR)
21.0	22.5	4	8	10	2	4	5	4	5	20	15	-2	55	Class 3 (FAIR)
22.5	24.0	4	3	10	2	4	5	4	5	20	15	-2	50	Class 3 (FAIR)
24.0	25.5	4	8	15	2	4	5	4	5	20	15	-2	60	Class 3 (FAIR)
25.5	27.0	4	8	15	2	4	5	4	5	20	15	-2	60	Class 3 (FAIR)
27.0	28.5	4	8	15	2	4	5	4	5	20	15	-2	60	Class 3 (FAIR)
28.5	30.0	4	8	15	2	4	5	4	5	20	15	-2	60	Class 3 (FAIR)
30.0	31.5	4	13	15	2	4	5	4	5	20	15	-2	65	Class 2 (GOOD)
31.5	33.0	4	13	15	2	4	5	4	5	20	15	-2	65	Class 2 (GOOD)
33.0	34.5	4	8	15	2	4	5	4	5	20	15	-2	60	Class 3 (FAIR)
34.5	36.0	4	8	15	2	4	5	4	5	20	15	-2	60	Class 3 (FAIR)
36.0	37.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
37.5	39.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
39.0	40.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)

1.1.3.3 Bh3

Tunnel: 1		BH: 3		T1BH03	TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	2	3	5	7	-5	17	Class 5 (VERY POOR)
6.0	7.5	2	3	5	2	1	3	2	3	11	7	-5	23	Class 4 (POOR)
7.5	9.0	2	3	5	2	1	3	2	3	11	10	-5	26	Class 4 (POOR)
9.0	10.5	2	3	5	2	1	3	2	3	11	10	-5	26	Class 4 (POOR)

Tunnel: 1		BH: 3			T1BH03		TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	2	3	5	2	4	3	2	3	14	10	-5	29	Class 4 (POOR)
12.0	13.5	2	3	5	2	4	3	2	3	14	10	-5	29	Class 4 (POOR)
13.5	15.0	2	3	10	4	4	5	2	3	18	10	-5	38	Class 4 (POOR)
15.0	16.5	2	3	10	4	5	5	2	3	19	10	-5	39	Class 4 (POOR)
16.5	18.0	4	3	10	4	5	5	2	3	19	10	-5	41	Class 3 (FAIR)
18.0	19.5	4	3	10	4	5	5	2	3	19	10	-5	41	Class 3 (FAIR)
19.5	21.0	4	3	10	4	5	5	2	3	19	10	-5	41	Class 3 (FAIR)
21.0	22.5	4	3	10	4	5	5	2	3	19	10	-5	41	Class 3 (FAIR)
22.5	24.0	4	3	10	4	5	5	2	3	19	10	-5	41	Class 3 (FAIR)
24.0	25.5	4	3	15	4	5	5	2	3	19	10	-5	46	Class 3 (FAIR)
25.5	27.0	4	8	15	4	5	5	2	3	19	10	-5	51	Class 3 (FAIR)
27.0	28.5	4	8	15	4	5	5	4	3	21	10	-5	53	Class 3 (FAIR)
28.5	30.0	4	8	15	4	5	5	4	3	21	10	-5	53	Class 3 (FAIR)
30.0	31.5	4	8	15	4	5	5	4	3	21	10	-5	53	Class 3 (FAIR)
31.5	33.0	4	8	15	4	5	5	4	5	23	10	-5	55	Class 3 (FAIR)
33.0	34.5	4	3	15	4	5	5	4	5	23	10	-5	50	Class 3 (FAIR)
34.5	36.0	7	3	15	4	5	5	4	5	23	10	-5	53	Class 3 (FAIR)
36.0	37.5	7	8	15	4	5	5	4	5	23	10	-5	58	Class 3 (FAIR)
37.5	39.0	7	8	15	4	5	5	4	5	23	10	-5	58	Class 3 (FAIR)
39.0	40.5	7	8	15	4	5	5	4	5	23	10	-5	58	Class 3 (FAIR)

1.1.3.4 Bh4

Tunnel: 1		BH: 4			T1BH04		TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	3	2	3	10	10	-5	25	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	3	2	3	10	10	-5	25	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	3	2	3	10	10	-5	25	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)

Tunnel: 1		BH: 4			T1BH04		TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
15.0	16.5	2	3	5	1	1	5	2	3	12	10	-5	27	Class 4 (POOR)
16.5	18.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
18.0	19.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
19.5	21.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
21.0	22.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
22.5	24.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
24.0	25.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
25.5	27.0	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
27.0	28.5	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
28.5	30.0	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
30.0	31.5	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
31.5	33.0	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
33.0	34.5	4	3	10	2	4	5	2	3	16	10	-5	38	Class 4 (POOR)
34.5	36.0	4	3	10	2	4	5	2	3	16	10	-5	38	Class 4 (POOR)
36.0	37.5	4	8	10	2	4	5	2	3	16	10	-5	43	Class 3(FAIR)
37.5	39.0	4	8	10	2	4	5	2	3	16	10	-5	43	Class 3(FAIR)
39.0	40.5	4	8	10	2	4	5	2	3	16	10	-5	43	Class 3(FAIR)

1.1.3.5 Bh5

Tunnel: 1		BH: 5			TOTAL DEPTH: 42m								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
1.5	3.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
3.0	4.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
4.5	6.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
6.0	7.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
7.5	9.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
9.0	10.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
10.5	12.0	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
12.0	13.5	2	3	5	2	4	5	2	3	16	10	-5	31	Class 4 (POOR)
13.5	15.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
15.0	16.5	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)

Tunnel: 1		BH: 5			TOTAL DEPTH: 42m								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
16.5	18.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
18.0	19.5	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
19.5	21.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
21.0	22.5	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
22.5	24.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
24.0	25.5	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
25.5	27.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
27.0	28.5	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
28.5	30.0	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
30.0	31.5	4	3	8	2	4	5	2	3	16	10	-5	36	Class 4 (POOR)
31.5	33.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
33.0	34.5	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
34.5	36.0	4	3	5	2	4	5	2	3	16	10	-5	33	Class 4 (POOR)
36.0	37.5	4	8	5	2	4	5	2	3	16	10	-5	38	Class 4 (POOR)
37.5	39.0	4	8	5	2	4	5	2	3	16	10	-5	38	Class 4 (POOR)
39.0	40.5	4	13	5	2	4	5	2	3	16	10	-5	43	Class 3 (FAIR)
40.5	42.0	4	13	5	2	4	5	2	3	16	10	-5	43	Class 3 (FAIR)

1.1.3.6 Bh6

Tunnel: 1		BH: 6		T1BH06	TOTAL DEPTH: 33					RMR				
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
13.5	15.0	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
15.0	16.5	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
16.5	18.0	2	3	5	1	1	3	2	3	10	7	-5	22	Class 4 (POOR)
18.0	19.5	2	3	5	2	4	3	2	3	14	7	-5	26	Class 4 (POOR)
19.5	21.0	4	3	5	2	4	3	2	3	14	7	-5	28	Class 4 (POOR)
21.0	22.5	4	3	5	2	4	3	2	3	14	7	-5	28	Class 4 (POOR)
22.5	24.0	4	3	5	2	4	3	2	3	14	7	-5	28	Class 4 (POOR)
24.0	25.5	4	3	5	2	4	3	2	3	14	7	-5	28	Class 4 (POOR)
25.5	27.0	4	3	5	2	4	3	2	3	14	7	-5	28	Class 4 (POOR)
27.0	28.5	4	3	5	2	4	3	2	3	14	7	-5	28	Class 4 (POOR)
28.5	30.0	4	8	5	2	4	3	2	3	14	7	-5	33	Class 4 (POOR)
30.0	31.5	4	8	5	2	4	3	2	3	14	7	-5	33	Class 4 (POOR)
31.5	33.0	4	13	5	2	4	3	2	3	14	7	-5	38	Class 4 (POOR)

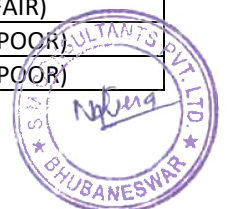
1.1.3.7 Bh7

Tunnel: 1		BH: 7		T1BH7	TOTAL DEPTH: 32					RMR				
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
1.5	3.0	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
3.0	4.5	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
4.5	6.0	2	3	5	1	1	1	1	1	5	10	-2	23	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	1	1	1	5	10	-2	23	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	1	1	1	5	10	-2	23	Class 4 (POOR)

9.0	10.5	2	3	5	1	1	1	1	1	5	10	-2	23	Class 4 (POOR)
10.5	12.0	7	3	5	1	1	5	4	3	14	10	-2	37	Class 4 (POOR)
12.0	13.5	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
13.5	15.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
15.0	16.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
16.5	18.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
18.0	19.5	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
19.5	21.0	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
21.0	22.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
22.5	24.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
24.0	25.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
25.5	27.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
27.0	28.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
28.5	30.0	7	17	20	6	6	6	6	6	30	16	-1	89	Class 1 (VERY GOOD)
30.0	31.5	7	13	20	6	6	6	6	6	30	17	0	87	Class 1 (VERY GOOD)
31.5	32.0	7	17	20	6	6	6	6	6	30	18	1	93	Class 1 (VERY GOOD)

1.1.3.8 Bh8

Tunnel: 1		BH: 8		T1BH08	TOTAL DEPTH: 43								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
12.0	13.5	2	3	8	1	1	5	2	1	10	7	-2	28	Class 4 (POOR)
13.5	15.0	2	3	8	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
15.0	16.5	2	3	8	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
16.5	18.0	2	3	8	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
18.0	19.5	2	3	8	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
19.5	21.0	1	3	8	2	2	5	2	1	12	10	-2	32	Class 4 (POOR)
21.0	22.5	1	3	8	2	2	5	2	1	12	10	-2	32	Class 4 (POOR)
22.5	24.0	2	3	10	2	2	5	2	1	12	10	-2	35	Class 4 (POOR)
24.0	25.5	2	3	10	2	2	5	2	1	12	7	-2	32	Class 4 (POOR)
25.5	27.0	2	8	15	2	2	5	2	1	12	7	-2	42	Class 3 (FAIR)
27.0	28.5	2	8	8	2	2	5	2	1	12	7	-2	35	Class 4 (POOR)
28.5	30.0	4	13	8	2	2	5	2	1	12	7	-2	42	Class 3 (FAIR)
30.0	31.5	4	8	8	2	2	5	2	1	12	7	-2	37	Class 4 (POOR)
31.5	33.0	7	8	8	2	2	5	2	1	12	10	-2	43	Class 3 (FAIR)
33.0	34.5	7	3	8	1	1	5	2	1	10	10	-2	36	Class 4 (POOR)
34.5	36.0	7	8	8	2	1	5	2	1	11	7	-2	39	Class 4 (POOR)



36.0	37.5	7	8	8	2	2	5	2	1	12	7	-2	40	Class 4 (POOR)
37.5	39.0	7	8	8	1	2	5	2	1	11	7	-2	39	Class 4 (POOR)
39.0	40.5	7	13	8	1	1	5	2	1	10	7	-2	43	Class 3 (FAIR)
40.5	42.0	7	13	8	1	1	5	2	1	10	7	-2	43	Class 3 (FAIR)
42.0	43.0	7	13	8	1	1	5	2	1	10	7	-2	43	Class 3 (FAIR)

1.1.3.9 Bh9

Tunnel: 1			BH: 9		T1BH09		TOTAL DEPTH: 44							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)	
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)	
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)	
4.5	6.0	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)	
6.0	7.5	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)	
7.5	9.0	2	3	5	0	0	0	0	1	1	7	-5	13	Class 5 (VERY POOR)	
9.0	10.5	2	3	5	4	4	3	2	3	16	7	-5	28	Class 4 (POOR)	
10.5	12.0	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
12.0	13.5	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
13.5	15.0	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
15.0	16.5	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
16.5	18.0	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
18.0	19.5	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
19.5	21.0	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
21.0	22.5	2	8	5	4	4	3	2	3	16	10	-5	36	Class 4 (POOR)	
22.5	24.0	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
24.0	25.5	2	3	5	4	4	3	2	3	16	10	-5	31	Class 4 (POOR)	
25.5	27.0	2	3	10	4	4	3	2	3	16	10	-5	36	Class 4 (POOR)	
27.0	28.5	4	8	10	4	4	3	2	3	16	10	-5	43	Class 3(FAIR)	
28.5	30.0	4	8	10	4	4	3	2	3	16	10	-5	43	Class 3(FAIR)	
30.0	31.5	7	8	10	4	4	3	2	3	16	10	-5	46	Class 3(FAIR)	
31.5	33.0	7	8	10	4	4	3	2	3	16	10	-5	46	Class 3(FAIR)	
33.0	34.5	7	8	10	4	4	3	2	3	16	10	-5	46	Class 3(FAIR)	
34.5	36.0	7	13	10	4	4	3	2	3	16	10	-5	51	Class 3(FAIR)	
36.0	37.5	7	13	10	4	4	3	2	3	16	10	-5	51	Class 3(FAIR)	
37.5	39.0	7	8	10	4	4	3	2	3	16	10	-5	46	Class 3(FAIR)	
39.0	40.5	7	13	10	4	4	3	2	3	16	10	-5	51	Class 3(FAIR)	
40.5	42.0	7	13	10	4	4	3	2	3	16	10	-5	51	Class 3(FAIR)	
42.0	43.5	7	17	10	4	4	3	2	3	16	10	-5	55	Class 3(FAIR)	
43.5	44.0	7	17	10	4	4	3	2	3	16	10	-5	55	Class 3(FAIR)	

1.1.3.10 Bh10

Tunnel: 1		BH: 10		T1BH10P2		TOTAL DEPTH: 31							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	4	3	14	10	-5	27	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	4	3	14	10	-5	27	Class 4 (POOR)
3.0	4.5	0	3	5	4	4	5	4	3	20	10	-5	33	Class 4 (POOR)
4.5	6.0	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
6.0	7.5	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
7.5	9.0	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
9.0	10.5	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
10.5	12.0	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
12.0	13.5	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
13.5	15.0	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
15.0	16.5	0	3	5	4	5	5	4	5	23	10	-5	36	Class 4 (POOR)
16.5	18.0	0	3	5	4	5	5	4	5	23	10	-5	36	Class 4 (POOR)
18.0	19.5	0	3	5	4	5	5	4	6	24	10	-5	37	Class 4 (POOR)
19.5	21.0	0	3	5	4	5	5	4	6	24	10	-5	37	Class 4 (POOR)
21.0	22.5	0	3	5	4	5	5	4	6	24	10	-5	37	Class 4 (POOR)
22.5	24.0	2	3	5	4	5	5	4	6	24	10	-5	39	Class 4 (POOR)
24.0	25.5	2	3	5	4	5	5	4	6	24	10	-5	39	Class 4 (POOR)
25.5	27.0	2	3	5	4	5	5	4	6	24	10	-5	39	Class 4 (POOR)
27.0	28.5	2	3	5	4	5	5	4	6	24	10	-5	39	Class 4 (POOR)
28.5	30.0	2	3	5	4	5	5	4	6	24	10	-5	39	Class 4 (POOR)
30.0	31.0	2	3	5	4	5	5	4	6	24	10	-5	39	Class 4 (POOR)

1.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-01)

[illegible]

Test Section	25.5 m- 28.5 m	radius in cm=	3.8						Intake (Lit.)	Flow Condition			Turbulent		
										Lugeon	K cm/sec	Q (cm3/sec)			
Upper Part of Test Section (m)		L=Test Section in m.		Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.			
25.50	28.50	3	300	2.5	---	29.5	1	3950	1.10	3.10	6.80	5.0	16.7	0.00000978	
25.50	28.50	3	300	2.5	---	29.5	2	4950	1.60	3.50	9.10	6.3	21.0	0.00000983	
25.50	28.50	3	300	2.5	---	29.5	3	5950	2.10	4.30	8.50	6.4	21.3	0.00000831	
25.50	28.50	3	300	2.5	---	29.5	2	4950	1.30	4.10	7.80	6.0	20.0	0.00000937	
25.50	28.50	3	300	2.5	---	29.5	1	3950	0.90	3.50	6.50	5.0	16.7	0.00000978	
												Avr.	0.00000941	0.80	

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-03)

Test Section		25.5 m- 28.5 m	radius in cm=	3. 8				Intake (Lit.)									
													Flow Condition				
													Lugeon				
													K cm/sec				
													Q (cm3/sec)				
													Avg.				
													3 (15 min)				
													2 (10 min)				
													1 (5 min)				
													Differential Head of Water H=(Hg+Hp) cm.				
														1			
														Hp (Pressure at monometer) kg/cm2			
														Hg in m.			
														GWL of hole m			
															Hight Of water Swivel from GL		

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-04)

Test Section	25.5 m- 28.5 m	radius in cm=	3 · 8						Intake (Lit.)								
	</																

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-05)

Test Section		27.0 m-30.0 m	radius in cm=		3 . 8			Intake (Lit.)									
																	Flow Condition

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-06)

Test Section	18.0 m- 21.0 m	radius in cm=	3 . 8				Intake (Lit.)												
							Flow Condition	Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp)	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-07)

Test Section	16.5 m-19.5 m	radius in cm=	3 . 8				Intake (Lit.)									

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-08)

Test Section	28.5 m-31.5 m		radius in cm=		3.8			Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	Lugeon	Flow Condition
														K cm/sec	
28.50	31.50	3	300	2.5	--	32.5	1	4250	0.90	2.90	3.10	3.0	10.0	0.00000545	0.50
28.50	31.50	3	300	2.5	--	32.5	2	5250	1.20	3.70	5.60	4.7	15.7	0.00000692	0.70
28.50	31.50	3	300	2.5	--	32.5	3	6250	2.30	3.00	4.10	3.6	12.0	0.00000445	0.40
28.50	31.50	3	300	2.5	--	32.5	2	5250	1.50	3.20	5.10	4.2	14.0	0.00000618	0.60
28.50	31.50	3	300	2.5	--	32.5	1	4250	0.60	5.40	3.90	4.7	15.7	0.00000854	0.90
													Avg.	0.00000631	0.40

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-09)

Test Section	31.5 m-34.5 m	radius in cm=	3.8					Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-01 (BH-10)

Test Section	16.5 m-19.5 m	radius in cm=	3 . 8					Intake (Lit.)								
														</		

Lugen test result

1.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.1	BH-1	At 0.5 m depth	6.66	18.25	0.025
2			At 3.0 m depth	6.71	20.01	0.022
3		BH-2	At 0.5 m depth	6.77	23.47	0.026
4			At 3.0 m depth	6.89	25.68	0.029
5		BH-3	At 0.5 m depth	6.01	30.78	0.031
6			At 1.5 m depth	6.11	31.22	0.035
7		BH-4	At 0.5 m depth	9.91	26.87	0.024
8			At 6.0 m depth	6.13	27.84	0.021
9			At 7.5 m depth	6.95	39.62	0.030
10		BH-5	At 0.5 m depth	6.04	35.88	0.031
11		BH-6	At 0.5 m depth	6.65	40.11	0.034
12		BH-7	At 0.5 m depth	6.89	38.96	0.030
13		BH-8	At 0.5 m depth	6.52	35.67	0.031
14		BH-9	At 0.5 m depth	6.64	27.41	0.022
15		BH-10	At 0.5 m depth	6.68	38.25	0.025
16			At 1.5 m depth	6.59	25.62	0.027
17			At. 6.0 m depth	6.81	21.89	0.029
18			At. 7.5 m depth	6.85	24.37	0.021
19			At. 16.5 m depth	6.64	28.95	0.032

1.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

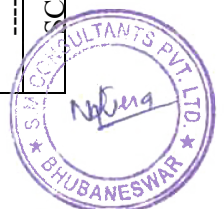
CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.1	BH-1	24.0	6.7	26	18
2			27.0	6.8	28	24

1.1.7 ANNEXURE- G (SOIL TEST)

LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-1, CHAINAGE NO.41592)																									
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																									
3	At 3.0 m	1	SL.No	Grain size analysis					Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive Strength	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
		At 0.5 m	Samples	Type of sample collection	Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %												
				D.S	12.17	8.65	8.98	13.08	36.62	20.50	32	17	15	----	----	----	----	----	----	----	2.70	----	20	----	CL
				S.P.T	0.41	0.15	47.12	51.88	0.44	----	----	----	----	----	----	----	----	----	----	----	2.65	----	----	N>100	NOTE*
NOTE* - From 2.0 m to 3.0 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.																									

LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-2,CHAINAGE NO.41642)																									
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																									
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %			Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive Strength	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %														
1	At 0.5 m	D.S	0.57	1.88	14.05	50.20	33.30		19		NP									2.66		0			MS
3	At 3.0 m	S.P.T	0.00	0.00	4.86	50.01	45.13		20		NP									2.66		0	N32		MS

LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-3,CHAINAGE NO.41692)																									
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																									
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %			Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive Strength	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %														
1	At 0.5 m	D.S	0.61	7.54	7.78	24.85	25.73	0.51	29	18	11										2.68		01		SC
2	At 1.5 m	U.D.S	0.64	6.52	8.12	24.64	30.48	0.60	29	61	01										2.68		01		SC



LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-4,CHAINAGE NO.41742)																											
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																											
6	At.	5	1	SL. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive Strength	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
							Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %												
						D.S	48.17	4.38	12.30	19.25	15.90		19	----	NP	----	----	----	----	----	----	2.66	----	0	----	GM	
						S.P.	0.0	0.0	2.4	71.	26.29		----	----	----	----	----	----	----	----	----	2.6	----	----	N>		

NOTE*- From 4.5 m to 7.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-5,CHAINAGE NO.41792)																								
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Drv density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive Strength	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.	
1	At 0.5 m	D.S	Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	----	----	----	----	----	----	----	2.69	----	----	12	----	GC
LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-6,CHAINAGE NO.41842)																								

LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-6,CHAINAGE NO.41842)

TEST CONDUCTED AS PER IS : 2720 (Pt. II , Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			% Fine Gravel In	% Coarse Sand In	% Medium Sand In	% Fine Sand in	Silt in % in 75µm to 425µm	Clay in % in less than 75µm	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %												
1	At 0.5 m	D.S	78.34	1.28	3.30	8.95	8.13		18		NP						2.68		0			GP-GM	
LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-7,CHAINAGE NO.41892)																							
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			% Fine Gravel In	% Coarse Sand In	% Medium Sand In	% Fine Sand in	Silt in % in 75µm to 425µm	Clay in % in less than 75µm	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %												
1	At 0.5 m	D.S	4.40	0.06	6.33	27.63	41.08	20.50	32	18	14						2.70		20			CL	
LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-8,CHAINAGE NO.41942)																							
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture	Bulk density in g/cc	Dry density in g/cc	Cohesion (c)	Angle of shearing	Un-Confined	Compression Index	Specific gravity	Void ratio	Free swelling Index	Field S.P.T. Value	Group of soil.
			Fine	Coarse	Medium	Fine Sand	Silt in % in 75µm to 425µm	Clay in % in less than 75µm	Liquid	Plastic	Plasticity												
1	At 0.5 m	D.S	23.71	3.46	7.06	31.32	21.95	12.50	29	18	11						2.68		10			SC	

LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-9,CHAINAGE NO.41992)																								
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index	(N) Field S.P.T. Value (N)	Group of soil.	
			% In Fine Gravel	% In Coarse Sand	% In Medium Sand	% In Fine Sand	% in Silt	% in Clay	Liquid Limit	Plastic Limit	Plasticity Index													
1	At 0.5 m	D.S	0.69	0.81	10.24	30.10	36.96	21.20	31	17	14	---	---	---	---	---	---	2.70	---	15	---	CL		
LABORATORY TEST RESULT OF TUNNEL NO.1 (BH-10,CHAINAGE NO.42052)																								
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compressive	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index	(N) Field S.P.T. Value (N)	Group of soil.	
			% In Fine Gravel	% In Coarse Sand	% In Medium Sand	% In Fine Sand	% in Silt	% in Clay	Liquid Limit	Plastic Limit	Plasticity Index													
1	At 0.5	D.S	0.37	0.07	19.06	39.96	27.64	12.90	28	18	10	---	---	---	---	---	---	2.68	---	10	---	SC		
2	At 1.5	S.P.T	8.19	1.89	10.28	26.63	32.41	20.60	32	18	14	---	---	---	---	---	---	2.70	---	20	N=29	CL		
5	At.	S.P.	0.0	0.0	32.	66.	9	1.0	---	---	---	---	---	---	---	---	---	2.6	---	---	N>	NOTE*		
6	At.	S.P.	0.0	0.0	33.	61.	8	4.9	---	---	---	---	---	---	---	---	---	2.6	---	---	N>	NOTE*		
12	At.	S.P.	11.	5.7	29.	36.	15	17.	---	---	---	---	---	---	---	---	---	2.6	---	---	N>	NOTE*		
NOTE* - From 6.0 m to 7.5 m & 16.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.																								

2. T2

2.1 Annexures

2.1.1 ANNEXURE- A (BORELOG)



2.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

2.1.2.1 Specific Gravity

Sample Depth (m)		Specific Gravity							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	2.78	2.76	2.76	2.80	---	---
1.50	3.00	---	---	2.78	2.76	2.76	2.80	---	---
3.00	4.50	2.76	---	2.78	2.76	2.77	2.81	2.78	2.78
4.50	6.00	2.76	2.76	2.78	2.77	2.77	2.81	2.78	2.80
6.00	7.50	2.79	2.79	2.78	2.78	2.78	2.81	2.78	2.80
7.50	9.00	2.78	2.78	2.78	2.78	2.78	2.81	2.79	2.81
9.00	10.50	2.79	2.79	2.79	2.79	2.79	2.78	2.79	2.81
10.50	12.00	2.77	2.78	2.79	2.79	2.79	2.78	2.79	2.81
12.00	13.50	2.78	2.78	2.80	2.79	2.80	2.79	2.79	2.80
13.50	15.00	2.78	2.78	2.79	2.78	2.80	2.78	2.79	2.81
15.00	16.50	2.79	2.78	2.81	2.79	2.81	2.78	2.79	2.81
16.50	18.00	2.79	2.79	2.81	2.79	2.81	2.78	2.80	2.80
18.00	19.50	2.79	2.78	2.79	2.79	2.81	2.78	2.80	2.80
19.50	21.00	2.79	2.78	2.79	2.78	2.82	2.79	2.81	2.80
21.00	22.50	2.80	2.79	2.80	2.79	2.82	2.79	2.81	2.81
22.50	24.00	2.80	2.78	2.80	2.79	2.82	2.79	2.81	2.81
24.00	25.50		2.79	2.79	2.79	2.82	2.78	2.81	2.81
25.50	27.00		2.79	2.80	2.80	2.81	2.78	2.80	2.81
27.00	28.50		2.78	2.80	2.80	2.81	2.79	2.80	2.81
28.50	30.00		2.79	2.79	2.81	2.81	2.79	2.80	2.80
30.00	31.50		2.78	2.81	2.81	2.80	2.78	2.81	2.81
31.50	33.00		2.78	2.80	2.81	2.80	2.78		2.80
33.00	34.50		2.80	2.80	2.81	2.81	2.78		2.81
34.50	36.00			2.81	2.81	2.80	2.79		2.81
36.00	37.50			2.81	2.82	2.81	2.78		2.82
37.50	39.00			2.79	2.82	2.80	2.79		
39.00	40.50			2.79	2.82	2.81	2.79		
40.50	42.00			2.80	2.82	2.81			
42.00	43.50			2.80	2.82	2.82			
43.50	46.00			2.82	2.82				

BH09 - BH16

Sample Depth (m)		Specific Gravity							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	2.78	---	---	---	---	---	---	---
3.00	4.50	2.78	2.77	---	---	---	---	2.67	2.78
4.50	6.00	2.78	2.78	2.78	2.77	---	2.77	2.68	2.78
6.00	7.50	2.79	2.77	2.77	2.77	---	2.78	2.69	2.79
7.50	9.00	2.79	2.77	2.77	2.78	2.78	2.78	2.81	2.79
9.00	10.50	2.79	2.77	2.77	2.78	2.78	2.77	2.82	2.80
10.50	12.00	2.79	2.78	2.78	2.78	2.78	2.79	2.83	2.80
12.00	13.50	2.80	2.78	2.79	2.80	2.77	2.80	2.82	2.80
13.50	15.00	2.80	2.77	2.79	2.80	2.78	2.81	2.82	2.80
15.00	16.50	2.81	2.77	2.78	2.81	2.79	2.81	2.83	2.80
16.50	18.00	2.81	2.78	2.79	2.81	2.78	2.82	2.83	2.80
18.00	19.50	2.81	2.79	2.79	2.81	2.79	2.81	2.83	2.81
19.50	21.00	2.82	2.79	2.78	2.81	2.79	2.82	2.82	2.81
21.00	22.50	2.82	2.79	2.78	2.81	2.80	2.81	2.83	2.83
22.50	24.00	2.82	2.80	2.78	2.82	2.80	2.82	2.83	2.83
24.00	25.50	2.82	2.80	2.80		2.79	2.82	2.82	
25.50	27.00	2.81	2.80	2.80		2.79	2.83	2.84	
27.00	28.50	2.81	2.79	2.79		2.79			
28.50	30.00	2.81	2.79	2.80		2.80			
30.00	31.50	2.82	2.79	2.80		2.81			
31.50	33.00	2.81	2.79	2.78					
33.00	34.50	2.83	2.79	2.80					
34.50	36.00	2.79	2.79	2.80					
36.00	37.50	2.80	2.79						
37.50	39.00	2.80	2.80						
39.00	40.50	2.80	2.79						
40.50	42.00	2.80	2.80						
42.00	43.50								
43.50	46.00								

2.1.2.2 Dry Density

Sample Depth (m)		Dry Density (gm/cc)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	2.72	2.73	2.72	2.78	---	---
1.50	3.00	---	---	2.74	2.72	2.73	2.78	---	---
3.00	4.50	2.66	---	2.73	2.73	2.72	2.79	2.72	2.76
4.50	6.00	2.75	2.66	2.75	2.73	2.72	2.79	2.73	2.76

Sample Depth (m)		Dry Density (gm/cc)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
6.00	7.50	2.77	2.74	2.76	2.74	2.73	2.78	2.74	2.77
7.50	9.00	2.76	2.76	2.72	2.75	2.75	2.79	2.74	2.77
9.00	10.50	2.76	2.77	2.76	2.77	2.77	2.75	2.73	2.78
10.50	12.00	2.77	2.76	2.77	2.77	2.78	2.75	2.75	2.78
12.00	13.50	2.77	2.77	2.79	2.77	2.77	2.77	2.77	2.77
13.50	15.00	2.76	2.77	2.78	2.78	2.79	2.77	2.78	2.79
15.00	16.50	2.76	2.76	2.78	2.78	2.79	2.76	2.77	2.77
16.50	18.00	2.76	2.77	2.78	2.78	2.79	2.76	2.78	2.77
18.00	19.50	2.77	2.77	2.78	2.78	2.80	2.76	2.78	2.77
19.50	21.00	2.78	2.77	2.77	2.76	2.78	2.76	2.79	2.78
21.00	22.50	2.78	2.76	2.79	2.76	2.78	2.76	2.78	2.78
22.50	24.00	2.77	2.76	2.79	2.76	2.79	2.77	2.79	2.78
24.00	25.50		2.77	2.78	2.77	2.80	2.77	2.78	2.77
25.50	27.00		2.76	2.79	2.78	2.80	2.76	2.78	2.78
27.00	28.50		2.76	2.77	2.79	2.80	2.75	2.79	2.78
28.50	30.00		2.76	2.78	2.79	2.79	2.75	2.79	2.79
30.00	31.50		2.77	2.78	2.79	2.79	2.75	2.79	2.79
31.50	33.00		2.76	2.77	2.80	2.78	2.75		2.78
33.00	34.50		2.78	2.78	2.80	2.79	2.75		2.79
34.50	36.00			2.78	2.80	2.78	2.75		2.78
36.00	37.50			2.77	2.80	2.79	2.76		2.79
37.50	39.00			2.78	2.80	2.79	2.76		
39.00	40.50			2.77	2.80	2.78	2.77		
40.50	42.00			2.79	2.80	2.78			
42.00	43.50			2.78	2.80	2.80			
43.50	46.00								

BH09-BH16

Sample Depth (m)		Dry Density (gm/cc)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	2.73	---	---	---	---	---	---	---
3.00	4.50	2.74	2.72	---	---	---	---	2.64	2.74
4.50	6.00	2.74	2.73	2.72	2.72	---	2.71	2.65	2.75
6.00	7.50	2.73	2.74	2.72	2.75	---	2.72	2.66	2.76
7.50	9.00	2.73	2.73	2.72	2.75	----	2.74	2.78	2.75
9.00	10.50	2.75	2.73	2.73	2.76	----	2.75	2.78	2.77
10.50	12.00	2.76	2.73	2.73	2.77	----	2.76	2.79	2.78
12.00	13.50	2.77	2.72	2.74	2.78	----	2.78	2.79	2.78
13.50	15.00	2.77	2.74	2.74	2.79	----	2.79	2.79	2.78
15.00	16.50	2.78	2.74	2.74	2.79	----	2.78	2.78	2.78

Sample Depth (m)		Dry Density (gm/cc)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
16.50	18.00	2.77	2.75	2.75	2.79	2.75	2.79	2.78	2.79
18.00	19.50	2.77	2.76	2.75	2.78	2.77	2.79	2.78	2.79
19.50	21.00	2.78	2.77	2.75	2.78	2.77	2.79	2.79	2.79
21.00	22.50	2.78	2.77	2.76	2.79	2.76	2.78	2.79	2.80
22.50	24.00	2.79	2.77	2.76	2.80	2.76	2.79	2.79	2.81
24.00	25.50	2.79	2.76	2.77		2.77	2.79	2.78	
25.50	27.00	2.79	2.76	2.77		2.78	2.80	2.80	
27.00	28.50	2.78	2.76	2.77		2.78			
28.50	30.00	2.78	2.77	2.77		2.77			
30.00	31.50	2.78	2.77	2.78		2.78			
31.50	33.00	2.79	2.76	2.77					
33.00	34.50	2.79	2.76	2.78					
34.50	36.00	2.76	2.76	2.78					
36.00	37.50	2.77	2.77						
37.50	39.00	2.76	2.77						
39.00	40.50	2.77	2.77						
40.50	42.00	2.78	2.78						

2.1.2.3 Water absorption Test

Sample Depth (m)		Water Absorption							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	0.36	0.44	0.45	0.24	---	---
1.50	3.00	---	---	0.34	0.44	0.41	0.22	---	---
3.00	4.50	0.45	---	0.33	0.43	0.44	0.18	0.38	0.28
4.50	6.00	0.33	0.44	0.35	0.43	0.42	0.16	0.32	0.26
6.00	7.50	0.21	0.32	0.34	0.42	0.40	0.18	0.31	0.22
7.50	9.00	0.21	0.21	0.33	0.32	0.32	0.16	0.32	0.21
9.00	10.50	0.20	0.21	0.31	0.21	0.31	0.25	0.32	0.21
10.50	12.00	0.20	0.19	0.26	0.20	0.28	0.22	0.31	0.20
12.00	13.50	0.18	0.17	0.21	0.19	0.24	0.24	0.18	0.18
13.50	15.00	0.18	0.18	0.18	0.18	0.21	0.21	0.16	0.17
15.00	16.50	0.18	0.18	0.16	0.17	0.18	0.22	0.16	0.17
16.50	18.00	0.17	0.18	0.19	0.16	0.16	0.24	0.14	0.16
18.00	19.50	0.17	0.20	0.20	0.16	0.19	0.24	0.14	0.16
19.50	21.00	0.17	0.21	0.18	0.18	0.13	0.23	0.13	0.16
21.00	22.50	0.16	0.19	0.19	0.15	0.18	0.21	0.13	0.17
22.50	24.00	0.16	0.17	0.20	0.15	0.18	0.23	0.12	0.17
24.00	25.50		0.17	0.17	0.15	0.17	0.23	0.13	0.18
25.50	27.00		0.18	0.18	0.14	0.16	0.22	0.15	0.18
27.00	28.50		0.18	0.17	0.14	0.13	0.24	0.15	0.19
28.50	30.00		0.19	0.18	0.14	0.18	0.24	0.12	0.17
30.00	31.50		0.19	0.19	0.14	0.21	0.25	0.11	0.17

Sample Depth (m)		Water Absorption							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
31.50	33.00		0.20	0.17	0.14	0.27	0.21		0.19
33.00	34.50		0.16	0.18	0.14	0.26	0.22		0.15
34.50	36.00			0.17	0.13	0.21	0.22		0.15
36.00	37.50			0.18	0.13	0.29	0.22		0.15
37.50	39.00			0.16	0.13	0.17	0.20		
39.00	40.50			0.17	0.13	0.13	0.20		
40.50	42.00			0.16	0.13	0.18			
42	43.5			0.15	0.12	0.12			
43.5	46			0.12	0.12				

BH09-BH16

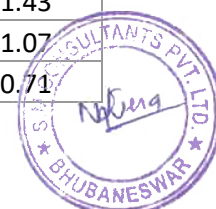
Sample Depth (m)		Water Absorption							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	0.42	---	---	---	---	---	---	---
3.00	4.50	0.41	0.41	---	---	---	---	0.38	0.35
4.50	6.00	0.40	0.38	0.41	0.21	---	0.34	0.35	0.33
6.00	7.50	0.38	0.36	0.38	0.22	---	0.32	0.32	0.31
7.50	9.00	0.36	0.36	0.36	0.21	---	0.31	0.18	0.32
9.00	10.50	0.35	0.35	0.34	0.24	---	0.32	0.16	0.30
10.50	12.00	0.32	0.37	0.32	0.22	---	0.31	0.14	0.22
12.00	13.50	0.31	0.37	0.30	0.18	---	0.21	0.14	0.20
13.50	15.00	0.30	0.38	0.28	0.16	---	0.18	0.14	0.18
15.00	16.50	0.30	0.35	0.27	0.16	---	0.16	0.13	0.17
16.50	18.00	0.21	0.34	0.25	0.17	0.33	0.14	0.13	0.17
18.00	19.50	0.20	0.22	0.24	0.17	0.31	0.13	0.13	0.16
19.50	21.00	0.18	0.22	0.23	0.13	0.28	0.13	0.11	0.16
21.00	22.50	0.18	0.21	0.21	0.12	0.26	0.13	0.12	0.14
22.50	24.00	0.16	0.21	0.20	0.10	0.24	0.13	0.12	0.12
24.00	25.50	0.16	0.21	0.20		0.20	0.12	0.12	
25.50	27.00	0.16	0.19	0.20		0.19	0.12	0.10	
27.00	28.50	0.17	0.20	0.19		0.19			
28.50	30.00	0.17	0.20	0.19		0.19			
30.00	31.50	0.17	0.20	0.19		0.18			
31.50	33.00	0.18	0.21	0.19					
33.00	34.50	0.16	0.21	0.19					
34.50	36.00	0.24	0.22	0.18					
36.00	37.50	0.23	0.21						
37.50	39.00	0.21	0.20						
39.00	40.50	0.21	0.19						
40.50	42.00	0.20	0.18						

2.1.2.4 Porosity

Sample Depth (m)		Porosity (%)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	2.16	1.09	1.45	0.71	---	---
1.50	3.00	---	---	1.44	1.45	1.09	0.71	---	---
3.00	4.50	3.62	---	1.80	1.09	1.81	0.71	2.16	0.72
4.50	6.00	0.36	3.62	1.08	1.44	1.81	0.71	1.80	1.43
6.00	7.50	0.72	1.79	0.72	1.44	1.80	1.07	1.44	1.07
7.50	9.00	0.72	0.72	2.16	1.08	1.08	0.71	1.79	1.42
9.00	10.50	1.08	0.72	1.08	0.72	0.72	1.08	2.15	1.07
10.50	12.00	0.00	0.72	0.72	0.72	0.36	1.08	1.43	1.07
12.00	13.50	0.36	0.36	0.36	0.72	1.07	0.72	0.72	1.07
13.50	15.00	0.72	0.36	0.36	0.00	0.36	0.36	0.36	0.71
15.00	16.50	1.08	0.72	1.07	0.36	0.71	0.72	0.72	1.42
16.50	18.00	1.08	0.72	1.07	0.36	0.71	0.72	0.71	1.07
18.00	19.50	0.72	0.36	0.36	0.36	0.36	0.72	0.71	1.07
19.50	21.00	0.36	0.36	0.72	0.72	1.42	1.08	0.71	0.71
21.00	22.50	0.71	1.08	0.36	1.08	1.42	1.08	1.07	1.07
22.50	24.00	0.70	0.72	0.36	1.08	1.06	0.72	0.71	1.07
24.00	25.50		0.72	0.36	0.72	0.71	0.36	1.07	1.42
25.50	27.00		1.08	0.36	0.71	0.36	0.72	0.71	1.07
27.00	28.50		0.72	1.07	0.36	0.36	1.43	0.36	1.07
28.50	30.00		1.08	0.36	0.71	0.71	1.43	0.36	0.36
30.00	31.50		0.36	1.07	0.71	0.36	1.08	0.71	0.71
31.50	33.00		0.72	1.07	0.36	0.71	1.08		0.71
33.00	34.50		0.71	0.71	0.36	0.71	1.08		0.71
34.50	36.00			1.07	0.36	0.71	1.43		1.07
36.00	37.50			1.42	0.71	0.71	0.72		1.06
37.50	39.00			0.36	0.71	0.36	1.08		
39.00	40.50			0.72	0.71	1.07	0.72		
40.50	42.00			0.36	0.71	1.07			
42	43.5			0.71	0.71	0.71			
43.5	46			0.71	0.71				

BH09-BH16

Sample Depth (m)		Porosity (%)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	1.80	---	---	---	---	---	---	---
3.00	4.50	1.44	1.81	---	---	---	---	1.12	1.44
4.50	6.00	1.44	1.80	2.16	1.81	---	2.17	1.12	1.08
6.00	7.50	2.15	1.08	1.81	0.72	---	2.16	1.12	1.08
7.50	9.00	2.15	1.44	1.81	1.08	----	1.44	1.07	1.43
9.00	10.50	1.43	1.44	1.44	0.72	----	0.72	1.42	1.07
10.50	12.00	1.08	1.80	1.80	0.36	----	1.08	1.41	0.71



Sample Depth (m)		Porosity (%)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
12.00	13.50	1.07	2.16	1.79	0.71	----	0.71	1.06	0.71
13.50	15.00	1.07	1.08	1.79	0.36	----	0.71	1.06	0.71
15.00	16.50	1.07	1.08	1.44	0.71	----	1.07	1.77	0.71
16.50	18.00	1.42	1.08	1.43	0.71	1.08	1.06	1.77	0.36
18.00	19.50	1.42	1.08	1.43	1.07	0.72	0.71	1.77	0.71
19.50	21.00	1.42	0.72	1.08	1.07	0.72	1.06	1.06	0.71
21.00	22.50	1.42	0.72	0.72	0.71	1.43	1.07	1.41	1.06
22.50	24.00	1.06	1.07	0.72	0.71	1.43	1.06	1.41	0.71
24.00	25.50	1.06	1.43	1.07		0.72	1.06	1.42	
25.50	27.00	0.71	1.43	1.07		0.36	1.06	1.41	
27.00	28.50	1.07	1.08	0.72		0.36			
28.50	30.00	1.07	0.72	1.07		1.07			
30.00	31.50	1.42		0.71		1.07			
31.50	33.00	0.71	1.08	0.36					
33.00	34.50	1.41	1.08	0.71					
34.50	36.00	1.08	1.08	0.71					
36.00	37.50	1.07	0.72						
37.50	39.00	1.43	1.07						
39.00	40.50	1.07	0.72						
40.50	42.00	0.71	0.71						
42	43.5								
43.5	46								

2.1.2.5 Hardness

Sample Depth (m)		Mohr's Hardness							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	5.00	5.00	5.00	7.00	---	---
1.50	3.00	---	---	6.00	5.00	5.00	7.00	---	---
3.00	4.50	5.00	---	6.00	5.00	5.00	7.00	5.00	7.00
4.50	6.00	5.00	5.00	5.00	6.00	6.00	7.00	5.00	7.00
6.00	7.50	6.00	6.00	6.00	6.00	5.00	7.00	5.00	7.00
7.50	9.00	6.00	6.00	5.00	6.00	6.00	7.00	5.00	7.00
9.00	10.50	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.00
10.50	12.00	7.00	7.00	6.00	6.00	6.00	6.00	6.00	7.00
12.00	13.50	6.00	7.00	6.00	6.00	6.00	6.00	6.00	7.00
13.50	15.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	7.00
15.00	16.50	6.00	6.00	6.00	5.00	7.00	6.00	6.00	7.00
16.50	18.00	7.00	7.00	6.00	6.00	7.00	7.00	6.00	7.00
18.00	19.50	7.00	7.00	6.00	5.00	7.00	6.00	7.00	7.00
19.50	21.00	7.00	6.00	6.00	5.00	7.00	7.00	7.00	7.00

Sample Depth (m)		Mohr's Hardness							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
21.00	22.50	7.00	7.00	6.00	5.00	6.00	6.00	7.00	7.00
22.50	24.00	7.00	7.00	7.00	6.00	6.00	7.00	7.00	7.00
24.00	25.50		6.00	6.00	6.00	6.00	6.00	7.00	7.00
25.50	27.00		6.00	7.00	6.00	6.00	7.00	6.00	7.00
27.00	28.50		7.00	6.00	6.00	6.00	7.00	6.00	7.00
28.50	30.00		7.00	7.00	6.00	7.00	7.00	6.00	7.00
30.00	31.50		6.00	6.00	6.00	7.00	6.00	7.00	7.00
31.50	33.00		7.00	6.00	6.00	7.00	6.00		7.00
33.00	34.50		7.00	7.00	7.00	7.00	6.00		7.00
34.50	36.00			7.00	7.00	7.00	6.00		7.00
36.00	37.50			7.00	7.00	6.00	7.00		7.00
37.50	39.00			6.00	7.00	6.00	7.00		
39.00	40.50			6.00	5.00	6.00	7.00		
40.50	42.00			6.00	7.00	6.00			
42	43.5			7.00	7.00	7.00			
43.5	46			7.00	7.00				

BH09-BH16

Sample Depth (m)		Mohr's Hardness							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	5.00	---	---	---	---	---	---	---
3.00	4.50	5.00	5.00	---	---	---	---	5.00	6.00
4.50	6.00	5.00	5.00	5.00	5.00	---	5.00	5.00	6.00
6.00	7.50	5.00	5.00	5.00	5.00	---	5.00	5.00	6.00
7.50	9.00	6.00	5.00	5.00	6.00	----	5.00	7.00	7.00
9.00	10.50	6.00	5.00	5.00	6.00	----	5.00	7.00	7.00
10.50	12.00	6.00	5.00	5.00	6.00	----	6.00	7.00	7.00
12.00	13.50	6.00	6.00	5.00	7.00	----	7.00	7.00	7.00
13.50	15.00	6.00	6.00	5.00	7.00	----	7.00	7.00	7.00
15.00	16.50	6.00	6.00	5.00	7.00	----	7.00	7.00	7.00
16.50	18.00	6.00	6.00	5.00	7.00	6.00	7.00	7.00	7.00
18.00	19.50	6.00	6.00	6.00	7.00	6.00	7.00	7.00	7.00
19.50	21.00	6.00	6.00	6.00	7.00	6.00	7.00	7.00	7.00
21.00	22.50	6.00	6.00	6.00	7.00	6.00	7.00	7.00	7.00
22.50	24.00	6.00	6.00	6.00	7.00	7.00	7.00	7.00	7.00
24.00	25.50	6.00	6.00	6.00		7.00	7.00	7.00	
25.50	27.00	7.00	6.00	6.00		7.00	7.00	7.00	
27.00	28.50	7.00	6.00	6.00		6.00			
28.50	30.00	7.00	6.00	6.00		6.00			
30.00	31.50	7.00	6.00	6.00		7.00			
31.50	33.00	7.00	6.00	6.00					
33.00	34.50	7.00	6.00	7.00					

Sample Depth (m)		Mohr's Hardness							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
34.50	36.00	6.00	6.00	7.00					
36.00	37.50	6.00	6.00						
37.50	39.00	6.00	6.00						
39.00	40.50	6.00	7.00						
40.50	42.00	6.00	7.00						
42	43.5								
43.5	46								

2.1.2.6 Unconfined Compression Test

Sample Depth (m)		Unconfined Compressive Strength (MPa)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	----	10.02	----	24.71	---	---
1.50	3.00	---	---	----	11.31	----	38.51	---	---
3.00	4.50	4.47	---	----	13.48	----	43.87	----	----
4.50	6.00	4.58	11.42	----	14.73	----	47.29	----	19.31
6.00	7.50	4.78	12.47	11.77	16.01	----	53.74	----	26.38
7.50	9.00	5.63	20.52	12.59	16.98	----	60.42	----	28.56
9.00	10.50	6.96	25.41	12.71	17.68	18.34	20.52	----	30.11
10.50	12.00	8.39	27.51	26.97	18.88	21.41	21.88	11.81	33.73
12.00	13.50	8.86	31.16	29.38	20.36	25.76	23.39	20.48	35.41
13.50	15.00	10.72	33.38	32.72	22.38	31.43	25.61	21.84	37.88
15.00	16.50	12.20	36.37	35.55	24.01	36.76	27.24	22.26	39.48
16.50	18.00	12.47	39.28	37.42	24.98	38.35	29.72	31.51	41.23
18.00	19.50	13.06	41.54	39.28	26.46	41.46	31.51	35.83	43.64
19.50	21.00	13.29	41.89	41.46	28.17	43.71	33.38	38.12	44.53
21.00	22.50	15.11	42.55	45.19	33.53	45.23	33.77	41.89	45.11
22.50	24.00	16.00	42.78	47.56	34.71	47.60	35.67	43.75	47.33
24.00	25.50		43.13	49.27	36.41	49.42	35.94	46.76	48.22
25.50	27.00		43.87	52.77	38.07	52.69	36.80	49.16	48.45
27.00	28.50		44.06	55.72	40.03	55.62	38.74	52.70	48.88
28.50	30.00		44.26	57.23	40.69	58.32	40.69	57.28	49.35
30.00	31.50		44.22	59.68	42.57	61.66	41.23	60.47	49.81
31.50	33.00		44.49	61.51	44.71	63.45	42.55		50.09
33.00	34.50		44.57	64.15	46.19	65.82	42.92		50.32
34.50	36.00			67.73	47.81	68.81	43.09		50.47
36.00	37.50			71.25	48.55	71.61	43.40		50.64
37.50	39.00			73.83	50.08	73.48	44.18		
39.00	40.50			75.31	50.91	75.19	44.49		
40.50	42.00			77.54	54.49	75.75			
42	43.5			78.28	63.87	76.45			
43.5	46			80.59	76.46				

BH09- BH16



Sample Depth (m)		Unconfined Compressive Strength (MPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	----	---	---	---	---	---	---	---
3.00	4.50	----	----	---	---	---	---	----	----
4.50	6.00	----	----	----	----	---	----	----	----
6.00	7.50	----	----	----	----	---	----	5.52	----
7.50	9.00	----	----	9.17	----	11.60	9.68	35.58	12.51
9.00	10.50	16.20	9.83	9.52	16.51	----	----	41.78	30.50
10.50	12.00	----	10.14	9.83	20.40	----	----	43.70	34.10
12.00	13.50	----	10.53	10.14	30.46	----	32.72	48.59	38.94
13.50	15.00	20.13	10.69	10.53	35.71	----	35.41	57.28	45.58
15.00	16.50	24.56	11.35	10.69	38.38	16.20	39.17	63.83	52.43
16.50	18.00	25.68	11.73	11.35	41.30	----	45.71	65.23	54.70
18.00	19.50	27.32	24.52	11.73	43.75	23.66	49.12	71.47	58.33
19.50	21.00	29.57	25.23	24.52	53.53	----	56.67	76.93	60.47
21.00	22.50	31.51	25.41	25.23	57.15	27.94	68.19	77.19	80.42
22.50	24.00	33.42	25.80	25.41	60.60	29.43	73.48	78.10	88.50
24.00	25.50	35.71	26.33	25.80		31.56	77.84	79.72	
25.50	27.00	36.45	26.72	26.33		35.76	80.55	80.46	
27.00	28.50	38.90	26.94	26.72		39.12			
28.50	30.00	43.27	28.20	26.94		41.26			
30.00	31.50	44.49	28.42	28.20		45.49			
31.50	33.00	30.21	31.52	28.42					
33.00	34.50	32.48	33.53	31.52					
34.50	36.00	35.76	33.79	33.53					
36.00	37.50	37.42	34.32						
37.50	39.00	38.51	36.45						
39.00	40.50	39.77	38.68						
40.50	42.00	40.51	40.78						
42	43.5								
43.5	46								

2.1.2.7 Point Load Test

Sample Depth (m)		Point Load Strength (MPa)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	----	0.48	0.42	1.22	---	---
1.50	3.00	---	---	----	0.53	0.46	1.86	---	---
3.00	4.50	0.22	---	----	0.65	0.48	2.19	----	----
4.50	6.00	0.24	0.57	----	0.73	0.52	2.34	----	----
6.00	7.50	0.25	0.59	0.60	0.84	0.57	2.62	----	1.36
7.50	9.00	0.27	1.03	0.63	0.87	0.61	3.02	----	1.43
9.00	10.50	0.33	1.21	0.65	0.91	0.87	0.98	0.42	1.54

Sample Depth (m)		Point Load Strength (MPa)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
10.50	12.00	0.42	1.45	1.32	0.94	1.07	1.09	0.59	1.65
12.00	13.50	0.43	1.48	1.44	1.02	1.17	1.16	1.06	1.79
13.50	15.00	0.54	1.59	1.59	1.13	1.46	1.21	1.12	1.85
15.00	16.50	0.58	1.82	1.72	1.17	1.72	1.31	1.17	1.94
16.50	18.00	0.62	1.87	1.81	1.24	1.83	1.45	1.61	2.09
18.00	19.50	0.65	2.08	1.87	1.35	1.97	1.59	1.83	2.16
19.50	21.00	0.70	2.20	1.99	1.41	2.08	1.68	1.91	2.21
21.00	22.50	0.76	2.13	2.22	1.64	2.19	1.72	2.08	2.25
22.50	24.00	0.75	2.17	2.31	1.73	2.38	1.83	2.20	2.30
24.00	25.50		2.21	2.44	1.78	2.45	1.89	2.31	2.33
25.50	27.00		2.24	2.51	1.86	2.51	1.94	2.42	2.36
27.00	28.50		2.27	2.68	1.97	2.78	2.02	2.59	2.39
28.50	30.00		2.30	2.77	2.01	2.92	2.12	2.83	2.43
30.00	31.50		2.31	2.86	2.08	2.98	2.17	3.08	2.45
31.50	33.00		2.33	2.98	2.22	3.12	2.22		2.48
33.00	34.50		2.34	3.12	2.27	3.18	2.27		2.50
34.50	36.00			3.39	2.33	3.29	2.21		2.53
36.00	37.50			3.48	2.42	3.41	2.28		2.58
37.50	39.00			3.57	2.51	3.58	2.34		
39.00	40.50			3.65	2.57	3.79	2.39		
40.50	42.00			3.74	2.66	3.84			
42	43.5			3.89	2.97	3.92			
43.5	46			3.94	3.57				

BH09-BH16

Sample Depth (m)		Point Load Strength (MPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	----	---	---	---	---	---	---	---
3.00	4.50	----	----	---	---	---	---	----	----
4.50	6.00	----	----	----	----	---	----	----	----
6.00	7.50	----	----	----	----	---	----	0.28	0.00
7.50	9.00	----	----	0.43	----	0.54	----	1.81	0.62
9.00	10.50	----	0.48	0.46	----	0.65	0.52	2.12	1.53
10.50	12.00	0.83	0.51	0.47	0.98	0.00	1.20	2.16	1.62
12.00	13.50	0.91	0.53	0.49	1.49	----	1.58	2.42	1.89
13.50	15.00	----	0.55	0.50	1.74	----	1.71	2.83	2.28
15.00	16.50	1.19	0.57	0.52	1.83	0.77	1.89	3.09	2.59
16.50	18.00	1.24	0.60	0.55	1.97	1.12	2.23	3.16	2.74
18.00	19.50	1.32	1.19	0.59	2.19	1.15	2.36	3.57	2.92
19.50	21.00	1.39	1.23	1.18	2.55	1.23	2.72	3.79	3.02
21.00	22.50	1.53	1.26	1.21	2.81	1.39	3.36	3.86	4.13
22.50	24.00	1.62	1.28	1.25	2.96	1.45	3.62	3.91	4.36

Sample Depth (m)		Point Load Strength (MPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
24.00	25.50	1.71	1.31	1.29		1.52	3.82	4.08	
25.50	27.00	1.79	1.35	1.32		1.69	3.93	4.12	
27.00	28.50	1.85	1.37	1.36		1.89			
28.50	30.00	2.09	1.41	1.42		2.06			
30.00	31.50	2.17	1.44	1.46		2.24			
31.50	33.00	1.48	1.56	1.54					
33.00	34.50	1.56	1.64	1.62					
34.50	36.00	1.73	1.69	1.72					
36.00	37.50	1.82	1.73						
37.50	39.00	1.98	1.82						
39.00	40.50	2.02	1.89						
40.50	42.00	2.09	1.96						
42	43.5								
43.5	46								

2.1.2.8 Brazilian Test

Sample Depth (m)		Tensile Strength (MPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	----	1.08	----	2.56	---	---
1.50	3.00	---	---	----	1.19	----	3.98	---	---
3.00	4.50	0.48	---	----	1.46	----	4.61	----	----
4.50	6.00	0.52	1.26	----	1.62	----	4.89	----	2.02
6.00	7.50	0.54	1.34	1.26	1.84	----	5.56	----	2.78
7.50	9.00	0.63	2.19	1.37	1.96	----	6.78	----	2.96
9.00	10.50	0.78	2.68	1.45	2.02	1.98	2.28	1.06	3.25
10.50	12.00	0.91	2.96	2.86	2.12	2.26	2.43	1.23	3.48
12.00	13.50	0.96	3.34	3.12	2.26	2.73	2.51	2.39	3.75
13.50	15.00	1.14	3.68	3.58	2.43	3.48	2.78	2.52	3.89
15.00	16.50	1.29	3.82	3.76	2.56	3.89	2.94	2.59	4.21
16.50	18.00	1.35	4.19	3.92	2.73	4.21	3.21	3.32	4.34
18.00	19.50	1.42	4.28	4.21	2.91	4.56	3.48	3.64	4.57
19.50	21.00	1.51	4.31	4.49	3.12	4.78	3.62	3.98	4.71
21.00	22.50	1.71	4.39	4.87	3.47	4.86	3.74	4.43	4.91
22.50	24.00	1.75	4.43	5.12	3.65	5.11	3.88	4.66	5.04
24.00	25.50		4.51	5.52	3.82	5.48	4.02	4.98	5.21
25.50	27.00		4.58	5.84	3.98	5.71	4.13	5.34	5.38
27.00	28.50		4.74	6.08	4.13	5.93	4.21	5.72	5.49
28.50	30.00		4.82	6.87	4.26	6.26	4.36	6.21	5.53
30.00	31.50		4.96	7.14	4.48	6.72	4.42	6.87	5.68
31.50	33.00		5.08	7.24	4.67	6.96	4.56		5.79

Sample Depth (m)		Tensile Strength (MPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
33.00	34.50		5.14	7.62	4.89	7.21	4.62		5.84
34.50	36.00			7.88	5.02	7.54	4.71		5.89
36.00	37.50			8.17	5.23	7.87	4.86		5.93
37.50	39.00			8.56	5.68	8.04	5.03		
39.00	40.50			8.89	5.82	8.25	5.14		
40.50	42.00			9.12	6.16	8.56			
42	43.5			9.27	7.36	8.98			
43.5	46			9.64	8.76				

BH09-BH16

Sample Depth (m)		Tensile Strength (MPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	----	---	---	---	---	---	---	---
3.00	4.50	----	----	---	---	---	---	----	----
4.50	6.00	----	----	----	----	---	----	----	----
6.00	7.50	----	----	----	----	---	----	0.62	----
7.50	9.00	----	----	0.99	----	1.27	1.08	3.72	1.43
9.00	10.50	----	0.98	1.08	1.82	----	1.19	4.64	3.36
10.50	12.00	----	1.01	1.16	2.21	----	----	4.82	3.81
12.00	13.50	----	1.05	1.21	3.26	----	3.59	5.13	4.16
13.50	15.00	2.14	1.07	1.27	3.82	----	3.93	6.04	5.18
15.00	16.50	2.56	1.13	1.31	4.12	1.71	4.26	6.78	5.94
16.50	18.00	2.69	1.17	1.37	4.63	1.82	4.84	7.24	6.24
18.00	19.50	2.89	2.45	1.42	4.98	2.45	5.34	8.14	6.48
19.50	21.00	3.12	2.52	2.52	5.73	2.67	5.89	8.76	6.93
21.00	22.50	3.48	2.54	2.63	6.14	2.92	7.36	8.98	9.24
22.50	24.00	3.59	2.58	2.76	6.92	3.18	8.43	9.21	10.16
24.00	25.50	3.87	2.63	2.89		3.45	8.82	9.48	
25.50	27.00	4.12	2.67	2.96		3.82	9.43	9.64	
27.00	28.50	4.29	2.69	3.09		4.36			
28.50	30.00	4.67	2.82	3.15		4.76			
30.00	31.50	4.93	2.84	3.21		5.28			
31.50	33.00	3.19	3.15	3.33					
33.00	34.50	3.56	3.35	3.47					
34.50	36.00	3.78	3.38	3.64					
36.00	37.50	3.94	3.43						
37.50	39.00	4.12	3.65						
39.00	40.50	4.29	3.87						
40.50	42.00	4.49	4.08						
42	43.5								
43.5	46								

2.1.2.9 Modulus of elasticity test

Sample Depth (m)		Modulus of Elasticity (GPa)							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	---	---	---	31.60	---	---
1.50	3.00	---	---	---	---	---	36.20	---	---
3.00	4.50	---	---	---	---	---	41.40	---	---
4.50	6.00	---	---	---	---	---	43.10	---	---
6.00	7.50	---	---	---	---	---	45.30	---	32.40
7.50	9.00	25.10	30.60	---	---	---	50.40	---	33.20
9.00	10.50	25.60	32.60	---	29.80	30.40	30.00	---	34.80
10.50	12.00	26.20	33.40	---	---	31.90	30.40	---	---
12.00	13.50	26.90	35.70	34.80	---	33.20	31.50	30.40	37.40
13.50	15.00	27.60	36.20	36.60	31.50	34.20	32.60	31.30	38.20
15.00	16.50	28.20	38.40	38.40	32.60	37.60	33.80	31.90	38.70
16.50	18.00	28.70	40.40	39.10	33.20	39.40	34.60	36.20	40.30
18.00	19.50	29.50	41.30	40.60	34.40	---	---	37.80	41.70
19.50	21.00	30.40	41.60	42.40	35.10	---	---	39.20	42.60
21.00	22.50	30.90	42.40	43.60	37.10	43.60	35.20	40.60	43.40
22.50	24.00	31.10	43.10	44.70	38.40	44.30	36.70	42.40	43.80
24.00	25.50		43.70	45.60	39.20	44.90	37.20	43.10	44.30
25.50	27.00		44.20	46.40	39.70	45.80	39.40	44.80	44.90
27.00	28.50		43.90	47.90	41.40	46.40	40.40	47.30	45.20
28.50	30.00		44.90	49.80	41.90	48.60	42.60	48.90	45.60
30.00	31.50		45.30	50.60	42.10	50.20	42.90	50.70	46.80
31.50	33.00		45.80	52.10	42.80	51.10	43.10		47.30
33.00	34.50		46.30	53.40	43.40	52.70	43.50		47.60
34.50	36.00			54.60	43.90	53.60	44.10		48.20
36.00	37.50			55.80	44.20	55.20	44.40		48.90
37.50	39.00			56.20	45.80	56.50	45.20		
39.00	40.50			58.40	46.20	57.10	45.80		
40.50	42.00			59.80	49.80	57.80			
42	43.5			60.40	52.40	58.10			
43.5	46			61.80	56.20				

BH09-BH16

Sample Depth (m)		Modulus of Elasticity (GPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	---	---	---	---	---	---	---	---
3.00	4.50	---	---	---	---	---	---	---	---
4.50	6.00	---	---	---	---	---	---	---	---
6.00	7.50	---	---	---	---	---	---	---	---
7.50	9.00	---	---	---	---	31.80	---	37.20	---
9.00	10.50	---	---	---	---	---	---	40.80	35.40

Sample Depth (m)		Modulus of Elasticity (GPa)							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
10.50	12.00	----	26.10	25.20	----	----	----	41.60	36.10
12.00	13.50	----	----	26.40	----	----	35.60	43.70	37.60
13.50	15.00	----	----	26.90	36.20	----	37.10	46.40	43.80
15.00	16.50	32.80	----	27.50	37.50	----	40.20	50.60	46.30
16.50	18.00	----	----	28.30	40.60	----	43.90	51.80	47.20
18.00	19.50	33.60	30.70	29.20	44.20	----	45.20	54.60	49.60
19.50	21.00	34.50	31.40	31.50	46.50	----	47.90	56.90	50.80
21.00	22.50	35.70	32.30	32.60	47.20	----	53.70	57.10	61.40
22.50	24.00	36.20	32.60	33.10	50.40	33.40	56.40	58.40	62.60
24.00	25.50	37.10	33.10	33.60		35.20	58.20	59.20	
25.50	27.00	37.30	33.80	34.20		36.10	60.70	60.40	
27.00	28.50	39.10	33.40	34.70		37.20			
28.50	30.00	42.60	34.20	35.10		40.60			
30.00	31.50	43.20	35.00	35.60		43.50			
31.50	33.00	35.10	35.40	36.20					
33.00	34.50	35.60	37.20	37.40					
34.50	36.00	37.50	37.90	38.50					
36.00	37.50	38.20	38.20						
37.50	39.00	40.60	38.50						
39.00	40.50	42.50	39.80						
40.50	42.00	43.10	42.60						
42	43.5								
43.5	46								

2.1.2.10 Abrasion test

Sample Depth (m)		Abrasion value							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
0.50	1.50	---	---	1.02	0.98	0.89	1.42	---	---
1.50	3.00	---	---	1.06	1.08	0.93	1.84	---	---
3.00	4.50	0.62	---	1.09	1.11	0.99	1.93	----	----
4.50	6.00	0.68	1.13	1.12	1.14	1.04	2.12	----	1.29
6.00	7.50	0.73	1.16	1.13	1.17	1.09	2.28	----	1.47
7.50	9.00	0.79	1.32	1.16	1.19	1.12	2.52	----	1.51
9.00	10.50	0.84	1.45	1.18	1.21	1.19	1.32	1.11	1.58
10.50	12.00	0.88	1.54	1.48	1.26	1.32	1.34	1.14	1.64
12.00	13.50	0.92	1.59	1.52	1.29	1.47	1.38	1.27	1.71
13.50	15.00	1.04	1.62	1.63	1.32	1.60	1.45	1.31	1.78
15.00	16.50	1.12	1.64	1.76	1.37	1.77	1.51	1.36	1.85
16.50	18.00	1.15	1.69	1.81	1.42	1.79	1.58	1.54	1.92
18.00	19.50	1.16	1.71	1.87	1.49	1.89	1.63	1.62	1.96
19.50	21.00	1.18	1.75	1.92	1.58	1.94	1.66	1.74	2.05
21.00	22.50	1.22	1.78	2.09	1.64	2.05	1.71	1.83	2.12

Sample Depth (m)		Abrasion value							
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08
22.50	24.00	1.24	1.82	2.13	1.71	2.13	1.75	1.92	2.15
24.00	25.50		1.84	2.17	1.78	2.17	1.78	1.98	2.18
25.50	27.00		1.86	2.24	1.84	2.26	1.82	2.04	2.21
27.00	28.50		1.90	2.35	1.87	2.35	1.86	2.11	2.23
28.50	30.00		1.94	2.42	1.92	2.46	1.91	2.21	2.29
30.00	31.50		1.98	2.48	1.95	2.58	1.94	2.36	2.32
31.50	33.00		2.00	2.53	1.98	2.62	1.96		2.35
33.00	34.50		2.03	2.62	2.06	2.66	1.98		2.38
34.50	36.00			2.71	2.11	2.72	2.02		2.41
36.00	37.50			2.77	2.16	2.78	2.06		2.45
37.50	39.00			2.79	2.22	2.81	2.11		
39.00	40.50			2.85	2.26	2.84	2.14		
40.50	42.00			2.91	2.31	2.87			
42	43.5			2.94	2.36	2.89			
43.5	46			2.98	2.42				

BH09-BH16

Sample Depth (m)		Abrasion value							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
0.50	1.50	---	---	---	---	---	---	---	---
1.50	3.00	----	---	---	---	---	---	---	---
3.00	4.50	----	----	---	---	---	---	----	----
4.50	6.00	----	----	0.84	----	---	----	----	----
6.00	7.50	----	----	0.88	----	---	----	0.76	----
7.50	9.00	----	----	0.91	1.18	1.03	0.98	1.74	1.15
9.00	10.50	1.23	0.98	0.94	1.21	1.12	1.02	1.92	1.54
10.50	12.00	1.26	1.08	0.99	1.28	----	1.49	1.95	1.62
12.00	13.50	1.30	1.10	1.06	1.56	----	1.66	2.17	1.76
13.50	15.00	1.32	1.13	1.09	1.79	----	1.79	2.48	1.89
15.00	16.50	1.39	1.15	1.11	1.87	1.21	1.84	2.62	2.04
16.50	18.00	1.46	1.18	1.08	1.94	1.39	2.12	2.65	2.16
18.00	19.50	1.49	1.43	1.14	1.98	1.42	2.17	2.77	2.29
19.50	21.00	1.54	1.46	1.42	2.24	1.45	2.42	2.87	2.46
21.00	22.50	1.61	1.48	1.45	2.39	1.56	2.69	2.91	2.96
22.50	24.00	1.65	1.50	1.49	2.48	1.59	2.79	2.94	3.12
24.00	25.50	1.72	1.53	1.51		1.63	2.91	2.99	
25.50	27.00	1.79	1.56	1.54		1.75	2.96	3.08	
27.00	28.50	1.84	1.58	1.55		1.89			
28.50	30.00	1.89	1.63	1.58		1.92			
30.00	31.50	1.92	1.66	1.61		2.08			
31.50	33.00	1.63	1.71	1.63					
33.00	34.50	1.77	1.75	1.69					
34.50	36.00	1.79	1.82	1.72					

Sample Depth (m)		Abrasion value							
Top	Bottom	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16
36.00	37.50	1.81	1.84						
37.50	39.00	1.82	1.87						
39.00	40.50	1.85	1.90						
40.50	42.00	1.92	1.93						
42	43.5								
43.5	46								

2.1.3 ANNEXURE- C (RMR LOGS)

Tunnel: 2			BH: 2		TOTAL DEPTH: 34m								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	20	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
4.5	6.0	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
6.0	7.5	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
7.5	9.0	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
9.0	10.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
10.5	12.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
12.0	13.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
13.5	15.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
15.0	16.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
16.5	18.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
18.0	19.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
19.5	21.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)

21.0	22.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
22.5	24.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
24.0	25.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
25.5	27.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
27.0	28.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
28.5	30.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
30.0	31.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
31.5	33.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
33.0	34.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)

Tunnel: 2		BH: 3			T2BH3		TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	4	3	14	7	-2	27	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	4	3	14	7	-2	27	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	5	4	3	14	7	-2	27	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	5	4	3	14	7	-2	27	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	4	3	14	7	-2	29	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	5	4	3	14	7	-2	29	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
10.5	12.0	4	3	5	1	1	5	4	3	14	10	-2	34	Class 4 (POOR)
12.0	13.5	4	3	10	2	4	5	4	5	20	10	-2	45	Class 3(FAIR)
13.5	15.0	4	3	10	2	4	5	4	5	20	10	-2	45	Class 3(FAIR)
15.0	16.5	4	8	10	2	4	5	4	5	20	10	-2	50	Class 3(FAIR)
16.5	18.0	4	3	15	2	4	5	4	5	20	10	-2	50	Class 3(FAIR)
18.0	19.5	4	3	15	2	4	5	6	5	22	10	-2	52	Class 3(FAIR)
19.5	21.0	4	8	15	2	4	5	6	5	22	10	-2	57	Class 3(FAIR)
21.0	22.5	4	8	15	4	5	5	6	5	25	10	-2	60	Class 3(FAIR)
22.5	24.0	4	8	15	4	5	5	6	5	25	10	-2	60	Class 3(FAIR)
24.0	25.5	4	8	15	4	5	5	6	5	25	10	-2	60	Class 3(FAIR)
25.5	27.0	7	3	15	4	5	5	6	5	25	10	-2	58	Class 3(FAIR)
27.0	28.5	7	3	15	4	5	5	6	5	25	10	-2	58	Class 3(FAIR)
28.5	30.0	7	3	15	4	5	5	6	5	25	10	-2	58	Class 3(FAIR)
30.0	31.5	7	8	15	4	5	5	6	5	25	10	-2	63	Class 2(GOOD)
31.5	33.0	7	8	15	4	5	5	6	5	25	10	-2	63	Class 2(GOOD)
33.0	34.5	7	8	15	4	5	5	6	5	25	10	-2	63	Class 2(GOOD)
34.5	36.0	7	13	15	4	5	5	6	5	25	10	-2	68	Class 2(GOOD)
36.0	37.5	7	13	15	4	5	5	6	5	25	10	-2	68	Class 2(GOOD)
37.5	39.0	7	13	15	4	5	5	6	5	25	10	-2	68	Class 2(GOOD)
39.0	40.5	7	13	15	4	5	5	6	5	25	10	-2	68	Class 2(GOOD)
40.5	42.0	7	13	15	4	5	5	6	5	25	15	-2	73	Class 2(GOOD)
42.0	43.5	7	13	15	6	5	5	6	5	27	15	-2	75	Class 2(GOOD)
43.5	45.0	7	13	15	6	5	5	6	5	27	15	-2	75	Class 2(GOOD)
45.0	46.0	7	13	15	6	5	5	6	5	27	15		77	Class 2(GOOD)

Tunnel: 2		BH: 5			T2BH05		TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	2	3	16	10	-2	32	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	2	3	16	10	-2	32	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
6.0	7.5	0	3	10	4	4	5	4	5	22	10	-2	43	Class 3(FAIR)
7.5	9.0	0	3	10	4	4	5	4	5	22	10	-2	43	Class 3(FAIR)
9.0	10.5	2	3	10	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
10.5	12.0	2	3	10	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
12.0	13.5	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
13.5	15.0	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
15.0	16.5	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
16.5	18.0	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
18.0	19.5	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
19.5	21.0	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
21.0	22.5	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
22.5	24.0	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)
24.0	25.5	4	8	20	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
25.5	27.0	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
27.0	28.5	7	3	20	6	6	6	6	6	30	10	-2	68	Class 2(GOOD)
28.5	30.0	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
30.0	31.5	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
31.5	33.0	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
33.0	34.5	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
34.5	36.0	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
36.0	37.5	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
37.5	39.0	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
39.0	40.5	7	3	20	6	6	6	6	6	30	10	-2	68	Class 2(GOOD)
40.5	42.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2(GOOD)
42.0	43.0	7	17	20	6	6	6	6	6	30	10	-2	82	Class 1 (VERY GOOD)

Tunnel: 2			BH: 6		T2BH06								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	10	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
1.5	3.0	4	8	15	4	4	5	4	5	22	10	-2	57	Class 3(FAIR)
3.0	4.5	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)
4.5	6.0	4	3	10	4	4	5	4	5	22	10	-2	47	Class 3(FAIR)
6.0	7.5	7	8	10	4	4	5	4	5	22	10	-2	55	Class 3(FAIR)
7.5	9.0	7	3	10	4	4	5	4	5	22	10	-2	50	Class 3(FAIR)
9.0	10.5	2	3	10	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
10.5	12.0	2	3	10	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
12.0	13.5	2	3	10	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
13.5	15.0	4	3	10	4	4	5	6	5	24	10	-2	49	Class 3(FAIR)
15.0	16.5	4	8	10	4	4	5	6	5	24	10	-2	54	Class 3(FAIR)
16.5	18.0	4	8	10	4	4	5	6	5	24	10	-2	54	Class 3(FAIR)
18.0	19.5	4	3	10	4	4	5	6	5	24	10	-2	49	Class 3(FAIR)
19.5	21.0	4	3	10	4	4	5	6	5	24	10	-2	49	Class 3(FAIR)
21.0	22.5	4	8	10	4	4	5	6	5	24	10	-2	54	Class 3(FAIR)
22.5	24.0	4	8	10	4	4	5	6	5	24	10	-2	54	Class 3(FAIR)
24.0	25.5	4	8	10	4	4	5	6	5	24	10	-2	54	Class 3(FAIR)
25.5	27.0	4	3	10	4	4	5	6	5	24	10	-2	49	Class 3(FAIR)
27.0	28.5	4	8	10	4	4	5	6	5	24	10	-2	54	Class 3(FAIR)
28.5	30.0	4	13	10	4	4	5	6	5	24	10	-2	59	Class 3(FAIR)
30.0	31.5	4	8	10	4	4	5	6	5	24	11	-1	56	Class 3(FAIR)
31.5	33.0	4	3	10	4	4	5	6	5	24	12	0	53	Class 3(FAIR)
33.0	34.5	4	3	10	4	4	5	6	5	24	13	1	55	Class 3(FAIR)
34.5	36.0	4	8	10	4	4	5	6	5	24	14	2	62	Class 2(GOOD)
36.0	37.5	4	8	10	4	4	5	6	5	24	15	3	64	Class 2(GOOD)
37.5	39.0	4	13	15	4	5	5	6	5	25	10	4	71	Class 2(GOOD)
39.0	40.0	4	20	15	4	5	5	6	5	25	11	5	80	Class 2(GOOD)

Tunnel: 2		BH: 7			T2BH07								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
6.0	7.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
7.5	9.0	0	3	5	2	4	5	4	5	20	10	-2	36	Class 4 (POOR)
9.0	10.5	0	3	5	2	4	5	4	5	20	10	-2	36	Class 4 (POOR)
10.5	12.0	2	3	8	4	4	5	4	5	22	10	-2	43	Class 3(FAIR)
12.0	13.5	2	3	8	4	4	5	4	5	22	10	-2	43	Class 3(FAIR)
13.5	15.0	2	3	10	4	4	5	4	5	22	15	-2	50	Class 3(FAIR)
15.0	16.5	2	3	10	4	4	5	4	5	22	15	-2	50	Class 3(FAIR)
16.5	18.0	4	8	15	4	4	5	4	5	22	15	-2	62	Class 2(GOOD)
18.0	19.5	4	3	15	4	4	5	4	5	22	15	-2	57	Class 3(FAIR)
19.5	21.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
21.0	22.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
22.5	24.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
24.0	25.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
25.5	27.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
27.0	28.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
30.0	31.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

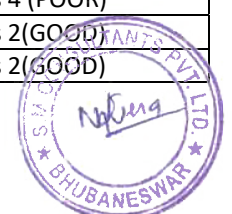
Tunnel: 2		BH: 8			T2BH08								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	2	3	5	2	4	5	4	3	18	10	-2	36	Class 4 (POOR)
6.0	7.5	4	8	8	2	4	5	4	5	20	15	-2	53	Class 3(FAIR)
7.5	9.0	4	3	8	2	4	5	4	5	20	15	-2	48	Class 3(FAIR)
9.0	10.5	4	3	8	2	4	5	4	5	20	15	-2	48	Class 3(FAIR)
10.5	12.0	4	3	10	2	4	5	4	5	20	15	-2	50	Class 3(FAIR)
12.0	13.5	4	13	20	4	6	6	6	6	28	15	-2	78	Class 2(GOOD)

Tunnel: 2		BH: 8			T2BH08								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
15.0	16.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
16.5	18.0	4	3	15	4	4	6	6	6	26	15	-2	61	Class 2(GOOD)
18.0	19.5	4	3	15	4	4	6	6	6	26	15	-2	61	Class 2(GOOD)
19.5	21.0	4	8	15	4	4	6	6	6	26	15	-2	66	Class 2(GOOD)
21.0	22.5	4	8	15	4	4	6	6	6	26	15	-2	66	Class 2(GOOD)
22.5	24.0	4	8	15	4	4	6	6	6	26	15	-2	66	Class 2(GOOD)
24.0	25.5	4	3	10	4	4	6	6	6	26	15	-2	56	Class 3(FAIR)
25.5	27.0	4	3	10	4	4	6	6	6	26	15	-2	56	Class 3(FAIR)
27.0	28.5	4	8	10	4	4	6	6	6	26	15	-2	61	Class 2(GOOD)
28.5	30.0	4	3	10	4	6	6	6	6	28	15	-2	58	Class 3(FAIR)
30.0	31.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
31.5	33.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
33.0	34.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
34.5	36.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
36.0	37.0	7	8	13	6	6	6	6	6	30	15	-2	71	Class 2(GOOD)

Tunnel: 2			BH: 9		T2BH09								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
6.0	7.5	0	3	5	4	5	5	4	3	21	10	-2	37	Class 4 (POOR)
7.5	9.0	0	3	5	4	5	5	4	3	21	10	-2	37	Class 4 (POOR)
9.0	10.5	2	3	5	4	5	5	4	3	21	10	-2	39	Class 4 (POOR)
10.5	12.0	0	3	5	4	5	5	4	3	21	10	-2	37	Class 4 (POOR)
12.0	13.5	0	3	5	4	5	5	4	3	21	10	-2	37	Class 4 (POOR)
13.5	15.0	2	3	5	4	5	5	4	3	21	10	-2	39	Class 4 (POOR)
15.0	16.5	2	3	5	4	5	5	4	3	21	10	-2	39	Class 4 (POOR)
16.5	18.0	4	3	5	4	5	5	4	5	23	10	-2	43	Class 3(FAIR)
18.0	19.5	4	3	5	4	5	5	4	5	23	15	-2	48	Class 3(FAIR)
19.5	21.0	4	3	5	4	5	5	4	5	23	15	-2	48	Class 3(FAIR)

Tunnel: 2			BH: 9		T2BH09								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
21.0	22.5	4	3	10	4	5	5	4	5	23	15	-2	53	Class 3(FAIR)
22.5	24.0	4	3	10	4	5	5	4	5	23	15	-2	53	Class 3(FAIR)
24.0	25.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
27.0	28.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
28.5	30.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
30.0	31.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
31.5	33.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
33.0	34.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
34.5	36.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
36.0	37.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
37.5	39.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
39.0	40.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
40.5	41.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)

Tunnel: 2		BH: 10			T2BH10								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	3	18	3	-2	27	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	4	3	18	3	-2	27	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	3	-2	27	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	3	18	3	-2	27	Class 4 (POOR)
6.0	7.5	0	3	5	2	4	5	4	3	18	3	-2	27	Class 4 (POOR)
7.5	9.0	0	3	5	2	4	5	4	3	18	3	-2	27	Class 4 (POOR)
9.0	10.5	2	3	5	2	4	5	4	3	18	3	-2	29	Class 4 (POOR)
10.5	12.0	2	3	5	2	4	5	4	3	18	3	-2	29	Class 4 (POOR)
12.0	13.5	2	3	5	2	4	5	4	3	18	3	-2	29	Class 4 (POOR)
13.5	15.0	2	3	5	2	4	5	4	5	20	5	-2	33	Class 4 (POOR)
15.0	16.5	2	3	5	2	4	5	4	5	20	5	-2	33	Class 4 (POOR)
16.5	18.0	2	3	5	2	4	5	4	5	20	5	-2	33	Class 4 (POOR)
18.0	19.5	2	3	5	2	4	5	4	5	20	5	-2	33	Class 4 (POOR)
19.5	21.0	4	8	5	2	4	5	4	5	20	5	-2	40	Class 4 (POOR)
21.0	22.5	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
22.5	24.0	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)



Tunnel: 2		BH: 10			T2BH10								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
24.0	25.5	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
27.0	28.5	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
28.5	30.0	4	13	20	6	6	6	6	6	30	5	-2	70	Class 2(GOOD)
30.0	31.5	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
31.5	33.0	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
33.0	34.5	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
34.5	36.0	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
36.0	37.5	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)
37.5	39.0	4	13	20	6	6	6	6	6	30	5	-2	70	Class 2(GOOD)
39.0	40.5	4	13	20	6	6	6	6	6	30	5	-2	70	Class 2(GOOD)
40.5	41.0	4	8	20	6	6	6	6	6	30	5	-2	65	Class 2(GOOD)

Tunnel: 2		BH: 12			T2BH12								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	5	20	10	-2	36	Class 4 (POOR)
6.0	7.5	0	3	5	2	4	5	6	5	22	10	-2	38	Class 4 (POOR)
7.5	9.0	0	3	5	2	4	5	6	5	22	10	-2	38	Class 4 (POOR)
9.0	10.5	2	3	5	2	4	5	6	5	22	10	-2	40	Class 4 (POOR)
10.5	12.0	2	3	5	2	4	5	6	5	22	10	-2	40	Class 4 (POOR)
12.0	13.5	4	3	5	2	4	5	6	5	22	10	-2	42	Class 3(FAIR)
13.5	15.0	4	3	5	2	4	5	6	5	22	10	-2	42	Class 3(FAIR)
15.0	16.5	4	3	5	2	4	5	6	5	22	10	-2	42	Class 3(FAIR)
16.5	18.0	4	3	5	2	4	5	6	5	22	10	-2	42	Class 3(FAIR)
18.0	19.5	4	3	5	2	4	5	6	5	22	10	-2	42	Class 3(FAIR)
19.5	21.0	7	8	10	2	4	5	6	5	22	10	-2	55	Class 3(FAIR)
21.0	22.5	7	8	10	2	4	5	6	5	22	10	-2	55	Class 3(FAIR)
22.5	23.0	7	8	10	2	4	5	6	5	22	10	-2	55	Class 3(FAIR)

Tunnel: 2		BH: 13			T2BH13								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	4	3	14	10	-2	30	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	4	3	14	10	-2	30	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
6.0	7.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
7.5	9.0	2	3	5	2	4	5	4	3	18	10	-2	36	Class 4 (POOR)
9.0	10.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
10.5	12.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
12.0	13.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
13.5	15.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
15.0	16.5	2	3	5	2	4	5	4	3	18	10	-2	36	Class 4 (POOR)
16.5	18.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
18.0	19.5	2	3	5	2	4	5	4	3	18	10	-2	36	Class 4 (POOR)
19.5	21.0	0	3	20	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
21.0	22.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
22.5	24.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
24.0	25.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
27.0	28.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
28.5	30.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
30.0	31.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)

Tunnel: 2		BH: 14			T2BH14								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	1	1	5	10	-2	21	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	1	1	1	5	10	-2	21	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	1	1	1	5	10	-2	21	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	1	1	1	5	10	-2	21	Class 4 (POOR)
6.0	7.5	0	3	15	2	4	5	4	5	20	10	-2	46	Class 3(FAIR)
7.5	9.0	2	3	15	2	4	5	4	5	20	10	-2	48	Class 3(FAIR)
9.0	10.5	0	3	15	2	4	5	4	5	20	10	-2	46	Class 3(FAIR)
10.5	12.0	0	3	15	2	4	5	4	5	20	10	-2	46	Class 3(FAIR)
12.0	13.5	4	8	15	2	4	5	4	5	20	10	-2	55	Class 3(FAIR)

Tunnel: 2		BH: 14			T2BH14								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
13.5	15.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
15.0	16.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
16.5	18.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
18.0	19.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
19.5	21.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
21.0	22.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
22.5	24.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
24.0	25.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 2		BH: 15			T2BH15								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	2	3	16	4	-2	26	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	2	3	16	4	-2	26	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	2	3	16	4	-2	26	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	2	3	16	4	-2	26	Class 4 (POOR)
6.0	7.5	2	3	5	2	4	5	2	3	16	4	-2	28	Class 4 (POOR)
7.5	9.0	4	8	5	2	4	5	2	3	16	4	-2	35	Class 4 (POOR)
9.0	10.5	4	3	5	4	4	5	4	5	22	7	-2	39	Class 4 (POOR)
10.5	12.0	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)
12.0	13.5	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)
13.5	15.0	7	3	10	4	4	5	6	5	24	10	-2	52	Class 3(FAIR)
15.0	16.5	7	8	10	4	4	5	6	5	24	10	-2	57	Class 3(FAIR)
16.5	18.0	7	8	15	4	4	5	6	5	24	10	-2	62	Class 2(GOOD)
18.0	19.5	7	13	15	4	4	5	6	5	24	15	-2	72	Class 2(GOOD)
19.5	21.0	7	8	15	4	4	5	6	5	24	15	-2	67	Class 2(GOOD)
21.0	22.5	7	8	15	4	4	5	6	5	24	15	-2	67	Class 2(GOOD)
22.5	24.0	7	8	15	4	4	5	6	5	24	15	-2	67	Class 2(GOOD)
24.0	25.5	7	13	15	4	4	5	6	5	24	15	-2	72	Class 2(GOOD)
25.5	27.0	7	8	15	4	4	5	6	5	24	15	-2	67	Class 2(GOOD)

Tunnel: 2		BH: 16			T2BH16								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
1.5	3.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
3.0	4.5	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
4.5	6.0	0	3	5	2	4	5	4	3	18	10	-2	34	Class 4 (POOR)
6.0	7.5	0	3	5	2	4	5	4	5	20	10	-2	36	Class 4 (POOR)
7.5	9.0	2	3	5	2	4	5	4	5	20	10	-2	38	Class 4 (POOR)
9.0	10.5	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
10.5	12.0	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
12.0	13.5	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3(FAIR)
13.5	15.0	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
15.0	16.5	7	3	8	4	4	5	4	5	22	10	-2	48	Class 3(FAIR)
16.5	18.0	7	8	5	4	4	5	4	5	22	10	-2	50	Class 3(FAIR)
18.0	19.5	7	3	8	4	4	5	4	5	22	15	-2	53	Class 3(FAIR)
19.5	21.0	7	3	8	4	4	5	4	5	22	15	-2	53	Class 3(FAIR)
21.0	22.5	7	3	8	4	4	5	4	5	22	15	-2	53	Class 3(FAIR)
22.5	24.0	7	8	8	4	4	5	4	5	22	15	-2	58	Class 3(FAIR)

2.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-01)

Test Section		7.5 m-10.5 m		radius in cm=		3.8				Intake (Lit.)																				
				Flow Condition								Void Filling g																		
				Lugeon																										
				K cm/sec																										
				Q (cm3/sec)																										
				Avg.																										
				3 (15 min)																										
				2 (10 min)																										
				1 (5 min)																										
				Differential Head of Water H=(Hg+Hp) cm.																										
				Hp (Pressure at monometer) kg/cm2																										
				Hg in m.																										
				GWL of hole m																										
				Hight Of water Swivel from GL																										
				L=Test Section in cm.																										
				L=Test Section in m.																										
				Lower Part of Test Section (m)																										
				Upper Part of Test Section (m)																										
7.50		10.50		3		300		2.52		11.52		1		2152		12.30		29.90		13.30		21.6		72.0		0.0007755		7.80		Void Filling g
7.50		10.50		3		300		2.52		11.52		2		3152		15.50		28.60		29.50		29.1		97.0		0.0007133		7.10		
7.50		10.50		3		300		2.52		11.52		3		4152		17.30		32.30		40.20		36.3		121.0		0.0006755		6.80		
7.50		10.50		3		300		2.52		11.52		2		3152		10.20		18.80		31.30		25.1		83.7		0.0006153		6.20		
7.50		10.50		3		300		2.52		11.52		1		2152		7.30		12.50		16.30		14.4		48.0		0.0005170		5.20		
												Avr.		0.0006593		5.20														

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-02)

Test Section	19.5 m-22.5 m	radius in cm=	3 . 8				Intake (Lit.)							
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water						
19.50	22.50	3	300	2.53	8 . 5	11.03	1	2103	8.80	15.90	23.20	19.6	65.3	7.20
19.50	22.50	3	300	2.53	8 . 5	11.03	2	3103	17.90	33.80	25.60	29.7	99.0	7.40
19.50	22.50	3	300	2.53	8 . 5	11.03	3	4103	16.70	29.70	41.70	35.7	119.0	6.70
19.50	22.50	3	300	2.53	8 . 5	11.03	2	3103	8.30	15.40	32.60	24.0	80.0	6.00
19.50	22.50	3	300	2.53	8 . 5	11.03	1	2103	5.10	9.90	17.30	13.6	45.3	5.00
											Avr .	0.0006458	5.00	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-03)

Test Section	31.5 m-34.5 m	radius in cm=		3.8				Intake (Lit.)									
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hlight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)		K cm/sec	Lugeon	Flow Condition
31.50	34.50	3	300	2.51	13.5	16.01	1	2601	1.80	1.50	2.10	1.8	6.0	0.00000535	0.50	Dilat ion	
31.50	34.50	3	300	2.51	13.5	16.01	2	3601	4.10	2.50	3.10	2.8	9.3	0.00000601	0.60		
31.50	34.50	3	300	2.51	13.5	16.01	3	4601	6.30	3.10	5.90	4.5	15.0	0.00000756	0.80		
31.50	34.50	3	300	2.51	13.5	16.01	2	3601	5.10	2.10	2.90	2.5	8.3	0.00000536	0.50		
31.50	34.50	3	300	2.51	13.5	16.01	1	2601	4.10	1.60	1.90	1.8	6.0	0.00000535	0.50		
													Avr.	0.00000592	0.80		

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-04)

Test Section		30.0 m-33.0 m	radius in cm=		3.8				Intake (Lit.)													
Upper Part of Test Section (m)			Lower Part of Test Section (m)		L=Test Section in m.	L=Test Section in cm.		Hight Of water Swivel from GL	GWL of hole m		Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water		1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
30.00			33.00		3	300	2.53	6	8.53	1	1853	0.90	2.20	2.90	2.6	8.7	0.00001084	1.10	Void Filling			
30.00			33.00		3	300	2.53	6	8.53	2	2853	1.10	3.60	3.80	3.7	12.3	0.00001002	1.00				
30.00			33.00		3	300	2.53	6	8.53	3	3853	1.30	3.50	4.60	4.1	13.7	0.00000822	0.80				
30.00			33.00		3	300	2.53	6	8.53	2	2853	1.40	2.10	3.00	2.6	8.7	0.00000704	0.70				
30.00			33.00		3	300	2.53	6	8.53	1	1853	1.10	0.90	1.30	1.1	3.7	0.00000459	0.50				
																			Avr.	0.00000814	0.50	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-05)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-06)

Test Section	25.0 m-28.0 m	radius in cm=		3.8				Intake (Lit.)									

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-07)

Test Section	16.5 m-19.5 m	radius in cm=	3.8					Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp)	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon
16.50	19.50	3	300	2.53	6	8.53	1	1853	0.90	1.50	3.10	2.3	7.7	0.0000959	1.00
16.50	19.50	3	300	2.53	6	8.53	2	2853	1.40	2.50	3.30	2.9	9.7	0.00000785	0.80
16.50	19.50	3	300	2.53	6	8.53	3	3853	2.20	3.40	4.00	3.7	12.3	0.00000742	0.70
16.50	19.50	3	300	2.53	6	8.53	2	2853	1.60	2.30	4.10	3.2	10.7	0.00000867	0.90
16.50	19.50	3	300	2.53	6	8.53	1	1853	1.10	2.20	2.90	2.6	8.7	0.00001084	1.10
												Avr.	.	0.00000887	0.70



PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-08)

Test Section	22.50 m-25.5 m	radius in cm=	3.8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp)	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
22.50	25.50	3	300	2.51	6.2	8.71	1	1871	1.20	2.00	3.30	2.7	9.0	0.00001115	1.10	Turbulent
22.50	25.50	3	300	2.51	6.2	8.71	2	2871	2.90	3.70	4.10	3.9	13.0	0.00001050	1.00	
22.50	25.50	3	300	2.51	6.2	8.71	3	3871	3.50	5.60	2.20	3.9	13.0	0.00000778	0.80	
22.50	25.50	3	300	2.51	6.2	8.71	2	2871	1.60	2.70	3.80	3.3	11.0	0.00000888	0.90	
22.50	25.50	3	300	2.51	6.2	8.71	1	1871	2.40	1.90	3.50	2.7	9.0	0.00001115	1.10	
Avr.														0.00000989	0.80	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-09)

Test Section	26.0 m-29.0 m	radius in cm=	3.8					Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water							
25.50	28.50	3	300	2.52	12.6	15.12	1	2512	1.40	2.30	5.10	3.7	12.3	0.00001138	1.10
25.50	28.50	3	300	2.52	12.6	15.12	2	3512	2.80	4.10	2.90	3.5	11.7	0.00000770	0.80
25.50	28.50	3	300	2.52	12.6	15.12	3	4512	1.90	3.80	4.20	4.0	13.3	0.00000685	0.70
25.50	28.50	3	300	2.52	12.6	15.12	2	3512	3.30	4.60	3.30	4.0	13.3	0.00000880	0.90
25.50	28.50	3	300	2.52	12.6	15.12	1	2512	0.80	2.30	4.30	3.3	11.0	0.00001015	1.00
												Avr.	0.00000898	0.70	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-10)

Test Section		25.5 m-28.5 m	radius in cm=	3.8				Intake (Lit.)														
Flow Condition									Void Filling													
Lugeon									0.	90												
K cm/sec									0.0000	0923												
Q (cm ³ /sec)									13.	3												
Avg.									4.	0												
3 (15 min)									4.	0												
2 (10 min)									3.	10												
1 (5 min)									4.	20												
Differential Head of Water H=(Hg+Hp) cm.									33	50												
Hp (Pressure at monometer) kg/cm ²									1	33												
Hg in m.									23.	5												
GWL of hole m									2	1												
Hight Of water Swivel from GL									2.5													
L=Test Section in cm.									30	0												
L=Test Section in m.									3													
Lower Part of Test Section (m)									28.	50												
Upper Part of Test Section (m)									25.50													
									25.50	28.	3	30	2.5	2	23.	33	4.	3.	4.	13.	0.0000	0.
									25.50	28.	3	30	2.5	2	23.	43	2.	3.	4.	14.	0.0000	0.
									25.50	28.	3	30	2.5	2	23.	53	3.	4.	5.	15.	0.0000	0.
									25.50	28.	3	30	2.5	2	23.	43	1.	2.	3.	11.	0.0000	0.
									25.50	28.	3	30	2.5	2	23.	33	2.	1.	2.	7.3	0.0000	0.
																			Avr .	0.0000	0.	
																				0692	50	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-11)

Test Section	21.0 m-24.0 m		radius in cm=		3.8			Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
21.00	24.00	3	300	2.51	20.3	22.81	1	3281	1.40	3.30	5.50	4.4	14.7	0.0001036	1.00	Turbulent
21.00	24.00	3	300	2.51	20.3	22.81	2	4281	2.80	5.20	3.50	4.4	14.7	0.00000794	0.80	
21.00	24.00	3	300	2.51	20.3	22.81	3	5281	1.90	3.50	4.20	3.9	13.0	0.00000571	0.60	
21.00	24.00	3	300	2.51	20.3	22.81	2	4281	3.30	4.10	5.10	4.6	15.3	0.00000830	0.80	
21.00	24.00	3	300	2.51	20.3	22.81	1	3281	0.80	3.40	4.60	4.0	13.3	0.00000942	0.90	
													Avr.	0.00000835	0.60	



PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-12)

Test Section n	7.5 m-10.5 m		radius in cm=		3.8			Intake (Lit.)									
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
	7.50	10.50	3	300	2.53	16.5	11.53	1	2153	9.30	16.10	31.50	23.8	79.3	0.00008541	8.50	Was hout
	7.50	10.50	3	300	2.53	16.5	11.53	2	3153	19.50	35.50	40.00	37.8	126.0	0.00009263	9.30	
	7.50	10.50	3	300	2.53	16.5	11.53	3	4153	23.30	42.20	64.10	53.2	177.4	0.00009897	9.90	
	7.50	10.50	3	300	2.53	16.5	11.53	2	3153	23.70	45.50	52.40	49.0	163.4	0.00012007	12.00	
	7.50	10.50	3	300	2.53	16.5	11.53	1	2153	17.20	30.20	45.30	37.8	126.0	0.00013565	13.60	
														Avr .	0.00010655	13.60	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-13)

Test Section	16.5 m-19.5 m	radius in cm=	3	8				Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water							
16.50	19.50	3	300	2.5	--	20.5	1	3050	10.30	19.90	30.90	25.4	84.7	0.00006434	6.40
16.50	19.50	3	300	2.5	--	20.5	2	4050	17.70	30.20	45.30	37.8	126.0	0.00007211	7.20
16.50	19.50	3	300	2.5	--	20.5	3	5050	26.10	48.60	58.80	53.7	179.0	0.00008216	8.20
16.50	19.50	3	300	2.5	--	20.5	2	4050	27.80	51.30	66.60	59.0	196.7	0.00011256	11.30
16.50	19.50	3	300	2.5	--	20.5	1	3050	19.70	42.50	60.30	51.4	171.4	0.00013021	13.00
												Avr	0.00009227	13.00	

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-14)

Test Section	10.5 m-13.5 m	radius in cm=	3.8				Intake (Lit.)									
Flow Condition	Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)
Turbulent	10.00	0.00010011	75.7	22.7	20.00	25.30	12.10	1752	1	7.52	5	2.52	300	3	13.50	10.50
	9.90	0.00009854	117.0	35.1	38.90	31.30	7.30	2752	2	7.52	5	2.52	300	3	13.50	10.50
	9.30	0.00009349	151.4	45.4	51.20	39.50	8.60	3752	3	7.52	5	2.52	300	3	13.50	10.50
	9.80	0.00009770	116.0	34.8	41.00	28.60	12.90	2752	2	7.52	5	2.52	300	3	13.50	10.50
	10.90	0.00010893	82.3	24.7	28.90	20.40	8.80	1752	1	7.52	5	2.52	300	3	13.50	10.50
	9.30	0.00009975	Avr.													

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-15)

Test Section	9.0 m-12.0 m	radius in cm=	3 . 8				Intake (Lit.)						Flow Condition																																																			
							1	2	3	Avg.	Q <i>(cm³/sec)</i>		K cm/sec	Lugeon																																																		
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.					79.0	0.00007954	8.00																																																		
							1	2	3	Avg.	2302																																																					
																11.00	24.50	22.90	23.7																																													
																				11.00	24.50	22.90	23.7																																									
																								11.00	24.50	22.90	23.7																																					
																												11.00	24.50	22.90	23.7																																	
9.00	12.00	3	300	2.52	-- -	13.02	1	2302	11.00	24.50	22.90	23.7	79.0	0.00007954	8.00																																																	
																	9.00	12.00	3	300	2.52	-- -	13.02	2	3302	14.60	29.10	37.50	33.3	111.0	0.00007792	7.80																																
																																	9.00	12.00	3	300	2.52	-- -	13.02	3	4302	17.30	35.50	48.30	41.9	139.7	0.00007525	7.50																
																																																	9.00	12.00	3	300	2.52	-- -	13.02	2	3302	14.30	30.30	40.70	35.5	118.4	0.00008307	8.30
												Avr .	0.00008115	7.50																																																		

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-15)

Test Section	9.0 m-12.0 m	radius in cm=	3 . 8				Intake (Lit.)					Flow Condition					
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon				
	Upper Part of Test Section (m)			Hght Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer) kg/cm2	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon		
	9.00	12.00	3	30	2.53	13.03	1	2303	9.80	21.00	25.70	23.4	78.0	0.00007850	7.90	Turbulent	
	9.00	12.00	3	30	2.53	13.03	2	3303	11.30	20.60	28.00	24.3	81.0	0.00005684	5.70		
	9.00	12.00	3	30	2.53	13.03	3	4303	12.20	20.30	35.60	28.0	93.4	0.00005028	5.00		
	9.00	12.00	3	30	2.53	13.03	2	3303	13.90	29.70	35.90	32.8	109.4	0.00007672	7.70		
	9.00	12.00	3	30	2.53	13.03	1	2303	10.30	18.60	22.40	20.5	68.3	0.00006877	6.90		
														Avr .	0.00006622	5.00	

Lugen test result



2.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.2	BH-1	At 0.5 m depth	6.14	22.15	0.022
2		BH-2	At 0.5 m depth	6.20	21.01	0.025
3			At 1.5 m depth	6.35	20.03	0.028
4			At 3.0m depth	6.31	19.67	0.031
5			At 4.5 m depth	6.28	17.01	0.022
6		BH-3	At 0.5 m depth	6.33	16.25	0.031
7		BH-4	At 0.5 m depth	6.13	15.62	0.033
8		BH-5	At 0.5 m depth	6.25	16.32	0.035
9		BH-6	At 0.5 m depth	6.34	14.58	0.029
10		BH-7	At 0.5 m depth	6.32	20.01	0.031
11			At 1.5 m depth	6.89	20.35	0.033
12			At 3.0 m depth	6.47	22.14	0.035
13		BH-8	At 0.5 m depth	6.52	23.58	0.034
14			At 1.5 m depth	6.34	26.89	0.038
15			At 3.0 m depth	6.29	28.63	0.031
16		BH-9	At 0.5 m depth	6.32	30.01	0.025
17			At 1.5 m depth	6.35	32.25	0.026
18		BH-10	At 1.5 m depth	6.45	29.68	0.021
19			At 3.0 m depth	6.48	30.13	0.022
20		BH-11	At 1.5 m depth	6.52	32.65	0.025
21			At 3.0 m depth	6.64	35.24	0.024
22		BH-12	At 1.5 m depth	6.67	36.87	0.027
23			At 3.0 m depth	6.72	32.01	0.028

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
24		BH-13	At 1.5 m depth	6.54	29.87	0.026
25			At 3.0 m depth	6.65	28.65	0.035
26		BH-14	At 1.5 m depth	6.37	26.47	0.026
27			At 3.0 m depth	6.34	25.32	0.029
28		BH-15	At 1.5 m depth	6.55	24.31	0.031
29			At 3.0 m depth	6.47	22.01	0.034
30		BH-16	At 1.5 m depth	6.25	30.89	0.028
31			At 3.0 m depth	6.89	31.25	0.034

2.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.2	BH-1	12.00	7.02	35.87	41.28
2			16.50	7.04	38.91	52.04
3		BH-2	1.50	6.98	32.96	38.33
4			13.50	6.97	33.98	42.25
5		BH-3	15.00	7.07	27.55	18.63
6			22.50	7.04	31.22	22.24
7		BH-4	7.50	6.92	38.74	21.22
8			12.00	6.94	37.40	24.55
9		BH-5	10.50	6.88	32.41	45.22
10			13.50	6.86	33.56	42.27
13		BH-7	7.50	6.88	30.11	16.57
14			10.50	6.92	38.91	22.56
15		BH-8	7.50	7.04	42.22	24.78
16			22.50	7.01	43.56	28.85
17		BH-9	13.50	6.72	45.99	31.55
18			25.50	6.78	42.87	34.62
19		BH-10	22.50	6.88	32.80	41.22
20			28.50	6.82	34.57	46.22
21		BH-11	22.50	7.04	28.64	44.15
22			31.50	7.05	27.21	48.55
23		BH-12	18.00	6.92	26.44	42.66
24			22.00	6.84	28.78	47.12
27		BH-14	12.00	6.78	31.54	40.21
28			21.00	6.77	32.28	41.22
29		BH-15	6.00	6.80	42.55	47.22
30			15.00	6.82	37.55	46.24

2.1.7 ANNEXURE- G (SOIL TEST)

Sl. No		Samples		Type of sample collection				Grain size analysis		Hydro meter analys is		Atterber g's Limits		Field Moisture Content in %		Bulk density in g/cc		Dry density in g/cc		Cohesion (c) Kgf/cm ²		Angle of shearing		Un-Confined Compression test		Compression Index (Cc)		Specific gravity		Void ratio		Free swelling Index In %		Field S.P.T. Value (N)		Group of soil.									
				Fine Gravel In %		Coarse Sand In %		Medium Sand In %		Fine Sand in %		Silt in %		Clay in %		Liquid Limit In %		Plastic Limit In %		Plasticity Index in %																									
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																																													
LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-1)																																													
1		At 0.5 m		D.S		2.56		4.51		28.52		25.62		25.89		12.90		27		18		9		---		---		---		---		---		2.69		---		10		---		SC			
LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-2)																																													
1		At 0.5 m		D.S		21.60		7.54		7.78		24.85		20.63		17.60		28		17		11		---		---		---		---		---		---		2.68		---		10		---		SC	
2		At 1.5 m		S.P.T		1.25		14.75		67.21		14.62		2.17		---		---		---		---		---		---		---		---		---		2.65		N>100		N>100		NOTE*					
3		At 3.0m		S.P.T		2.34		17.65		59.84		18.29		1.88		---		---		---		---		---		---		---		---		2.64		N>100		N>100									
4		At 4.5 m		S.P.T		2.54		19.61		63.44		11.76		2.65		---		---		---		---		---		---		---		---		2.65		N>100		N>100									
NOTE*- From 1.5 m to 4.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.																																													
LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-3)																																													
1		At 0.5 m depth		D.S		3.41		7.65		29.51		16.37		28.76		14.30		27		17		10		---		---		---		---		---		---		12		---		SC					
NOTE*- From 4.5 m to 7.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.																																													
LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-4)																																													
1		At 0.5 m		D.S		1.48		3.67		25.46		28.46		25.53		15.40		29		17		12		---		---		---		---		---		---		2.69		---		12		---		SC	



Sl. No	Samples		
Type of sample collection	Grain size analysis	Hydro meter analysis	Atterberg's Limits
Fine Gravel In %			
Coarse Sand In %			
Medium Sand In %			
Fine Sand in %			
Silt in %			
Clay in %			
Liquid Limit In %			
Plastic Limit In %			
Plasticity Index in %			
Field Moisture Content in %			
Bulk density in g/cc			
Dry density in g/cc			
Cohesion (c) Kgf/cm ²			
Angle of shearing			
Un-Confined Compression test			
Compression Index (Cc)			
Specific gravity			
Void ratio			
Free swelling Index In %			
Field S.P.T. Value (N)			
Group of soil.			

NOTE*- From 1.5 m to 3.0 m depth, a highly weathered rock stratum exists from which core samples could not be collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-9)									
2	1								
At 1.5 m	At 0.5 m								
S.P.T	D.S								
2.37	1.39								
17.52	4.85								
36.45	36.24								
39.34	22.54								
4.32	23.38								
	11.60								
---	28								
---	18								
---	10								
---	---								
---	---								
---	---								
---	---								
---	---								
2.65	2.69								
---	---								
---	12								
N>100	---								
NOTE*	SC								

NOTE*- From 1.5 m to 2.0 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-10)						
3	2	1				
At 3.0	At 1.5 m	At 0.5 m				
S.P.T	S.P.T	D.S				
3.41	2.46	32.37				
23.45	28.34	14.31				
41.87	39.32	10.95				
30.24	27.37	8.32				
1.03	2.51	23.95				
		10.10				
---	---	27				
---	---	17				
---	---	10				
---	---	---				
---	---	---				
---	---	---				
---	---	---				
---	---	---				
2.64	2.65	2.69				
---	---	---				
---	---	0				
N>100	N>100	---				
	NOTE*	SC				

NOTE*- From 1.5 m to 3.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-11)									
2	1								
At 1.5 m	At 0.5 m								
S.P.T	D.S								
1.76	1.54								
5.33	4.21								
25.49	27.88								
63.78	21.63								
3.64	28.84								
	15.90								
---	28								
---	17								
---	11								
---	---								
---	---								
---	---								
---	---								
---	---								
2.65	2.69								
---	---								
---	12								
N>100	---								
NOTE*	SC								



4	3	SL No Samples	Type of sample collection	Grain size analysis	Hydro meter analysis	Atterberg's Limits
AT 4.5	AT 3.0					
S.P.T	S.P.T					
3.57	2.53		Fine Gravel In %			
8.41	7.82		Coarse Sand In %			
23.34	27.61		Medium Sand In %			
61.91	60.43		Fine Sand in %			
2.77	1.61		Silt in %			
			Clay in %			
---	---		Liquid Limit In %			
---	---		Plastic Limit In %			
---	---		Plasticity Index in %			
---	---		Field Moisture Content in %			
---	---		Bulk density in g/cc			
---	---		Dry density in g/cc			
---	---		Cohesion (c) Kgf/cm ²			
---	---		Angle of shearing			
---	---		Un-Confined Compression test			
---	---		Compression Index (Cc)			
2.64	2.65		Specific gravity			
---	---		Void ratio			
---	---		Free swelling Index In %			
N>100	N>100		Field S.P.T. Value (N)			
			Group of soil.			

NOTE*- From 1.5 m to 5.0 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-12)						
4	3	2	1			
AT 4.5	AT 3.0	At 1.5 m	At 0.5 m			
S.P.T	S.P.T	S.P.T	D.S			
1.34	1.68	1.28	1.05			
18.64	17.52	19.35	17.85			
40.58	39.71	36.38	19.67			
38.61	40.55	41.85	18.74			
0.83	0.54	1.14	25.19			
---	---	---	17.50			
---	---	---	29			
---	---	---	17			
---	---	---	12			
---	---	---	---			
---	---	---	---			
---	---	---	---			
---	---	---	---			
---	---	---	---			
---	---	---	---			
---	---	---	---			
2.64	2.64	2.65	2.69			
---	---	---	---			
---	---	---	12			
N>100	N>100	N>100	---			
				NOTE*		
						SC

NOTE*- From 1.5 m to 5.0 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-13)						
3	2	1				
At 3.0m	At 1.5 m	At 0.5 m				
S.P.T	S.P.T	D.S				
8.24	11.25	21.60				
23.67	23.65	7.54				
28.79	29.21	7.78				
35.71	33.18	24.85				
3.59	2.71	20.63				
---	---	17.60				
---	---	30				
---	---	17				
---	---	13				
---	---	---				
---	---	---				
---	---	---				
---	---	---				
---	---	---				
---	---	---				
2.65	2.65	2.68				
---	---	---				
---	---	10				
N>100	N>100	---				
			NOTE*			SC

NOTE*- From 1.5 m to 6.0 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

NOTE*- From 1.5 m to 4.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.



Sl. No	Samples	Type of sample collection	Grain size analysis				Hydro meter analysis	Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compression test	Compression Index (Cc)	Specific gravitv	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.	
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %		Silt in %	Clay in %	Liquid Limit In %													Plastic Limit In %
5	m t o 4 . 5 m d e p t h	S . P . T	ROCK STRATA, CORE RECOVERY=14.66%, R.Q.D=0.00%																			N > 1 0 0 0	- - - -
	F r o m 4 . 5 m t o 6 . 0 m d e p t h																						

NOTE*- From 1.5 m to 3.0m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

SL. No	Samples		Type of sample collection	Grain size analysis				Hydro meter analysis	Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compression test	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.					
3	At 3.0m	S.P.T	UDS	D.S	1.55	6.39	19.84	26.78	27.04	18.40	28	17	11	12.37	1.832	1.630	0.21	10	0.42	0.114	2.69	0.65	10	12	N>100	NOTE*	SC	SC
LABORATORY TEST RESULT OF TUNNEL NO.2 (BH-16)																												
3	At 1.5 m	S.P.T	UDS	D.S	1.55	6.39	19.84	26.78	27.04	18.40	28	17	11	12.37	1.832	1.630	0.21	10	0.42	0.114	2.69	0.65	10	12	N>100	NOTE*	SC	SC

NOTE* - From 3.0 m to 3.5m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

3. T3

3.1 Annexures

3.1.1 ANNEXURE- A (BORELOG)

3.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

3.1.2.1 Specific Gravity

Depth (m)		Specific Gravity												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	2.78	2.78	2.81		2.76	2.74	2.74	2.75	2.76	2.77	2.79	2.77	2.78
1.5	3	2.78	2.78	2.81		2.76	2.75	2.75	2.75	2.76	2.77	2.79	2.77	2.78
3	4.5	2.78	2.78	2.81		2.77	2.76	2.76	2.76	2.76	2.77	2.78	2.78	2.79
4.5	6	2.78	2.78	2.80	2.74	2.77	2.76	----	2.77	2.77	2.78	2.78	2.79	2.79
6	7.5	2.79	2.78	2.80	2.74	---	2.76	----	2.78	2.77	2.78	2.78	2.79	2.79
7.5	9	2.79	2.78	2.81	2.75	---	2.77	2.76	2.78	2.77	2.79	2.78	2.80	2.80
9	10.5	2.79	2.78	2.80	2.75	---	2.78	2.76	2.78	2.77	2.79	2.78	2.80	2.79
10.5	12	2.79	2.79	2.80	2.75	2.78	2.78	2.76	2.79	2.77	2.82	2.77	2.80	2.79
12	13.5	2.79	2.79	2.80	2.75	2.78	2.81	2.77	2.79	2.77	2.82	2.77	2.81	2.79
13.5	15	2.84	2.79	2.81	2.76	2.78	2.81	2.77	2.80	2.78	2.81	2.77	2.81	2.80
15	16.5	2.84	2.79	2.81	2.76	2.79	2.82	2.78	2.80	2.78	2.81	2.78	2.81	2.80
16.5	18	2.82	2.79	2.81	2.76	2.79	2.82	2.78	2.80	2.78	2.81	2.78	2.81	2.80
18	19.5	2.82	2.80	2.81	2.77	2.79	2.82	2.80	2.80	2.78	2.80	2.78	2.81	2.80
19.5	21	2.81	2.80	2.81	2.77	2.80	2.82	2.80	2.80	2.78	2.81	2.78	2.82	2.80
21	22.5	2.81	2.80	2.82	2.77	2.80	2.82	2.81	2.81	2.79	2.81	2.79	2.82	2.80
22.5	24		2.81	2.82	2.78	2.80	2.83	2.82	2.81	2.79	2.81	2.79	2.82	2.80
24	25.5		2.81	2.82	2.78	2.81	2.83	2.83	2.81	2.79	2.81		2.82	
25.5	27		2.81	2.82	2.82	2.81	2.83	2.83	2.81	2.79	2.81		2.83	
27	28.5			2.83	2.82	2.81	2.83	2.83	2.81	2.79	2.82		2.83	
28.5	30			2.83	2.82	2.82	2.84	2.83	2.82	2.79	2.82		2.83	
30	31.5			2.83	2.82	2.82	2.84	2.84	2.82	2.80			2.83	
31.5	33			2.83	2.82	2.82	2.84	2.84	2.82					
33	34.5				2.83			2.83	2.82					
34.5	36				2.83			2.84	2.83					
36	37.5				2.83			2.84	2.83					
37.5	39								2.83					
39	40.5								2.82					

3.1.2.2 Dry Density

Depth (m)		Density (gm/cc)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	2.73	2.72	2.76		2.70	2.68	2.68	2.68	2.69	2.72	2.72	2.72	2.70
1.5	3	2.73	2.72	2.76		2.70	2.69	2.70	2.70	2.69	2.72	2.72	2.73	2.70
3	4.5	2.73	2.73	2.77		2.71	2.70	2.73	2.71	2.69	2.71	2.72	2.73	2.72
4.5	6	2.74	2.73	2.76	2.70	2.71	2.70	----	2.72	2.71	2.71	2.72	2.74	2.71
6	7.5	2.74	2.73	2.77	2.70	---	2.72	----	2.72	2.72	2.71	2.72	2.74	2.71
7.5	9	2.74	2.74	2.78	2.71	---	2.73	2.71	2.73	2.71	2.70	2.73	2.78	2.71
9	10.5	2.75	2.74	2.77	2.71	---	2.74	2.71	2.73	2.72	2.70	2.73	2.78	2.74
10.5	12	2.75	2.75	2.76	2.71	2.73	2.74	2.72	2.74	2.72	2.79	2.73	2.78	2.74
12	13.5	2.75	2.75	2.78	2.72	2.73	2.78	2.72	2.74	2.72	2.79	2.73	2.78	2.74
13.5	15	2.82	2.75	2.79	2.70	2.75	2.78	2.73	2.77	2.73	2.78	2.73	2.78	2.75
15	16.5	2.81	2.76	2.78	2.70	2.75	2.79	2.74	2.77	2.73	2.78	2.74	2.79	2.75
16.5	18	2.79	2.76	2.79	2.71	2.76	2.79	2.75	2.78	2.73	2.77	2.75	2.79	2.75
18	19.5	2.79	2.76	2.79	2.71	2.76	2.79	2.78	2.78	2.74	2.76	2.75	2.79	2.76
19.5	21	2.78	2.76	2.79	2.72	2.77	2.80	2.78	2.78	2.74	2.78	2.76	2.79	2.76
21	22.5	2.78	2.77	2.80	2.73	2.77	2.80	2.78	2.79	2.75	2.78	2.78	2.79	2.77
22.5	24		2.77	2.80	2.73	2.77	2.81	2.79	2.79	2.75	2.79	2.78	2.80	2.77
24	25.5		2.77	2.80	2.74	2.78	2.81	2.80	2.79	2.75	2.79		2.80	
25.5	27		2.77	2.80	2.78	2.78	2.81	2.81	2.79	2.75	2.79		2.80	
27	28.5			2.81	2.78	2.78	2.81	2.81	2.80	2.76	2.80		2.80	
28.5	30			2.81	2.78	2.79	2.82	2.81	2.80	2.76	2.80		2.80	
30	31.5			2.81	2.79	2.79	2.82	2.82	2.80	2.77			2.80	
31.5	33			2.81	2.79	2.79	2.82	2.82	2.81					
33	34.5				2.79			2.81	2.81					
34.5	36				2.79			2.82	2.81					
36	37.5				2.79			2.82	2.81					
37.5	39								2.81					
39	40.5								2.80					

3.1.2.3 Water absorption Test

Depth (m)		Water absorption value												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	0.42	0.38	0.39		0.65	0.75	0.70	0.60	0.32	0.42	0.33	0.42	0.28
1.5	3	0.41	0.36	0.38		0.60	0.72	0.65	0.55	0.31	0.40	0.32	0.38	0.28

Depth (m)		Water absorption value												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
3	4.5	0.39	0.35	0.36		0.54	0.69	0.50	0.52	0.31	0.37	0.31	0.35	0.27
4.5	6	0.39	0.36	0.37	0.60	0.52	0.65	----	0.46	0.30	0.38	0.30	0.33	0.27
6	7.5	0.38	0.37	0.35	0.58	---	0.50	----	0.44	0.29	0.35	0.29	0.30	0.26
7.5	9	0.36	0.37	0.35	0.56	---	0.46	0.45	0.42	0.29	0.32	0.29	0.15	0.26
9	10.5	0.35	0.36	0.34	0.55	---	0.41	0.42	0.40	0.29	0.30	0.28	0.12	0.23
10.5	12	0.32	0.35	0.33	0.53	0.47	0.32	0.40	0.38	0.28	0.14	0.27	0.10	0.23
12	13.5	0.30	0.35	0.31	0.50	0.45	0.15	0.39	0.35	0.27	0.14	0.26	0.09	0.22
13.5	15	0.09	0.34	0.29	0.60	0.43	0.14	0.38	0.25	0.25	0.15	0.24	0.10	0.21
15	16.5	0.01	0.30	0.28	0.55	0.35	0.13	0.37	0.23	0.25	0.16	0.23	0.08	0.22
16.5	18	0.13	0.15	0.28	0.52	0.33	0.12	0.35	0.20	0.24	0.16	0.21	0.09	0.22
18	19.5	0.12	0.14	0.26	0.47	0.31	0.11	0.16	0.18	0.24	0.18	0.21	0.07	0.22
19.5	21	0.11	0.12	0.25	0.45	0.30	0.11	0.15	0.11	0.23	0.09	0.19	0.09	0.20
21	22.5	0.10	0.11	0.23	0.42	0.29	0.10	0.13	0.07	0.21	0.09	0.18	0.08	0.21
22.5	24		0.11	0.21	0.38	0.25	0.11	0.12	0.06	0.20	0.08	0.17	0.07	0.22
24	25.5		0.10	0.20	0.36	0.26	0.11	0.11	0.06	0.20	0.08		0.07	
25.5	27		0.10	0.18	0.34	0.27	0.12	0.10	0.05	0.19	0.07		0.05	
27	28.5			0.18	0.33	0.20	0.10	0.10	0.04	0.18	0.06		0.06	
28.5	30			0.16	0.34	0.18	0.10	0.09	0.05	0.17	0.05		0.06	
30	31.5			0.15	0.32	0.15	0.09	0.09	0.05	0.17			0.05	
31.5	33			0.12	0.30	0.12	0.09	0.08	0.04					
33	34.5				0.28			0.07	0.05					
34.5	36				0.27			0.08	0.04					
36	37.5				0.24			0.08	0.04					
37.5	39								0.04					
39	40.5								0.04					

3.1.2.4 Porosity

Depth (m)		Porosity (%)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	----	2.16	1.78		2.17	2.19	2.19	2.55	2.54	1.81	----	1.81	2.88
1.5	3	1.80	2.16	1.78		2.17	2.18	1.82	1.82	2.54	1.81	2.51	1.44	2.88
3	4.5	1.80	1.80	1.42		2.17	2.17	1.09	1.81	2.54	2.17	2.16	1.80	2.51
4.5	6	1.44	1.80	1.43	1.46	2.17	2.17	----	1.81	2.17	2.52	2.16	1.79	2.87
6	7.5	1.79	1.80	1.07	1.46	---	1.45	----	2.16	1.81	2.52	2.16	1.79	2.87

Depth (m)		Porosity (%)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
7.5	9	1.79	1.44	1.07	1.45	---	1.44	1.81	1.80	2.17	3.23	1.80	0.71	3.21
9	10.5	1.43	1.44	1.07	1.45	---	1.44	1.81	1.80	1.81	3.23	1.80	0.71	1.79
10.5	12	1.43	1.43	1.43	1.45	1.80	1.44	1.45	1.79	1.81	1.06	1.44	0.71	1.79
12	13.5	1.43	1.43	0.71	1.09	1.80	1.07	1.81	1.79	1.81	1.06	1.44	1.07	1.79
13.5	15	0.70	1.43	0.71	2.17	1.08	1.07	1.44	1.07	1.80	1.07	1.44	1.07	1.79
15	16.5	1.06	1.08	1.07	2.17	1.43	1.06	1.44	1.07	1.80	1.07	1.44	0.71	1.79
16.5	18	1.06	1.08	0.71	1.81	1.08	1.06	1.08	0.71	1.80	1.42	1.08	0.71	1.79
18	19.5	1.06	1.43	0.71	2.17	1.08	1.06	0.71	0.71	1.44	1.43	1.08	0.71	1.43
19.5	21	1.07	1.43	0.71	1.81	1.07	0.71	0.71	0.71	1.44	1.07	0.72	1.06	1.43
21	22.5	1.07	1.07	0.71	1.44	1.07	0.71	1.07	0.71	1.43	1.07	0.36	1.06	1.07
22.5	24		1.42	0.71	1.80	1.07	0.71	1.06	0.71	1.43	0.71	0.36	0.71	1.07
24	25.5		1.42	0.71	1.44	1.07	0.71	1.06	0.71	1.43	0.71		0.71	
25.5	27		1.42	0.71	1.42	1.07	0.71	0.71	0.71	1.43	0.71		1.06	
27	28.5			0.71	1.42	1.15	0.71	0.71	0.36	1.08	0.71		1.06	
28.5	30			0.71	1.42	1.06	0.70	0.71	0.71	1.08	0.71		1.06	
30	31.5			0.71	1.06	1.06	0.70	0.70	0.71	1.07			1.06	
31.5	33			0.71	1.06	1.06	0.70	0.70	0.35					
33	34.5				1.41			0.71	0.35					
34.5	36				1.41			0.70	0.71					
36	37.5				1.41			0.70	0.71					
37.5	39								0.71					
39	40.5								0.71					

3.1.2.5 Hardness

Depth (m)		Hardness												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	----	5.00	----		5.00	5.00	5.00	5.00	----	6.00	----	6.00	5.00
1.5	3	5.00	5.00	5.00		5.00	5.00	5.00	5.00	5.00	6.00	5.00	6.00	5.00
3	4.5	5.00	5.00	5.00		5.00	5.00	5.00	5.00	5.00	6.00	5.00	6.00	5.00
4.5	6	5.00	5.00	5.00	5.00	5.00	5.00	----	5.00	5.00	6.00	5.00	6.00	5.00
6	7.5	5.00	5.00	5.00	5.00	---	5.00	----	5.00	5.00	6.00	5.00	6.00	5.00
7.5	9	5.00	5.00	5.00	5.00	---	5.00	5.00	5.00	5.00	6.00	5.00	6.00	6.00
9	10.5	5.00	5.00	6.00	5.00	---	5.00	5.00	5.00	5.00	7.00	5.00	7.00	6.00
10.5	12	5.00	6.00	6.00	5.00	5.00	6.00	5.00	5.00	5.00	8.00	6.00	7.00	6.00

Depth (m)		Hardness												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
12	13.5	6.00	6.00	6.00	5.00	5.00	7.00	5.00	6.00	5.00	8.00	6.00	7.00	6.00
13.5	15	8.00	6.00	6.00	6.00	5.00	7.00	5.00	7.00	6.00	7.00	6.00	7.00	6.00
15	16.5	8.00	7.00	6.00	6.00	6.00	7.00	5.00	7.00	6.00	7.00	6.00	7.00	7.00
16.5	18	7.00	7.00	6.00	6.00	6.00	7.00	6.00	7.00	6.00	7.00	7.00	7.00	7.00
18	19.5	7.00	7.00	6.00	6.00	6.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	7.00
19.5	21	7.00	7.00	7.00	6.00	6.00	7.00	7.00	7.00	6.00	8.00	7.00	7.00	7.00
21	22.5	7.00	7.00	7.00	6.00	6.00	7.00	7.00	7.00	6.00	8.00	7.00	7.00	7.00
22.5	24		7.00	7.00	6.00	6.00	7.00	7.00	7.00	6.00	8.00	7.00	7.00	7.00
24	25.5		7.00	7.00	7.00	6.00	8.00	7.00	7.00	7.00	8.00		8.00	
25.5	27		7.00	7.00	7.00	6.00	8.00	8.00	7.00	7.00	8.00		8.00	
27	28.5			7.00	7.00	7.00	8.00	8.00	7.00	7.00	8.00		8.00	
28.5	30			7.00	7.00	7.00	8.00	8.00	8.00	7.00	8.00		8.00	
30	31.5			7.00	7.00	7.00	8.00	8.00	8.00	7.00			8.00	
31.5	33			7.00	7.00	7.00	8.00	8.00	8.00					
33	34.5				7.00			8.00	8.00					
34.5	36				7.00			8.00	8.00					
36	37.5				7.00			8.00	8.00					
37.5	39								8.00					
39	40.5								8.00					

3.1.2.6 Compression Test

Depth (m)		Unconfined Compressive Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	----	6.76	----		5.01	----	3.81	----	----	6.68	----	8.24	14.30
1.5	3	8.90	7.69	5.67		5.13	3.73	4.16	4.08	8.73	7.58	10.37	9.40	16.36
3	4.5	9.87	8.43	6.92		6.00	4.58	4.62	4.24	11.09	7.81	11.23	9.75	17.76
4.5	6	10.57	9.09	7.42	----	6.29	4.82	----	4.82	12.92	8.66	12.47	11.11	21.87
6	7.5	11.07	10.34	9.87	4.08	---	8.78	----	6.53	15.46	9.36	13.75	12.40	23.40
7.5	9	11.31	11.58	12.14	4.35	---	9.75	7.54	7.07	18.38	11.57	16.50	33.45	24.36
9	10.5	11.46	12.28	12.88	4.47	---	11.58	7.81	8.28	20.04	12.24	18.38	35.79	25.28

Depth (m)		Unconfined Compressive Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
10.5	12	11.97	20.63	14.67	4.90	7.19	12.24	9.09	9.87	22.83	77.14	19.91	43.75	27.20
12	13.5	12.16	21.22	16.50	4.97	7.81	44.92	9.95	11.58	25.63	78.63	21.35	46.02	28.68
13.5	15	80.86	21.45	17.51	8.39	8.66	46.78	10.61	50.71	28.55	80.94	24.14	48.42	32.92
15	16.5	84.22	22.46	19.91	8.82	35.48	57.80	10.96	54.75	30.08	83.30	26.06	48.94	34.45
16.5	18	61.78	23.35	21.35	9.52	36.33	71.69	12.20	59.68	31.48	40.51	27.29	50.47	37.24
18	19.5	63.57	27.72	22.83	10.45	38.35	75.57	24.25	63.53	32.92	39.21	29.60	51.82	40.21
19.5	21	65.01	30.08	24.40	10.92	39.75	80.46	30.08	76.49	35.01	90.29	31.48	54.75	41.65
21	22.5	66.49	32.92	27.11	11.73	42.90	85.40	98.49	101.07	37.37	91.73	32.92	59.64	43.75
22.5	24		36.06	28.55	12.36	45.34	90.94	102.47	102.86	38.94	92.73	36.50	61.17	46.10
24	25.5		40.34	30.56	12.47	48.73	94.00	107.05	105.78	40.21	95.57		63.61	
25.5	27		43.09	31.56	37.46	50.59	96.22	108.67	107.01	41.65	98.49		66.71	
27	28.5			34.97	40.21	59.59	104.82	109.19	108.67	43.09	103.99		69.90	
28.5	30			37.37	46.63	62.30	116.00	115.87	109.23	44.66	105.87		73.74	
30	31.5			40.30	48.07	63.65	124.69	117.31	110.15	46.10			80.51	
31.5	33			43.83	52.43	66.54	130.01	118.31	112.55					
33	34.5				54.83			121.63	113.56					
34.5	36				56.62			122.29	115.00					
36	37.5				60.73			125.52	117.00					
37.5	39								118.01					
39	40.5								118.86					

3.1.2.7 Point Load Test

Depth (m)		Point Load Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	0.25	0.25	0.18		0.14	0.11	0.11	0.11	0.21	0.21	0.14	0.29	0.53
1.5	3	0.29	0.29	0.25		0.18	0.14	0.14	0.14	0.32	0.25	0.39	0.32	0.57
3	4.5	0.32	0.29	0.29		0.21	0.18	0.18	0.18	0.43	0.29	0.43	0.36	0.61
4.5	6	0.39	0.32	0.32	0.14	0.25	0.21	----	0.21	0.46	0.32	0.50	0.39	0.82

Depth (m)		Point Load Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
6	7.5	0.43	0.36	0.39	0.14	---	0.29	---	0.25	0.57	0.36	0.53	0.46	0.96
7.5	9	0.46	0.43	0.46	0.18	---	0.32	0.25	0.29	0.64	0.39	0.61	1.39	1.00
9	10.5	0.46	0.46	0.50	0.18	---	0.43	0.29	0.36	0.71	0.43	0.68	1.46	1.03
10.5	12	0.50	0.75	0.57	0.18	0.29	0.50	0.32	0.39	0.82	3.31	0.75	1.85	1.10
12	13.5	0.53	0.78	0.68	0.21	0.32	1.60	0.36	0.46	0.93	3.35	0.82	1.92	1.18
13.5	15	3.49	0.82	0.71	0.25	0.36	1.85	0.39	2.21	1.10	3.42	0.89	2.03	1.25
15	16.5	3.64	0.86	0.75	0.25	1.50	2.21	0.43	2.35	1.25	3.64	1.03	2.07	1.39
16.5	18	2.67	0.89	0.82	0.29	1.57	3.03	0.46	2.42	1.35	1.64	1.10	2.14	1.53
18	19.5	2.71	1.10	0.86	0.32	1.60	3.10	0.96	2.78	1.39	1.68	1.18	2.03	1.71
19.5	21	2.78	1.25	0.93	0.32	1.68	3.39	1.18	3.31	1.50	3.99	1.25	2.17	1.75
21	22.5	2.85	1.32	1.07	0.36	1.82	3.53	4.21	4.28	1.57	4.03	1.32	2.57	1.85
22.5	24		1.50	1.14	0.39	1.89	3.56	4.31	4.38	1.60	4.06	1.43	2.64	1.96
24	25.5		1.64	1.28	0.43	1.96	3.92	4.42	4.56	1.68	4.13		2.67	
25.5	27		1.75	1.32	1.50	2.10	4.28	4.56	4.60	1.75	4.24		2.78	
27	28.5			1.39	1.60	2.46	4.63	4.63	4.67	1.78	4.53		3.03	
28.5	30			1.50	1.85	2.64	4.88	4.70	4.74	1.85	4.60		3.17	
30	31.5			1.68	1.92	2.71	5.17	4.92	4.85	1.89			3.46	
31.5	33			1.85	2.14	2.85	5.42	5.03	4.92					
33	34.5				2.21			5.10	4.99					
34.5	36				2.32			5.42	5.03					
36	37.5				2.57			5.49	5.20					
37.5	39								5.27					
39	40.5								5.30					

3.1.2.8 Brazilian Test

Depth (m)		Tensile Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	----	0.68	----		0.48	----	0.40	----	----	0.69	----	0.78	1.45
1.5	3	0.91	0.78	0.58		0.53	0.38	0.43	0.42	0.90	0.80	1.05	0.81	1.65
3	4.5	0.99	0.89	0.70		0.65	0.49	0.48	0.45	1.13	0.85	1.12	0.85	1.78
4.5	6	1.08	0.93	0.76	----	0.68	0.50	----	0.50	1.32	0.90	1.27	0.89	2.20
6	7.5	1.15	1.05	1.00	0.48	---	0.91	----	0.67	1.57	0.96	1.39	1.03	2.34
7.5	9	1.17	1.16	1.23	0.52	---	1.02	0.77	0.73	1.86	1.20	1.66	1.17	2.45

Depth (m)		Tensile Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
9	10.5	1.18	1.26	1.32	0.55	---	1.20	0.80	0.85	2.02	1.26	1.85	1.25	2.55
10.5	12	1.22	2.10	1.49	0.60	0.74	1.25	0.93	1.02	2.28	7.79	2.00	3.40	2.74
12	13.5	1.25	2.17	1.68	0.63	0.82	4.52	1.00	1.18	2.57	7.90	2.15	3.78	2.89
13.5	15	8.12	2.20	1.77	0.88	0.91	4.73	1.07	5.12	2.88	8.14	2.45	3.93	3.30
15	16.5	8.56	2.31	2.01	0.90	3.60	5.82	1.12	5.52	3.08	8.40	2.62	4.19	3.45
16.5	18	6.22	2.42	2.16	0.98	3.68	7.21	1.25	6.01	3.17	4.12	2.75	4.25	3.74
18	19.5	6.40	2.80	2.30	1.11	3.88	7.68	2.45	6.42	3.34	4.00	2.98	4.98	4.05
19.5	21	6.54	3.11	2.46	1.20	3.99	8.11	3.11	7.72	3.52	9.13	3.17	5.34	4.18
21	22.5	6.71	3.34	2.75	1.25	4.30	8.63	9.98	10.20	3.78	9.22	3.31	6.02	4.39
22.5	24		3.69	2.92	1.30	4.55	9.12	10.32	10.34	3.92	9.35	3.67	6.24	4.65
24	25.5		4.11	3.11	1.32	4.87	9.45	10.78	10.62	4.06	9.63		6.52	
25.5	27		4.35	3.20	3.86	5.10	9.78	10.90	10.74	4.18	9.92		6.70	
27	28.5			3.54	4.11	6.02	10.52	10.95	10.93	4.32	10.48		7.12	
28.5	30			3.78	4.70	6.32	11.78	11.63	11.02	4.50	10.65		7.58	
30	31.5			4.15	4.90	6.40	12.56	11.80	11.23	4.63			8.11	
31.5	33			4.40	5.30	6.65	13.11	11.98	11.34					
33	34.5				5.52			12.25	11.42					
34.5	36				5.78			12.40	11.58					
36	37.5				6.12			12.60	11.75					
37.5	39								11.88					
39	40.5								11.96					

3.1.2.9 Modulus of elasticity test

Depth (m)		Tensile Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	----	----	----		----	----	----	----	----	----	----	----	----
1.5	3	----	----	----		----	----	----	----	----	----	----	----	----
3	4.5	----	----	----		----	----	----	----	----	----	----	----	----
4.5	6	----	----	----		----	----	----	----	----	----	----	----	32.40

Depth (m)		Tensile Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
6	7.5	----	----	----	----	---	----	----	----	----	----	----	----	35.20
7.5	9	----	----	26.40	----	---	----	----	----	----	29.80	29.80	----	36.40
9	10.5	----	----	29.30	----	---	----	----	----	29.80	----	30.70	----	37.50
10.5	12	----	----	31.70	----	----	----	----	----	31.40	50.30	33.40	46.20	38.40
12	13.5	----	----	33.40	----	----	----	----	----	32.80	50.90	34.10	47.80	38.70
13.5	15	56.70	----	35.20	----	----	----	----	----	35.60	51.60	34.60	48.20	40.40
15	16.5	58.30	----	35.90	----	----	51.80	----	----	36.20	52.40	36.70	48.60	41.30
16.5	18	52.40	----	36.30	----	----	52.40	----	----	37.70	44.90	37.50	49.30	42.70
18	19.5	54.30	39.50	37.40	----	----	53.10	----	----	38.20	43.40	37.80	49.70	44.30
19.5	21	56.40	40.20	38.50	----	----	53.80	36.20	49.80	40.40	53.70	39.20	51.20	45.60
21	22.5	57.90	44.20	38.20	----	----	54.20	52.30	52.10	41.90	54.20	40.60	52.60	47.20
22.5	24	----	45.80	39.40	----	----	54.80	53.10	52.60	42.40	55.20	42.50	53.50	50.40
24	25.5	----	47.90	40.60	----	----	55.60	53.70	53.40	44.60	56.70	----	53.90	----
25.5	27	----	49.20	40.90	----	----	56.90	53.90	53.70	45.90	57.30	----	54.40	----
27	28.5	----	----	42.70	44.60	52.70	57.20	54.60	54.20	47.10	58.20	----	55.20	----
28.5	30	----	----	44.60	47.50	53.40	57.80	55.30	54.50	49.70	58.50	----	56.30	----
30	31.5	----	----	45.80	49.20	55.30	58.30	55.70	54.90	50.60	----	----	58.20	----
31.5	33	----	----	47.20	50.40	56.40	59.40	56.40	55.70	----	----	----	----	----
33	34.5	----	----	52.60	----	----	56.80	56.40	----	----	----	----	----	----
34.5	36	----	----	54.70	----	----	57.30	57.10	----	----	----	----	----	----
36	37.5	----	----	55.20	----	----	58.40	57.40	----	----	----	----	----	----
37.5	39	----	----	----	----	----	----	58.20	----	----	----	----	----	----
39	40.5	----	----	----	----	----	----	59.60	----	----	----	----	----	----

3.1.2.10 Abrasion test

Depth (m)		Tensile Strength (MPa)												
To p	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12	BH 13
0.5	1.5	----	0.81	----		0.76	----	0.49	----	----	0.84	----	0.87	1.13
1.5	3	0.94	0.85	0.78		0.78	0.58	0.58	0.52	0.96	0.89	1.04	0.93	1.18
3	4.5	0.98	0.89	0.84		0.81	0.69	0.62	0.56	1.04	0.92	1.07	0.98	1.20
4.5	6	1.02	0.93	0.89	----	0.84	0.72	----	0.65	1.09	0.95	1.11	1.08	1.33
6	7.5	1.08	1.06	0.95	0.69	---	0.84	----	0.78	1.15	0.97	1.13	1.12	1.37
7.5	9	1.09	1.19	1.12	0.71	---	0.92	0.76	0.82	1.21	1.08	1.16	1.68	1.42
9	10.5	1.12	1.14	1.15	0.73	---	1.08	0.81	0.87	1.29	1.13	1.21	1.76	1.45
10.5	12	1.10	1.24	1.17	0.78	0.88	1.17	0.86	0.93	1.34	2.87	1.25	1.97	1.49
12	13.5	1.13	1.31	1.21	0.82	0.91	2.01	0.94	1.08	1.38	2.91	1.32	2.12	1.52
13.5	15	2.95	1.36	1.24	0.86	0.96	2.12	1.06	2.24	1.45	2.94	1.38	2.15	1.63
15	16.5	2.98	1.39	1.29	0.91	1.75	2.38	1.12	2.32	1.56	2.98	1.46	2.17	1.72
16.5	18	2.54	1.42	1.32	0.94	1.78	2.79	1.15	2.48	1.62	1.92	1.52	2.22	1.79
18	19.5	2.59	1.48	1.35	1.06	1.82	2.88	1.42	2.56	1.66	1.86	1.55	2.29	1.93
19.5	21	2.65	1.56	1.43	1.14	1.85	2.96	1.64	2.85	1.73	3.12	1.63	2.32	1.96
21	22.5	2.67	1.63	1.51	1.15	1.94	3.00	3.12	3.12	1.78	3.17	1.68	2.48	1.98
22.5	24		1.72	1.53	1.17	2.04	3.08	3.19	3.18	1.83	3.19	1.76	2.54	2.08
24	25.5		1.87	1.58	1.13	2.12	3.14	3.24	3.23	1.88	3.24		2.57	
25.5	27		1.92	1.62	1.79	2.36	3.21	3.31	3.28	1.92	3.27		2.69	
27	28.5			1.71	1.92	2.48	3.24	3.32	3.32	1.96	3.34		2.72	
28.5	30			1.76	2.08	2.54	3.29	3.36	3.37	1.99	3.39		2.79	
30	31.5			1.89	2.13	2.57	3.45	3.43	3.41	2.02			2.95	
31.5	33			1.96	2.24	2.63	3.58	3.49	3.45					
33	34.5				2.31			3.51	3.51					
34.5	36				2.39			3.57	3.54					
36	37.5				2.48			3.62	3.56					
37.5	39								3.59					
39	40.5								3.80					

3.1.3 ANNEXURE- C (RMR LOGS)

Tunnel: 3		BH: 1											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
7.5	9.0	2	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
9.0	10.5	2	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
12.0	13.5	2	3	5	0	0	0	0	1	1	7	-2	8	Class 5 (VERY POOR)
13.5	15.0	2	3	8	1	1	5	2	3	12	7	-2	22	Class 4 (POOR)
15.0	16.5	2	3	8	1	1	5	2	3	12	7	-2	22	Class 4 (POOR)
16.5	18.0	7	3	8	1	1	5	2	3	12	10	-2	25	Class 4 (POOR)
18.0	19.5	7	8	8	1	1	5	2	3	12	10	-2	25	Class 4 (POOR)
19.5	21.0	7	8	8	1	1	5	2	3	12	10	-2	25	Class 4 (POOR)
21.0	22.5	7	3	8	1	1	5	2	3	12	10	-2	25	Class 4 (POOR)
22.5	24.0	7	3	8	1	1	5	2	3	12	10	-2	25	Class 4 (POOR)
24.0	25.0	7	8	8	1	1	5	2	3	12	10	-2	25	Class 4 (POOR)

Tunnel:03		BH-02											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)

Tunnel:03		BH-02										RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
7.5	9.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
9.0	10.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
12.0	13.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
13.5	15.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
15.0	16.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
16.5	18.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
18.0	19.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
19.5	21.0	2	3	5	2	4	5	4	3	18	10	-2	36	Class 4 (POOR)
21.0	22.5	4	3	5	2	4	5	4	3	18	10	-2	38	Class 4 (POOR)
22.5	24.0	4	3	5	2	4	5	4	3	18	10	-2	38	Class 4 (POOR)
24.0	25.5	4	3	5	2	4	5	4	3	18	10	-2	38	Class 4 (POOR)
25.5	27.0	4	8	5	2	4	5	4	3	18	10	-2	43	Class 3(FAIR)
27.0	28.5	4	8	5	2	4	5	4	3	18	10	-2	43	Class 3(FAIR)
28.5	29.0	4	8	5	2	4	5	4	3	18	10	-2	43	Class 3(FAIR)

Tunnel:3		BH-04											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
6.0	7.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
7.5	9.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
9.0	10.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
12.0	13.5	2	3	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
13.5	15.0	2	3	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
15.0	16.5	2	3	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
16.5	18.0	2	3	5	1	1	5	2	3	12	7	-2	27	Class 4 (POOR)
18.0	19.5	2	3	5	1	1	5	2	3	12	7	-2	27	Class 4 (POOR)
19.5	21.0	2	3	5	1	1	5	2	3	12	7	-2	27	Class 4 (POOR)
21.0	22.5	2	3	5	2	4	5	2	5	18	10	-2	36	Class 4 (POOR)
22.5	24.0	2	3	5	2	4	5	2	5	18	10	-2	36	Class 4 (POOR)
24.0	25.5	2	3	5	2	4	5	2	5	18	10	-2	36	Class 4 (POOR)
25.5	27.0	4	3	15	4	5	5	4	5	23	15	-2	58	Class 3 (FAIR)
27.0	28.5	4	8	15	4	5	5	4	5	23	15	-2	63	Class 2 (GOOD)
28.5	30.0	4	8	15	4	5	5	4	5	23	15	-2	63	Class 2 (GOOD)
30.0	31.5	4	8	15	4	5	5	4	5	23	15	-2	63	Class 2 (GOOD)
31.5	33.0	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2 (GOOD)
33.0	34.5	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2 (GOOD)
34.5	36.0	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2 (GOOD)
36.0	37.0	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2 (GOOD)

Tunnel:3		BH-5											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
12.0	13.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
13.5	15.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)
15.0	16.5	4	3	5	0	0	0	0	1	1	7	-2	18	Class 5 (VERY POOR)
16.5	18.0	4	3	5	0	0	0	0	1	1	7	-2	18	Class 5 (VERY POOR)
18.0	19.5	4	3	5	0	0	0	0	1	1	7	-2	18	Class 5 (VERY POOR)
19.5	21.0	4	3	5	1	1	3	1	3	9	7	-2	26	Class 4 (POOR)
21.0	22.5	4	3	5	1	1	3	1	3	9	7	-2	26	Class 4 (POOR)
22.5	24.0	4	3	5	1	1	3	1	3	9	7	-2	26	Class 4 (POOR)
24.0	25.5	4	3	5	1	1	3	1	3	9	7	-2	26	Class 4 (POOR)
25.5	27.0	7	3	5	1	1	3	1	3	9	7	-2	29	Class 4 (POOR)
27.0	28.5	7	3	8	2	4	5	4	5	20	10	-2	46	Class 3(FAIR)
28.5	30.0	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2(GOOD)
30.0	31.5	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2(GOOD)
31.5	32.0	7	8	15	4	5	5	4	5	23	15	-2	66	Class 2(GOOD)

Tunnel: 3		BH: 6											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
1.5	3.0	1	3	5	1	1	5	2	3	12	10	-2	29	Class 4 (POOR)
3.0	4.5	1	3	5	1	1	5	2	3	12	10	-2	29	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
6.0	7.5	1	3	5	1	1	5	2	3	12	10	-2	29	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
13.5	15.0	4	3	5	1	1	5	4	5	16	10	-2	36	Class 4 (POOR)
15.0	16.5	4	3	5	1	1	5	4	5	16	10	-2	36	Class 4 (POOR)
16.5	18.0	7	3	8	2	1	5	4	5	17	10	-2	43	Class 3 (FAIR)
18.0	19.5	7	3	8	2	1	5	4	5	17	10	-2	43	Class 3 (FAIR)
19.5	21.0	7	3	8	2	1	5	4	5	17	10	-2	43	Class 3 (FAIR)
21.0	22.5	7	3	8	2	1	5	4	5	17	10	-2	43	Class 3 (FAIR)
22.5	24.0	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)
24.0	25.5	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)
25.5	27.0	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)
27.0	28.5	7	8	20	6	5	6	4	5	26	15	-2	74	Class 2 (GOOD)
28.5	30.0	12	3	15	4	5	6	4	5	24	10	-2	62	Class 2 (GOOD)
30.0	31.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
31.5	33.0	12	8	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
33.0	34.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

Tunnel: 3		BH7											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	1	3	5	1	1	5	2	3	12	7	-2	26	Class 4 (POOR)
1.5	3.0	1	3	5	1	1	5	2	3	12	7	-2	26	Class 4 (POOR)
3.0	4.5	1	3	5	1	1	5	2	3	12	10	-2	29	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)

Tunnel: 3		BH7											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
6.0	7.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
7.5	9.0	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
9.0	10.5	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
10.5	12.0	0	3	5	1	4	5	4	5	19	10	-2	35	Class 4 (POOR)
12.0	13.5	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
13.5	15.0	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
15.0	16.5	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
16.5	18.0	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
18.0	19.5	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
19.5	21.0	2	3	5	1	4	5	4	5	19	10	-2	37	Class 4 (POOR)
21.0	22.5	4	3	8	2	4	5	4	5	20	15	-2	48	Class 3 (FAIR)
22.5	24.0	7	3	8	2	4	5	4	5	20	15	-2	51	Class 3 (FAIR)
24.0	25.5	12	3	10	4	4	5	4	5	22	15	-2	60	Class 3 (FAIR)
25.5	27.0	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
27.0	28.5	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
28.5	30.0	12	3	15	4	5	5	4	5	23	15	-2	66	Class 2 (GOOD)
30.0	31.5	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
31.5	33.0	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
33.0	34.5	12	8	15	5	5	5	5	5	25	15	-2	73	Class 2 (GOOD)
34.5	36.0	12	3	15	5	5	5	5	5	25	15	-2	68	Class 2 (GOOD)
36.0	37.5	12	8	15	5	5	5	5	5	25	15	-2	73	Class 2 (GOOD)
37.5	39.0	12	8	15	5	5	5	5	5	25	15	-2	73	Class 2 (GOOD)

Tunnel:03		BH-08											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	3	2	3	10	10	-2	26	Class 4 (POOR)
1.5	3.0	1	3	5	1	1	3	2	3	10	10	-2	27	Class 4 (POOR)
3.0	4.5	1	3	5	1	1	3	2	3	10	10	-2	27	Class 4 (POOR)
4.5	6.0	1	3	5	1	1	3	2	3	10	10	-2	27	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	5	2	3	12	15	-2	35	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)

Tunnel:03			BH-08										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
12.0	13.5	2	3	5	2	4	5	4	5	20	15	-2	43	Class 3 (FAIR)
13.5	15.0	7	3	5	2	4	5	4	5	20	15	-2	48	Class 3 (FAIR)
15.0	16.5	7	3	5	2	4	5	4	5	20	15	-2	48	Class 3 (FAIR)
16.5	18.0	7	3	5	2	4	5	4	5	20	15	-2	48	Class 3 (FAIR)
18.0	19.5	7	3	10	4	5	5	4	5	23	15	-2	56	Class 3 (FAIR)
19.5	21.0	7	8	10	4	5	5	4	5	23	15	-2	61	Class 2 (GOOD)
21.0	22.5	12	3	10	4	5	5	4	5	23	15	-2	61	Class 2 (GOOD)
22.5	24.0	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
24.0	25.5	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
25.5	27.0	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
27.0	28.5	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
28.5	30.0	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
30.0	31.5	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
31.5	33.0	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
33.0	34.5	12	8	15	4	5	5	4	5	23	15	-2	71	Class 2 (GOOD)
34.5	36.0	12	13	15	5	5	5	4	5	24	15	-2	77	Class 2 (GOOD)
36.0	37.5	12	13	15	5	5	5	4	5	24	15	-2	77	Class 2 (GOOD)
37.5	39.0	12	13	15	5	5	5	4	5	24	15	-2	77	Class 2 (GOOD)
39.0	40.0	12	13	15	5	5	5	4	5	24	15	-2	77	Class 2 (GOOD)

Tunnel: 3			BH10										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)
7.5	9.0	2	3	8	2	4	5	4	5	20	15	-2	46	Class 3 (FAIR)
9.0	10.5	2	3	8	2	4	5	4	5	20	15	-2	46	Class 3 (FAIR)
10.5	12.0	7	3	8	2	4	5	4	5	20	15	-2	51	Class 3 (FAIR)
12.0	13.5	7	8	10	4	5	5	4	5	23	15	-2	61	Class 2 (GOOD)
13.5	15.0	7	3	10	4	5	5	4	5	23	15	-2	56	Class 3 (FAIR)
15.0	16.5	7	3	10	4	5	5	4	5	23	15	-2	56	Class 3 (FAIR)

Tunnel: 3		BH10											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
16.5	18.0	4	3	10	4	5	5	4	5	23	15	-2	53	Class 3 (FAIR)
18.0	19.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
19.5	21.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
21.0	22.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
22.5	24.0	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
24.0	25.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
25.5	27.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
27.0	28.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
28.5	29.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)

TUNNEL 3		BH 12											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
7.5	9.0	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
9.0	10.5	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
10.5	12.0	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
12.0	13.5	4	3	10	1	4	5	4	5	19	10	-2	44	Class 3 (FAIR)
13.5	15.0	4	3	10	1	4	5	4	5	19	10	-2	44	Class 3 (FAIR)
15.0	16.5	4	3	10	2	4	5	4	5	20	10	-2	45	Class 3 (FAIR)
16.5	18.0	7	8	15	2	4	5	4	5	20	10	-2	58	Class 3 (FAIR)
18.0	19.5	7	8	15	2	4	5	4	5	20	10	-2	58	Class 3 (FAIR)
19.5	21.0	7	8	10	2	4	5	4	5	20	10	-2	53	Class 3 (FAIR)
21.0	22.5	7	8	10	2	4	5	4	5	20	10	-2	53	Class 3 (FAIR)
22.5	24.0	7	8	10	2	4	5	4	5	20	10	-2	53	Class 3 (FAIR)
24.0	25.5	7	8	10	2	4	5	4	5	20	10	-2	53	Class 3 (FAIR)
25.5	27.0	7	3	10	2	4	5	4	5	20	10	-2	48	Class 3 (FAIR)

TUNNEL 3		BH 12											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
27.0	28.5	7	3	10	2	4	5	4	5	20	10	-2	48	Class 3 (FAIR)
28.5	30.0	7	3	10	2	4	5	4	5	20	10	-2	48	Class 3 (FAIR)
30.0	31.0	7	8	10	2	4	5	4	5	20	10	-2	53	Class 3 (FAIR)

3.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-01)

Test Section	10.5 m-13.5 m	radius in cm=	3.8			Intake (Lit.)									
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Height Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.							Flow Condition
								1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	
10.50	13.50	3	300	2.52	16.5	14.52	1	2452	3.80	9.20	8.50	8.9	29.7	0.00002804	2.80
10.50	13.50	3	300	2.52	16.5	14.52	2	3452	4.10	9.80	18.70	14.3	47.7	0.00003201	3.20
10.50	13.50	3	300	2.52	16.5	14.52	3	4452	6.30	19.30	25.30	22.3	74.3	0.00003870	3.90
10.50	13.50	3	300	2.52	16.5	14.52	2	3452	10.30	22.90	31.30	27.1	90.4	0.00006066	6.10
10.50	13.50	3	300	2.52	16.5	14.52	1	2452	14.10	23.90	25.50	24.7	82.3	0.00007783	7.80

Avr	0.0000	7.	
.	4745	80	

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-02)

Test Section	13.5 m-16.5 m	radius in cm=	3.8					Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-03)

Test Section	18.0 m-21.0 m	radius in cm=	3.8					Intake (Lit.)	
--------------	---------------	---------------	-----	--	--	--	--	---------------	--

Flow Condition		Turbulent													
Lugeon		1.00	0.80	0.70	0.90	1.20							0.70		
K cm/sec		0.00001014	0.00000828	0.00000728	0.00000920	0.00001159							0.00000930		
Q (cm ³ /sec)		14.0	15.0	16.3	16.7	16.0							Avr .		
Avg.		4.2	4.5	4.9	5.0	4.8									
3 (15 min)		4.50	5.10	5.50	5.20	4.40									
2 (10 min)		3.90	3.90	4.20	4.80	5.10									
1 (5 min)		2.10	2.80	3.50	3.20	3.90									
Differential Head of Water H=(Hg+Hp) cm.		32.00	42.00	52.00	42.00	32.00									
Hp (Pressure at monometer) kg/cm ²		1	2	3	2	1									
Hg in m.		22	22	22	22	22									
GWL of hole m		22.3	22.3	22.3	22.3	22.3									
Hight Of water Swivel from GL		2.5	2.5	2.5	2.5	2.5									
L=Test Section in cm.		300	300	300	300	300									
L=Test Section in m.		3	3	3	3	3									
Lower Part of Test Section (m)		21.00	21.00	21.00	21.00	21.00									
Upper Part of Test Section (m)		18.00	18.00	18.00	18.00	18.00									

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-04)

Test Section	22.5 m- 25.5 m	radius in cm=	3. 8			Intake (Lit.)																																				
						Flow Condition	Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)																				
22.50	25.50	3	30	2.51	18.7	21.21	1	3121	3.10	7.50	9.30	8.4	28.0	0.0000 2079	2.10																											
																								Was hout	3.00	0.0000 3037	54.0	16.2	21.10	11.30	5.30	4121	21.21	18.7	2.51	30	3	25.50	22.50			
22.50	25.50	3	30	2.51	18.7	21.21	2	4121	11.40	25.60	35.70	30.7	102.4	0.0000 5756	5.80																											
																								Was hout	4.00	0.0000 3983	88.0	26.4	29.40	23.30	7.90	5121	21.21	18.7	2.51	30	3	25.50	22.50			
22.50	25.50	3	30	2.51	18.7	21.21	3	5121	16.70	30.70	38.30	34.5	115.0	0.0000 8541	8.50																											
																								Was hout	5.80	0.0000 4679	Avr .															
22.50	25.50	3	30	2.51	18.7	21.21	1	3121	16.70	30.70	38.30	34.5	115.0	0.0000 8541	8.50																											
																								Was hout	8.50	0.0000 4679	Avr .															

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-05)

Test Section	16.5 m-19.5 m	radius in cm=	3.8				Intake (Lit.)							
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)						Hg in m.								
						Differential Head of Water H=(Hg+Hp) cm.								
						Hp (Pressure at monometer) kg/cm ²								
						GWL of hole m								
						Hight Of water Swivel from GL								
						L=Test Section in cm.								
						L=Test Section in m.								
						Lower Part of Test Section (m)								
						Upper Part of Test Section (m)								
16.50	19.50	3	300	2.53	17.7	20.23	1	3.90	7.80	10.20	9.00	30.00	0.00002300	2.30
16.50	19.50	3	300	2.53	17.7	20.23	2	9.60	16.70	25.30	21.00	70.00	0.00004033	4.00
16.50	19.50	3	300	2.53	17.7	20.23	3	14.80	25.30	41.30	33.30	11.00	0.00005122	5.10
16.50	19.50	3	300	2.53	17.7	20.23	2	17.30	28.80	44.70	36.80	12.27	0.00007068	7.10
16.50	19.50	3	300	2.53	17.7	20.23	1	15.50	40.30	29.40	34.90	11.64	0.00008920	8.90
											Avr.	0.00005489	8.90	

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-06)

Test Section	19.5 m- 22.5 m	radius in cm=	3. 8						Intake (Lit.)								
								</									

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-07)

Test Section	24.0 m- 27.0 m	radius in cm=	3.8					Intake (Lit.)								
				</												

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-08)

Test Section		16.50 m-19.5 m		radius in cm=		3.8				Intake (Lit.)							
															Flow Condition		
															Lugeon		
															K cm/sec		
															Q (cm3/sec)		
															Avg.		
															3 (15 min)		
															2 (10 min)		
															1 (5 min)		
															Differential Head of Water H=(Hg+Hp) cm.		
															Hp (Pressure at monometer) kg/cm2		
															Hg in m.		
															GWL of hole m		
															Hight Of water Swivel from GL		
															L=Test Section in cm.		
															L=Test Section in m.		
															Lower Part of Test Section (m)		
															Upper Part of Test Section (m)		
16.50	19.50	3	300	2.55	10.6	13.15	1	2315	0.80	1.80	2.50	2.2	7.3	0.00000734	0.70	Dilat ion	
16.50	19.50	3	300	2.55	10.6	13.15	2	3315	1.70	3.50	4.10	3.8	12.7	0.00000886	0.90		
16.50	19.50	3	300	2.55	10.6	13.15	3	4315	2.90	4.90	6.30	5.6	18.7	0.00001003	1.00		
16.50	19.50	3	300	2.55	10.6	13.15	2	3315	1.40	2.50	4.20	3.4	11.3	0.00000792	0.80		
16.50	19.50	3	300	2.55	10.6	13.15	1	2315	2.10	1.60	2.20	1.9	6.3	0.00000634	0.60		
													Avr .	0.00000810	1.00		

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-09)

Test Section	16.5 m-19.5 m	radius in cm=	3.8						Intake (Lit.)							
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
16.50	19.50	3	300	2.54	23.6	20.54	1	3054	2.60	4.10	5.00	4.6	15.3	0.00001164	1.20	Turbulent
16.50	19.50	3	300	2.54	23.6	20.54	2	4054	3.70	6.30	5.20	5.8	19.3	0.00001105	1.10	
16.50	19.50	3	300	2.54	23.6	20.54	3	5054	2.20	4.40	6.80	5.6	18.7	0.00000856	0.90	
16.50	19.50	3	300	2.54	23.6	20.54	2	4054	3.30	5.50	7.10	6.3	21.0	0.00001201	1.20	
16.50	19.50	3	300	2.54	23.6	20.54	1	3054	1.80	4.50	5.60	5.1	17.0	0.00001290	1.30	
													Avr .	0.00001123	0.90	

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-10)

Test Section	10.5 m- 13.5 m	radius in cm=	3. 8				Intake (Lit.)									
																</

PERMEABILITY TEST RESULT OF TUNNEL-02 (BH-11)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-12)

Test Section		16.5 m-19.5 m		radius in cm=		3.8				Intake (Lit.)							
												Flow Condition					
												Lugeon					
												K cm/sec					
												Q (cm3/sec)					
												Avg.					
												3 (15 min)					
												2 (10 min)					
												1 (5 min)					
												Differential Head of Water H=(Hg+Hp) cm.					
												Hp (Pressure at monometer) kg/cm2					
												Hg in m.					
												GWL of hole m					
												Hight Of water Swivel from GL					
												L=Test Section in cm.					
												L=Test Section in m.					
												Lower Part of Test Section (m)					
												Upper Part of Test Section (m)					
16.50	19.50	3	300	2.5	21.8	20.5	1	3050	2.10	3.80	5.50	4.7	15.7	0.00001191	1.20	Turbulent	
16.50	19.50	3	300	2.5	21.8	20.5	2	4050	1.80	5.20	3.90	4.6	15.3	0.00000878	0.90		
16.50	19.50	3	300	2.5	21.8	20.5	3	5050	2.70	3.90	5.50	4.7	15.7	0.00000719	0.70		
16.50	19.50	3	300	2.5	21.8	20.5	2	4050	2.20	4.90	5.30	5.1	17.0	0.00000973	1.00		
16.50	19.50	3	300	2.5	21.8	20.5	1	3050	1.90	3.20	5.10	4.2	14.0	0.00001064	1.10		
													Avr.		0.00000965	0.70	

PERMEABILITY TEST RESULT OF TUNNEL-03 (BH-13)

Test Section	4.5 m-7.5 m		radius in cm=		3.8				Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL			GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.				Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
			1	2	3				Avg.							
4.50	7.50	3	300	2.51	18.2	8.51	1	1851	5.60	12.60	19.60	16.1	53.7	0.00006720	6.70	
4.50	7.50	3	300	2.51	18.2	8.51	2	2851	19.90	31.00	24.60	27.8	92.7	0.00007534	7.50	
4.50	7.50	3	300	2.51	18.2	8.51	3	3851	25.30	38.60	43.30	41.0	136.7	0.00008226	8.20	
4.50	7.50	3	300	2.51	18.2	8.51	2	2851	14.60	22.20	31.20	26.7	89.0	0.00007236	7.20	
4.50	7.50	3	300	2.51	18.2	8.51	1	1851	8.10	15.60	15.80	15.7	52.3	0.00006553	6.60	
													Avr .	0.00007254	8.20	

Lugen test result

3.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.3	BH-1	At 0.5 m depth	6.16	15.69	0.021
2			At. 6.0 m depth	6.24	17.92	0.026
3			At. 7.5 m depth	6.30	18.52	0.034
4		BH-2	At 0.5 m depth	6.34	19.62	0.028
5			At. 6.0 m depth	6.25	16.35	0.026
6			At. 7.5 m depth	6.31	20.01	0.032
7		BH-3	At 0.5 m depth	6.38	18.95	0.035
8		BH-4	At 0.5 m depth	6.41	21.47	0.034
9			At.1.5 m depth	6.58	22.34	0.036
10			At.3.0 m depth	6.32	25.68	0.029
11			At.4.5 m depth	6.35	30.02	0.031
12		BH-5	At 0.5 m depth	6.20	34.27	0.034
13			At. 7.5 m depth	6.47	35.69	0.028
14			At. 9.0 m depth	6.11	38.41	0.035
15			At. 10.5 m depth	6.25	32.06	0.034
16		BH-6	At 0.5 m depth	6.37	30.01	0.028
17			At. 6.0 m depth	6.39	32.26	0.023
18		BH-7	At 0.5 m depth	6.54	30.11	0.022
19			At. 6.0 m depth	6.49	24.02	0.025
20			At. 7.5 m depth	6.25	25.34	0.029
21			At. 12.0 m depth	6.38	26.55	0.032
22		BH-8	At 0.5 m depth	6.25	28.74	0.038
23		BH-9	At 0.5 m depth	6.31	29.85	0.034

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
24		BH-10	At 0.5 m depth	6.20	30.02	0.031
25		BH-11	At 0.5 m depth	6.47	36.58	0.023
26		BH-12	At 0.5 m depth	6.90	32.15	0.029
27		BH-13	At 0.5 m depth	6.82	33.24	0.026

3.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.3	BH-1	18.50	7.04	28.22	34.58
2			22.50	7.02	24.50	36.22
3		BH-2	21.00	6.97	37.00	46.54
4			25.50	7.00	34.55	47.22
5		BH-3	25.50	6.66	42.57	37.88
6			30.00	6.68	44.01	36.00
7		BH-4	21.00	6.82	42.01	38.78
8			28.50	6.81	40.02	40.22
9		BH-5	21.00	7.01	66.54	53.24
10			24.00	7.00	62.55	51.21
11		BH-6	25.50	6.72	58.44	58.22
12			30.00	6.70	56.90	52.00
13		BH-7	22.50	6.82	67.12	43.21
14			28.50	6.88	65.44	46.55
15		BH-8	12.00	6.93	60.14	48.74

16			28.50	6.97	62.33	45.02
17			25.50	6.75	51.22	34.78
18		BH-9	30.00	6.88	53.55	55.52
19			22.50	7.00	37.10	28.44
20		BH-10	25.50	7.03	32.55	27.56
21			21.00	6.82	35.66	27.55
22		BH-11	22.50	6.80	31.22	25.66
23			22.50	6.73	51.24	44.78
24		BH-12	25.50	6.77	56.55	45.85
25			21.00	7.01	42.22	53.22
26		BH-13	23.00	7.04	43.57	50.14

3.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498															
Sl. No	Samples (soil/rock) collected at	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-1, CHAINAGE NO.44181)															
1	At 0.5 m depth	D.S	11.77	6.35	18.20	29.96	21.82	11.90	28	16	12	2.68	10	----	SC
5	At. 6.0 m depth	S.P.T	0.00	0.47	8.61	73.59	17.33	----	----	----	2.65	----	----	N>100	NOTE*
6	At. 7.5 m depth	S.P.T	0.42	0.82	6.92	69.64	22.20	----	----	----	2.65	----	----	N>100	
NOTE*- From 4.5 m to 7.50 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.															
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-2, CHAINAGE NO. 44231)															

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																
Sl. No	Samples (soil/rock) collected at	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index	In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %					
1	At 0.5 m depth	D.S	4.26	3.22	19.31	34.42	23.19	15.60	28	16	12	2.68	10	----	SC	NOTE*
5	At. 6.0 m depth	S.P.T	0.00	0.00	40.81	54.12	5.07	----	----	----	2.65	----	N>100			
6	At. 7.5 m depth	S.P.T	0.00	0.41	42.53	55.07	1.99	----	----	----	2.64	----	N>100			

NOTE*- From 4.50 m to 7.50 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-3, CHAINAGE NO. 44281)															
1	At 0.5 m	D.S	5.23	2.68	16.54	32.14	27.21	16.20	29	17	12	2.68	10	----	SC
	depth														
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-4, CHAINAGE NO. 44331)															
1	At 0.5 m	D.S	25.82	4.54	21.08	28.33	20.23	18	----	NP	2.66	0	----	SM	
	depth														
2	At.1.5 m	S.P.T	1.69	0.23	33.93	59.31	4.84	----	----	----	2.65	----	N>100	NOTE*	
3	At.3.0 m	S.P.T	1.62	0.65	31.82	58.94	6.97	----	----	----	2.65	----	N>100		
4	At.4.5 m	S.P.T	0.82	0.47	40.56	52.76	5.39	----	----	----	2.64	----	N>100		
	depth														

NOTE*- From 0.50 m to 4.50 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.

LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-5, CHAINAGE NO.44381)													
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TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498															
Sl. No	Samples (soil/rock) collected at	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
1	At 0.5 m depth	D.S	0.00	0.40	9.23	52.61	37.76	19	----	NP	2.68	0	----	SM	
6	At. 7.5 m depth	S.P.T	0.00	0.00	42.18	54.98	2.84	----	----	----	2.65	----	N>100	NOTE*	
7	At. 9.0 m depth	S.P.T	0.00	0.00	45.36	53.62	1.02	----	----	----	2.65	----	N>100		
8	At. 10.5 m depth	S.P.T	0.00	0.00	41.89	55.47	2.64	----	----	----	2.65	----	N>100		
NOTE* - From 6.0 m to 10.50 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.															
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-6, CHAINAGE NO. 44431)															
1	At 0.5 m depth	D.S	0.65	0.34	7.99	41.23	30.89	18.90	30	17	13	2.69	12	----	SC
5	At. 6.0 m depth	S.P.T	0.00	0.00	16.72	64.04	19.24	----	----	----	2.65	----	N>100	NOTE*	
NOTE* - From 4.5 m to 6.0 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.															
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-7, CHAINAGE NO. 44481)															
1	At 0.5 m depth	D.S	64.88	0.83	4.65	13.97	15.67	28	16	12	2.67	10	----	GC	
5	At. 6.0 m depth	S.P.T	0.00	0.54	49.63	48.49	1.34	----	----	----	2.65	----	N>100	NOTE*	
6	At. 7.5 m depth	S.P.T	0.72	0.42	48.71	45.60	4.55	----	----	----	2.65	----	N>100		

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498															
Sl. No	Samples (soil/rock) collected at m depth	Type of sample collection S.P.T	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
9	At 12.0 m depth	S.P.T	0.00	0.25	50.11	47.62	2.02	---	---	---	2.65	---	N>100		
NOTE*- From 4.50 m to 7.50 m & from 10.50 m to 12.00 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.															
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-8, CHAINAGE NO. 44531)															
1	At 0.5 m depth	D.S	30.74	3.91	10.50	20.52	19.53	14.80	28	16	12	2.68	10	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-9, CHAINAGE NO. 44581)															
1	At 0.5 m depth	D.S	6.58	2.35	12.47	32.56	29.24	16.80	30	18	12	2.68	10	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-10, CHAINAGE NO. 44631)															
1	At 0.5 m depth	D.S	38.96	1.72	6.85	22.46	16.91	13.10	29	17	12	2.68	10	----	GC
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-11, CHAINAGE NO.44681)															
1	At 0.5 m depth	D.S	0.58	0.32	8.13	42.36	30.71	17.90	30	17	13	2.68	10	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-12, CHAINAGE NO.44731)															
1	At 0.5 m depth	D.S	18.68	3.13	10.99	24.08	27.82	15.30	29	17	12	2.68	12	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.3 (BH-13, CHAINAGE NO. 44771)															
1	At 0.5 m depth	D.S	9.58	4.25	12.31	25.14	31.92	16.80	30	18	12	2.68	10	----	SC



4. T4

4.1 Annexures

4.1.1 ANNEXURE- A (BORELOG)

4.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

4.1.2.1 Specific Gravity

Top	Bottom	BH01	BH02	BH03
1.5	3	2.77	2.77	2.77
3	4.5	2.77	2.77	2.77
4.5	6	2.78	2.77	2.77
6	7.5	2.78	2.78	2.77
7.5	9	2.79	2.78	2.81
9	10.5	2.81	2.78	2.81
10.5	12	2.80	2.78	2.81
12	13.5	2.80	2.78	2.82
13.5	15	2.81	2.79	2.82
15	16.5	2.81	2.79	2.82
16.5	18	2.81	2.79	2.83
18	19.5	2.81	2.80	2.83
19.5	21	2.82	2.80	2.83
21	22.5	2.82	2.80	
22.5	24	2.82	2.81	
24	25.5	2.82	2.81	
25.5	27		2.82	
27	28.5		2.82	
28.5	30		2.81	
30	31.5		2.81	
31.5	33		2.81	
33	34.5		2.82	
34.5	36		2.82	
36	37.5		2.82	
37.5	39		2.82	
39	40.5		2.82	

4.1.2.2 Dry Density

Depth (m)		Density (gm/cc)		
Top	Bottom	BH01	BH02	BH03
1.5	3	2.72	2.71	2.73
3	4.5	2.72	2.71	2.73
4.5	6	2.71	2.71	2.75
6	7.5	2.71	2.73	2.76
7.5	9	2.70	2.73	2.76
9	10.5	2.70	2.74	2.77
10.5	12	2.79	2.74	2.77

Depth (m)		Density (gm/cc)		
Top	Bottom	BH01	BH02	BH03
12	13.5	2.78	2.74	2.78
13.5	15	2.78	2.75	2.78
15	16.5	2.78	2.75	2.78
16.5	18	2.79	2.75	2.79
18	19.5	2.79	2.75	2.79
19.5	21	2.80	2.76	2.79
21	22.5	2.80	2.77	
22.5	24	2.80	2.77	
24	25.5	2.80	2.77	
25.5	27		2.78	
27	28.5		2.78	
28.5	30		2.78	
30	31.5		2.79	
31.5	33		2.79	
33	34.5		2.79	
34.5	36		2.79	
36	37.5		2.80	
37.5	39		2.80	
39	40.5		2.80	

4.1.2.3 Water absorption Test

Depth (m)		Water Absorption (%)		
Top	Bottom	BH01	BH02	BH03
1.5	3	0.42	0.40	0.42
3	4.5	0.40	0.37	0.42
4.5	6	0.14	0.38	0.25
6	7.5	0.16	0.38	0.22
7.5	9	0.15	0.35	0.18
9	10.5	0.10	0.25	0.16
10.5	12	0.10	0.25	0.14
12	13.5	0.09	0.25	0.10
13.5	15	0.09	0.22	0.09
15	16.5	0.09	0.20	0.08
16.5	18	0.09	0.20	0.07
18	19.5	0.08	0.20	0.07
19.5	21	0.07	0.18	0.07
21	22.5	0.07	0.18	
22.5	24	0.07	0.18	
24	25.5	0.07	0.18	
25.5	27		0.18	
27	28.5		0.18	
28.5	30		0.16	

Depth (m)		Water Absorption (%)		
Top	Bottom	BH01	BH02	BH03
30	31.5		0.14	
31.5	33		0.12	
33	34.5		0.10	
34.5	36		0.10	
36	37.5		0.09	
37.5	39		0.09	
39	40.5		0.09	

4.1.2.4 Porosity

Depth (m)		Porosity (%)		
Top	Bottom	BH01	BH02	BH03
1.5	3	1.81	2.17	1.44
3	4.5	1.81	2.17	1.44
4.5	6	2.52	2.17	0.72
6	7.5	2.52	1.80	0.36
7.5	9	3.23	1.80	1.78
9	10.5	3.91	1.44	1.42
10.5	12	0.36	1.44	1.42
12	13.5	0.71	1.44	1.42
13.5	15	1.07	1.43	1.42
15	16.5	1.07	1.43	1.42
16.5	18	0.71	1.43	1.41
18	19.5	0.71	1.79	1.41
19.5	21	0.71	1.43	1.41
21	22.5	0.71	1.07	
22.5	24	0.71	1.42	
24	25.5	0.71	1.42	
25.5	27		1.42	
27	28.5		1.42	
28.5	30		1.07	
30	31.5		0.71	
31.5	33		0.71	
33	34.5		1.06	
34.5	36		1.06	
36	37.5		0.71	
37.5	39		0.71	
39	40.5		0.71	

4.1.2.5 Hardness

Depth (m)		Hardness (Mohr Scale)		
Top	Bottom	BH01	BH02	BH03
1.5	3	6.00	6.00	6.00
3	4.5	6.00	6.00	6.00
4.5	6	7.00	6.00	6.00
6	7.5	7.00	7.00	7.00
7.5	9	7.00	7.00	7.00
9	10.5	7.00	7.00	7.00
10.5	12	8.00	7.00	7.00
12	13.5	8.00	7.00	8.00
13.5	15	8.00	7.00	8.00
15	16.5	8.00	7.00	8.00
16.5	18	8.00	7.00	8.00
18	19.5	8.00	7.00	8.00
19.5	21	8.00	8.00	8.00
21	22.5	8.00	8.00	
22.5	24	8.00	8.00	
24	25.5	8.00	8.00	
25.5	27		8.00	
27	28.5		8.00	
28.5	30		8.00	
30	31.5		8.00	
31.5	33		8.00	
33	34.5		8.00	
34.5	36		8.00	
36	37.5		8.00	
37.5	39		8.00	
39	40.5		8.00	

4.1.2.6 Compression Test

Depth (m)		Unconfined Compressive Strength (MPa)		
Top	Bottom	BH01	BH02	BH03
1.5	3	13.68	13.25	11.73
3	4.5	15.74	14.84	17.56
4.5	6	28.47	15.58	21.45
6	7.5	35.14	22.79	37.33
7.5	9	39.38	24.10	41.56
9	10.5	40.38	27.42	52.48
10.5	12	41.82	27.72	54.66
12	13.5	48.11	28.42	56.80
13.5	15	56.84	29.77	56.84
15	16.5	64.83	30.60	63.39

Depth (m)		Unconfined Compressive Strength (MPa)		
Top	Bottom	BH01	BH02	BH03
16.5	18	68.02	34.27	65.57
18	19.5	73.70	35.14	67.84
19.5	21	74.31	41.56	71.25
21	22.5	77.97	43.70	
22.5	24	78.96	47.67	
24	25.5	79.00	48.11	
25.5	27		52.48	
27	28.5		65.57	
28.5	30		70.20	
30	31.5		70.12	
31.5	33		74.44	
33	34.5		76.49	
34.5	36		79.72	
36	37.5		79.82	
37.5	39		79.23	
39	40.5		79.68	

4.1.2.7 Point Load Test

Depth (m)		Point Load Strength (MPa)		
Top	Bottom	BH01	BH02	BH03
1.5	3	0.65	0.64	0.59
3	4.5	0.74	0.73	0.86
4.5	6	1.36	0.76	1.02
6	7.5	1.69	1.12	1.82
7.5	9	1.86	1.15	2.06
9	10.5	1.91	1.31	2.53
10.5	12	1.96	1.37	2.61
12	13.5	2.28	1.41	2.73
13.5	15	2.73	1.45	2.81
15	16.5	3.12	1.52	3.02
16.5	18	3.36	1.57	3.16
18	19.5	3.52	1.65	3.24
19.5	21	3.63	1.98	3.47
21	22.5	3.89	2.08	
22.5	24	4.12	2.29	
24	25.5	4.16	2.32	
25.5	27		2.48	
27	28.5		3.12	

Depth (m)		Point Load Strength (MPa)		
Top	Bottom	BH01	BH02	BH03
28.5	30		3.29	
30	31.5		3.33	
31.5	33		3.51	
33	34.5		3.62	
34.5	36		3.78	
36	37.5		4.06	
37.5	39		4.19	
39	40.5		4.03	

4.1.2.8 Brazilian Test

Depth (m)		Tensile Strength (MPa)		
Top	Bottom	BH01	BH02	BH03
1.5	3	1.41	1.36	1.26
3	4.5	1.61	1.52	1.89
4.5	6	2.93	1.59	2.23
6	7.5	3.62	2.36	3.84
7.5	9	4.12	2.51	4.25
9	10.5	4.32	2.79	5.36
10.5	12	4.58	2.84	5.89
12	13.5	5.23	2.89	6.02
13.5	15	5.89	3.12	6.42
15	16.5	6.74	3.25	6.94
16.5	18	7.38	3.49	7.12
18	19.5	8.12	3.58	7.56
19.5	21	8.36	4.23	7.94
21	22.5	9.08	4.42	
22.5	24	9.62	4.85	
24	25.5	9.76	4.92	
25.5	27		5.36	
27	28.5		6.78	
28.5	30		7.18	
30	31.5		7.14	
31.5	33		7.56	
33	34.5		7.72	
34.5	36		8.14	
36	37.5		8.82	
37.5	39		9.06	
39	40.5		8.96	

4.1.2.9 Modulus of elasticity test

Depth (m)		Modulus of Elasticity (GPa)		
Top	Bottom	BH01	BH02	BH03
1.5	3	-----	-----	-----
3	4.5	-----	-----	-----
4.5	6	34.20	25.80	31.40
6	7.5	36.20	31.90	38.40
7.5	9	38.60	32.50	42.30
9	10.5	41.30	33.10	47.30
10.5	12	42.30	33.60	48.60
12	13.5	44.60	34.30	49.30
13.5	15	48.90	34.90	49.80
15	16.5	53.30	36.20	52.60
16.5	18	54.20	38.40	53.20
18	19.5	55.80	39.20	54.90
19.5	21	56.20	40.50	55.30
21	22.5	57.90	42.50	
22.5	24	59.30	44.30	
24	25.5	60.23	45.20	
25.5	27		46.30	
27	28.5		53.70	
28.5	30		55.30	
30	31.5		54.80	
31.5	33		56.20	
33	34.5		57.30	
34.5	36		58.20	
36	37.5		59.30	
37.5	39		59.70	
39	40.5		59.40	

4.1.2.10 Abrasion test

Depth (m)		Abrasion value		
Top	Bottom	BH01	BH02	BH03
1.5	3	1.14	1.13	1.11
3	4.5	1.17	1.15	1.24
4.5	6	1.56	1.17	1.32
6	7.5	1.76	1.36	1.79
7.5	9	1.88	1.43	1.93
9	10.5	1.91	1.48	2.23
10.5	12	1.93	1.52	2.31
12	13.5	2.17	1.56	2.37
13.5	15	2.38	1.59	2.59

Depth (m)		Abrasion value		
Top	Bottom	BH01	BH02	BH03
15	16.5	2.62	1.63	2.61
16.5	18	2.69	1.72	2.66
18	19.5	2.81	1.76	2.71
19.5	21	2.85	1.91	2.79
21	22.5	2.92	1.94	
22.5	24	2.96	2.12	
24	25.5	2.93	2.15	
25.5	27		2.23	
27	28.5		2.69	
28.5	30		2.75	
30	31.5		2.72	
31.5	33		2.83	
33	34.5		2.88	
34.5	36		2.92	
36	37.5		2.98	
37.5	39		3.04	
39	40.5		3.06	

4.1.3 ANNEXURE- C (RMR LOGS)

Tunnel: 4		BH: 1											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	0	0	0	0	1	4	-2	13	Class 5 (VERY POOR)

Tunnel: 4			BH: 1										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
1.5	3.0	2	3	5	1	1	0	0	0	2	4	-2	14	Class 5 (VERY POOR)
3.0	4.5	4	3	5	1	1	0	0	0	2	4	-2	16	Class 5 (VERY POOR)
4.5	6.0	4	8	10	6	5	6	2	6	25	10	-2	55	Class 3 (FAIR)
6.0	7.5	4	8	10	6	5	6	2	6	25	10	-2	55	Class 3 (FAIR)
7.5	9.0	4	8	10	6	5	6	2	6	25	10	-2	55	Class 3 (FAIR)
9.0	10.5	4	13	15	6	5	6	6	6	29	15	-2	74	Class 2 (GOOD)
10.5	12.0	4	13	15	6	5	6	6	6	29	15	-2	74	Class 2 (GOOD)
12.0	13.5	7	13	15	6	5	6	6	6	29	15	-2	77	Class 2 (GOOD)
13.5	15.0	7	13	15	6	5	6	6	6	29	15	-2	77	Class 2 (GOOD)
15.0	16.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
16.5	18.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
18.0	19.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
19.5	21.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
21.0	22.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
22.5	24.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)

Tunnel: 4			BH: 2										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	1	1	1	2	1	6	4	-2	18	Class 5 (VERY POOR)
1.5	3.0	2	3	5	1	1	1	2	1	6	4	-2	18	Class 5 (VERY POOR)
3.0	4.5	2	3	8	2	4	3	2	3	14	7	-5	29	Class 4 (POOR)
4.5	6.0	2	3	8	2	4	3	2	3	14	10	-5	32	Class 4 (POOR)
6.0	7.5	2	8	8	2	4	3	2	3	14	10	-2	40	Class 4 (POOR)
7.5	9.0	4	8	8	2	4	3	2	3	14	10	-2	42	Class 3 (FAIR)
9.0	10.5	4	8	8	2	4	3	2	3	14	10	-2	42	Class 3 (FAIR)
10.5	12.0	4	8	8	2	4	3	2	3	14	10	-2	42	Class 3 (FAIR)
12.0	13.5	4	8	8	2	4	3	2	3	14	10	-2	42	Class 3 (FAIR)
13.5	15.0	4	8	15	4	5	5	6	6	26	10	-2	61	Class 2 (GOOD)
15.0	16.5	4	8	15	4	5	5	6	6	26	10	-2	61	Class 2 (GOOD)

Tunnel: 4			BH: 2										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
16.5	18.0	4	8	15	4	5	5	6	6	26	10	-2	61	Class 2(GOOD)
18.0	19.5	4	8	15	6	6	6	6	6	30	10	-2	65	Class 2(GOOD)
19.5	21.0	4	13	15	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
21.0	22.5	4	13	15	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
22.5	24.0	4	13	15	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
24.0	25.5	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
25.5	27.0	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
27.0	28.5	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
28.5	30.0	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
30.0	31.5	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
31.5	33.0	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
33.0	34.5	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
34.5	36.0	7	17	15	6	6	6	6	6	30	10	-2	77	Class 2(GOOD)
36.0	37.5	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)
37.5	39.0	7	13	15	6	6	6	6	6	30	10	-2	73	Class 2(GOOD)

Tunnel: 4			BH: 3										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3							0			3	Class 5 (VERY POOR)
1.5	3.0	2	3	5	1	1	1	2	1	6	4	-2	18	Class 5 (VERY POOR)
3.0	4.5	2	3	5	1	1	1	2	1	6	4	-2	18	Class 5 (VERY POOR)
4.5	6.0	2	3	8	2	4	3	2	3	14	7	-2	32	Class 4 (POOR)
6.0	7.5	4	3	10	6	6	6	6	5	29	10	-2	54	Class 3 (FAIR)
7.5	9.0	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3 (FAIR)
9.0	10.5	7	8	8	4	4	6	4	5	23	10	-2	54	Class 3 (FAIR)
10.5	12.0	7	8	8	4	4	5	4	5	22	10	-2	53	Class 3 (FAIR)
12.0	13.5	7	13	10	4	4	5	4	6	23	10	-2	61	Class 2(GOOD)
13.5	15.0	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
15.0	16.5	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
16.5	18.0	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)

Tunnel: 4			BH: 3										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
18.0	19.5	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
19.5	21.0	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)

4.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-04 (BH-01)

Test Section	7.5 m-10.5 m	radius in cm=	3.8			Intake (Lit.)											
Flow Condition	Lugeon	K cm/sec	Q (cm ³ /sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm ²	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)	
Turbulent	4.30	0.00004286	39.7	11.9	14.20	9.50	3.90	21.45	1	11.45	11.2	2.45	300	3	10.50	7.50	
	3.90	0.00003857	52.3	15.7	21.10	10.30	4.90	31.45	2	11.45	11.2	2.45	300	3	10.50	7.50	
	2.70	0.00002666	47.7	14.3	20.70	7.90	3.50	41.45	3	11.45	11.2	2.45	300	3	10.50	7.50	
	3.60	0.00003636	49.3	14.8	17.10	12.40	5.80	31.45	2	11.45	11.2	2.45	300	3	10.50	7.50	
	4.90	0.00004935	45.7	13.7	12.20	15.20	7.30	21.45	1	11.45	11.2	2.45	300	3	10.50	7.50	
	2.70	0.00003876	Avr.														

PERMEABILITY TEST RESULT OF TUNNEL-04 (BH-02)

Test Section	22.5 m-25.5 m	radius in cm=	3.8				Intake (Lit.)								
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition	
Upper Part of Test Section (m)						Hg in m.									
						Differential Head of Water H=(Hg+Hp) cm.									
						Hp (Pressure at monometer) kg/cm ²									
						GWL of hole m									
						Hight Of water Swivel from GL									
						L=Test Section in cm.									
						L=Test Section in m.									
						Lower Part of Test Section (m)									
						Upper Part of Test Section (m)									
22.50	25.50	3	300	2.51	14.2	16.71	1	2671	4.40	10.30	16.30	13.3	44.3	0.00003847	3.80
22.50	25.50	3	300	2.51	14.2	16.71	2	3671	3.50	8.60	23.40	16.0	53.3	0.00003367	3.40
22.50	25.50	3	300	2.51	14.2	16.71	3	4671	2.60	6.50	19.50	13.0	43.3	0.00002150	2.20
22.50	25.50	3	300	2.51	14.2	16.71	2	3671	3.70	7.90	20.50	14.2	47.3	0.00002989	3.00
22.50	25.50	3	300	2.51	14.2	16.71	1	2671	5.10	9.80	14.60	12.2	40.7	0.00003529	3.50
												Avr.	0.00003177	2.20	

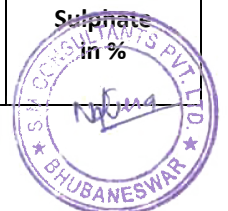
PERMEABILITY TEST RESULT OF TUNNEL-04 (BH-03)

Test Section	4.5 m-7.5 m	radius in cm=	3.8					Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
4.50	7.50	3	300	2.57	10.4	8.57	1857	2.20	7.60	19.00	13.3	44.3	0.00005534	5.50	Dilat ion
4.50	7.50	3	300	2.57	10.4	8.57	2857	5.60	14.40	30.20	22.3	74.3	0.00006031	6.00	
4.50	7.50	3	300	2.57	10.4	8.57	3857	11.90	22.60	47.90	35.3	117.7	0.00007071	7.10	
4.50	7.50	3	300	2.57	10.4	8.57	2857	6.40	15.90	30.40	23.2	77.3	0.00006274	6.30	
4.50	7.50	3	300	2.57	10.4	8.57	1857	3.30	8.10	21.10	14.6	48.7	0.00006074	6.10	
												Avr .	0.00006197	5.50	

Lugen test result

4.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %



1	Tunnel No.4	BH-1	At 0.5 m depth	6.23	26.35	0.025
2			At 1.5 m depth	6.18	28.97	0.029
3		BH-2	At 0.5 m depth	6.34	30.02	0.026
4			At 1.5 m depth	6.30	32.14	0.022
5		BH-3	At 0.5 m depth	6.87	29.54	0.028
6			At 1.5 m depth	6.23	30.78	0.031

4.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.4	BH-1	13.5	6.83	32.22	42.55
2			18.0	6.86	28.88	45.33
3		BH-2	15.0	6.93	32.22	41.22
4			21.0	6.94	34.57	40.00
5		BH-3	12.0	7.05	44.78	37.10
6			16.5	7.04	43.52	35.55

4.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
SL. No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Un-Confined	Compression	Specific gravity	Void ratio	Free swelling	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in %	Liquid	Plastic	Plasticity												
LABORATORY TEST RESULT OF TUNNEL NO.4 (BH-1)																							
2	At 1.5 m	S.P.T	2.02	4.12	27.12	25.62	27.92	13.20	27	17	10	----	----	----	----	----	----	----	2.69	----	10	N=69	SC
1	At 0.5 m	D.S	3.12	5.12	27.12	25.12	26.92	12.60	28	18	10	----	----	----	----	----	----	----	2.69	----	10	----	SC

TEST CONDUCTED AS PER IS : 2720 (Pt. II , Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
Sl. No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Un-Confined	Compression	Specific gravity	Void ratio	Free swelling	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in %	Liquid	Plastic	Plasticity												
LABORATORY TEST RESULT OF TUNNEL NO.4 (BH-2)																							
1	At 0.5 m	D.S	17.12	6.52	8.15	23.22	28.49	16.50	28	17	11	---	---	---	---	---	---	---	2.68	---	10	---	SC
2	At 1.5 m	S.P.T	2.12	16.25	62.12	14.45	5.06	---	---	---	---	---	---	---	---	---	---	---	2.65	---	---	N>100	NOTE*
NOTE*- From 1.5 m to 1.7m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.																							
LABORATORY TEST RESULT OF TUNNEL NO.4 (BH-3)																							
1	At 0.5 m	D.S	2.12	8.15	28.12	17.11	30.40	14.10	27	17	10	---	---	---	---	---	---	---	2.69	---	12	---	SC
2	At 1.5 m	S.P.T	1.12	13.52	27.15	16.45	26.16	15.60	28	17	11	---	---	---	---	---	---	---	2.68	---	12	N=65	SC

5. T5

5.1 Annexures

5.1.1 ANNEXURE- A (BORELOG)

5.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

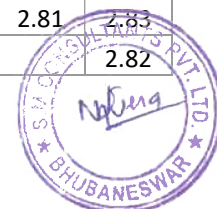
TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

5.1.2.1 Specific Gravity

Depth (m)		Specific Gravity											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	2.75											2.77
1.50	3.00	2.75											2.75
3.00	4.50	2.75	2.74								2.74		2.77
4.50	6.00	2.76	2.74				2.74		2.74	2.75	2.74		2.77
6.00	7.50	2.76	2.76	2.75	2.75	2.74	2.74	2.76	2.74	2.76	2.72	2.74	2.77
7.50	9.00	2.77	2.78	2.77	2.76	2.75	2.74	2.75	2.75	2.80	2.80	2.75	2.78
9.00	10.50	2.76	2.77	2.76	2.77	2.75	2.76	2.74	2.75	2.80	2.72	2.76	2.78
10.50	12.00	2.77	2.77	2.76	2.77	2.78	2.74	2.77	2.76	2.81	2.70	2.76	2.77
12.00	13.50	2.78	2.76	2.77	2.77	2.75	2.77	2.76	2.76	2.82	2.74	2.77	2.80
13.50	15.00	2.82	2.75	2.80	2.77	2.78	2.77	2.80	2.77	2.82	2.74	2.78	2.80
15.00	16.50	2.78	2.78	2.77	2.78	2.78	2.76	2.77	2.77	2.83	2.72	2.78	2.81
16.50	18.00	2.77	2.78	2.77	2.78	2.79	2.77	2.80	2.78	2.80	2.74	2.78	2.81
18.00	19.50	2.77	2.77	2.78	2.78	2.79	2.78	2.78	2.78	2.81	2.80	2.80	2.83
19.50	21.00	2.79	2.77	2.76	2.80	2.79	2.77	2.81	2.79	2.83	2.80	2.81	2.83
21.00	22.50	2.79	2.77	2.79	2.80	2.80	2.75	2.80	2.79		2.80	2.79	
22.50	24.00		2.77	2.77	2.80	2.80	2.75	2.82	2.79		2.78	2.81	
24.00	25.50		2.80	2.76	2.80	2.80	2.79	2.78	2.80		2.78	2.81	
25.50	27.00		2.77	2.78	2.80	2.81	2.77	2.80	2.81		2.78		
27.00	28.50		2.77	2.77	2.79	2.82	2.78	2.78	2.81		2.83		
28.50	30.00			2.77	2.78	2.82	2.78	2.79	2.80		2.83		
30.00	31.50			2.77	2.80	2.83	2.80	2.80					
31.50	33.00			2.77	2.80	2.83	2.80	2.78					
33.00	34.50			2.78	2.80	2.83	2.82	2.81					
34.50	36.00			2.79	2.80	2.80		2.82					
36.00	37.50			2.78	2.81	2.83							
37.50	39.00			2.79	2.84								
39.00	40.50			2.80	2.84								
40.50	42.00			2.82	2.83								
42.00	43.50				2.84								
43.50	45.00				2.77								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												

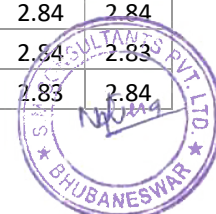
Depth (m)		Specific Gravity											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Specific Gravity											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		2.75				2.74	2.75		2.75	2.75	2.74	2.74
1.50	3.00		2.74			2.74	2.74	2.74	2.74	2.74	2.75	2.74	2.74
3.00	4.50		2.74	2.74		2.74	2.74	2.74	2.74	2.74	2.77	2.75	2.74
4.50	6.00	2.74	2.75	2.75	2.74	2.75	2.77	2.74	2.75	2.75	2.77	2.77	2.74
6.00	7.50	2.74	2.74	2.77	2.74	2.75	2.77	2.75	2.75	2.75	2.76	2.77	2.74
7.50	9.00	2.76	2.75	2.77	2.75	2.77	2.79	2.74	2.76	2.76	2.80	2.76	2.74
9.00	10.50	2.76	2.74	2.75	2.75	2.80	2.79	2.77	2.76	2.77	2.82	2.78	2.79
10.50	12.00	2.76	2.74	2.79	2.76	2.84	2.78	2.77	2.77	2.79	2.83	2.77	2.77
12.00	13.50	2.78	2.74	2.74	2.76	2.78	2.81	2.77	2.77	2.79	2.83	2.77	2.83
13.50	15.00	2.78	2.75	2.79	2.76	2.83	2.82	2.76	2.77	2.80	2.83	2.83	2.76
15.00	16.50	2.77	2.75	2.77	2.77	2.84	2.80	2.77	2.76	2.78	2.83	2.83	2.76
16.50	18.00	2.78	2.75	2.77	2.78	2.84	2.79	2.79	2.77	2.79	2.83	2.83	2.76
18.00	19.50	2.79	2.76	2.77	2.77	2.84	2.80	2.79	2.78	2.79	2.83	2.84	2.78
19.50	21.00	2.79	2.75	2.79	2.76	2.84	2.80	2.81	2.79	2.79	2.83	2.83	2.80
21.00	22.50	2.78	2.77	2.75	2.77	2.84	2.82	2.79	2.79	2.80	2.84	2.83	2.84
22.50	24.00	2.79	2.78	2.79	2.79	2.84	2.83	2.78	2.80	2.81	2.84	2.84	2.84
24.00	25.50	2.80	2.76	2.77	2.79	2.84	2.83	2.79	2.82	2.80	2.84	2.84	2.84
25.50	27.00		2.77	2.77	2.80	2.84	2.84	2.80	2.82	2.81	2.84	2.84	2.84
27.00	28.50		2.77	2.77	2.80	2.83	2.84	2.80	2.82	2.81	2.84	2.83	2.83
28.50	30.00			2.79	2.80	2.84	2.84	2.80	2.82	2.79	2.83	2.84	2.84
30.00	31.50			2.79	2.81	2.84	2.84	2.80	2.81	2.79	2.84	2.84	2.84
31.50	33.00			2.80	2.81	2.84	2.84	2.80	2.82	2.79	2.84	2.84	2.82
33.00	34.50			2.82	2.82	2.84	2.84	2.82	2.83	2.82	2.82	2.84	2.83
34.50	36.00			2.83	2.82	2.84		2.79	2.83	2.82	2.84	2.83	2.83
36.00	37.50				2.82	2.83		2.82	2.83	2.82	2.84	2.84	2.84
37.50	39.00				2.82	2.83			2.82		2.83	2.84	2.83
39.00	40.50				2.84						2.84	2.83	2.84
40.50	42.00										2.84	2.83	2.82
42.00	43.50											2.84	2.84
43.50	45.00											2.84	2.84
45.00	46.50											2.84	2.83
46.50	48.00											2.81	2.83
48.00	49.50											2.82	2.82



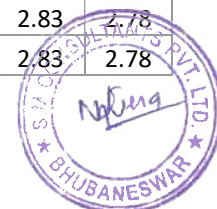
Depth (m)		Specific Gravity											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
49.50	51.00												2.83
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Specific Gravity											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		2.75				2.74	2.75		2.75	2.75	2.74	2.74
1.50	3.00		2.74			2.74	2.74	2.74	2.74	2.74	2.75	2.74	2.74
3.00	4.50		2.74	2.74		2.74	2.74	2.74	2.74	2.74	2.77	2.75	2.74
4.50	6.00	2.74	2.75	2.75	2.74	2.75	2.77	2.74	2.75	2.75	2.77	2.77	2.74
6.00	7.50	2.74	2.74	2.77	2.74	2.75	2.77	2.75	2.75	2.75	2.76	2.77	2.74
7.50	9.00	2.76	2.75	2.77	2.75	2.77	2.79	2.74	2.76	2.76	2.80	2.76	2.74
9.00	10.50	2.76	2.74	2.75	2.75	2.80	2.79	2.77	2.76	2.77	2.82	2.78	2.79
10.50	12.00	2.76	2.74	2.79	2.76	2.84	2.78	2.77	2.77	2.79	2.83	2.77	2.77
12.00	13.50	2.78	2.74	2.74	2.76	2.78	2.81	2.77	2.77	2.79	2.83	2.77	2.83
13.50	15.00	2.78	2.75	2.79	2.76	2.83	2.82	2.76	2.77	2.80	2.83	2.83	2.76
15.00	16.50	2.77	2.75	2.77	2.77	2.84	2.80	2.77	2.76	2.78	2.83	2.83	2.76
16.50	18.00	2.78	2.75	2.77	2.78	2.84	2.79	2.79	2.77	2.79	2.83	2.83	2.76
18.00	19.50	2.79	2.76	2.77	2.77	2.84	2.80	2.79	2.78	2.79	2.83	2.84	2.78
19.50	21.00	2.79	2.75	2.79	2.76	2.84	2.80	2.81	2.79	2.79	2.83	2.83	2.80
21.00	22.50	2.78	2.77	2.75	2.77	2.84	2.82	2.79	2.79	2.80	2.84	2.83	2.84
22.50	24.00	2.79	2.78	2.79	2.79	2.84	2.83	2.78	2.80	2.81	2.84	2.84	2.84
24.00	25.50	2.80	2.76	2.77	2.79	2.84	2.83	2.79	2.82	2.80	2.84	2.84	2.84
25.50	27.00		2.77	2.77	2.80	2.84	2.84	2.80	2.82	2.81	2.84	2.84	2.84
27.00	28.50		2.77	2.77	2.80	2.83	2.84	2.80	2.82	2.81	2.84	2.83	2.83
28.50	30.00			2.79	2.80	2.84	2.84	2.80	2.82	2.79	2.83	2.84	2.84
30.00	31.50			2.79	2.81	2.84	2.84	2.80	2.81	2.79	2.84	2.84	2.84
31.50	33.00			2.80	2.81	2.84	2.84	2.80	2.82	2.79	2.84	2.84	2.82
33.00	34.50			2.82	2.82	2.84	2.84	2.82	2.83	2.82	2.82	2.84	2.83
34.50	36.00			2.83	2.82	2.84		2.79	2.83	2.82	2.84	2.83	2.83
36.00	37.50				2.82	2.83		2.82	2.83	2.82	2.84	2.84	2.84
37.50	39.00				2.82	2.83			2.82		2.83	2.84	2.83
39.00	40.50				2.84						2.84	2.83	2.84



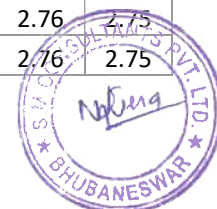
Depth (m)		Specific Gravity											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
40.50	42.00										2.84	2.83	2.82
42.00	43.50											2.84	2.84
43.50	45.00											2.84	2.84
45.00	46.50											2.84	2.83
46.50	48.00											2.81	2.83
48.00	49.50												2.82
49.50	51.00												2.83
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Specific Gravity											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	2.74	2.74	2.74	2.74	2.74	2.75	2.75	2.74	2.75	2.74	2.76	2.77
1.50	3.00	2.74	2.74	2.74	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.75	2.75
3.00	4.50	2.74	2.74	2.74	2.75	2.74	2.75	2.74	2.74	2.74	2.74	2.76	2.76
4.50	6.00	2.76	2.74	2.74	2.75	2.74	2.75	2.75	2.74	2.75	2.74	2.76	2.75
6.00	7.50	2.75	2.76	2.74	2.75	2.74	2.75	2.76	2.74	2.75	2.74	2.76	2.75
7.50	9.00	2.75	2.78	2.75	2.78	2.75	2.75	2.83	2.74	2.75	2.74	2.77	2.76
9.00	10.50	2.78	2.77	2.75	2.76	2.76	2.76	2.83	2.74	2.77	2.74	2.78	2.76
10.50	12.00	2.80	2.79	2.75	2.77	2.77	2.84	2.84	2.83	2.78	2.75	2.81	2.76
12.00	13.50	2.80	2.78	2.76	2.77	2.79	2.84	2.84	2.83	2.80	2.80	2.81	2.76
13.50	15.00	2.80	2.79	2.76	2.82	2.80	2.83	2.84	2.83	2.82	2.78	2.82	2.77
15.00	16.50	2.81	2.77	2.77	2.80	2.82	2.83	2.83	2.84	2.81	2.84	2.83	2.76
16.50	18.00	2.82	2.76	2.79	2.84	2.83	2.84	2.84	2.79	2.82	2.84	2.84	2.76
18.00	19.50	2.82	2.76	2.79	2.83	2.83	2.83	2.84	2.84	2.83	2.84	2.84	2.76
19.50	21.00	2.83	2.81	2.80	2.84	2.83	2.84	2.84	2.84	2.83	2.84	2.84	2.76
21.00	22.50	2.83	2.76	2.80	2.83	2.83	2.84	2.83	2.84	2.83	2.83	2.84	2.76
22.50	24.00	2.83	2.76	2.81	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.83	2.77
24.00	25.50	2.84	2.76	2.81	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.76
25.50	27.00	2.83	2.78	2.79	2.84	2.83	2.84		2.83	2.84	2.83	2.84	2.78
27.00	28.50	2.84	2.79	2.84	2.84	2.83	2.84		2.84	2.84	2.84	2.84	2.78
28.50	30.00	2.84	2.81	2.83	2.84	2.82			2.84	2.84	2.83	2.84	2.78
30.00	31.50	2.83	2.78	2.84	2.84	2.84			2.84	2.84	2.84	2.83	2.78
31.50	33.00	2.83	2.78	2.83	2.83	2.84			2.84	2.84	2.84	2.83	2.78



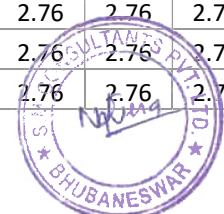
Depth (m)		Specific Gravity											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
33.00	34.50	2.84	2.79	2.84	2.84	2.84			2.84	2.84	2.84	2.84	2.78
34.50	36.00	2.84	2.81	2.84	2.83				2.84	2.84	2.83	2.84	2.80
36.00	37.50	2.84	2.81	2.83	2.84				2.84	2.84	2.84	2.84	
37.50	39.00	2.84	2.79	2.83	2.84				2.84	2.84	2.83	2.84	
39.00	40.50	2.84	2.80	2.84					2.84	2.84	2.84		
40.50	42.00	2.83	2.78	2.83					2.84	2.84	2.84		
42.00	43.50	2.84	2.79						2.84	2.84			
43.50	45.00	2.84	2.82						2.84	2.84			
45.00	46.50	2.84								2.84			
46.50	48.00									2.84			
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Specific Gravity											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		2.75	2.75	2.75		2.75	2.76		2.74	2.75	2.76	
1.50	3.00	2.75	2.74	2.75	2.75		2.75	2.76		2.76	2.75	2.75	
3.00	4.50	2.75	2.75	2.75	2.75		2.75	2.75	2.75	2.76	2.76	2.75	2.75
4.50	6.00	2.75	2.75	2.76	2.75	2.74	2.75	2.76	2.75	2.75	2.75	2.75	2.75
6.00	7.50	2.76	2.75	2.75	2.76	2.74	2.75	2.75	2.76	2.75	2.75	2.75	2.74
7.50	9.00	2.76	2.76	2.76	2.78	2.74	2.76	2.75	2.76	2.75	2.76	2.75	2.75
9.00	10.50	2.76	2.76	2.76	2.79	2.74	2.75	2.75	2.75	2.76	2.75	2.75	2.74
10.50	12.00	2.77	2.77	2.76	2.80	2.74	2.76	2.75	2.75	2.76	2.75	2.75	2.75
12.00	13.50	2.77	2.77	2.76	2.80	2.75	2.78	2.75	2.76	2.76	2.76	2.75	2.75
13.50	15.00	2.78	2.77	2.77	2.81	2.74	2.78	2.75	2.76	2.77	2.75	2.75	2.75
15.00	16.50	2.78	2.77	2.77	2.82	2.74	2.78	2.80	2.77	2.76	2.75	2.76	2.75
16.50	18.00	2.78	2.77	2.77	2.82	2.75	2.78	2.79	2.77	2.76	2.75	2.76	2.76
18.00	19.50	2.79	2.78	2.78	2.83	2.75	2.78	2.77	2.76	2.76	2.76	2.76	2.76
19.50	21.00	2.79	2.81	2.77	2.83	2.76	2.78	2.77	2.77	2.76	2.76	2.76	2.75
21.00	22.50	2.79		2.77	2.83	2.78	2.78	2.78	2.76	2.76	2.74	2.76	2.75
22.50	24.00	2.80		2.78	2.84	2.75	2.78	2.78	2.77	2.76	2.76	2.76	2.75
24.00	25.50	2.79		2.77	2.84	2.75	2.79	2.78	2.76	2.75	2.76	2.76	2.75



Depth (m)		Specific Gravity											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
25.50	27.00	2.81		2.77	2.84	2.75	2.79	2.77	2.75	2.75	2.76	2.76	2.76
27.00	28.50			2.77	2.83	2.75	2.79	2.78	2.76	2.75	2.78	2.75	2.75
28.50	30.00			2.78	2.83	2.78	2.79	2.79	2.77	2.75	2.81	2.76	2.76
30.00	31.50			2.78	2.84	2.77	2.79	2.80	2.75	2.76	2.81	2.77	2.76
31.50	33.00			2.78	2.83	2.81	2.79	2.79	2.77	2.77	2.81	2.77	2.76
33.00	34.50			2.79	2.83	2.79	2.80	2.76	2.76	2.77	2.80	2.76	2.76
34.50	36.00			2.80	2.84	2.79	2.80	2.77	2.76	2.77	2.79	2.77	2.76
36.00	37.50				2.84	2.79	2.80	2.80	2.79	2.77	2.78	2.77	2.76
37.50	39.00				2.84	2.79	2.80	2.79	2.79	2.83	2.79	2.77	2.76
39.00	40.50				2.83	2.79	2.80	2.81	2.79	2.83	2.80	2.78	2.76
40.50	42.00				2.84	2.79	2.79	2.78	2.79	2.84	2.81		2.76
42.00	43.50				2.84	2.78	2.79	2.77	2.79	2.83	2.81		2.77
43.50	45.00				2.84	2.79	2.80	2.77	2.78	2.83	2.80		2.77
45.00	46.50				2.84	2.83	2.80	2.78	2.79	2.84			2.76
46.50	48.00				2.84	2.82	2.80	2.77	2.81	2.83			2.77
48.00	49.50				2.84	2.80	2.80	2.82	2.82				2.78
49.50	51.00				2.84	2.83	2.81	2.80	2.81				
51.00	52.50					2.82		2.81	2.79				
52.50	54.00							2.80	2.81				
54.00	55.50							2.80	2.81				
55.50	57.00							2.82	2.83				
57.00	58.50							2.83	2.82				
58.50	60.00							2.81	2.83				
60.00	61.50								2.83				
61.50	63.00								2.83				
63.00	64.50								2.83				
64.50	66.00								2.83				
66.00	67.50								2.84				

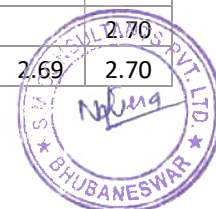
Depth (m)		Specific Gravity												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	2.74	2.74	2.76	2.77	2.75		2.75	2.78	2.75	2.76	2.74	2.76	2.75
1.50	3.00	2.74	2.74	2.74	2.75	2.74	2.75	2.75	2.75	2.75	2.76	2.75	2.74	2.74
3.00	4.50	2.74	2.74	2.75	2.76	2.75	2.76	2.75	2.75	2.75	2.75	2.75	2.74	2.74
4.50	6.00	2.75	2.74	2.75	2.76	2.74	2.74	2.76	2.75	2.75	2.75	2.75	2.75	2.74
6.00	7.50	2.75	2.74	2.76	2.76	2.75	2.75	2.76	2.74	2.74	2.76	2.75	2.74	2.75
7.50	9.00	2.75	2.74	2.75	2.75	2.77	2.75	2.76	2.74	2.74	2.75	2.75	2.75	2.74
9.00	10.50	2.75	2.75	2.77	2.76	2.75	2.75	2.77	2.75	2.75	2.76	2.75	2.75	2.75
10.50	12.00	2.76	2.75	2.76	2.75	2.76	2.75	2.76	2.75	2.75	2.75	2.75	2.75	2.76
12.00	13.50	2.76	2.75	2.77	2.76	2.76	2.75	2.77	2.75	2.75	2.75	2.76	2.76	2.75
13.50	15.00	2.76	2.76	2.77	2.76	2.76	2.76	2.76	2.74	2.76	2.76	2.76	2.76	2.75
15.00	16.50	2.77	2.75	2.77	2.76	2.77	2.76	2.77	2.75	2.75	2.76	2.76	2.76	2.76



Depth (m)		Specific Gravity												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
16.50	18.00	2.76	2.75	2.78	2.76	2.77	2.76	2.77	2.76	2.75	2.75	2.76	2.77	2.76
18.00	19.50	2.77	2.75	2.80	2.77		2.77	2.76	2.75	2.75	2.76	2.76	2.75	2.77
19.50	21.00	2.77	2.76	2.82			2.77	2.77	2.75	2.76	2.76	2.77	2.77	2.78
21.00	22.50	2.77	2.76				2.77	2.76	2.75	2.78	2.75	2.76	2.77	2.78
22.50	24.00	2.78	2.76				2.77	2.77	2.75	2.81	2.76	2.77	2.77	2.78
24.00	25.50	2.78	2.76				2.79	2.76	2.75	2.79	2.75	2.76	2.77	2.78
25.50	27.00	2.78	2.77				2.79	2.77	2.75	2.77	2.76	2.77	2.78	
27.00	28.50	2.78	2.77				2.77	2.77	2.76	2.76	2.76	2.77	2.78	
28.50	30.00	2.78	2.77				2.78	2.76	2.76	2.77	2.76	2.77	2.78	
30.00	31.50	2.79	2.78				2.78	2.77	2.76	2.76	2.77	2.78	2.78	
31.50	33.00	2.79	2.78				2.76	2.76	2.76	2.78	2.77	2.78	2.77	
33.00	34.50	2.79	2.78				2.76	2.77	2.76	2.78	2.77	2.78	2.78	
34.50	36.00	2.78	2.79				2.77	2.77	2.77	2.79	2.78	2.78	2.78	
36.00	37.50	2.79						2.78	2.77	2.83	2.78	2.79	2.80	
37.50	39.00	2.79						2.78	2.77		2.78	2.79	2.82	
39.00	40.50	2.80						2.79	2.79		2.78	2.79		
40.50	42.00	2.80						2.79	2.80		2.80	2.79		
42.00	43.50							2.79				2.80		
43.50	45.00							2.80				2.81		
45.00	46.50							2.80				2.81		
46.50	48.00							2.80				2.81		
48.00	49.50											2.82		
49.50	51.00											2.82		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.2 Dry Density

Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	2.68											2.70
1.50	3.00	2.68											2.69
3.00	4.50	2.68	2.68								2.68		2.70
4.50	6.00	2.70	2.68				2.68		2.70	2.69	2.70		2.70
6.00	7.50	2.70	2.70	2.69	2.68	2.70	2.69	2.69	2.71	2.70	2.70	2.69	2.70



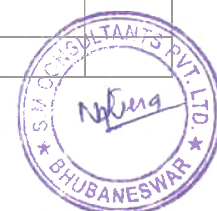
Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
7.50	9.00	2.71	2.72	2.72	2.69	2.70	2.69	2.69	2.71	2.71	2.78	2.70	2.71
9.00	10.50	2.71	2.71	2.71	2.70	2.71	2.70	2.68	2.72	2.71	2.70	2.72	2.71
10.50	12.00	2.71	2.71	2.71	2.70	2.72	2.69	2.70	2.72	2.72	2.69	2.71	2.70
12.00	13.50	2.75	2.70	2.72	2.70	2.71	2.72	2.69	2.73	2.75	2.70	2.73	2.74
13.50	15.00	2.79	2.70	2.75	2.70	2.73	2.72	2.72	2.73	2.75	2.70	2.75	2.74
15.00	16.50	2.75	2.74	2.72	2.71	2.72	2.71	2.69	2.73	2.78	2.70	2.75	2.78
16.50	18.00	2.73	2.74	2.72	2.71	2.75	2.72	2.72	2.74	2.71	2.72	2.76	2.78
18.00	19.50	2.74	2.74	2.73	2.71	2.71	2.73	2.69	2.74	2.72	2.78	2.78	2.80
19.50	21.00	2.78	2.72	2.71	2.73	2.74	2.72	2.75	2.75	2.80	2.78	2.80	2.80
21.00	22.50	2.78	2.72	2.73	2.73	2.78	2.70	2.72	2.75		2.75	2.77	
22.50	24.00		2.72	2.71	2.73	2.78	2.70	2.77	2.75		2.75	2.80	
24.00	25.50		2.72	2.71	2.73	2.79	2.75	2.71	2.76		2.73	2.80	
25.50	27.00		2.72	2.72	2.73	2.79	2.72	2.72	2.77		2.73		
27.00	28.50		2.72	2.72	2.72	2.80	2.75	2.71	2.77		2.80		
28.50	30.00			2.72	2.72	2.80	2.73	2.71	2.76		2.80		
30.00	31.50			2.73	2.73	2.81	2.78	2.72					
31.50	33.00			2.73	2.73	2.81	2.78	2.71					
33.00	34.50			2.73	2.73	2.82	2.80	2.75					
34.50	36.00			2.71	2.73	2.80		2.78					
36.00	37.50			2.73	2.75	2.81							
37.50	39.00			2.75	2.78								
39.00	40.50			2.75	2.78								
40.50	42.00			2.78	2.79								
42.00	43.50				2.78								
43.50	45.00				2.70								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		2.70				2.69	2.69		2.69	2.69	2.68	2.69
1.50	3.00		2.68			2.68	2.69	2.68	2.68	2.68	2.69	2.68	2.68
3.00	4.50		2.68	2.68		2.68	2.69	2.68	2.68	2.68	2.71	2.70	2.69
4.50	6.00	2.68	2.70	2.69	2.68	2.69	2.71	2.68	2.69	2.69	2.71	2.72	2.68
6.00	7.50	2.68	2.68	2.71	2.68	2.69	2.72	2.69	2.70	2.69	2.70	2.72	2.68
7.50	9.00	2.70	2.69	2.71	2.69	2.71	2.73	2.68	2.71	2.69	2.73	2.71	2.68
9.00	10.50	2.70	2.68	2.69	2.69	2.75	2.73	2.71	2.73	2.71	2.76	2.74	2.78
10.50	12.00	2.70	2.68	2.73	2.70	2.80	2.72	2.71	2.74	2.73	2.78	2.72	2.76
12.00	13.50	2.73	2.68	2.69	2.70	2.73	2.75	2.71	2.74	2.73	2.79	2.73	2.81
13.50	15.00	2.73	2.70	2.73	2.70	2.79	2.78	2.70	2.74	2.74	2.80	2.80	2.75
15.00	16.50	2.71	2.70	2.71	2.71	2.80	2.74	2.71	2.71	2.72	2.80	2.80	2.75
16.50	18.00	2.73	2.69	2.71	2.72	2.80	2.73	2.73	2.74	2.73	2.80	2.80	2.75
18.00	19.50	2.76	2.70	2.71	2.71	2.80	2.74	2.73	2.74	2.73	2.80	2.82	2.77
19.50	21.00	2.75	2.70	2.73	2.70	2.80	2.75	2.76	2.75	2.72	2.79	2.81	2.79
21.00	22.50	2.73	2.73	2.69	2.71	2.80	2.77	2.74	2.75	2.73	2.82	2.81	2.82
22.50	24.00	2.76	2.75	2.73	2.73	2.80	2.78	2.73	2.77	2.75	2.82	2.82	2.82
24.00	25.50	2.78	2.75	2.71	2.73	2.80	2.79	2.73	2.78	2.73	2.82	2.82	2.82
25.50	27.00		2.77	2.71	2.75	2.80	2.81	2.75	2.79	2.75	2.82	2.82	2.82
27.00	28.50		2.77	2.71	2.75	2.79	2.81	2.75	2.78	2.74	2.82	2.81	2.80
28.50	30.00			2.72	2.76	2.81	2.82	2.75	2.79	2.72	2.81	2.82	2.81
30.00	31.50			2.73	2.76	2.81	2.82	2.76	2.78	2.73	2.82	2.82	2.81
31.50	33.00			2.74	2.77	2.81	2.82	2.75	2.79	2.73	2.82	2.82	2.79
33.00	34.50			2.77	2.77	2.81	2.82	2.80	2.80	2.75	2.82	2.82	2.80
34.50	36.00			2.79	2.78	2.81		2.74	2.80	2.74	2.82	2.82	2.81
36.00	37.50				2.78	2.79		2.80	2.80	2.74	2.82	2.82	2.81
37.50	39.00				2.78	2.79			2.79		2.81	2.82	2.80
39.00	40.50				2.82						2.82	2.82	2.82
40.50	42.00										2.82	2.82	2.79
42.00	43.50											2.82	2.81
43.50	45.00											2.82	2.82
45.00	46.50											2.82	2.80
46.50	48.00											2.80	2.81
48.00	49.50												2.79
49.50	51.00												2.80
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												



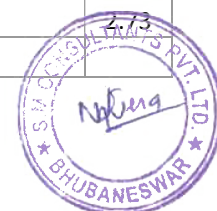
Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
66.00	67.50												

Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	2.68	2.69	2.68	2.68	2.68	2.69	2.69	2.68	2.69	2.68	2.71	2.71
1.50	3.00	2.68	2.68	2.68	2.69	2.68	2.68	2.68	2.68	2.68	2.68	2.69	2.69
3.00	4.50	2.68	2.68	2.68	2.69	2.68	2.69	2.68	2.68	2.68	2.68	2.70	2.70
4.50	6.00	2.70	2.68	2.68	2.69	2.68	2.69	2.69	2.68	2.69	2.68	2.70	2.69
6.00	7.50	2.69	2.72	2.68	2.70	2.68	2.69	2.70	2.68	2.69	2.68	2.71	2.69
7.50	9.00	2.69	2.74	2.69	2.74	2.70	2.69	2.80	2.68	2.70	2.69	2.72	2.70
9.00	10.50	2.71	2.73	2.69	2.71	2.72	2.70	2.80	2.68	2.72	2.69	2.74	2.70
10.50	12.00	2.76	2.75	2.69	2.72	2.73	2.82	2.81	2.81	2.74	2.70	2.77	2.70
12.00	13.50	2.77	2.74	2.70	2.72	2.76	2.81	2.82	2.81	2.76	2.76	2.77	2.70
13.50	15.00	2.76	2.75	2.70	2.81	2.78	2.82	2.81	2.81	2.80	2.74	2.79	2.71
15.00	16.50	2.78	2.72	2.70	2.80	2.80	2.81	2.81	2.82	2.77	2.82	2.80	2.70
16.50	18.00	2.80	2.72	2.73	2.82	2.81	2.82	2.82	2.78	2.80	2.82	2.81	2.70
18.00	19.50	2.80	2.72	2.74	2.81	2.81	2.81	2.82	2.82	2.83	2.82	2.82	2.70
19.50	21.00	2.81	2.78	2.77	2.82	2.81	2.82	2.82	2.82	2.83	2.82	2.82	2.70
21.00	22.50	2.81	2.72	2.77	2.81	2.81	2.82	2.82	2.82	2.83	2.81	2.82	2.70
22.50	24.00	2.81	2.72	2.78	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.81	2.71
24.00	25.50	2.82	2.72	2.78	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.70
25.50	27.00	2.81	2.74	2.76	2.82	2.81	2.82		2.81	2.82	2.81	2.82	2.73
27.00	28.50	2.82	2.76	2.82	2.82	2.81	2.82		2.82	2.82	2.82	2.82	2.72
28.50	30.00	2.82	2.79	2.81	2.82	2.80			2.82	2.82	2.81	2.82	2.72
30.00	31.50	2.81	2.74	2.82	2.82	2.82			2.82	2.82	2.82	2.81	2.72
31.50	33.00	2.81	2.74	2.81	2.81	2.82			2.82	2.82	2.82	2.81	2.73
33.00	34.50	2.82	2.75	2.82	2.82	2.82			2.82	2.82	2.82	2.82	2.73
34.50	36.00	2.82	2.79	2.81	2.81				2.82	2.82	2.81	2.82	2.75
36.00	37.50	2.82	2.79	2.81	2.82				2.82	2.82	2.82	2.82	
37.50	39.00	2.82	2.75	2.81	2.82				2.82	2.82	2.81	2.82	
39.00	40.50	2.82	2.77	2.82						2.82	2.82	2.82	
40.50	42.00	2.81	2.74	2.81						2.82	2.82	2.82	
42.00	43.50	2.82	2.75							2.82	2.82		
43.50	45.00	2.82	2.81							2.82	2.82		
45.00	46.50	2.82									2.82		
46.50	48.00										2.82		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												



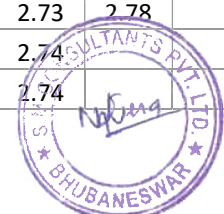
Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		2.69	2.69	2.70		2.70	2.70		2.68	2.68	2.72	
1.50	3.00	2.69	2.68	2.69	2.70		2.69	2.70		2.70	2.69	2.69	
3.00	4.50	2.69	2.69	2.69	2.70		2.70	2.70	2.69	2.70	2.69	2.70	2.69
4.50	6.00	2.69	2.69	2.70	2.71	2.69	2.69	2.70	2.70	2.69	2.69	2.70	2.69
6.00	7.50	2.70	2.69	2.69	2.71	2.68	2.70	2.69	2.70	2.69	2.69	2.69	2.68
7.50	9.00	2.70	2.70	2.69	2.73	2.69	2.70	2.69	2.70	2.69	2.69	2.69	2.69
9.00	10.50	2.70	2.70	2.70	2.74	2.69	2.70	2.69	2.69	2.70	2.69	2.70	2.68
10.50	12.00	2.71	2.70	2.69	2.74	2.69	2.70	2.70	2.69	2.70	2.69	2.70	2.69
12.00	13.50	2.71	2.71	2.70	2.76	2.70	2.72	2.69	2.70	2.70	2.69	2.69	2.69
13.50	15.00	2.72	2.71	2.70	2.78	2.69	2.72	2.69	2.70	2.71	2.68	2.70	2.69
15.00	16.50	2.72	2.71	2.71	2.77	2.69	2.73	2.78	2.71	2.70	2.69	2.70	2.69
16.50	18.00	2.73	2.71	2.70	2.80	2.70	2.72	2.77	2.71	2.70	2.69	2.70	2.70
18.00	19.50	2.73	2.73	2.72	2.80	2.70	2.72	2.74	2.71	2.70	2.69	2.70	2.70
19.50	21.00	2.73	2.78	2.71	2.81	2.70	2.73	2.74	2.71	2.70	2.70	2.70	2.69
21.00	22.50	2.73		2.70	2.81	2.74	2.72	2.75	2.70	2.70	2.68	2.70	2.69
22.50	24.00	2.74		2.71	2.82	2.70	2.72	2.75	2.71	2.71	2.69	2.71	2.69
24.00	25.50	2.73		2.71	2.82	2.70	2.73	2.75	2.70	2.70	2.69	2.70	2.69
25.50	27.00	2.76		2.70	2.81	2.70	2.73	2.75	2.69	2.70	2.70	2.70	2.70
27.00	28.50			2.70	2.81	2.70	2.73	2.76	2.70	2.70	2.73	2.70	2.69
28.50	30.00			2.72	2.81	2.74	2.73	2.76	2.71	2.70	2.78	2.70	2.70
30.00	31.50			2.70	2.82	2.72	2.73	2.79	2.70	2.71	2.78	2.71	2.71
31.50	33.00			2.72	2.81	2.78	2.74	2.77	2.71	2.72	2.78	2.71	2.70
33.00	34.50			2.74	2.81	2.76	2.75	2.73	2.70	2.73	2.76	2.70	2.70
34.50	36.00			2.76	2.82	2.76	2.75	2.74	2.70	2.73	2.75	2.71	2.70
36.00	37.50				2.82	2.76	2.76	2.79	2.73	2.72	2.75	2.71	2.70
37.50	39.00				2.82	2.76	2.74	2.77	2.73	2.81	2.75	2.71	2.70
39.00	40.50				2.81	2.76	2.75	2.79	2.73	2.81	2.76	2.72	2.70
40.50	42.00				2.82	2.76	2.74	2.76	2.73	2.82	2.78		2.71
42.00	43.50				2.82	2.75	2.74	2.73	2.73	2.81	2.79		2.71
43.50	45.00				2.82	2.76	2.75	2.73	2.72	2.81	2.76		2.71
45.00	46.50				2.82	2.80	2.76	2.76	2.73	2.82			2.71
46.50	48.00				2.82	2.79	2.76	2.73	2.77	2.81			2.71
48.00	49.50				2.82	2.78	2.76	2.80	2.78				
49.50	51.00				2.82	2.80	2.77	2.78	2.77				



Depth (m)		Dry Sensity (gm/cc)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
51.00	52.50					2.79		2.79	2.74				
52.50	54.00							2.79	2.76				
54.00	55.50							2.78	2.76				
55.50	57.00							2.80	2.81				
57.00	58.50							2.81	2.78				
58.50	60.00							2.79	2.80				
60.00	61.50								2.81				
61.50	63.00								2.80				
63.00	64.50								2.80				
64.50	66.00								2.81				
66.00	67.50								2.82				

Depth (m)		Dry Sensity (gm/cc)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	2.68	2.68	2.70	2.72	2.69		2.69	2.70	2.69	2.70	2.69	2.70	2.69
1.50	3.00	2.68	2.68	2.68	2.69	2.68	2.69	2.69	2.69	2.69	2.70	2.69	2.68	2.68
3.00	4.50	2.68	2.68	2.69	2.71	2.69	2.70	2.69	2.69	2.69	2.69	2.69	2.68	2.68
4.50	6.00	2.69	2.68	2.69	2.70	2.68	2.68	2.69	2.69	2.69	2.69	2.70	2.69	2.69
6.00	7.50	2.69	2.68	2.70	2.70	2.69	2.69	2.70	2.68	2.68	2.70	2.69	2.68	2.69
7.50	9.00	2.69	2.68	2.69	2.69	2.72	2.69	2.70	2.68	2.68	2.69	2.69	2.69	2.68
9.00	10.50	2.70	2.69	2.71	2.70	2.69	2.69	2.70	2.69	2.69	2.70	2.70	2.69	2.69
10.50	12.00	2.70	2.69	2.70	2.69	2.71	2.69	2.70	2.69	2.69	2.69	2.70	2.69	2.70
12.00	13.50	2.70	2.69	2.71	2.70	2.70	2.69	2.70	2.69	2.69	2.69	2.70	2.70	2.69
13.50	15.00	2.70	2.69	2.71	2.70	2.70	2.70	2.70	2.68	2.70	2.70	2.70	2.70	2.68
15.00	16.50	2.71	2.69	2.71	2.71	2.71	2.70	2.70	2.69	2.69	2.70	2.70	2.70	2.70
16.50	18.00	2.70	2.69	2.73	2.70	2.72	2.70	2.71	2.69	2.69	2.69	2.70	2.71	2.71
18.00	19.50	2.71	2.69	2.76	2.72		2.71	2.70	2.69	2.69	2.70	2.71	2.69	2.73
19.50	21.00	2.71	2.70	2.79			2.72	2.70	2.69	2.70	2.70	2.71	2.70	2.75
21.00	22.50	2.71	2.70				2.72	2.70	2.69	2.73	2.69	2.71	2.71	2.75
22.50	24.00	2.72	2.70				2.72	2.70	2.69	2.77	2.70	2.71	2.71	2.75
24.00	25.50	2.72	2.70				2.73	2.70	2.69	2.75	2.69	2.71	2.71	2.75
25.50	27.00	2.72	2.71				2.73	2.70	2.69	2.72	2.70	2.72	2.72	
27.00	28.50	2.72	2.71				2.72	2.70	2.70	2.70	2.70	2.72	2.71	
28.50	30.00	2.73	2.71				2.72	2.70	2.70	2.71	2.70	2.72	2.72	
30.00	31.50	2.73	2.72				2.72	2.70	2.70	2.71	2.71	2.72	2.72	
31.50	33.00	2.73	2.72				2.70	2.70	2.71	2.72	2.72	2.72	2.71	
33.00	34.50	2.73	2.73				2.70	2.70	2.70	2.73	2.72	2.73	2.73	
34.50	36.00	2.73	2.75				2.71	2.71	2.72	2.75	2.72	2.73	2.73	
36.00	37.50	2.73						2.72	2.72	2.80	2.73	2.73	2.75	
37.50	39.00	2.74						2.72	2.73		2.73	2.73	2.78	
39.00	40.50	2.74						2.73	2.75		2.73	2.74	2.74	
40.50	42.00	2.74						2.73	2.77		2.75	2.74	2.74	



Depth (m)		Dry Sensity (gm/cc)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
42.00	43.50							2.73				2.75		
43.50	45.00							2.75				2.76		
45.00	46.50							2.76				2.76		
46.50	48.00							2.77				2.78		
48.00	49.50											2.78		
49.50	51.00											2.79		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.3 Water absorption Test

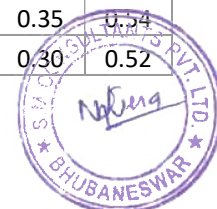
Depth (m)		Water Absorption value											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	0.50											0.50
1.50	3.00	0.49											0.50
3.00	4.50	0.46	0.60								0.45		0.48
4.50	6.00	0.42	0.58				0.60		0.62	0.58	0.35		0.48
6.00	7.50	0.40	0.57	0.55	0.70	0.55	0.58	0.60	0.58	0.55	0.35	0.58	0.48
7.50	9.00	0.38	0.55	0.45	0.68	0.52	0.55	0.60	0.55	0.42	0.30	0.55	0.46
9.00	10.50	0.37	0.53	0.43	0.65	0.52	0.53	0.58	0.53	0.40	0.30	0.50	0.45
10.50	12.00	0.36	0.51	0.43	0.65	0.50	0.52	0.55	0.52	0.40	0.30	0.50	0.45
12.00	13.50	0.30	0.50	0.42	0.65	0.50	0.50	0.55	0.52	0.38	0.28	0.48	0.42
13.50	15.00	0.28	0.47	0.40	0.65	0.48	0.50	0.50	0.52	0.35	0.28	0.46	0.40
15.00	16.50	0.32	0.45	0.39	0.62	0.48	0.50	0.50	0.50	0.33	0.26	0.46	0.35
16.50	18.00	0.35	0.43	0.39	0.61	0.45	0.48	0.50	0.45	0.32	0.25	0.46	0.35
18.00	19.50	0.30	0.40	0.36	0.61	0.45	0.48	0.48	0.43	0.32	0.22	0.40	0.25
19.50	21.00	0.25	0.38	0.35	0.60	0.45	0.46	0.45	0.40	0.30	0.20	0.38	0.25
21.00	22.50	0.23	0.36	0.35	0.60	0.42	0.46	0.45	0.38		0.20	0.35	
22.50	24.00		0.35	0.33	0.60	0.42	0.46	0.40	0.38		0.20	0.32	
24.00	25.50		0.33	0.33	0.60	0.42	0.45	0.38	0.35		0.20	0.32	
25.50	27.00		0.30	0.33	0.60	0.40	0.43	0.38	0.32		0.20		
27.00	28.50		0.30	0.33	0.56	0.38	0.43	0.36	0.32		0.15		
28.50	30.00			0.32	0.56	0.35	0.42	0.35	0.30		0.15		

Depth (m)		Water Absorption value											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
30.00	31.50			0.32	0.55	0.32	0.40	0.32					
31.50	33.00			0.32	0.53	0.30	0.40	0.32					
33.00	34.50			0.30	0.53	0.25	0.32	0.30					
34.50	36.00			0.30	0.52	0.25		0.28					
36.00	37.50			0.30	0.50	0.23							
37.50	39.00			0.25	0.46								
39.00	40.50			0.25	0.45								
40.50	42.00			0.23	0.45								
42.00	43.50				0.44								
43.50	45.00				0.44								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Water Absorption value											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		0.58				0.52	0.58		0.66	0.55	0.58	0.58
1.50	3.00		0.58			0.65	0.52	0.60	0.60	0.65	0.55	0.58	0.58
3.00	4.50		0.58	0.60		0.65	0.52	0.60	0.58	0.65	0.52	0.56	0.58
4.50	6.00	0.62	0.55	0.58	0.60	0.60	0.48	0.60	0.58	0.62	0.52	0.52	0.56
6.00	7.50	0.62	0.55	0.50	0.58	0.55	0.48	0.58	0.56	0.62	0.51	0.51	0.55
7.50	9.00	0.60	0.55	0.50	0.56	0.35	0.45	0.58	0.55	0.60	0.50	0.50	0.55
9.00	10.50	0.60	0.55	0.50	0.55	0.25	0.45	0.52	0.52	0.58	0.45	0.45	0.40
10.50	12.00	0.58	0.54	0.46	0.52	0.20	0.45	0.50	0.50	0.55	0.40	0.44	0.40
12.00	13.50	0.55	0.54	0.58	0.50	0.22	0.42	0.50	0.50	0.55	0.35	0.44	0.30
13.50	15.00	0.52	0.52	0.45	0.50	0.20	0.35	0.55	0.50	0.54	0.25	0.25	0.30
15.00	16.50	0.52	0.52	0.50	0.48	0.15	0.40	0.46	0.50	0.55	0.25	0.25	0.30
16.50	18.00	0.50	0.52	0.50	0.48	0.15	0.40	0.46	0.48	0.52	0.25	0.25	0.31
18.00	19.50	0.48	0.50	0.50	0.48	0.15	0.40	0.48	0.48	0.52	0.25	0.10	0.28
19.50	21.00	0.46	0.50	0.46	0.48	0.12	0.38	0.42	0.44	0.52	0.10	0.10	0.26
21.00	22.50	0.45	0.48	0.50	0.46	0.12	0.35	0.45	0.44	0.52	0.10	0.10	0.15

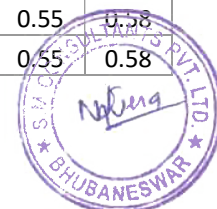
Depth (m)		Water Absorption value											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
22.50	24.00	0.42	0.45	0.45	0.46	0.12	0.32	0.48	0.36	0.50	0.05	0.05	0.15
24.00	25.50	0.40	0.45	0.44	0.46	0.15	0.30	0.47	0.34	0.50	0.05	0.05	0.13
25.50	27.00		0.42	0.42	0.45	0.11	0.25	0.42	0.34	0.50	0.05	0.05	0.12
27.00	28.50		0.42	0.42	0.45	0.11	0.25	0.42	0.32	0.50	0.05	0.06	0.12
28.50	30.00			0.40	0.45	0.10	0.20	0.42	0.32	0.48	0.05	0.05	0.12
30.00	31.50			0.38	0.43	0.05	0.15	0.40	0.30	0.48	0.05	0.05	0.12
31.50	33.00			0.36	0.42	0.10	0.15	0.40	0.30	0.48	0.05	0.04	0.12
33.00	34.50			0.32	0.40	0.08	0.15	0.30	0.28	0.45	0.06	0.04	0.12
34.50	36.00			0.30	0.40	0.05		0.40	0.25	0.45	0.03	0.04	0.11
36.00	37.50				0.35	0.10		0.22	0.25	0.45	0.03	0.03	0.10
37.50	39.00				0.35	0.10			0.25		0.03	0.03	0.10
39.00	40.50				0.25						0.03	0.03	0.10
40.50	42.00										0.02	0.03	0.10
42.00	43.50											0.02	0.10
43.50	45.00											0.02	0.10
45.00	46.50											0.02	0.08
46.50	48.00											0.02	0.08
48.00	49.50												0.08
49.50	51.00												0.08
51.00	52.50	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
52.50	54.00		0.58				0.52	0.58		0.66	0.55	0.58	0.58
54.00	55.50		0.58			0.65	0.52	0.60	0.60	0.65	0.55	0.58	0.58
55.50	57.00		0.58	0.60		0.65	0.52	0.60	0.58	0.65	0.52	0.56	0.58
57.00	58.50	0.62	0.55	0.58	0.60	0.60	0.48	0.60	0.58	0.62	0.52	0.52	0.56
58.50	60.00	0.62	0.55	0.50	0.58	0.55	0.48	0.58	0.56	0.62	0.51	0.51	0.55
60.00	61.50	0.60	0.55	0.50	0.56	0.35	0.45	0.58	0.55	0.60	0.50	0.50	0.55
61.50	63.00	0.60	0.55	0.50	0.55	0.25	0.45	0.52	0.52	0.58	0.45	0.45	0.40
63.00	64.50	0.58	0.54	0.46	0.52	0.20	0.45	0.50	0.50	0.55	0.40	0.44	0.40
64.50	66.00	0.55	0.54	0.58	0.50	0.22	0.42	0.50	0.50	0.55	0.35	0.44	0.30
66.00	67.50	0.52	0.52	0.45	0.50	0.20	0.35	0.55	0.50	0.54	0.25	0.25	0.30

Depth (m)		Water absorption Value											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	0.50	0.52	0.75	0.70	0.58	0.65	0.60	0.58	0.52	0.60	0.50	0.58
1.50	3.00	0.50	0.50	0.75	0.68	0.58	0.65	0.58	0.58	0.50	0.60	0.50	0.58
3.00	4.50	0.50	0.50	0.75	0.66	0.56	0.65	0.58	0.56	0.50	0.58	0.50	0.58
4.50	6.00	0.46	0.49	0.75	0.65	0.52	0.63	0.55	0.52	0.40	0.58	0.46	0.55
6.00	7.50	0.45	0.46	0.75	0.62	0.51	0.63	0.52	0.51	0.40	0.57	0.45	0.55
7.50	9.00	0.45	0.45	0.70	0.55	0.50	0.63	0.25	0.50	0.30	0.55	0.45	0.55
9.00	10.50	0.42	0.45	0.68	0.55	0.45	0.60	0.25	0.45	0.30	0.55	0.33	0.55
10.50	12.00	0.40	0.42	0.65	0.54	0.44	0.35	0.23	0.24	0.28	0.52	0.35	0.54
12.00	13.50	0.40	0.42	0.62	0.54	0.44	0.34	0.20	0.24	0.20	0.28	0.35	0.54
13.50	15.00	0.40	0.42	0.58	0.35	0.25	0.34	0.20	0.22	0.15	0.28	0.30	0.52



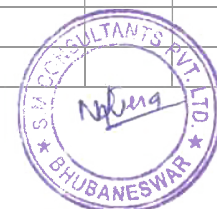
Depth (m)		Water absorption Value											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
15.00	16.50	0.36	0.41	0.56	0.35	0.25	0.34	0.20	0.20	0.13	0.20	0.30	0.52
16.50	18.00	0.35	0.41	0.48	0.20	0.25	0.30	0.18	0.20	0.12	0.20	0.25	0.52
18.00	19.50	0.35	0.41	0.46	0.20	0.10	0.30	0.15	0.18	0.10	0.20	0.20	0.50
19.50	21.00	0.30	0.40	0.30	0.20	0.10	0.28	0.15	0.16	0.10	0.18	0.20	0.50
21.00	22.50	0.30	0.40	0.30	0.18	0.10	0.28	0.12	0.16	0.10	0.16	0.20	0.48
22.50	24.00	0.28	0.40	0.28	0.18	0.05	0.28	0.10	0.12	0.05	0.16	0.20	0.45
24.00	25.50	0.26	0.40	0.28	0.18	0.05	0.25	0.10	0.12	0.05	0.15	0.16	0.45
25.50	27.00	0.25	0.38	0.27	0.16	0.05	0.10		0.11	0.05	0.15	0.15	0.42
27.00	28.50	0.25	0.38	0.20	0.16	0.06	0.10		0.11	0.05	0.14	0.15	0.40
28.50	30.00	0.23	0.36	0.20	0.16	0.05			0.10	0.03	0.14	0.15	0.40
30.00	31.50	0.23	0.36	0.20	0.15	0.05			0.10	0.03	0.14	0.14	0.38
31.50	33.00	0.23	0.36	0.20	0.15	0.04			0.10	0.03	0.12	0.14	0.38
33.00	34.50	0.20	0.35	0.20	0.10	0.04			0.08	0.03	0.12	0.14	0.38
34.50	36.00	0.18	0.32	0.20	0.10				0.05	0.02	0.12	0.08	0.35
36.00	37.50	0.18	0.32	0.15	0.10				0.05	0.02	0.10	0.08	
37.50	39.00	0.15	0.31	0.15	0.06				0.05	0.02	0.10	0.08	
39.00	40.50	0.15	0.31	0.12						0.02	0.08	0.08	
40.50	42.00	0.15	0.31	0.12						0.02	0.09	0.08	
42.00	43.50	0.10	0.31							0.02	0.08		
43.50	45.00	0.10	0.25							0.02	0.08		
45.00	46.50	0.10									0.05		
46.50	48.00										0.05		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Water absorption Value											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		0.55	0.58	0.50		0.58	0.58		0.62	0.58	0.58	
1.50	3.00	0.52	0.55	0.58	0.50		0.60	0.58		0.58	0.58	0.58	
3.00	4.50	0.50	0.52	0.57	0.48		0.60	0.58	0.62	0.58	0.58	0.58	0.58
4.50	6.00	0.50	0.52	0.55	0.45	0.55	0.60	0.56	0.60	0.58	0.55	0.55	0.58
6.00	7.50	0.49	0.50	0.55	0.40	0.55	0.58	0.56	0.60	0.58	0.55	0.55	0.58



Depth (m)		Water absorption Value											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
7.50	9.00	0.46	0.50	0.52	0.40	0.53	0.58	0.56	0.58	0.56	0.55	0.55	0.55
9.00	10.50	0.45	0.48	0.51	0.30	0.53	0.52	0.56	0.58	0.56	0.55	0.55	0.55
10.50	12.00	0.45	0.46	0.51	0.30	0.53	0.50	0.56	0.58	0.56	0.54	0.55	0.55
12.00	13.50	0.42	0.46	0.51	0.30	0.52	0.50	0.55	0.56	0.53	0.54	0.55	0.55
13.50	15.00	0.42	0.45	0.50	0.28	0.52	0.55	0.55	0.56	0.53	0.52	0.54	0.54
15.00	16.50	0.42	0.45	0.50	0.25	0.52	0.46	0.48	0.52	0.52	0.52	0.54	0.54
16.50	18.00	0.41	0.45	0.50	0.25	0.50	0.46	0.48	0.52	0.52	0.52	0.53	0.52
18.00	19.50	0.41	0.42	0.46	0.25	0.48	0.48	0.47	0.52	0.52	0.50	0.52	0.52
19.50	21.00	0.41	0.35	0.42	0.22	0.48	0.42	0.47	0.50	0.52	0.50	0.52	0.52
21.00	22.50	0.40		0.42	0.22	0.45	0.45	0.47	0.50	0.50	0.50	0.52	0.52
22.50	24.00	0.40		0.41	0.20	0.45	0.48	0.47	0.50	0.48	0.46	0.54	0.50
24.00	25.50	0.40		0.41	0.20	0.45	0.45	0.47	0.50	0.48	0.45	0.54	0.50
25.50	27.00	0.40		0.41	0.18	0.45	0.42	0.47	0.50	0.48	0.45	0.54	0.48
27.00	28.50			0.41	0.18	0.44	0.42	0.45	0.49	0.48	0.40	0.54	0.48
28.50	30.00			0.40	0.18	0.40	0.42	0.45	0.48	0.48	0.38	0.54	0.46
30.00	31.50			0.40	0.16	0.40	0.42	0.40	0.48	0.46	0.35	0.53	0.45
31.50	33.00			0.38	0.16	0.35	0.42	0.40	0.46	0.45	0.35	0.53	0.45
33.00	34.50			0.36	0.16	0.35	0.40	0.40	0.46	0.44	0.35	0.52	0.44
34.50	36.00			0.33	0.15	0.35	0.40	0.40	0.46	0.42	0.35	0.52	0.44
36.00	37.50				0.15	0.35	0.40	0.38	0.42	0.42	0.30	0.50	0.44
37.50	39.00				0.12	0.33	0.38	0.38	0.40	0.25	0.30	0.50	0.44
39.00	40.50				0.12	0.33	0.38	0.35	0.40	0.25	0.28	0.48	0.42
40.50	42.00				0.12	0.33	0.38	0.35	0.40	0.20	0.23		0.42
42.00	43.50				0.10	0.32	0.38	0.35	0.40	0.20	0.23		0.42
43.50	45.00				0.10	0.32	0.36	0.35	0.40	0.20	0.23		0.40
45.00	46.50				0.10	0.25	0.36	0.34	0.39	0.15			0.40
46.50	48.00				0.08	0.25	0.35	0.34	0.30	0.15			0.40
48.00	49.50				0.08	0.24	0.35	0.30	0.28				0.38
49.50	51.00				0.08	0.20	0.35	0.30	0.28				
51.00	52.50					0.20		0.30	0.28				
52.50	54.00							0.30	0.26				
54.00	55.50							0.30	0.26				
55.50	57.00							0.25	0.20				
57.00	58.50							0.25	0.20				
58.50	60.00							0.25	0.20				
60.00	61.50								0.18				
61.50	63.00								0.18				
63.00	64.50								0.18				
64.50	66.00								0.18				
66.00	67.50								0.15				

Depth (m)		Water absorption Value												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	0.56	0.58	0.55	0.56	0.52		0.60	0.56	0.60	0.58	0.55	0.70	0.50
1.50	3.00	0.56	0.58	0.55	0.56	0.52	0.66	0.60	0.56	0.58	0.58	0.45	0.69	0.49
3.00	4.50	0.55	0.58	0.55	0.55	0.50	0.65	0.60	0.56	0.58	0.58	0.43	0.69	0.46
4.50	6.00	0.55	0.55	0.55	0.55	0.50	0.65	0.58	0.56	0.56	0.56	0.43	0.69	0.42
6.00	7.50	0.54	0.55	0.54	0.55	0.50	0.62	0.58	0.56	0.55	0.56	0.42	0.68	0.40
7.50	9.00	0.54	0.55	0.54	0.55	0.48	0.62	0.56	0.56	0.52	0.56	0.40	0.65	0.38
9.00	10.50	0.52	0.55	0.52	0.52	0.48	0.60	0.56	0.55	0.50	0.55	0.39	0.65	0.37
10.50	12.00	0.52	0.54	0.52	0.52	0.47	0.58	0.56	0.55	0.50	0.55	0.39	0.62	0.36
12.00	13.50	0.50	0.54	0.50	0.52	0.47	0.55	0.55	0.55	0.50	0.55	0.36	0.60	0.30
13.50	15.00	0.50	0.52	0.50	0.52	0.47	0.55	0.55	0.55	0.50	0.52	0.35	0.60	0.28
15.00	16.50	0.50	0.52	0.50	0.50	0.46	0.54	0.55	0.53	0.48	0.52	0.35	0.60	0.32
16.50	18.00	0.50	0.52	0.48	0.50	0.45	0.55	0.53	0.53	0.48	0.52	0.33	0.58	0.35
18.00	19.50	0.48	0.50	0.42	0.49		0.52	0.53	0.53	0.44	0.50	0.33	0.57	0.30
19.50	21.00	0.45	0.50	0.35			0.52	0.53	0.52	0.44	0.50	0.33	0.55	0.25
21.00	22.50	0.45	0.48				0.50	0.53	0.52	0.36	0.50	0.33	0.53	0.23
22.50	24.00	0.42	0.45				0.50	0.52	0.52	0.34	0.49	0.32	0.51	0.22
24.00	25.50	0.42	0.45				0.48	0.52	0.52	0.34	0.49	0.32	0.50	0.20
25.50	27.00	0.40	0.42				0.48	0.52	0.52	0.32	0.49	0.32	0.47	
27.00	28.50	0.40	0.40				0.48	0.50	0.50	0.32	0.48	0.30	0.45	
28.50	30.00	0.39	0.40				0.48	0.50	0.50	0.30	0.48	0.30	0.43	
30.00	31.50	0.38	0.38				0.45	0.48	0.50	0.30	0.48	0.30	0.40	
31.50	33.00	0.38	0.38				0.47	0.48	0.50	0.28	0.45	0.25	0.38	
33.00	34.50	0.38	0.38				0.47	0.46	0.50	0.25	0.43	0.25	0.36	
34.50	36.00	0.38	0.35				0.46	0.46	0.47	0.25	0.43	0.23	0.35	
36.00	37.50	0.35						0.46	0.47	0.25	0.42	0.23	0.33	
37.50	39.00	0.35						0.45	0.45		0.40	0.23	0.30	
39.00	40.50	0.33						0.43	0.32		0.40	0.22		
40.50	42.00	0.33						0.43	0.30		0.32	0.20		
42.00	43.50							0.42				0.20		
43.50	45.00							0.40				0.20		
45.00	46.50							0.40				0.20		
46.50	48.00							0.32				0.18		
48.00	49.50											0.18		
49.50	51.00											0.15		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													



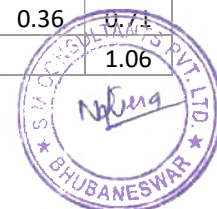
Depth (m)		Water absorption Value												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
66.00	67.50													

5.1.2.4 Porosity

Depth (m)		Porosity (%)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	2.55											2.53
1.50	3.00	2.55											2.18
3.00	4.50	2.55	2.19								2.19		2.53
4.50	6.00	2.17	2.19				2.19		1.46	2.18	1.46		2.53
6.00	7.50	2.17	2.17	2.18	2.55	1.46	1.82	2.54	1.09	2.17	0.74	1.82	2.53
7.50	9.00	2.17	2.16	1.81	2.54	1.82	1.82	2.18	1.45	3.21	0.71	1.82	2.52
9.00	10.50	1.81	2.17	1.81	2.53	1.45	2.17	2.19	1.09	3.21	0.74	1.45	2.52
10.50	12.00	2.17	2.17	1.81	2.53	2.16	1.82	2.53	1.45	3.20	0.37	1.81	2.53
12.00	13.50	1.08	2.17	1.81	2.53	1.45	1.81	2.54	1.09	2.48	1.46	1.44	2.14
13.50	15.00	1.06	1.82	1.79	2.53	1.80	1.81	2.86	1.44	2.48	1.46	1.08	2.14
15.00	16.50	1.08	1.44	1.81	2.52	2.16	1.81	2.89	1.44	1.77	0.74	1.08	1.07
16.50	18.00	1.44	1.44	1.81	2.52	1.43	1.81	2.86	1.44	3.21	0.73	0.72	1.07
18.00	19.50	1.08	1.08	1.80	2.52	2.87	1.80	3.24	1.44	3.20	0.71	0.71	1.06
19.50	21.00	0.36	1.81	1.81	2.50	1.79	1.81	2.14	1.43	1.06	0.71	0.36	1.06
21.00	22.50	0.36	1.81	2.15	2.50	0.71	1.82	2.86	1.43		1.79	0.72	
22.50	24.00		1.81	2.17	2.50	0.71	1.82	1.77	1.43		1.08	0.36	
24.00	25.50		2.86	1.81	2.50	0.36	1.43	2.52	1.43		1.80	0.36	
25.50	27.00		1.81	2.16	2.50	0.71	1.81	2.86	1.42		1.80		
27.00	28.50		1.81	1.81	2.51	0.71	1.08	2.52	1.42		1.06		
28.50	30.00			1.81	2.16	0.71	1.80	2.87	1.43		1.06		
30.00	31.50			1.44	2.50	0.71	0.71	2.86					
31.50	33.00			1.44	2.50	0.71	0.71	2.52					
33.00	34.50			1.80	2.50	0.35	0.71	2.14					
34.50	36.00			2.87	2.50	0.00		1.42					
36.00	37.50			1.80	2.14	0.71							
37.50	39.00			1.43	2.11								
39.00	40.50			1.79	2.11								
40.50	42.00			1.42	1.41								
42.00	43.50				2.11								
43.50	45.00				2.53								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												

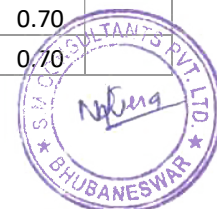
Depth (m)		Porosity (%)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Porosity (%)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		1.82				1.82	2.18		2.18	2.18	2.19	1.82
1.50	3.00		2.19			2.19	1.82	2.19	2.19	2.19	2.18	2.19	2.19
3.00	4.50		2.19	2.19		2.19	1.82	2.19	2.19	2.19	2.17	1.82	1.82
4.50	6.00	2.19	1.82	2.18	2.19	2.18	2.17	2.19	2.18	2.18	2.17	1.81	2.19
6.00	7.50	2.19	2.19	2.17	2.19	2.18	1.81	2.18	1.82	2.18	2.17	1.81	2.19
7.50	9.00	2.17	2.18	2.17	2.18	2.17	2.15	2.19	1.81	2.54	2.50	1.81	2.19
9.00	10.50	2.17	2.19	2.18	2.18	1.79	2.15	2.17	1.09	2.17	2.13	1.44	0.36
10.50	12.00	2.17	2.19	2.15	2.17	1.41	2.16	2.17	1.08	2.15	1.77	1.81	0.36
12.00	13.50	1.80	2.19	1.82	2.17	1.80	2.14	2.17	1.08	2.15	1.41	1.44	0.71
13.50	15.00	1.80	1.82	2.15	2.17	1.41	1.42	2.17	1.08	2.14	1.06	1.06	0.36
15.00	16.50	2.17	1.82	2.17	2.17	1.41	2.14	2.17	1.81	2.16	1.06	1.06	0.36
16.50	18.00	1.80	2.18	2.17	2.16	1.41	2.15	2.15	1.08	2.15	1.06	1.06	0.36
18.00	19.50	1.08	2.17	2.17	2.17	1.41	2.14	2.15	1.44	2.15	1.06	0.70	0.36
19.50	21.00	1.43	1.82	2.15	2.17	1.41	1.79	1.78	1.43	2.51	1.41	0.71	0.36
21.00	22.50	1.80	1.44	2.18	2.17	1.41	1.77	1.79	1.43	2.50	0.70	0.71	0.70
22.50	24.00	1.08	1.08	2.15	2.15	1.41	1.77	1.80	1.07	2.14	0.70	0.70	0.70
24.00	25.50	0.71	0.36	2.17	2.15	1.41	1.41	2.15	1.42	2.50	0.70	0.70	0.70
25.50	27.00		0.00	2.17	1.79	1.41	1.06	1.79	1.06	2.14	0.70	0.70	0.70
27.00	28.50		0.13	2.17	1.79	1.41	1.06	1.79	1.42	2.49	0.70	0.71	1.06
28.50	30.00			2.51	1.43	1.06	0.70	1.79	1.06	2.51	0.71	0.70	1.06
30.00	31.50			2.15	1.78	1.06	0.70	1.43	1.07	2.15	0.70	0.70	1.06
31.50	33.00			2.14	1.42	1.06	0.70	1.79	1.06	2.15	0.70	0.70	1.06
33.00	34.50			1.77	1.77	1.06	0.70	0.71	1.06	2.48	0.00	0.70	1.06
34.50	36.00			1.41	1.42	1.06		1.79	1.06	2.84	0.70	0.35	0.71
36.00	37.50				1.42	1.41		0.71	1.06	2.84	0.70	0.70	1.06
37.50	39.00				1.42	1.41			1.06		0.71	0.70	1.06
39.00	40.50				0.70						0.70	0.35	0.70
40.50	42.00										0.70	0.35	1.06
42.00	43.50											0.70	1.06
43.50	45.00											0.70	0.70
45.00	46.50											0.70	1.06
46.50	48.00											0.36	0.71
48.00	49.50											1.06	1.06



Depth (m)		Porosity (%)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
49.50	51.00												1.06
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Porosity (%)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	2.19	1.82	2.19	2.19	2.19	2.18	2.18	2.19	2.18	2.19	1.81	2.17
1.50	3.00	2.19	2.19	2.19	2.18	2.19	2.19	2.19	2.19	2.19	2.19	2.18	2.18
3.00	4.50	2.19	2.19	2.19	2.18	2.19	2.18	2.19	2.19	2.19	2.19	2.17	2.17
4.50	6.00	2.17	2.19	2.19	2.18	2.19	2.18	2.18	2.19	2.18	2.19	2.17	2.18
6.00	7.50	2.18	1.45	2.19	1.82	2.19	2.18	2.17	2.19	2.18	2.19	1.81	2.18
7.50	9.00	2.18	1.44	2.18	1.44	1.82	2.18	1.06	2.19	1.82	1.82	1.81	2.17
9.00	10.50	2.52	1.44	2.18	1.81	1.45	2.17	1.06	2.19	1.81	1.82	1.44	2.17
10.50	12.00	1.43	1.43	2.18	1.81	1.44	0.70	1.06	0.71	1.44	1.82	1.42	2.17
12.00	13.50	1.07	1.44	2.17	1.81	1.08	1.06	0.70	0.71	1.43	1.43	1.42	2.17
13.50	15.00	1.43	1.43	2.17	0.35	0.71	0.35	1.06	0.71	0.71	1.44	1.06	2.17
15.00	16.50	1.07	1.81	2.53	0.00	0.71	0.71	0.71	0.70	1.42	0.70	1.06	2.17
16.50	18.00	0.71	1.45	2.15	0.70	0.71	0.70	0.70	0.36	0.71	0.70	1.06	2.17
18.00	19.50	0.71	1.45	1.79	0.71	0.71	0.71	0.70	0.70	0.00	0.70	0.70	2.17
19.50	21.00	0.71	1.07	1.07	0.70	0.71	0.70	0.70	0.70	0.00	0.70	0.70	2.17
21.00	22.50	0.71	1.45	1.07	0.71	0.71	0.70	0.35	0.70	0.00	0.71	0.70	2.17
22.50	24.00	0.71	1.45	1.07	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.71	2.17
24.00	25.50	0.70	1.45	1.07	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	2.17
25.50	27.00	0.71	1.44	1.08	0.70	0.71	0.70		0.71	0.70	0.71	0.70	1.80
27.00	28.50	0.70	1.08	0.70	0.70	0.71	0.70		0.70	0.70	0.70	0.70	2.16
28.50	30.00	0.70	0.71	0.71	0.70	0.71			0.70	0.70	0.71	0.70	2.16
30.00	31.50	0.71	1.44	0.70	0.70	0.70			0.70	0.70	0.70	0.71	2.16
31.50	33.00	0.71	1.44	0.71	0.71	0.70			0.70	0.70	0.70	0.71	1.80
33.00	34.50	0.70	1.43	0.70	0.70	0.70			0.70	0.70	0.70	0.70	1.80
34.50	36.00	0.70	0.71	1.06	0.71				0.70	0.70	0.71	0.70	1.79
36.00	37.50	0.70	0.71	0.71	0.70				0.70	0.70	0.70	0.70	
37.50	39.00	0.70	1.43	0.71	0.70				0.70	0.70	0.71	0.70	
39.00	40.50	0.70	1.07	0.70						0.70	0.70	0.70	
40.50	42.00	0.71	1.44	0.71						0.63	0.70	0.70	



Depth (m)		Porosity (%)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
42.00	43.50	0.70	1.43							0.62	0.70		
43.50	45.00	0.70	0.35							0.70	0.70		
45.00	46.50	0.70									0.70		
46.50	48.00										0.70		
48.00	49.50	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
49.50	51.00	2.19	1.82	2.19	2.19	2.19	2.18	2.18	2.19	2.18	2.19	1.81	2.17
51.00	52.50	2.19	2.19	2.19	2.18	2.19	2.19	2.19	2.19	2.19	2.19	2.18	2.18
52.50	54.00	2.19	2.19	2.19	2.18	2.19	2.18	2.19	2.19	2.19	2.19	2.17	2.17
54.00	55.50	2.17	2.19	2.19	2.18	2.19	2.18	2.18	2.19	2.18	2.19	2.17	2.18
55.50	57.00	2.18	1.45	2.19	1.82	2.19	2.18	2.17	2.19	2.18	2.19	1.81	2.18
57.00	58.50	2.18	1.44	2.18	1.44	1.82	2.18	1.06	2.19	1.82	1.82	1.81	2.17
58.50	60.00	2.52	1.44	2.18	1.81	1.45	2.17	1.06	2.19	1.81	1.82	1.44	2.17
60.00	61.50	1.43	1.43	2.18	1.81	1.44	0.70	1.06	0.71	1.44	1.82	1.42	2.17
61.50	63.00	1.07	1.44	2.17	1.81	1.08	1.06	0.70	0.71	1.43	1.43	1.42	2.17
63.00	64.50	1.43	1.43	2.17	0.35	0.71	0.35	1.06	0.71	0.71	1.44	1.06	2.17
64.50	66.00	1.07	1.81	2.53	0.00	0.71	0.71	0.71	0.70	1.42	0.70	1.06	2.17
66.00	67.50	0.71	1.45	2.15	0.70	0.71	0.70	0.70	0.36	0.71	0.70	1.06	2.17

Depth (m)		Porosity (%)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		2.18	2.18	1.82		1.82	2.17		2.19	2.55	1.45	
1.50	3.00	2.18	2.19	2.18	1.82		2.18	2.17		2.17	2.18	2.18	
3.00	4.50	2.18	2.18	2.18	1.82		1.82	1.82	2.18	2.17	2.54	1.82	2.18
4.50	6.00	2.18	2.18	2.17	1.45	1.82	2.18	2.17	1.82	2.18	2.18	1.82	2.18
6.00	7.50	2.17	2.18	2.18	1.81	2.19	1.82	2.18	2.17	2.18	2.18	2.18	2.19
7.50	9.00	2.17	2.17	2.54	1.80	1.82	2.17	2.18	2.17	2.18	2.54	2.18	2.18
9.00	10.50	2.17	2.17	2.17	1.79	1.82	1.82	2.18	2.18	2.17	2.18	1.82	2.19
10.50	12.00	2.17	2.53	2.54	2.14	1.82	2.17	1.82	2.18	2.17	2.18	1.82	2.18
12.00	13.50	2.17	2.17	2.17	1.43	1.82	2.16	2.18	2.17	2.17	2.54	2.18	2.18
13.50	15.00	2.16	2.17	2.53	1.07	1.82	2.16	2.18	2.17	2.17	2.55	1.82	2.18
15.00	16.50	2.16	2.17	2.17	1.77	1.82	1.80	0.71	2.17	2.17	2.18	2.17	2.18
16.50	18.00	1.80	2.17	2.53	0.71	1.82	2.16	0.72	2.17	2.17	2.18	2.17	2.17
18.00	19.50	2.15	1.80	2.16	1.06	1.82	2.16	1.08	1.81	2.17	2.54	2.17	2.17
19.50	21.00	2.15	1.07	2.17	0.71	2.17	1.80	1.08	2.17	2.17	2.17	2.17	2.18
21.00	22.50	2.15		2.53	0.71	1.44	2.16	1.08	2.17	2.17	2.19	2.17	2.18
22.50	24.00	2.14		2.52	0.70	1.82	2.16	1.08	2.17	1.81	2.54	1.81	2.18
24.00	25.50	2.15		2.17	0.70	1.82	2.15	1.08	2.17	1.82	2.54	2.17	2.18
25.50	27.00	1.78		2.53	1.06	1.82	2.15	0.72	2.18	1.82	2.17	2.17	2.17
27.00	28.50			2.53	0.71	1.82	2.15	0.72	2.17	1.82	1.80	1.82	2.18
28.50	30.00			2.16	0.71	1.44	2.15	1.08	2.17	1.82	1.07	2.17	2.17
30.00	31.50			2.88	0.70	1.81	2.15	0.36	1.82	1.81	1.07	2.17	1.81
31.50	33.00			2.16	0.71	1.07	1.79	0.72	2.17	1.81	1.07	2.17	2.17
33.00	34.50			1.79	0.71	1.08	1.79	1.09	2.17	1.44	1.43	2.17	2.17



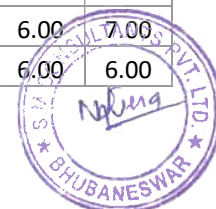
Depth (m)		Porosity (%)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
34.50	36.00			1.43	0.70	1.08	1.79	1.08	2.17	1.44	1.43	2.17	2.17
36.00	37.50				0.70	1.08	1.43	0.36	2.15	1.81	1.08	2.17	2.17
37.50	39.00				0.70	1.08	2.14	0.72	2.15	0.71	1.43	2.17	2.17
39.00	40.50				0.71	1.08	1.79	0.71	2.15	0.71	1.43	2.16	2.17
40.50	42.00				0.70	1.08	1.79	0.72	2.15	0.70	1.07		1.81
42.00	43.50				0.70	1.08	1.79	1.44	2.15	0.71	0.71		2.17
43.50	45.00				0.70	1.08	1.79	1.44	2.16	0.71	1.43		2.17
45.00	46.50				0.70	1.06	1.43	0.72	2.15	0.70			1.81
46.50	48.00				0.70	1.06	1.43	1.44	1.42	0.71			2.17
48.00	49.50				0.70	0.71	1.43	0.71	1.42				1.80
49.50	51.00				0.70	1.06	1.42	0.71	1.42				
51.00	52.50					1.06		0.71	1.79				
52.50	54.00							0.36	1.78				
54.00	55.50							0.71	1.78				
55.50	57.00							0.71	0.71				
57.00	58.50							0.71	1.42				
58.50	60.00							0.71	1.06				
60.00	61.50								0.71				
61.50	63.00								1.06				
63.00	64.50								1.06				
64.50	66.00								0.71				
66.00	67.50								0.70				

Depth (m)		Porosity (%)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	2.19	2.19	2.17	1.81	2.18		2.18	2.88	2.18	2.17	1.82	2.17	2.18
1.50	3.00	2.19	2.19	2.19	2.18	2.19	2.18	2.18	2.18	2.18	2.17	2.18	2.19	2.19
3.00	4.50	2.19	2.19	2.18	1.81	2.18	2.17	2.18	2.18	2.18	2.18	2.18	2.19	2.19
4.50	6.00	2.18	2.19	2.18	2.17	2.19	2.19	2.54	2.18	2.18	2.18	1.82	2.18	1.82
6.00	7.50	2.18	2.19	2.17	2.17	2.18	2.18	2.17	2.19	2.19	2.17	2.18	2.19	2.18
7.50	9.00	2.18	2.19	2.18	2.18	1.81	2.18	2.17	2.19	2.19	2.18	2.18	2.18	2.19
9.00	10.50	1.82	2.18	2.17	2.17	2.18	2.18	2.53	2.18	2.18	2.17	1.82	2.18	2.18
10.50	12.00	2.17	2.18	2.17	2.18	1.81	2.18	2.17	2.18	2.18	2.18	1.82	2.18	2.17
12.00	13.50	2.17	2.18	2.17	2.17	2.17	2.18	2.53	2.18	2.18	2.18	2.17	2.17	2.18
13.50	15.00	2.17	2.54	2.17	2.17	2.17	2.17	2.17	2.19	2.17	2.17	2.17	2.17	2.55
15.00	16.50	2.17	2.18	2.17	1.81	2.17	2.17	2.53	2.18	2.18	2.17	2.17	2.17	2.17
16.50	18.00	2.17	2.18	1.80	2.17	1.81	2.17	2.17	2.54	2.18	2.18	2.17	2.17	1.81
18.00	19.50	2.17	2.18	1.43	1.81		2.17	2.17	2.18	2.18	2.17	1.81	2.18	1.44
19.50	21.00	2.17	2.17	1.06			1.81	2.53	2.18	2.17	2.17	2.17	2.53	1.08
21.00	22.50	2.17	2.17				1.81	2.17	2.18	1.80	2.18	1.81	2.17	1.08
22.50	24.00	2.16	2.17				1.81	2.53	2.18	1.42	2.17	2.17	2.17	1.08
24.00	25.50	2.16	2.17				2.15	2.17	2.18	1.43	2.18	1.81	2.17	1.08
25.50	27.00	2.16	2.17				2.15	2.53	2.18	1.81	2.17	1.81	2.16	

Depth (m)		Porosity (%)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
27.00	28.50	2.16	2.17				1.81	2.53	2.17	2.17	2.17	1.81	2.52	
28.50	30.00	1.80	2.17				2.16	2.17	2.17	2.17	2.17	1.81	2.16	
30.00	31.50	2.15	2.16				2.16	2.53	2.17	1.81	2.17	2.16	2.16	
31.50	33.00	2.15	2.16				2.17	2.17	1.81	2.16	1.81	2.16	2.17	
33.00	34.50	2.15	1.80				2.17	2.53	2.17	1.80	1.81	1.80	1.80	
34.50	36.00	1.80	1.43				2.17	2.17	1.81	1.43	2.16	1.80	1.80	
36.00	37.50	2.15						2.16	1.81	1.06	1.80	2.15	1.79	
37.50	39.00	1.79						2.16	1.44		1.80	2.15	1.42	
39.00	40.50	2.14						2.15	1.43		1.80	1.79		
40.50	42.00	2.14						2.15	1.07		1.79	1.79		
42.00	43.50							2.15				1.79		
43.50	45.00							1.79				1.78		
45.00	46.50							1.43				1.78		
46.50	48.00							1.07				1.07		
48.00	49.50											1.42		
49.50	51.00											1.06		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.5 Hardness

Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	5.00											5.00
1.50	3.00	5.00											5.00
3.00	4.50	5.00	5.00								5.00		5.00
4.50	6.00	6.00	5.00				5.00		5.00	5.00	7.00		5.00
6.00	7.50	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	5.00	5.00
7.50	9.00	6.00	7.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	7.00	5.00	5.00
9.00	10.50	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	5.00	5.00
10.50	12.00	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	7.00	6.00	5.00	5.00
12.00	13.50	7.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	7.00	6.00	5.00	6.00
13.50	15.00	8.00	5.00	6.00	5.00	5.00	5.00	6.00	5.00	7.00	6.00	6.00	6.00
15.00	16.50	7.00	7.00	5.00	5.00	5.00	5.00	5.00	5.00	8.00	6.00	6.00	7.00
16.50	18.00	6.00	7.00	5.00	5.00	6.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00



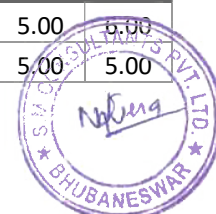
Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
18.00	19.50	7.00	7.00	5.00	5.00	5.00	6.00	5.00	6.00	7.00	7.00	7.00	7.00
19.50	21.00	8.00	7.00	5.00	5.00	5.00	5.00	7.00	6.00	8.00	7.00	7.00	8.00
21.00	22.50	8.00	7.00	5.00	6.00	6.00	5.00	6.00	7.00		7.00	7.00	
22.50	24.00		7.00	5.00	6.00	6.00	5.00	7.00	7.00		7.00	7.00	
24.00	25.50		7.00	5.00	5.00	6.00	6.00	5.00	7.00		7.00	7.00	
25.50	27.00		7.00	5.00	5.00	7.00	5.00	6.00	7.00		7.00		
27.00	28.50		7.00	5.00	5.00	7.00	5.00	5.00	7.00		8.00		
28.50	30.00			5.00	5.00	7.00	5.00	5.00	7.00		8.00		
30.00	31.50			5.00	5.00	8.00	6.00	6.00					
31.50	33.00			5.00	6.00	8.00	6.00	5.00					
33.00	34.50			6.00	6.00	8.00	7.00	7.00					
34.50	36.00			5.00	6.00	7.00		7.00					
36.00	37.50			6.00	6.00	8.00							
37.50	39.00			6.00	7.00								
39.00	40.50			7.00	7.00								
40.50	42.00			8.00	7.00								
42.00	43.50				7.00								
43.50	45.00				5.00								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		5.00				5.00	5.00		5.00	5.00	5.00	5.00
1.50	3.00		5.00			5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
3.00	4.50		5.00	5.00		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
4.50	6.00	5.00	5.00	5.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	6.00	5.00
6.00	7.50	5.00	5.00	6.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	6.00	5.00
7.50	9.00	5.00	5.00	6.00	5.00	7.00	7.00	5.00	6.00	5.00	6.00	5.00	5.00
9.00	10.50	5.00	5.00	5.00	5.00	8.00	7.00	5.00	6.00	5.00	7.00	7.00	7.00

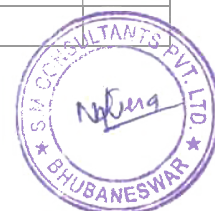


Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
10.50	12.00	5.00	5.00	6.00	5.00	8.00	7.00	6.00	6.00	6.00	7.00	6.00	6.00
12.00	13.50	6.00	5.00	5.00	5.00	7.00	7.00	6.00	6.00	6.00	7.00	7.00	8.00
13.50	15.00	6.00	5.00	6.00	5.00	7.00	8.00	5.00	6.00	6.00	8.00	8.00	5.00
15.00	16.50	5.00	5.00	5.00	6.00	8.00	7.00	5.00	6.00	5.00	8.00	8.00	5.00
16.50	18.00	6.00	5.00	5.00	6.00	7.00	7.00	6.00	6.00	6.00	8.00	7.00	5.00
18.00	19.50	7.00	5.00	5.00	6.00	7.00	7.00	6.00	6.00	6.00	8.00	8.00	6.00
19.50	21.00	6.00	5.00	6.00	5.00	8.00	7.00	7.00	6.00	6.00	8.00	8.00	7.00
21.00	22.50	6.00	5.00	5.00	6.00	8.00	7.00	6.00	7.00	6.00	8.00	8.00	8.00
22.50	24.00	7.00	6.00	6.00	6.00	8.00	8.00	6.00	7.00	6.00	8.00	8.00	8.00
24.00	25.50	7.00	6.00	5.00	6.00	7.00	8.00	6.00	8.00	6.00	8.00	8.00	8.00
25.50	27.00		6.00	6.00	6.00	8.00	8.00	7.00	8.00	6.00	8.00	8.00	8.00
27.00	28.50		6.00	5.00	6.00	8.00	8.00	7.00	8.00	6.00	8.00	8.00	8.00
28.50	30.00			6.00	7.00	8.00	8.00	7.00	8.00	6.00	8.00	8.00	8.00
30.00	31.50			6.00	7.00	8.00	8.00	7.00	7.00	6.00	8.00	8.00	8.00
31.50	33.00			7.00	7.00	8.00	8.00	7.00	8.00	6.00	8.00	8.00	7.00
33.00	34.50			7.00	7.00	8.00	8.00	8.00	8.00	7.00	7.00	8.00	8.00
34.50	36.00			8.00	7.00	8.00		7.00	8.00	6.00	8.00	8.00	8.00
36.00	37.50				7.00	8.00		8.00	8.00	7.00	8.00	8.00	8.00
37.50	39.00				7.00	8.00			8.00		8.00	8.00	8.00
39.00	40.50				8.00						8.00	8.00	8.00
40.50	42.00										8.00	8.00	7.00
42.00	43.50											8.00	8.00
43.50	45.00											8.00	8.00
45.00	46.50											8.00	8.00
46.50	48.00											8.00	8.00
48.00	49.50												7.00
49.50	51.00												8.00
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

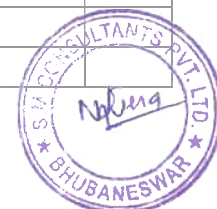
Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
1.50	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00



Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
3.00	4.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
4.50	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
6.00	7.50	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
7.50	9.00	6.00	6.00	5.00	6.00	5.00	5.00	7.00	5.00	5.00	5.00	6.00	5.00
9.00	10.50	6.00	6.00	5.00	5.00	6.00	5.00	7.00	5.00	6.00	5.00	6.00	5.00
10.50	12.00	7.00	7.00	5.00	5.00	6.00	8.00	7.00	8.00	6.00	5.00	6.00	5.00
12.00	13.50	7.00	7.00	5.00	5.00	7.00	8.00	7.00	8.00	6.00	7.00	7.00	5.00
13.50	15.00	7.00	7.00	5.00	8.00	8.00	8.00	7.00	8.00	7.00	7.00	7.00	6.00
15.00	16.50	7.00	6.00	5.00	7.00	8.00	7.00	8.00	8.00	7.00	8.00	7.00	5.00
16.50	18.00	7.00	6.00	7.00	8.00	8.00	8.00	7.00	6.00	7.00	8.00	8.00	5.00
18.00	19.50	8.00	6.00	7.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	8.00	5.00
19.50	21.00	8.00	7.00	8.00	8.00	7.00	8.00	8.00	8.00	7.00	8.00	8.00	5.00
21.00	22.50	7.00	6.00	8.00	8.00	7.00	8.00	7.00	8.00	8.00	8.00	8.00	5.00
22.50	24.00	8.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	6.00
24.00	25.50	7.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	5.00
25.50	27.00	7.00	7.00	7.00	8.00	7.00	8.00		8.00	8.00	8.00	8.00	7.00
27.00	28.50	8.00	8.00	8.00	8.00	8.00	8.00		8.00	8.00	8.00	8.00	6.00
28.50	30.00	8.00	8.00	8.00	8.00	7.00			8.00	8.00	8.00	8.00	7.00
30.00	31.50	8.00	7.00	8.00	8.00	8.00			8.00	8.00	8.00	8.00	6.00
31.50	33.00	8.00	7.00	8.00	8.00	8.00			8.00	8.00	8.00	8.00	7.00
33.00	34.50	8.00	7.00	8.00	8.00	8.00			8.00	8.00	8.00	8.00	6.00
34.50	36.00	8.00	8.00	8.00	8.00				8.00	8.00	8.00	8.00	7.00
36.00	37.50	8.00	8.00	8.00	8.00				8.00	8.00	8.00	8.00	
37.50	39.00	8.00	7.00	8.00	8.00				8.00	8.00	8.00	8.00	
39.00	40.50	8.00	8.00	8.00						8.00	8.00	8.00	
40.50	42.00	8.00	7.00	8.00						8.00	8.00	8.00	
42.00	43.50	8.00	7.00							8.00	8.00		
43.50	45.00	8.00	8.00							8.00	8.00		
45.00	46.50	8.00									8.00		
46.50	48.00										8.00		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

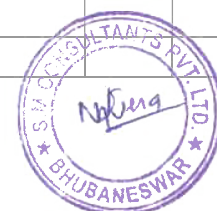


Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		5.00	5.00	5.00		5.00	5.00		5.00	5.00	5.00	
1.50	3.00	5.00	5.00	5.00	5.00		5.00	5.00		5.00	5.00	5.00	
3.00	4.50	5.00	5.00	5.00	5.00		5.00	5.00	5.00	5.00	5.00	5.00	5.00
4.50	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
6.00	7.50	5.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
7.50	9.00	5.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
9.00	10.50	6.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
10.50	12.00	6.00	6.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
12.00	13.50	6.00	6.00	5.00	7.00	5.00	6.00	5.00	5.00	6.00	5.00	5.00	5.00
13.50	15.00	6.00	6.00	5.00	7.00	5.00	6.00	5.00	5.00	6.00	5.00	5.00	5.00
15.00	16.50	6.00	6.00	6.00	8.00	5.00	6.00	6.00	5.00	6.00	5.00	5.00	5.00
16.50	18.00	7.00	6.00	6.00	8.00	5.00	6.00	6.00	5.00	6.00	5.00	5.00	5.00
18.00	19.50	7.00	6.00	6.00	8.00	5.00	6.00	6.00	5.00	6.00	5.00	5.00	5.00
19.50	21.00	7.00	7.00	6.00	8.00	6.00	7.00	6.00	6.00	5.00	6.00	5.00	5.00
21.00	22.50	7.00		5.00	8.00	7.00	6.00	6.00	5.00	5.00	5.00	5.00	5.00
22.50	24.00	7.00		6.00	8.00	5.00	6.00	6.00	5.00	6.00	5.00	6.00	5.00
24.00	25.50	7.00		6.00	8.00	5.00	7.00	6.00	5.00	6.00	5.00	5.00	5.00
25.50	27.00	8.00		6.00	8.00	5.00	7.00	6.00	5.00	5.00	6.00	5.00	5.00
27.00	28.50			6.00	8.00	5.00	7.00	6.00	5.00	6.00	6.00	5.00	5.00
28.50	30.00			6.00	8.00	7.00	7.00	6.00	6.00	5.00	7.00	5.00	5.00
30.00	31.50			6.00	8.00	6.00	7.00	7.00	5.00	6.00	7.00	6.00	5.00
31.50	33.00			6.00	8.00	7.00	7.00	7.00	6.00	6.00	7.00	6.00	5.00
33.00	34.50			7.00	8.00	6.00	7.00	6.00	5.00	6.00	7.00	5.00	5.00
34.50	36.00			7.00	8.00	6.00	7.00	6.00	5.00	7.00	7.00	6.00	5.00
36.00	37.50				8.00	6.00	7.00	7.00	6.00	6.00	6.00	6.00	5.00
37.50	39.00				8.00	7.00	7.00	6.00	6.00	7.00	6.00	6.00	5.00
39.00	40.50				8.00	7.00	7.00	7.00	6.00	7.00	6.00	6.00	5.00
40.50	42.00				8.00	6.00	7.00	6.00	6.00	8.00	7.00		5.00
42.00	43.50				8.00	6.00	7.00	6.00	6.00	7.00	8.00		6.00
43.50	45.00				8.00	6.00	7.00	6.00	6.00	7.00	7.00		6.00
45.00	46.50				8.00	8.00	7.00	6.00	6.00	8.00			5.00
46.50	48.00				8.00	8.00	7.00	6.00	7.00	8.00			6.00
48.00	49.50				8.00	6.00	7.00	7.00	7.00				6.00
49.50	51.00				8.00	8.00	8.00	7.00	7.00				
51.00	52.50					7.00		7.00	6.00				
52.50	54.00							7.00	7.00				
54.00	55.50							6.00	7.00				
55.50	57.00							7.00	8.00				
57.00	58.50							7.00	8.00				
58.50	60.00							7.00	8.00				
60.00	61.50								8.00				
61.50	63.00								8.00				
63.00	64.50								8.00				
64.50	66.00								8.00				



Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
66.00	67.50								8.00				

Depth (m)		Hardness (Mohr Scale)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	5.00	5.00	5.00	6.00	5.00		5.00	5.00	5.00	5.00	5.00	5.00	5.00
1.50	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
3.00	4.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
4.50	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
6.00	7.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
7.50	9.00	5.00	5.00	5.00	5.00	7.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
9.00	10.50	5.00	5.00	5.00	5.00	6.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00
10.50	12.00	6.00	5.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
12.00	13.50	6.00	5.00	5.00	5.00	6.00	5.00	6.00	5.00	5.00	5.00	6.00	5.00	5.00
13.50	15.00	6.00	5.00	5.00	5.00	6.00	5.00	5.00	5.00	5.00	5.00	6.00	5.00	5.00
15.00	16.50	6.00	5.00	5.00	5.00	6.00	6.00	6.00	5.00	5.00	5.00	6.00	5.00	5.00
16.50	18.00	6.00	5.00	6.00	5.00	7.00	5.00	6.00	5.00	5.00	5.00	6.00	5.00	6.00
18.00	19.50	6.00	6.00	7.00	6.00		6.00	5.00	5.00	5.00	5.00	6.00	5.00	6.00
19.50	21.00	6.00	6.00	8.00			7.00	6.00	5.00	6.00	5.00	6.00	5.00	6.00
21.00	22.50	6.00	6.00				7.00	5.00	5.00	7.00	5.00	6.00	6.00	6.00
22.50	24.00	6.00	6.00				6.00	6.00	5.00	7.00	5.00	6.00	6.00	6.00
24.00	25.50	6.00	6.00				7.00	5.00	5.00	7.00	5.00	6.00	5.00	6.00
25.50	27.00	6.00	6.00				7.00	6.00	5.00	6.00	5.00	7.00	6.00	
27.00	28.50	6.00	6.00				6.00	6.00	6.00	6.00	5.00	7.00	6.00	
28.50	30.00	6.00	7.00				7.00	5.00	5.00	6.00	6.00	7.00	6.00	
30.00	31.50	7.00	7.00				7.00	6.00	6.00	6.00	6.00	7.00	6.00	
31.50	33.00	7.00	7.00				7.00	5.00	6.00	7.00	6.00	7.00	6.00	
33.00	34.50	7.00	7.00				6.00	6.00	6.00	7.00	6.00	7.00	7.00	
34.50	36.00	7.00	7.00				7.00	6.00	6.00	7.00	6.00	7.00	7.00	
36.00	37.50	7.00						6.00	7.00	8.00	7.00	7.00	7.00	
37.50	39.00	7.00						6.00	7.00		7.00	7.00	8.00	
39.00	40.50	8.00						7.00	7.00		7.00	7.00		
40.50	42.00	8.00						7.00	8.00		8.00	8.00		
42.00	43.50							8.00				8.00		
43.50	45.00							8.00				8.00		
45.00	46.50							8.00				8.00		
46.50	48.00							8.00				8.00		
48.00	49.50											8.00		
49.50	51.00											8.00		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													



Depth (m)		Hardness (Mohr Scale)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.6 Compression Test

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	----											----
1.50	3.00	----											----
3.00	4.50	----	----								13.91		10.57
4.50	6.00	13.33	17.46				----		10.22	10.26	22.00		10.65
6.00	7.50	13.68	19.21	9.84	----	----	----	9.91	10.53	11.73	22.40	----	11.85
7.50	9.00	21.04	21.45	11.58	9.13	7.85	----	----	10.80	21.87	22.75	----	12.55
9.00	10.50	24.58	23.48	12.32	9.75	8.66	11.81	----	11.04	23.71	24.27	----	28.47
10.50	12.00	25.45	26.31	14.80	10.22	9.87	----	11.19	11.27	25.23	25.89	----	29.26
12.00	13.50	26.24	28.34	14.92	10.41	10.41	15.58	12.51	17.64	27.20	28.03	17.68	36.80
13.50	15.00	26.85	31.24	15.23	10.88	11.04	16.98	27.20	19.78	28.99	29.86	27.20	39.12
15.00	16.50	27.24	32.28	17.03	11.04	11.50	17.60	27.32	21.26	30.39	31.74	28.99	43.44
16.50	18.00	27.45	35.21	17.55	11.70	11.93	20.17	32.22	22.53	33.92	34.27	32.05	44.88
18.00	19.50	28.34	36.29	17.68	18.12	17.55	20.24	32.29	24.06	34.97	35.49	34.40	45.97
19.50	21.00	28.51	37.45	18.85	18.16	21.46	20.71	39.47	26.28	36.37	36.50	36.02	46.37
21.00	22.50	28.96	38.57	19.69	18.69	35.14	21.60	40.30	28.07		37.33	37.68	
22.50	24.00		39.86	19.82	18.90	35.97	22.30	41.52	31.56		38.55	39.29	
24.00	25.50		40.25	21.28	19.73	37.46	26.50	42.44	34.40		39.60	39.46	
25.50	27.00		40.38	22.70	21.00	38.42	28.17	43.13	35.97		40.25		
27.00	28.50		40.69	22.92	21.52	38.72	32.61	43.88	37.63		42.04		
28.50	30.00			23.05	22.05	39.12	32.79	44.66	39.51		43.83		
30.00	31.50			24.59	22.88	40.03	37.37	46.02					
31.50	33.00			26.28	23.84	40.38	38.59	46.71					
33.00	34.50			26.81	24.23	41.17	39.42	46.98					
34.50	36.00			----	25.45	42.04		47.19					
36.00	37.50			31.65	26.50	42.96							
37.50	39.00			32.66	27.29								
39.00	40.50			34.18	28.42								
40.50	42.00			35.01	29.60								
42.00	43.50				30.69								
43.50	45.00				31.85								
45.00	46.50												
46.50	48.00												
48.00	49.50												



Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		----				----	----		----	----	----	----
1.50	3.00		----			----	----	----	----	----	----	----	----
3.00	4.50		----	----		----	11.97	----	----	----	13.32	----	----
4.50	6.00	----	----	11.11	----	----	22.96	----	----	----	13.79	17.51	----
6.00	7.50	----	----	13.32	----	13.27	25.50	9.60	11.97	----	14.80	19.03	----
7.50	9.00	15.74	----	----	15.00	28.60	27.68	----	21.96	----	16.72	20.00	----
9.00	10.50	17.99	----	----	17.21	31.04	30.17	11.13	24.10	10.57	18.60	21.83	24.14
10.50	12.00	----	----	14.80	18.73	33.31	32.83	11.27	25.58	12.44	34.62	23.44	26.06
12.00	13.50	23.23	----	15.43	21.29	35.97	34.62	11.46	28.68	13.02	37.72	25.45	28.25
13.50	15.00	24.23	----	19.73	22.81	38.29	36.89	----	30.91	17.59	40.38	28.12	30.34
15.00	16.50	24.52	----	20.43	23.82	39.07	38.11	12.08	32.96	17.91	43.09	30.21	31.12
16.50	18.00	25.14	----	20.52	27.07	40.38	40.25	18.69	35.63	21.60	46.45	33.35	40.82
18.00	19.50	28.86	----	21.22	27.32	42.04	42.87	19.47	37.72	32.92	49.42	35.14	41.78
19.50	21.00	30.65	22.65	24.89	27.67	45.23	45.14	21.09	41.21	35.49	52.61	37.07	43.27
21.00	22.50	32.57	----	25.30	35.93	48.64	46.85	22.05	44.18	36.60	54.27	38.99	44.23
22.50	24.00	34.23	37.15	29.91	37.20	50.47	48.55	23.51	49.20	54.62	55.53	41.65	46.45
24.00	25.50	36.15	38.59	31.16	38.16	53.44	50.47	24.95	54.62	58.15	56.67	43.88	48.24
25.50	27.00		40.69	----	39.42	56.19	51.74	27.39	56.45	59.94	58.63	46.41	49.90
27.00	28.50		39.86	----	41.39	58.37	53.87	28.13	57.98	60.47	59.86	49.51	51.21
28.50	30.00			33.07	42.92	61.34	56.14	29.38	59.11	61.85	61.25	51.82	53.35
30.00	31.50			38.20	44.84	62.74	58.20	30.50	60.12	62.52	62.34	55.58	55.84
31.50	33.00			38.35	48.16	64.88	59.68	31.55	61.34	63.35	64.40	58.59	57.28
33.00	34.50			39.87	51.78	66.54	61.25	32.37	62.17	63.87	66.05	61.30	59.20
34.50	36.00			41.11	54.88	68.24		33.30	63.87	65.24	67.76	63.13	60.29
36.00	37.50				56.93	69.98		50.38	65.36	66.49	69.15	65.14	62.17
37.50	39.00				57.98	70.00			66.58		70.12	68.15	64.31
39.00	40.50				65.66						71.03	70.07	65.57
40.50	42.00										72.25	71.29	67.32

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
42.00	43.50											73.08	69.59
43.50	45.00											74.31	72.39
45.00	46.50											75.70	73.30
46.50	48.00											76.62	75.66
48.00	49.50												77.06
49.50	51.00												78.72
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	----	----	----	----	----	---	---	---	---	---	---	---
1.50	3.00	----	----	----	----	----	---	---	---	---	---	---	---
3.00	4.50	----	----	----	----	----	---	---	---	---	18.26	---	---
4.50	6.00	23.35	----	----	16.44	----	---	---	---	22.03	---	---	19.16
6.00	7.50	27.72	21.96	----	18.03	----	---	---	---	23.62	---	---	---
7.50	9.00	28.02	23.84	----	23.31	20.40	---	31.22	---	32.96	---	32.00	---
9.00	10.50	33.14	25.93	----	24.23	28.42	---	33.31	---	34.62	---	37.46	---
10.50	12.00	35.67	28.42	24.91	25.50	30.04	30.65	35.54	35.10	35.97	---	38.51	23.51
12.00	13.50	37.24	29.99	28.60	25.80	32.05	32.44	37.24	36.98	37.76	37.28	40.47	24.75
13.50	15.00	38.16	31.35	32.66	30.34	33.44	35.14	39.90	38.11	38.90	38.55	41.61	26.58
15.00	16.50	39.60	32.79	35.10	32.13	35.97	37.72	42.70	39.34	40.47	40.34	43.40	---
16.50	18.00	40.86	34.14	37.42	33.66	38.51	40.30	45.14	41.39	42.04	41.48	45.23	---
18.00	19.50	42.52	36.41	39.86	35.93	40.86	43.05	47.67	43.35	43.75	43.09	46.80	---
19.50	21.00	44.79	38.77	41.69	37.72	42.48	44.88	50.03	46.89	45.97	44.79	48.50	---
21.00	22.50	47.67	40.30	44.66	39.60	44.71	46.58	51.56	49.64	47.85	45.97	50.34	---
22.50	24.00	49.51	41.26	47.24	42.09	46.85	47.81	53.13	51.60	48.90	47.76	52.04	---
24.00	25.50	51.21	43.48	49.64	45.14	48.72	49.90	54.79	54.79	50.77	49.64	54.40	35.09
25.50	27.00	52.61	46.06	50.77	47.72	50.43	51.25		55.71	52.48	50.69	56.06	48.59
27.00	28.50	53.44	48.59	52.43	50.47	51.69	52.61		56.84	54.44	52.74	57.85	50.77
28.50	30.00	56.14	50.29	54.66	52.13	53.61			58.24	55.18	54.62	60.07	52.52
30.00	31.50	57.93	52.13	56.58	53.92	55.36			59.29	56.97	56.19	61.34	55.31
31.50	33.00	59.46	54.05	57.98	55.31	57.45			60.51	58.33	58.20	63.13	57.45
33.00	34.50	62.17	54.75	59.24	57.50	59.07			61.25	60.34	59.90	64.26	59.11

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
34.50	36.00	64.00	57.98	61.21	59.16				62.74	62.34	62.17	66.05	61.25
36.00	37.50	66.05	59.42	62.74	62.17				64.26	64.44	63.87	67.84	
37.50	39.00	67.45	61.82	62.91	63.65				65.71	66.10	65.75	69.29	
39.00	40.50	70.25	64.70	64.09						67.98	67.36	70.94	
40.50	42.00	71.34	67.28	65.71						67.86	68.89	72.21	
42.00	43.50	72.08	69.29							68.16	70.99		
43.50	45.00	73.26	70.07							68.58	72.56		
45.00	46.50	74.44									75.00		
46.50	48.00										76.62		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		---	---	---		---	---		----	----	----	
1.50	3.00	#REF!	---	---	---		---	---		----	----	----	
3.00	4.50	---	---	---	---		---	---	----	----	----	----	---
4.50	6.00	---	---	---	---	---	---	---	----	----	----	----	---
6.00	7.50	---	---	---	31.78	---	---	---	----	----	----	----	---
7.50	9.00	---	---	---	32.87	---	---	---	----	----	----	----	---
9.00	10.50	---	---	27.24	33.97	---	---	---	----	----	----	----	---
10.50	12.00	27.24	---	---	35.01	---	---	---	----	----	----	----	---
12.00	13.50	36.37	---	---	36.28	---	34.27	---	----	----	----	----	---
13.50	15.00	37.33	---	---	38.42	---	34.97	---	----	----	----	----	---
15.00	16.50	38.68	---	---	40.34	---	36.06	24.10	----	----	----	----	---
16.50	18.00	40.34	33.30	32.87	42.61	---	37.24	24.49	----	----	----	----	---
18.00	19.50	41.96	33.84	---	45.14	---	38.59	25.32	----	----	----	----	---
19.50	21.00	43.35	43.88	36.72	48.33	38.59	39.42	25.41	----	----	----	----	---
21.00	22.50	44.84		38.23	49.20	39.51	40.91	32.96	----	----	----	----	---
22.50	24.00	46.02		39.87	50.25	---	41.82	34.14	----	----	----	----	---
24.00	25.50	47.41		42.24	51.21	---	42.52	35.10	----	----	----	24.63	
25.50	27.00	48.24		43.21	51.87	---	48.20	36.28	----	----	25.33	25.57	---

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
27.00	28.50			45.38	52.56	---	50.47	37.46	----	----	35.10	----	---
28.50	30.00			52.65	53.04	51.65	51.74	38.51	----	----	36.41	----	---
30.00	31.50			53.87	53.39	52.61	53.57	39.90	----	----	38.42	----	---
31.50	33.00			56.01	54.62	55.14	54.83	41.82	----	30.78	39.47	----	---
33.00	34.50			57.93	56.19	57.10	56.06	43.48	32.91	30.89	40.78	----	---
34.50	36.00			58.94	56.97	59.07	57.50	44.66	34.23	35.01	41.82	----	---
36.00	37.50				58.98	60.38	59.29	46.19	45.54	35.16	43.79	33.07	---
37.50	39.00				61.25	62.08	61.34	47.46	47.19	43.88	43.98	34.43	---
39.00	40.50				63.00	63.65	63.00	49.16	48.24	44.88	50.56	45.84	---
40.50	42.00				65.57	66.19	64.22	50.34	50.29	45.97	51.21		33.07
42.00	43.50				67.80	69.11	65.84	---	51.69	47.02	52.00		34.43
43.50	45.00				69.02	70.03	66.97	---	53.39	48.07	52.61		35.78
45.00	46.50				71.03	71.64	69.24	---	54.88	49.46			---
46.50	48.00				73.48	73.26	71.51	63.35	56.89	50.43			36.31
48.00	49.50				75.44	74.31	72.78	64.40	58.37				36.94
49.50	51.00				76.23	76.23	76.40	65.57	60.07				
51.00	52.50					78.80		66.84	61.86				
52.50	54.00							67.89	63.39				
54.00	55.50							---	64.79				
55.50	57.00							77.36	65.66				
57.00	58.50							78.72	66.27				
58.50	60.00							----	66.97				
60.00	61.50								67.89				
61.50	63.00								69.11				
63.00	64.50								69.90				
64.50	66.00								70.81				
66.00	67.50								71.38				

Depth (m)		Unconfined Compression Strength (MPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	----	----	---	---	----		----	---	----	----	----	----	----
1.50	3.00	----	----	---	---	----	----	----	---	----	----	----	----	----
3.00	4.50	----	----	---	---	----	----	----	---	----	----	----	----	----
4.50	6.00	----	----	---	---	----	----	----	---	----	----	----	----	----
6.00	7.50	----	----	---	---	----	----	----	---	----	----	----	----	----
7.50	9.00	----	----	---	---	26.41	----	----	---	----	----	----	----	----
9.00	10.50	----	13.68	---	---	28.25	----	----	---	----	----	----	----	----
10.50	12.00	----	----	---	---	29.38	----	----	---	----	----	----	----	----
12.00	13.50	----	16.40	---	---	31.52	----	----	---	----	----	----	----	----
13.50	15.00	----	----	16.40	---	32.79	16.98	----	---	----	----	----	----	----
15.00	16.50	----	----	17.52	---	34.23	17.91	----	---	----	----	18.50	----	----
16.50	18.00	----	----	24.23	---	35.14	18.88	----	---	----	----	19.62	----	21.68
18.00	19.50	----	----	25.02	---		21.92	----	---	----	----	28.38	----	24.45

Depth (m)		Unconfined Compression Strength (MPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
19.50	21.00	----	----	26.28			26.54	----	---	----	----	29.21	----	25.45
21.00	22.50	----	----				28.07	----	---	27.16	----	29.77	20.32	34.97
22.50	24.00	41.69	29.45				28.42	----	---	27.72	----	30.56	21.06	36.02
24.00	25.50	42.00	41.69				29.12	----	---	28.51	----	31.26	----	36.46
25.50	27.00	42.96	42.61				29.34	----	---	28.56	----	31.96	26.33	
27.00	28.50	43.79	42.96				31.26	----	---	----	----	32.66	26.46	
28.50	30.00	44.84	43.79				32.79	----	---	30.46	----	32.96	26.73	
30.00	31.50	46.19	44.97				34.93	----	---	31.28	36.02	33.66	35.10	
31.50	33.00	46.89	45.93				33.54	----	---	39.34	37.72	34.18	36.93	
33.00	34.50	47.37	46.89				33.89	43.96	31.98	41.56	39.38	35.28	38.51	
34.50	36.00	48.29	48.24				35.49	46.06	44.31	44.27	41.17	35.97	39.86	
36.00	37.50	49.03						46.85	46.06	48.02	43.05	36.50	41.65	
37.50	39.00	50.56						48.07	47.24		45.71	37.33	43.70	
39.00	40.50	51.21						49.51	49.20		47.46	38.68		
40.50	42.00	52.61						50.51	50.43		50.43	39.38		
42.00	43.50							51.78				40.78		
43.50	45.00							53.00				43.88		
45.00	46.50							53.79				46.02		
46.50	48.00							54.57				47.41		
48.00	49.50											48.81		
49.50	51.00											50.43		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.7 Point Load Test

Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	0.43											----
1.50	3.00	0.51											----
3.00	4.50	0.61	0.62								----		0.48
4.50	6.00	----	0.87				0.47		----	----	0.68		0.53
6.00	7.50	0.69	0.98	----	0.46	----	0.52	----	0.52	0.62	1.08	0.46	0.58
7.50	9.00	1.03	1.12	0.57	----	----	0.56	0.48	----	1.08	1.16	0.52	
9.00	10.50	1.24	1.18	0.62	----	0.44	----	0.52	0.57	1.19	1.20		1.39

Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
10.50	12.00	1.28	1.33	0.72	----	----	----	0.58	----	1.26	1.29	----	----
12.00	13.50	1.33	1.42	0.75	0.53	0.54	----	----	0.87	1.38	1.36	0.81	1.84
13.50	15.00	1.38	----	0.80	0.57	0.57	0.83	----	0.95	1.45	1.45	1.36	1.93
15.00	16.50	1.42	1.61	0.86	0.59	0.61	0.87	1.36	1.06	1.56	1.57	1.47	2.21
16.50	18.00	1.46	1.78	0.92	0.62	0.63	0.96	1.58	1.15	1.73	1.71	1.59	2.29
18.00	19.50	1.49	1.84	0.95	0.92	0.89	0.98	1.62	1.23	1.85	1.82	1.76	2.36
19.50	21.00	1.52	1.91	1.02	0.96	1.12	1.04	1.95	1.28	1.93	1.89	1.84	2.45
21.00	22.50	1.55	2.02	1.05	0.99	1.75	1.09	2.06	1.37		1.93	1.93	
22.50	24.00		2.13	1.07	1.02	1.82	1.14	2.15	1.56		1.95	2.04	
24.00	25.50		2.16	1.12	1.06	1.88	1.29	2.23	1.68		2.03	2.10	
25.50	27.00		2.21	1.16	1.11	1.93	1.36	2.26	1.82		2.08		
27.00	28.50		2.30	1.23	1.16	1.98	1.62	2.34	1.97		2.13		
28.50	30.00			1.26	1.19	2.04	1.69	2.36	2.08		2.24		
30.00	31.50			1.32	1.23	2.11	1.84	2.45					
31.50	33.00			1.39	1.25	2.15	1.92	2.53					
33.00	34.50			1.43	1.29	2.21	2.01	2.57					
34.50	36.00			1.51	1.32	2.28		2.60					
36.00	37.50			1.63	1.35	2.32							
37.50	39.00			1.74	1.42								
39.00	40.50			1.85	1.46								
40.50	42.00			1.91	1.49								
42.00	43.50				1.54								
43.50	45.00				1.66								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		----				0.49	----		----	----		
1.50	3.00		----			----	0.54	----	----	0.28	----		



Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
3.00	4.50		----	0.47		----	0.59	----	0.46	----	0.66	----	----
4.50	6.00	-----	----	0.56	1.32	----	1.13	0.48	0.57	0.36	0.72	0.84	----
6.00	7.50	0.65	----	0.62	1.43	----	1.26	----	0.62	----	----	0.93	----
7.50	9.00	0.79	----	0.68	0.76	1.42	1.34	----	1.11	0.41	0.86	0.98	1.18
9.00	10.50	0.92	----	0.72	0.84	1.53	1.48	0.53	1.19	0.45	0.91	1.08	1.23
10.50	12.00	0.98	----	----	0.91	1.66	1.62	0.56	1.26	0.63	1.73	1.13	1.29
12.00	13.50	-----	----	----	1.02	1.79	1.73	0.59	1.42	0.67	1.86	1.23	1.42
13.50	15.00	1.25	0.76	0.98	1.12	1.85	1.84	0.62	1.56	0.89	1.93	1.36	1.53
15.00	16.50	-----	0.83	1.09	1.18	1.93	1.93	0.66	1.66	0.93	2.12	1.48	1.61
16.50	18.00	1.28	0.92	----	1.31	2.05	2.03	0.93	1.82	1.08	2.26	1.64	1.98
18.00	19.50	1.45	----	1.12	1.36	2.13	2.14	0.98	1.89	1.63	2.48	1.76	2.08
19.50	21.00	1.54	1.12	1.24	1.42	2.25	2.25	1.06	2.03	1.76	2.57	1.83	2.16
21.00	22.50	1.68	1.26	----	1.82	2.46	2.36	1.12	2.16	1.83	2.69	1.89	2.29
22.50	24.00	1.79	1.81	1.48	1.93	2.58	2.41	1.16	2.48	2.68	2.85	1.96	2.37
24.00	25.50	1.86	1.92	1.56	1.98	2.69	2.58	1.23	2.66	2.83	2.93	2.09	2.45
25.50	27.00		2.04	1.63	2.06	2.82	2.66	1.35	2.78	2.95	3.06	2.23	2.56
27.00	28.50		2.00	1.72	2.14	2.96	2.78	1.39	2.84	3.03	3.11	2.38	2.67
28.50	30.00			----	2.19	3.12	2.84	1.48	2.92	3.14	3.19	2.49	2.82
30.00	31.50			1.94	2.26	3.19	2.96	1.52	2.98	3.26	3.26	2.66	2.87
31.50	33.00			1.99	2.42	3.26	3.08	1.59	3.08	3.32	3.32	2.84	2.95
33.00	34.50			2.05	2.56	3.38	3.21	1.63	3.19	3.35	3.44	2.98	3.06
34.50	36.00			2.16	2.73	3.46		1.69	3.28	3.46	3.58	3.09	3.15
36.00	37.50				2.85	3.62		2.52	3.36	3.58	3.71	3.16	3.23
37.50	39.00				2.96	3.76			3.45		3.78	3.25	3.31
39.00	40.50				3.24						3.85	3.36	3.42
40.50	42.00										3.94	3.45	3.57
42.00	43.50											3.57	3.63
43.50	45.00											3.63	3.82
45.00	46.50											3.78	3.97
46.50	48.00											3.86	4.06
48.00	49.50												4.18
49.50	51.00												4.24
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												



Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	----	----	----	----	----	---	---	---	---	---	---	---
1.50	3.00	----	----	----	----	----	---	---	---	---	0.86	---	---
3.00	4.50	----	----	----	----	----	---	---	---	---	---	---	---
4.50	6.00	1.13	----	----	----	----	---	---	---	---	1.02	---	0.97
6.00	7.50	1.34	1.12	----	----	----	---	---	---	1.22	1.34	---	---
7.50	9.00	1.42	1.19	----	1.13	----	---	1.56	---	1.73	1.44	1.24	---
9.00	10.50	1.61	1.28	1.23	1.19	1.43	---	1.63	---	1.79	1.53	1.83	---
10.50	12.00	1.75	1.38	----	1.26	1.49	1.52	1.79	1.76	1.83	1.61	1.89	---
12.00	13.50	1.84	1.52	1.36	1.34	1.58	1.63	1.84	1.82	1.90	1.83	1.98	---
13.50	15.00	1.89	1.58	1.62	1.48	1.66	1.74	1.95	1.93	2.05	1.96	2.11	1.36
15.00	16.50	1.97	1.63	1.73	1.59	1.79	1.86	2.16	2.06	2.09	2.05	2.24	1.42
16.50	18.00	2.04	1.75	1.82	1.68	1.85	1.97	2.38	2.11	2.15	2.16	2.36	1.51
18.00	19.50	2.13	1.83	1.96	1.79	1.98	2.12	2.49	2.34	2.22	2.25	2.41	1.54
19.50	21.00	2.26	1.95	2.12	1.91	2.12	2.24	2.67	2.39	2.29	2.38	2.48	1.62
21.00	22.50	2.33	2.06	2.23	1.98	2.19	2.35	2.71	2.48	2.34	2.40	2.60	1.68
22.50	24.00	2.45	2.13	2.31	2.11	2.34	2.46	2.77	2.52	2.41	2.46	2.77	1.72
24.00	25.50	2.56	2.17	2.45	2.18	2.46	2.51	2.81	2.59	2.49	2.58	2.81	1.81
25.50	27.00	2.69	2.24	2.53	2.32	2.58	2.63		2.67	2.56	2.61	2.87	2.49
27.00	28.50	2.77	2.38	2.59	2.46	2.71	2.81		2.73	2.61	2.67	2.91	2.53
28.50	30.00	2.89	2.43	2.68	2.57	2.79			2.83	2.69	2.75	3.05	2.66
30.00	31.50	2.97	2.54	2.76	2.66	2.91			2.91	2.73	2.81	3.11	2.76
31.50	33.00	3.09	2.63	2.86	2.79	3.06			3.06	2.84	2.99	3.19	2.82
33.00	34.50	3.23	2.71	2.94	2.84	3.14			3.11	2.92	3.06	3.24	2.96
34.50	36.00	3.32	2.85	3.06	2.93				3.24	3.06	3.16	3.41	3.08
36.00	37.50	3.48	2.93	3.14	3.16				3.29	3.16	3.21	3.48	
37.50	39.00	3.56	3.06	3.22	3.25				3.34	3.29	3.33	3.59	
39.00	40.50	3.64	3.15	3.29						3.42	3.46	3.62	
40.50	42.00	3.73	3.28	3.41						3.28	3.57	3.71	
42.00	43.50	3.79	3.39							3.68	3.61		
43.50	45.00	3.85	3.46							3.90	3.87		
45.00	46.50	4.09									3.91		
46.50	48.00										4.06		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												



Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
66.00	67.50												

Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		---	---	0.88		---	---		----	----	----	
1.50	3.00	---	----	---	---		---	---		----	----	----	
3.00	4.50	1.07	---	---	1.05		---	---	----	----	----	----	---
4.50	6.00	1.11	---	---	1.25	---	---	---	----	----	----	----	---
6.00	7.50	1.15	1.22	---	1.58	---	---	---	----	----	----	----	---
7.50	9.00	1.29	1.31	---	1.62	---	---	---	----	----	----	----	---
9.00	10.50	1.33	1.33	---	1.74	---	---	---	----	----	----	----	---
10.50	12.00	1.38	----	---	1.82	---	---	---	----	----	----	0.79	---
12.00	13.50	1.86	---	---	1.86	---	1.69	---	----	----	----	0.85	---
13.50	15.00	1.92	1.63	1.51	1.94	---	1.72	---	----	----	----	----	---
15.00	16.50	1.96	1.69	1.62	2.11	---	1.79	1.21	----	----	----	----	---
16.50	18.00	1.99	1.73	---	2.18	---	1.82	1.24	----	----	----	0.98	---
18.00	19.50	2.16	1.81	1.72	2.22	1.67	1.91	1.27	----	----	----	----	---
19.50	21.00	2.22	2.11	1.83	2.43	1.72	1.96	1.30	----	----	----	----	---
21.00	22.50	2.27		---	2.51	1.92	2.07	1.65	----	----	----	1.18	---
22.50	24.00	2.34		2.05	2.58	---	2.11	1.72	----	----	1.19	1.22	---
24.00	25.50	2.41		2.18	2.63	---	2.14	1.78	----	----	1.22	1.31	---
25.50	27.00	2.48		2.37	2.67	---	2.43	1.82	----	----	1.38	1.36	---
27.00	28.50			2.44	2.74	---	2.46	1.89	----	----	1.76	----	1.24
28.50	30.00			2.61	2.80	2.53	2.51	1.92	----	----	1.83	----	---
30.00	31.50			2.73	2.83	2.59	2.63	2.04	----	1.34	1.87	----	1.29
31.50	33.00			2.81	2.86	2.68	2.68	2.13	----	1.49	1.92	----	1.42
33.00	34.50			2.89	2.92	2.77	2.72	2.22	1.65	1.51	1.99	----	---
34.50	36.00			3.06	3.02	2.86	2.86	2.28	1.72	1.73	2.08	----	1.53
36.00	37.50				3.07	2.94	2.92	2.37	2.29	1.78	2.15	1.72	1.57
37.50	39.00				3.18	3.11	3.12	2.44	2.38	2.24	2.21	1.76	---
39.00	40.50				3.22	3.21	3.17	2.61	2.43	2.30	2.53	2.37	1.67
40.50	42.00				3.29	3.33	3.21	2.69	2.49	2.34	2.67		1.72
42.00	43.50				3.35	3.46	3.29	---	2.52	2.40	2.73		1.82
43.50	45.00				3.46	3.53	3.34	---	2.61	2.44	2.81		---
45.00	46.50				3.55	3.68	3.41	2.76	2.73	2.51			1.87
46.50	48.00				3.61	3.74	3.56	3.24	2.84	2.57			1.92
48.00	49.50				3.89	3.81	3.61	3.31	2.96				1.95
49.50	51.00				4.12	3.93	3.84	3.37	3.18				
51.00	52.50					4.11		3.46	3.26				
52.50	54.00							3.57	3.33				
54.00	55.50							---	3.41				
55.50	57.00							3.86	3.46				
57.00	58.50							4.01	3.52				

Depth (m)		Point load Strength (MPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
58.50	60.00							---	3.59				
60.00	61.50								3.66				
61.50	63.00								3.71				
63.00	64.50								3.77				
64.50	66.00								3.82				
66.00	67.50								3.89				

Depth (m)		Point load Strength (MPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	----	----	----	---	----		----	---	----	----	----	----	----
1.50	3.00	----	----	----	---	----		----	---	----	----	----	----	----
3.00	4.50	----	----	---	---	----		----	---	----	----	----	----	----
4.50	6.00	----	----	0.45	---	----		----	---	----	----	----	----	----
6.00	7.50	----	----	0.51	0.65	----		----	---	----	----	----	----	----
7.50	9.00	----	----	---	---	1.32		----	---	----	----	----	----	----
9.00	10.50	----	----	---	0.76	1.41	0.72	----	---	----	----	----	----	----
10.50	12.00	----	0.79	0.67	0.80	1.50		----	---	----	0.81	----	----	----
12.00	13.50	----	----	0.72	0.85	1.63	0.80	----	0.84	----	0.84	----	0.81	----
13.50	15.00	----	0.92	0.86	---	1.77	0.89	----	---	----	0.88	----	----	----
15.00	16.50	1.14	1.08	0.92	1.09	1.82	0.92	----	0.92	----	0.92	----	----	0.98
16.50	18.00	1.19	1.19	1.26	1.18	1.86	0.96	----	---	----	0.98	0.98	0.92	1.05
18.00	19.50	1.27	1.24	1.34	1.21		1.02	----	---	----	1.02	1.42	----	1.20
19.50	21.00	1.31	1.39	1.41			1.30	----	---	----	1.09	1.48	----	1.23
21.00	22.50	1.44	1.43				1.38	----	---	1.34	1.15	1.51	0.99	1.71
22.50	24.00	2.06	1.55				1.44	----	1.24	1.38	1.21	1.57	1.05	1.75
24.00	25.50	2.12	2.14				1.49	----	1.29	1.43	1.26	1.63	1.12	1.83
25.50	27.00	2.19	----				1.52	----	1.32	1.48	1.32	1.69	1.32	
27.00	28.50	2.26	2.30				1.56	----	1.37	1.53	----	1.75	1.36	
28.50	30.00	2.31	2.34				1.63	----	1.43	1.57	1.43	1.79	1.42	
30.00	31.50	2.34	2.39				1.71	----	1.51	1.60	1.76	1.82	1.75	
31.50	33.00	2.37	2.43				1.68	----	1.58	1.93	1.83	1.87	1.80	
33.00	34.50	2.43	2.49				1.75	1.73	1.67	2.05	1.92	1.89	1.86	
34.50	36.00	2.49	2.57				1.83	2.34	1.72	2.27	2.02	1.92	1.98	
36.00	37.50	2.52						2.38	2.38	2.41	2.09	1.97	2.12	
37.50	39.00	2.63						2.44	2.42		2.21	2.01	2.21	
39.00	40.50	2.78						2.51	2.51		2.34	2.09		
40.50	42.00	2.84						2.55	2.63		2.46	2.13		
42.00	43.50							2.62				2.18		
43.50	45.00							2.70				2.25		
45.00	46.50							2.72				2.33		
46.50	48.00							2.83				2.41		
48.00	49.50											2.49		
49.50	51.00											2.54		

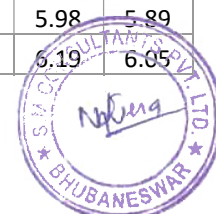
Depth (m)		Point load Strength (MPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.8 Brazilian Test

Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	----											----
1.50	3.00	----											----
3.00	4.50	----	----								1.45		1.06
4.50	6.00	1.43	1.86				0.00		1.06	1.13	2.26		1.17
6.00	7.50	1.48	2.04	----	----	----	0.00	----	----	1.26	2.35	----	1.25
7.50	9.00	2.19	2.28	1.21	----	0.82	0.00	----	1.16	2.34	2.39	1.17	1.36
9.00	10.50	2.56	2.37	1.27	----	0.91	1.23	----	----	3.56	2.52	----	2.93
10.50	12.00	2.72	2.74	1.56	----	1.04	1.42	1.17	1.23	2.78	2.66	----	----
12.00	13.50	2.85	2.89	1.63	1.12	1.09	----	1.29	1.83	2.92	2.93	1.62	3.82
13.50	15.00	2.93	3.23	1.74	1.16	1.16	1.79	2.79	2.04	3.08	3.06	2.85	3.98
15.00	16.50	3.08	3.42	1.83	1.21	1.21	1.83	2.84	2.21	3.25	3.28	3.06	4.52
16.50	18.00	3.14	3.69	1.92	1.25	1.27	2.12	3.28	2.36	3.57	3.64	3.46	4.63
18.00	19.50	3.21	3.85	1.99	1.89	1.84	2.18	3.36	2.48	3.68	3.75	3.62	4.85
19.50	21.00	3.36	3.92	2.12	1.93	2.28	2.26	4.04	2.71	3.89	3.82	3.85	5.12
21.00	22.50	3.48	4.12	2.19	1.98	3.66	2.31	4.16	2.89		3.94	3.93	
22.50	24.00		4.21	2.27	2.05	3.75	2.43	4.28	3.24		4.09	4.18	
24.00	25.50		4.53	2.38	2.14	3.84	2.79	4.37	3.58		4.17	4.26	
25.50	27.00		4.62	2.46	2.23	3.94	2.93	4.45	3.72		4.26		
27.00	28.50		4.70	2.57	2.29	4.06	3.38	4.52	3.86		4.41		
28.50	30.00			2.64	2.36	4.19	3.52	4.69	4.05		4.63		
30.00	31.50			2.78	2.45	4.28	3.89	4.72					
31.50	33.00			2.84	2.57	4.36	3.93	4.84					
33.00	34.50			2.96	2.62	4.52	4.26	4.92					
34.50	36.00			3.17	2.71	4.63		5.06					
36.00	37.50			3.48	2.75	4.75							
37.50	39.00			3.57	2.83								
39.00	40.50			3.71	2.92								
40.50	42.00			3.89	3.04								

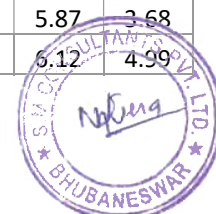
Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
42.00	43.50				3.17								
43.50	45.00				3.26								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		----				1.26	----		----	----	----	----
1.50	3.00		----			----	2.41	----	----	----	----	----	----
3.00	4.50		----	----		----	2.53	----	0.94	----	1.39	----	----
4.50	6.00	-----	----	1.39	----	----	2.68	----	1.16	----	1.45	1.82	----
6.00	7.50	1.43	----	1.45	----	1.08	2.85	1.04	1.27	0.76	1.53	1.97	----
7.50	9.00	1.68	----	----	1.58	2.97	2.93	----	2.29	----	1.76	2.12	----
9.00	10.50	1.92	----	----	1.82	3.16	3.11	1.19	2.53	0.96	1.95	2.23	2.53
10.50	12.00	-----	----	1.56	1.95	3.44	3.36	1.26	2.73	1.32	3.56	2.41	2.69
12.00	13.50	2.46	----	1.68	2.23	3.78	3.61	1.32	2.98	1.45	3.85	2.61	2.87
13.50	15.00	2.68	----	2.06	2.38	3.94	3.85	----	3.19	1.82	4.09	2.93	3.09
15.00	16.50	2.76	1.76	2.16	2.53	4.16	3.96	1.36	3.45	1.88	4.42	3.14	3.26
16.50	18.00	2.84	----	2.29	2.82	4.27	4.09	1.96	3.68	2.34	4.85	3.42	4.21
18.00	19.50	2.97	----	----	2.95	4.34	4.35	1.98	3.85	3.36	5.06	3.65	4.32
19.50	21.00	-----	2.36	2.56	3.04	4.61	4.68	2.15	4.26	3.67	5.38	3.79	4.45
21.00	22.50	3.38	----	----	3.72	4.97	4.82	2.28	4.57	3.82	5.59	3.96	4.53
22.50	24.00	3.65	3.78	3.09	3.85	5.16	4.97	2.46	5.12	5.58	5.74	4.28	4.76
24.00	25.50	3.92	4.03	3.26	3.98	5.48	5.13	2.58	5.63	5.82	5.83	4.46	4.94
25.50	27.00		4.24	3.48	4.08	5.79	5.26	2.92	5.78	6.13	5.96	4.78	5.12
27.00	28.50		4.20	3.62	4.24	5.96	5.53	3.12	5.97	6.21	6.08	5.12	5.23
28.50	30.00			3.85	4.36	6.21	5.79	3.26	6.08	6.29	6.17	5.31	5.44
30.00	31.50			4.12	4.62	6.38	5.86	3.41	6.16	6.41	6.29	5.68	5.67
31.50	33.00			4.23	4.93	6.59	6.06	3.62	6.25	6.47	6.52	5.98	5.89
33.00	34.50			4.38	5.27	6.78	6.24	3.78	6.54	6.53	6.73	6.19	6.05



Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
34.50	36.00			4.52	5.58	6.86		3.85	6.69	6.76	6.85	6.45	6.16
36.00	37.50				5.82	7.13		5.63	6.82	6.85	6.99	6.72	6.36
37.50	39.00				6.06	7.20			7.12		7.12	6.98	6.58
39.00	40.50				6.82						7.18	7.13	6.74
40.50	42.00										7.36	7.26	6.85
42.00	43.50											7.46	7.06
43.50	45.00											7.59	7.32
45.00	46.50											7.64	7.48
46.50	48.00											7.83	7.72
48.00	49.50												7.89
49.50	51.00												8.16
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	----	----	----	----	----	---	---	---	---	---	---	---
1.50	3.00	----	----	----	----	----	---	---	---	---	---	---	---
3.00	4.50	----	----	----	----	----	---	---	---	---	---	---	---
4.50	6.00	2.39	----	----	1.83	----	---	---	---	---	2.41	---	---
6.00	7.50	2.84	2.26	----	----	----	---	---	---	---	2.53	---	---
7.50	9.00	2.96	2.45	----	2.43	2.16	---	3.26	---	3.46	2.67	2.46	---
9.00	10.50	3.37	2.68	----	2.57	2.96	---	3.40	---	3.59	2.81	3.86	---
10.50	12.00	3.68	2.93	2.56	2.68	3.08	3.11	3.59	3.86	3.67	3.11	3.92	---
12.00	13.50	3.74	3.16	2.85	2.76	3.29	3.32	3.82	3.91	3.82	3.92	4.11	---
13.50	15.00	3.95	3.24	3.36	3.09	3.46	3.57	4.27	4.06	3.91	4.16	4.49	---
15.00	16.50	4.11	3.35	3.64	3.32	3.75	3.86	4.35	4.22	4.22	4.58	4.62	---
16.50	18.00	4.19	3.49	3.86	3.45	3.92	4.12	4.49	4.61	4.39	4.79	4.79	---
18.00	19.50	4.36	3.76	4.08	3.71	4.21	4.39	4.81	4.83	4.72	4.83	4.88	---
19.50	21.00	4.59	3.98	4.26	3.83	4.36	4.66	5.34	5.02	4.90	4.96	5.01	---
21.00	22.50	4.86	4.09	4.63	4.08	4.57	4.74	5.62	5.27	5.27	5.08	5.22	---
22.50	24.00	5.03	4.19	4.85	4.33	4.82	4.86	5.92	5.39	5.36	5.26	5.49	---
24.00	25.50	5.18	4.52	5.12	4.68	4.97	5.12	6.37	5.59	5.41	5.47	5.87	3.68
25.50	27.00	5.36	4.76	5.19	4.89	5.14	5.26		5.83	5.52	5.73	5.12	4.99



Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
27.00	28.50	5.45	4.98	5.34	5.13	5.26	5.48		6.21	5.79	5.91	6.46	5.19
28.50	30.00	5.76	5.11	5.56	5.27	5.45			6.30	5.81	6.27	6.97	5.42
30.00	31.50	5.88	5.29	5.78	5.48	5.63			6.57	5.90	6.39	7.05	5.66
31.50	33.00	6.08	5.53	5.93	5.67	5.92			6.83	6.11	6.55	7.11	5.83
33.00	34.50	6.34	5.57	6.07	5.89	6.15			6.91	6.82	6.73	7.43	6.23
34.50	36.00	6.52	5.94	6.19	6.13				7.08	6.94	6.92	7.61	6.59
36.00	37.50	6.78	6.13	6.33	6.35				7.24	7.26	7.08	7.80	
37.50	39.00	6.86	6.26	6.46	6.49				7.53	7.37	7.34	8.03	
39.00	40.50	7.13	6.59	6.53						7.82	7.49	8.16	
40.50	42.00	7.21	6.86	6.73						7.36	7.85	8.37	
42.00	43.50	7.44	7.16							7.60	8.16		
43.50	45.00	7.67	7.29							7.82	8.22		
45.00	46.50	7.89									8.67		
46.50	48.00										8.81		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		---	---	---		---	---		----	----	----	
1.50	3.00	---	---	---	2.01		---	---		----	----	----	
3.00	4.50	---	---	---	---		---	---	----	----	----	----	---
4.50	6.00	1.47	---	---	2.54	---	---	---	----	----	----	----	---
6.00	7.50	---	2.73	---	3.22	---	---	---	----	----	----	----	---
7.50	9.00	2.25	2.96	---	3.51	---	---	---	----	----	----	----	---
9.00	10.50	---	3.08	---	3.67	---	---	---	----	----	----	----	---
10.50	12.00	---	---	---	3.72	---	---	---	----	----	----	----	---
12.00	13.50	3.73	---	---	3.81	---	3.62	---	----	----	----	----	---
13.50	15.00	3.86	---	3.11	3.99	---	3.74	---	----	----	----	----	---
15.00	16.50	3.99	3.39	3.18	4.16	---	3.86	2.56	----	----	----	----	---
16.50	18.00	4.15	3.43	---	4.39	---	3.91	2.62	----	----	----	----	---

Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
18.00	19.50	4.37	3.81	3.57	4.67	3.45	4.10	2.78	----	----	----	----	---
19.50	21.00	4.46	4.44	---	5.21	3.97	4.19	2.83	----	----	----	----	---
21.00	22.50	4.73		---	5.33	4.21	4.35	3.57	----	----	----	2.38	---
22.50	24.00	4.81		4.06	5.46	---	4.62	3.69	----	----	----	----	---
24.00	25.50	4.92		4.39	5.67	---	4.76	3.71	----	----	----	----	---
25.50	27.00	5.12		4.52	5.72	---	4.91	3.79	----	----	2.61	2.69	---
27.00	28.50			4.68	5.89	---	5.21	3.89	----	----	3.65	----	---
28.50	30.00			5.49	6.04	5.33	5.38	4.07	----	----	3.78	----	---
30.00	31.50			5.61	6.27	5.47	5.46	4.39	----	----	3.92	----	2.67
31.50	33.00			5.73	6.33	5.62	5.51	4.61	----	3.15	4.11	----	2.74
33.00	34.50			5.83	6.58	5.83	5.79	4.96	3.42	3.21	4.38	----	---
34.50	36.00			5.99	6.61	5.96	5.91	5.17	3.61	3.66	4.91	----	---
36.00	37.50				6.84	6.11	6.22	5.39	4.68	3.94	5.26	----	3.19
37.50	39.00				7.03	6.48	6.39	5.62	4.92	4.61	5.31	3.56	---
39.00	40.50				7.26	6.55	6.47	5.95	4.97	4.88	5.92	4.93	3.44
40.50	42.00				7.49	6.79	6.59	6.08	5.38	5.12	6.02		3.61
42.00	43.50				7.85	7.28	6.77	---	5.41	5.37	6.11		3.75
43.50	45.00				7.93	7.61	6.83	---	5.59	5.41	6.43		---
45.00	46.50				8.11	7.82	7.51	---	5.68	5.64			3.94
46.50	48.00				8.37	8.17	7.73	6.40	5.77	5.89			4.27
48.00	49.50				8.74	8.22	7.96	6.48	6.02				4.38
49.50	51.00				8.81	8.61	8.22	6.73	6.37				
51.00	52.50					9.14		7.06	6.73				
52.50	54.00							7.24	6.91				
54.00	55.50							---	7.22				
55.50	57.00							8.24	7.63				
57.00	58.50							8.67	7.92				
58.50	60.00							---	8.11				
60.00	61.50								8.21				
61.50	63.00								8.49				
63.00	64.50								8.66				
64.50	66.00								8.71				
66.00	67.50								8.88				

Depth (m)		Tensile Strength (MPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	----	----	---	---	----		----	---	----	----	----	----	----
1.50	3.00	----	----	---	---	----		----	---	----	----	----	----	----
3.00	4.50	----	----	---	---	----		----	---	----	----	----	----	----
4.50	6.00	----	----	---	---	----		----	---	----	----	----	----	----
6.00	7.50	----	----	---	---	----		----	---	----	----	----	----	----
7.50	9.00	----	----	---	---	2.81	----	----	---	----	----	----	----	----
9.00	10.50	----	----	---	1.57	2.89	----	----	---	----	----	----	----	----



Depth (m)		Tensile Strength (MPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
10.50	12.00	----	----	---	1.62	2.96	----	----	---	----	----	----	----	----
12.00	13.50	----	----	---	1.86	3.24	----	----	---	----	----	----	----	----
13.50	15.00	----	----	---	---	3.38	1.82	----	---	----	----	----	----	----
15.00	16.50	----	2.19	1.83	2.23	3.59	1.86	----	---	----	----	----	----	----
16.50	18.00	----	2.33	2.54	2.44	3.72	1.92	----	---	----	2.05	----	----	----
18.00	19.50	----	2.69	2.68	---		2.05	----	---	----	2.15	2.97	----	2.53
19.50	21.00	----	2.83	2.76			2.63	----	---	----	2.20	3.05	----	2.57
21.00	22.50	----	3.05				2.78	----	---	2.83	----	3.24	----	3.56
22.50	24.00	4.22	3.24				2.88	----	---	2.89	2.43	3.41	----	3.81
24.00	25.50	4.31	----				2.96	----	2.49	2.91	2.51	3.61	2.29	3.93
25.50	27.00	4.38	----				3.09	----	2.53	2.96	----	3.72	2.74	
27.00	28.50	4.46	----				3.61	----	2.81	----	----	3.86	----	
28.50	30.00	4.51	----				3.79	----	2.86	3.16	----	3.90	2.82	
30.00	31.50	4.79	5.06				3.99	----	2.91	3.22	3.82	3.97	3.67	
31.50	33.00	4.91	5.12				3.89	----	3.20	4.25	3.91	4.10	3.75	
33.00	34.50	5.38	5.24				3.86	3.64	---	4.31	4.05	4.21	3.91	
34.50	36.00	5.44	5.49				4.02	4.89	3.46	4.54	4.26	4.30	4.22	
36.00	37.50	5.69						5.11	4.91	4.97	4.46	4.35	4.59	
37.50	39.00	5.91						5.74	5.13		4.68	4.39	4.94	
39.00	40.50	6.14						5.92	5.38		4.92	4.48		
40.50	42.00	6.22						6.12	5.49		5.21	4.61		
42.00	43.50							6.38				4.64		
43.50	45.00							6.51				4.73		
45.00	46.50							6.66				7.89		
46.50	48.00							6.79				4.96		
48.00	49.50											5.24		
49.50	51.00											5.61		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.9 Modulus of elasticity test

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	----											----



Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
1.50	3.00	----											----
3.00	4.50	----	----								----		25.10
4.50	6.00	----	----				----		----	----	31.70		----
6.00	7.50	----	29.50	----	----	----	----	----	----	----	32.60	----	28.30
7.50	9.00	31.40	30.40	25.70	----	----	----	----	----	30.80	33.00	----	----
9.00	10.50	32.20	----	26.10	----	----	----	----	----	31.70	33.50	----	33.70
10.50	12.00	32.70	33.20	26.50	----	----	----	----	----	32.40	33.80	----	----
12.00	13.50	33.50	34.10	27.30	25.20	25.20	----	----	28.30	33.20	34.50	27.30	36.50
13.50	15.00	33.90	----	27.60	25.50	----	28.20	33.80	29.40	33.80	34.90	33.70	40.40
15.00	16.50	34.20	35.60	----	26.30	26.30	----	----	31.20	35.20	35.80	34.10	42.20
16.50	18.00	34.70	36.30	28.40	26.80	26.70	30.40	35.50	31.80	35.70	36.20	35.70	43.40
18.00	19.50	35.10	37.50	28.90	28.30	27.80	30.70	35.90	32.30	36.40	36.90	36.30	43.90
19.50	21.00	35.40	37.90	----	28.60	30.20	----	40.20	33.10	37.20	37.20	37.80	44.80
21.00	22.50	----	39.40	29.70	28.90	36.10	----	41.50	33.60		38.40	39.20	
22.50	24.00		40.50	30.10	29.20	36.50	----	41.60	35.20		40.80	40.10	
24.00	25.50		41.80	30.70	29.60	36.30	33.20	42.30	36.30		41.70	40.89	
25.50	27.00		42.30	32.30	31.20	36.80	----	42.70	37.20		42.50		
27.00	28.50		42.65	32.80	31.50	39.40	36.10	43.10	39.40		43.80		
28.50	30.00			33.20	32.30	40.20	----	43.50	40.30		44.20		
30.00	31.50			33.80	32.70	40.80	36.90	43.80					
31.50	33.00			34.20	33.40	40.90	40.10	44.20					
33.00	34.50			34.70	33.80	43.20	40.70	44.60					
34.50	36.00			----	34.20	43.50		45.10					
36.00	37.50			36.20	34.70	44.20							
37.50	39.00			36.50	35.10								
39.00	40.50			37.40	35.50								
40.50	42.00			38.10	35.90								
42.00	43.50				36.30								
43.50	45.00				36.80								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		----				----	----		----	----	----	----
1.50	3.00		----			----	----	----	----	----	----	----	----
3.00	4.50		----	0.00		----	----	----	----	----	25.70	----	----
4.50	6.00	-----	----	25.90	----	----	32.10	----	----	----	26.40	28.30	----
6.00	7.50	-----	----	26.20	----	26.30	33.40	----	26.80	----	27.20	29.40	----
7.50	9.00	-----	----	----	----	33.40	33.80	----	30.50	----	28.40	30.50	----
9.00	10.50	-----	----	----	----	35.20	35.20	27.50	21.30	25.40	29.40	30.70	32.60
10.50	12.00	-----	----	28.30	----	35.70	36.10	----	32.20	27.80	36.20	31.80	33.50
12.00	13.50	32.60	----	----	30.60	36.30	36.50	28.30	33.10	----	38.30	32.70	33.90
13.50	15.00	33.50	----	28.90	30.80	39.20	37.20	----	35.40	28.30	41.40	33.40	34.60
15.00	16.50	-----	----	30.60	31.40	39.80	37.90	----	36.20	----	44.20	35.20	----
16.50	18.00	-----	----	30.90	33.20	41.30	41.30	29.40	36.90	----	44.80	36.70	41.20
18.00	19.50	34.70	----	----	----	41.80	41.60	29.80	38.20	36.40	45.10	36.90	41.80
19.50	21.00	35.80	----	33.20	33.70	43.20	43.20	31.40	41.30	37.20	45.60	38.20	42.60
21.00	22.50	36.20	----	----	36.20	44.10	43.80	32.30	42.70	----	46.30	39.50	43.20
22.50	24.00	36.70	39.20	34.50	38.40	45.30	45.00	----	45.60	46.80	46.60	42.60	44.40
24.00	25.50	-----	39.80	35.80	39.20	45.80	45.30	----	46.30	48.30	47.20	43.10	44.80
25.50	27.00		41.50	----	39.70	46.80	46.30	----	47.20	48.70	48.20	44.20	45.20
27.00	28.50		41.20	----	42.60	48.40	47.20	----	48.20	50.10	48.80	45.30	45.80
28.50	30.00			----	44.30	49.20	47.70	----	49.30	----	49.70	45.70	46.30
30.00	31.50			40.20	44.70	50.30	48.20	----	50.60	52.30	50.20	47.30	46.90
31.50	33.00			40.80	45.10	51.60	48/.6	----	50.80	52.60	50.70	48.60	48.10
33.00	34.50			----	46.20	52.40	50.30	----	51.40	53.20	52.20	50.10	49.60
34.50	36.00			----	46.70	52.60		----	51.80	----	52.90	50.70	50.30
36.00	37.50				47.30	53.10		45.80	52.30	54.40	53.10	52.30	50.70
37.50	39.00				48.20	53.69			53.40		53.80	53.40	51.20
39.00	40.50				50.30						54.10	53.60	51.70
40.50	42.00										54.60	54.20	52.30
42.00	43.50											54.80	52.60
43.50	45.00											55.10	52.90
45.00	46.50											52.30	53.20
46.50	48.00											52.70	53.50
48.00	49.50												54.20
49.50	51.00												54.70
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	----	----	----	----	----	---	---	---	---	---	---	---
1.50	3.00	----	----	----	----	----	---	---	---	---	---	---	---
3.00	4.50	----	----	----	----	----	---	---	---	---	---	---	---
4.50	6.00	31.60	----	----	26.40	----	---	---	---	---	---	---	---
6.00	7.50	33.70	30.60	----	----	----	---	---	---	---	---	---	---
7.50	9.00	34.20	31.40	----	32.40	30.40	---	35.62	---	36.62	---	31.26	---
9.00	10.50	36.40	32.40	----	32.70	34.20	---	36.39	---	37.11	---	37.62	---
10.50	12.00	36.80	32.90	----	33.30	35.40	35.20	37.51	37.65	37.56	---	37.99	---
12.00	13.50	37.30	33.40	33.60	----	35.90	36.10	38.06	38.25	38.06	38.25	40.01	---
13.50	15.00	39.20	33.60	35.70	35.60	36.40	36.80	39.62	38.95	38.64	38.67	40.69	32.61
15.00	16.50	40.20	35.10	36.30	35.90	37.20	37.70	41.29	39.12	40.12	40.16	41.29	---
16.50	18.00	40.70	36.30	37.40	36.40	39.40	41.60	42.68	40.52	41.16	40.59	41.83	---
18.00	19.50	41.60	36.80	40.10	37.80	41.60	42.70	43.29	41.35	41.94	41.82	42.41	---
19.50	21.00	42.30	37.30	40.70	38.20	41.90	43.10	45.01	42.68	42.57	42.05	43.27	---
21.00	22.50	43.50	40.60	42.80	40.40	42.70	44.40	45.68	44.29	43.72	42.53	45.12	---
22.50	24.00	44.60	41.50	43.60	41.60	43.80	44.70	46.28	45.37	43.81	42.91	46.21	---
24.00	25.50	45.30	42.30	44.60	42.40	44.20	45.20	47.63	47.15	45.02	43.86	47.39	---
25.50	27.00	45.80	44.10	45.30	43.80	45.10	45.60		47.62	46.01	45.06	47.81	43.95
27.00	28.50	46.10	44.70	45.80	44.70	45.70	47.90		48.29	47.11	46.15	48.39	45.28
28.50	30.00	47.30	45.30	46.70	45.40	46.30			49.22	47.59	47.12	50.41	46.31
30.00	31.50	48.30	46.10	47.20	46.20	47.20			49.75	48.09	47.83	50.89	47.38
31.50	33.00	49.50	46.80	48.30	46.70	48.30			50.16	48.76	48.99	51.37	48.26
33.00	34.50	50.40	47.30	49.50	48.30	49.50			50.68	50.07	49.76	51.91	49.82
34.50	36.00	51.30	48.20	50.50	49.20				51.29	51.17	51.06	52.66	51.37
36.00	37.50	51.70	49.60	51.20	50.40				52.04	52.03	51.52	53.81	
37.50	39.00	52.40	50.40	51.70	50.80				51.55	53.92	52.55	54.48	
39.00	40.50	53.20	52.30	52.30						54.62	53.26	55.12	
40.50	42.00	53.50	53.20	53.80						54.30	53.91	56.37	
42.00	43.50	53.90	53.70							55.36	55.08		
43.50	45.00	54.30	54.40							55.29	56.32		
45.00	46.50	54.70									57.84		
46.50	48.00										58.29		
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		---	---	---		---	---		----	----	----	
1.50	3.00	---	---	---	---		---	---		----	----	----	
3.00	4.50	---	---	---	---		---	---	----	----	----	----	---
4.50	6.00	---	---	---	---	---	---	---	----	----	----	----	---
6.00	7.50	---	---	---	35.86	---	---	---	----	----	----	----	---
7.50	9.00	---	---	---	36.22	---	---	---	----	----	----	----	---
9.00	10.50	---	---	---	36.91	---	---	---	----	----	----	----	---
10.50	12.00	---	---	---	37.52	---	---	---	----	----	----	----	---
12.00	13.50	37.62	---	---	37.88	---	37.19	---	----	----	----	----	---
13.50	15.00	37.95	---	---	39.21	---	37.48	---	----	----	----	----	---
15.00	16.50	38.92	---	---	40.02	---	37.81	32.11	----	----	----	----	---
16.50	18.00	40.11	---	---	41.13	---	38.22	32.49	----	----	----	----	---
18.00	19.50	40.86	---	---	42.11	---	38.76	32.67	----	----	----	----	---
19.50	21.00	41.23	42.63	---	43.58	39.12	39.51	32.74	----	----	----	----	---
21.00	22.50	42.37		---	44.73	39.84	40.13	36.10	----	----	----	----	---
22.50	24.00	43.05		---	45.39	---	40.53	37.08	----	----	----	----	---
24.00	25.50	43.62		---	45.77	---	41.27	37.51	----	----	----	----	---
25.50	27.00	44.11		41.86	46.03	---	43.96	38.02	----	----	----	----	---
27.00	28.50			42.53	46.51	---	45.16	38.57	----	----	37.66	----	---
28.50	30.00			46.11	46.87	45.83	45.63	38.76	----	----	38.21	----	---
30.00	31.50			46.28	46.93	46.18	46.35	39.21	----	----	38.48	----	---
31.50	33.00			47.11	47.11	47.21	47.11	40.58	----	36.52	39.27	----	---
33.00	34.50			47.67	47.68	48.66	47.68	42.33	----	----	40.26	----	---
34.50	36.00			48.14	47.77	49.27	48.29	42.69	----	37.43	40.64	----	---
36.00	37.50				48.62	50.21	49.16	43.18	43.62	38.21	41.37	----	---
37.50	39.00				50.93	51.66	50.47	43.86	44.21	41.65	----	----	---
39.00	40.50				51.33	52.34	51.22	44.67	44.86	42.18	45.14	----	---
40.50	42.00				52.67	52.76	52.04	45.29	45.12	42.79	45.63		---
42.00	43.50				53.84	54.08	52.52	---	45.86	43.27	46.39		---
43.50	45.00				54.63	55.01	52.81	---	46.11	43.92	47.11		---
45.00	46.50				55.18	55.69	54.37	---	46.58	44.18			---
46.50	48.00				56.39	56.38	55.63	51.86	47.62	45.22			---

Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
48.00	49.50				57.11	57.12	55.91	52.16	48.61				---
49.50	51.00				57.76	57.77	56.84	52.58	50.27				
51.00	52.50					58.38		52.83	50.86				
52.50	54.00							53.16	51.39				
54.00	55.50							---	52.48				
55.50	57.00							58.37	52.55				
57.00	58.50							58.69	52.93				
58.50	60.00							---	53.58				
60.00	61.50								53.91				
61.50	63.00								54.12				
63.00	64.50								54.67				
64.50	66.00								55.28				
66.00	67.50								56.17				

Depth (m)		Modulus of Elasticity (GPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	----	----	---	---	----		----	---	----	----	----	----	----
1.50	3.00	----	----	---	---	----		----	---	----	----	----	----	----
3.00	4.50	----	----	---	---	----		----	---	----	----	----	----	----
4.50	6.00	----	----	---	---	----		----	---	----	----	----	----	----
6.00	7.50	----	----	---	---	----		----	---	----	----	----	----	----
7.50	9.00	----	----	---	---	33.20	----	----	---	----	----	----	----	----
9.00	10.50	----	----	---	---	33.95	----	----	---	----	----	----	----	----
10.50	12.00	----	----	---	---	34.61	----	----	---	----	----	----	----	----
12.00	13.50	----	----	---	---	35.89	----	----	---	----	----	----	----	----
13.50	15.00	----	----	---	---	36.27	----	----	---	----	----	----	----	----
15.00	16.50	----	----	---	---	37.84	----	----	---	----	----	30.21	----	----
16.50	18.00	----	----	32.76	---	38.51	----	----	---	----	----	30.44	----	----
18.00	19.50	----	----	33.54	---		30.15	----	---	----	----	33.85	----	32.60
19.50	21.00	----	----	33.96			32.26	----	---	----	----	34.16	----	33.50
21.00	22.50	----	----				32.95	----	---	33.62	----	34.29	30.21	37.20
22.50	24.00	40.62	----				33.16	----	---	33.89	----	35.11	30.92	38.10
24.00	25.50	40.81	40.59				33.51	----	---	34.11	----	35.67	----	38.40
25.50	27.00	41.22	41.05				34.05	----	---	34.37	----	35.96	32.95	
27.00	28.50	41.73	41.37				36.08	----	---	----	----	36.29	33.02	
28.50	30.00	42.60	41.76				36.38	----	---	35.26	----	36.77	----	
30.00	31.50	42.81	42.58				37.12	----	---	----	37.62	37.46	35.08	
31.50	33.00	43.06	42.87				37.65	----	---	39.67	38.05	37.92	37.49	
33.00	34.50	43.58	43.29				37.29	37.84	---	40.95	38.95	38.02	38.24	
34.50	36.00	43.97	44.15					40.62	36.81	42.84	40.38	38.16	39.67	
36.00	37.50	44.27						43.15	47.68	44.06	41.76	38.29	40.85	
37.50	39.00	45.31						44.09	48.21		42.69	38.57	41.91	
39.00	40.50	45.62						44.81	44.16		43.84	38.79		

Depth (m)		Modulus of Elasticity (GPa)												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
40.50	42.00	46.18						45.19	45.49		45.11	39.27		
42.00	43.50							45.67				40.15		
43.50	45.00							46.31				40.86		
45.00	46.50							46.53				42.67		
46.50	48.00							47.33				43.85		
48.00	49.50											44.15		
49.50	51.00											45.26		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.2.10 Abrasion test

Depth (m)		Abrasion Value											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.00	1.50	0.82											----
1.50	3.00	1.02											----
3.00	4.50	1.08	1.06								----		0.93
4.50	6.00	1.13	1.17				0.79		1.01	1.05	1.34		1.05
6.00	7.50	1.16	1.26	0.96	0.84	----	0.95	0.89	1.03	1.12	1.39	0.92	1.09
7.50	9.00	1.32	1.33	1.04	0.95	0.79	0.98	0.95	1.08	1.33	1.42	0.97	1.14
9.00	10.50	1.42	1.37	1.09	0.98	0.85	1.03	1.05	1.11	1.39	1.45	----	1.47
10.50	12.00	1.46	1.45	1.12	1.02	0.89	----	1.08	1.13	1.46	1.48	----	1.56
12.00	13.50	1.48	1.54	1.16	1.05	0.95	1.17	1.11	1.21	1.51	1.53	1.16	1.76
13.50	15.00	1.52	1.63	1.18	1.07	1.02	1.21	1.48	1.24	1.57	1.58	1.51	1.88
15.00	16.50	1.55	1.67	1.23	1.11	1.06	1.25	1.52	1.32	1.63	1.63	1.56	1.95
16.50	18.00	1.59	1.75	1.26	1.14	1.12	1.32	1.67	1.35	1.67	1.69	1.64	2.02
18.00	19.50	1.62	1.78	1.30	1.23	1.15	1.35	1.71	1.41	1.72	1.73	1.68	2.08
19.50	21.00	1.65	1.83	1.34	1.26	1.31	1.39	1.85	1.47	1.81	1.78	1.79	2.13
21.00	22.50	1.68	1.87	1.38	1.28	1.68	1.41	1.90	1.52		1.82	1.83	
22.50	24.00		1.89	1.41	1.31	1.73	1.44	1.93	1.61		1.85	1.87	
24.00	25.50		1.92	1.45	1.33	1.78	1.46	1.97	1.68		1.88	1.89	
25.50	27.00		1.95	1.46	1.36	1.82	1.54	1.99	1.76		1.95		
27.00	28.50		1.98	1.49	1.37	1.87	1.59	2.03	1.83		1.98		

Depth (m)		Abrasion Value											
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
28.50	30.00			1.52	1.41	1.91	1.64	2.05	1.89		2.03		
30.00	31.50			1.56	1.43	1.93	1.71	2.10					
31.50	33.00			1.59	1.46	1.95	1.76	2.13					
33.00	34.50			1.62	1.49	1.97	1.84	2.16					
34.50	36.00			1.65	1.52	2.02		2.21					
36.00	37.50			1.68	1.54	2.06							
37.50	39.00			1.71	1.57								
39.00	40.50			1.75	1.58								
40.50	42.00			1.79	1.60								
42.00	43.50				1.63								
43.50	45.00				1.66								
45.00	46.50												
46.50	48.00												
48.00	49.50												
49.50	51.00												
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Abrasion Value											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.00	1.50		----				0.84	----		----	----	----	----
1.50	3.00		----			----	0.87	----	0.00	0.68	----	----	----
3.00	4.50		----	0.89		----	0.96	----	0.98	----	1.09	----	----
4.50	6.00	-----	----	1.06	----	----	1.33	0.92	1.03	0.76	1.13	1.21	----
6.00	7.50	1.06	----	1.11	----	0.97	1.42	0.97	1.07	0.83	1.16	1.25	----
7.50	9.00	1.17	----	1.15	1.15	1.54	1.51	----	1.32	----	1.21	1.29	1.33
9.00	10.50	1.23	----	1.18	1.21	1.64	1.61	1.06	1.39	0.92	1.26	1.33	1.42
10.50	12.00	1.31	----	1.21	1.25	1.69	1.64	1.09	1.43	1.06	1.68	1.38	1.48
12.00	13.50	1.38	----	1.24	1.32	1.77	1.68	1.12	1.56	1.11	1.82	1.44	1.57
13.50	15.00	1.42	1.18	1.28	1.35	1.83	1.76	1.13	1.61	1.21	1.88	1.51	1.62
15.00	16.50	1.46	1.21	1.31	1.41	1.88	1.81	1.15	1.64	1.25	1.93	1.58	1.66
16.50	18.00	1.49	1.25	1.34	1.46	1.91	1.86	1.24	1.72	1.32	2.05	1.63	1.86
18.00	19.50	1.56	----	1.36	1.51	1.93	1.94	1.28	1.75	1.61	2.13	1.74	1.93
19.50	21.00	1.64	1.34	1.41	1.53	2.08	1.97	1.33	1.92	1.72	2.21	1.83	1.98

Depth (m)		Abrasion Value											
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
21.00	22.50	1.68	1.46	1.46	1.77	2.13	2.06	1.37	2.02	1.78	2.27	1.87	2.03
22.50	24.00	1.73	1.82	1.53	1.82	2.17	2.11	1.39	2.12	2.26	2.33	1.92	2.08
24.00	25.50	1.79	1.86	1.62	1.86	2.22	2.16	1.42	2.23	2.42	2.37	1.97	2.14
25.50	27.00		1.92	1.65	1.90	2.31	2.21	1.48	2.29	2.46	2.42	2.05	2.19
27.00	28.50		1.90	1.69	1.95	2.45	2.26	1.52	2.35	2.50	2.46	2.14	2.24
28.50	30.00			1.72	1.98	2.52	2.31	1.58	2.44	2.54	2.51	2.18	2.29
30.00	31.50			1.79	2.04	2.58	2.37	1.63	2.49	2.57	2.54	2.26	2.36
31.50	33.00			1.84	2.14	2.63	2.46	1.66	2.53	2.63	2.59	2.34	2.43
33.00	34.50			1.88	2.23	2.68	2.52	1.69	2.57	2.66	2.65	2.44	2.47
34.50	36.00			1.93	2.31	2.71		1.73	2.61	2.74	2.69	2.52	2.52
36.00	37.50				2.39	2.75		2.23	2.65	2.78	2.73	2.59	2.57
37.50	39.00				2.43	2.80			2.69		2.76	2.65	2.62
39.00	40.50				2.61						2.79	2.71	2.66
40.50	42.00										2.83	2.78	2.71
42.00	43.50											2.82	2.74
43.50	45.00											2.86	2.78
45.00	46.50											2.91	2.83
46.50	48.00											2.97	2.87
48.00	49.50												2.91
49.50	51.00												2.96
51.00	52.50												
52.50	54.00												
54.00	55.50												
55.50	57.00												
57.00	58.50												
58.50	60.00												
60.00	61.50												
61.50	63.00												
63.00	64.50												
64.50	66.00												
66.00	67.50												

Depth (m)		Abrasion Value											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.00	1.50	----	----	----	----	----	---	---	---	---	---	---	---
1.50	3.00	----	----	----	----	----	---	---	---	---	1.16	---	---
3.00	4.50	----	----	----	----	----	---	---	---	---	1.23	---	---
4.50	6.00	1.39	----	----	1.17	----	---	---	---	1.35	1.32	---	1.27
6.00	7.50	1.48	1.33	----	1.23	----	---	---	---	1.38	1.37	---	---
7.50	9.00	1.53	1.38	----	1.36	1.32	---	1.61	---	1.62	1.39	1.33	---
9.00	10.50	1.65	1.46	1.19	1.42	1.54	---	1.72	---	1.70	1.42	1.82	---
10.50	12.00	1.76	1.53	1.34	1.49	1.61	1.63	1.76	1.76	1.76	1.61	1.84	1.32
12.00	13.50	1.81	1.59	1.43	1.53	1.66	1.68	1.78	1.79	1.79	1.82	1.92	1.43



Depth (m)		Abrasion Value											
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
13.50	15.00	1.86	1.64	1.61	1.61	1.72	1.73	1.83	1.82	1.86	1.86	1.94	1.49
15.00	16.50	1.90	1.68	1.74	1.66	1.78	1.81	1.97	1.86	1.92	1.91	1.98	1.52
16.50	18.00	1.93	1.74	1.83	1.72	1.84	1.87	2.06	1.93	1.98	1.93	2.06	1.58
18.00	19.50	1.97	1.79	1.87	1.76	1.92	1.93	2.11	1.96	2.01	1.98	2.11	1.61
19.50	21.00	2.04	1.84	1.93	1.81	1.97	1.98	2.23	2.08	2.06	2.03	2.18	1.65
21.00	22.50	2.12	1.91	1.97	1.88	2.03	2.06	2.27	2.18	2.09	2.06	2.21	1.70
22.50	24.00	2.16	1.94	2.03	1.93	2.08	2.09	2.31	2.28	2.13	2.12	2.28	1.74
24.00	25.50	2.23	1.99	2.08	2.06	2.13	2.14	2.34	2.31	2.21	2.17	2.33	1.76
25.50	27.00	2.26	2.03	2.15	2.12	2.22	2.24		2.36	2.26	2.22	2.37	1.11
27.00	28.50	2.32	2.11	2.26	2.24	2.28	2.28		2.39	2.30	2.28	2.39	2.21
28.50	30.00	2.39	2.17	2.31	2.31	2.31			2.42	2.37	2.31	2.52	2.28
30.00	31.50	2.44	2.24	2.39	2.36	2.36			2.48	2.39	2.37	2.54	2.36
31.50	33.00	2.48	2.31	2.42	2.39	2.42			2.51	2.40	2.40	2.58	2.40
33.00	34.50	2.53	2.36	2.47	2.43	2.48			2.56	2.46	2.48	2.63	2.47
34.50	36.00	2.59	2.42	2.53	2.47				2.58	2.53	2.53	2.67	2.52
36.00	37.50	2.66	2.48	2.57	2.56				2.62	2.58	2.60	2.68	
37.50	39.00	2.71	2.53	2.61	2.63				2.66	2.67	2.66	2.73	
39.00	40.50	2.75	2.58	2.66						2.69	2.69	2.76	
40.50	42.00	2.79	2.68	2.69						2.70	2.72	2.79	
42.00	43.50	2.83	2.73							2.68	2.76		
43.50	45.00	2.85	2.79							2.69	2.79		
45.00	46.50	2.92									2.85		
46.50	48.00										2.88		
48.00	49.50	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
49.50	51.00	----	----	----	----	----	---	---	---	---	---	---	---
51.00	52.50	----	----	----	----	----	---	---	---	---	1.16	---	---
52.50	54.00	----	----	----	----	----	---	---	---	---	1.23	---	---
54.00	55.50	1.39	----	----	1.17	----	---	---	---	1.35	1.32	---	1.27
55.50	57.00	1.48	1.33	----	1.23	----	---	---	---	1.38	1.37	---	---
57.00	58.50	1.53	1.38	----	1.36	1.32	---	1.61	---	1.62	1.39	1.33	---
58.50	60.00	1.65	1.46	1.19	1.42	1.54	---	1.72	---	1.70	1.42	1.82	---
60.00	61.50	1.76	1.53	1.34	1.49	1.61	1.63	1.76	1.76	1.76	1.61	1.84	1.39
61.50	63.00	1.81	1.59	1.43	1.53	1.66	1.68	1.78	1.79	1.79	1.82	1.92	1.43
63.00	64.50	1.86	1.64	1.61	1.61	1.72	1.73	1.83	1.82	1.86	1.86	1.94	1.49
64.50	66.00	1.90	1.68	1.74	1.66	1.78	1.81	1.97	1.86	1.92	1.91	1.98	1.52
66.00	67.50	1.93	1.74	1.83	1.72	1.84	1.87	2.06	1.93	1.98	1.93	2.06	1.58

Depth (m)		Abrasion Value											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
0.00	1.50		---	---	---		---	---		----	----	----	
1.50	3.00	---	---	---	---		---	---		----	----	----	
3.00	4.50	---	---	---	---		---	---		----	----	----	
4.50	6.00	---	---	---	---	---	---	---		----	----	----	



Depth (m)		Abrasion Value											
Top	Bottom	BH37	BH38	BH39	BH40	BH41	BH42	BH43	BH44	BH45	BH46	BH47	BH48
6.00	7.50	---	1.43	---	1.62	---	---	---	---	---	---	---	---
7.50	9.00	---	1.48	---	1.67	---	---	---	---	---	---	---	---
9.00	10.50	1.48	1.49	1.48	1.72	---	---	---	---	---	---	---	---
10.50	12.00	1.52	---	---	1.75	---	---	---	---	---	---	1.16	---
12.00	13.50	1.77	---	---	1.78	---	1.73	---	---	---	---	1.19	---
13.50	15.00	1.79	1.63	1.61	1.80	---	1.74	---	---	---	---	---	---
15.00	16.50	1.84	1.69	1.67	1.91	---	1.76	1.41	---	---	---	---	---
16.50	18.00	1.94	1.70	1.69	1.96	---	1.82	1.44	---	---	---	1.28	---
18.00	19.50	1.97	1.71	1.72	2.06	1.68	1.86	1.46	---	---	---	---	---
19.50	21.00	2.01	1.94	1.83	2.11	1.79	1.89	1.47	---	---	---	---	---
21.00	22.50	2.04		1.91	2.16	1.87	1.91	1.63	---	---	---	1.36	---
22.50	24.00	2.07		1.97	2.21	---	1.92	1.71	---	---	1.40	1.41	---
24.00	25.50	2.13		2.12	2.23	---	1.98	1.76	---	---	1.42	1.58	---
25.50	27.00	2.18		2.21	2.27	---	2.16	1.78	---	---	1.45	1.46	---
27.00	28.50			2.29	2.29	---	2.21	1.80	---	---	1.76	---	1.39
28.50	30.00			2.63	2.30	2.23	2.28	1.81	---	---	1.78	---	---
30.00	31.50			2.69	2.31	2.28	2.30	1.84	---	1.47	1.83	---	1.46
31.50	33.00			2.75	2.33	2.36	2.33	1.93	---	1.61	1.87	---	1.49
33.00	34.50			2.89	2.36	2.41	2.37	1.97	1.64	1.62	1.91	---	---
34.50	36.00			2.91	2.37	2.49	2.40	2.02	1.68	1.75	1.94	---	1.59
36.00	37.50				2.47	2.51	2.47	2.07	2.06	1.77	1.02	1.70	1.62
37.50	39.00				2.52	2.55	2.52	2.13	2.09	1.98	1.03	1.73	---
39.00	40.50				2.58	2.60	2.58	2.17	2.11	2.01	1.06	2.08	1.64
40.50	42.00				2.66	2.67	2.63	2.20	2.21	2.06	1.08		1.68
42.00	43.50				2.70	2.73	2.66	2.21	2.24	2.09	1.12		1.73
43.50	45.00				2.73	2.75	2.69	2.23	2.28	2.12	1.15		1.76
45.00	46.50				2.76	2.77	2.73	2.25	2.31	2.18			1.78
46.50	48.00				2.81	2.80	2.76	2.59	2.36	2.21			1.80
48.00	49.50				2.85	2.83	2.78	2.60	2.43				1.84
49.50	51.00				2.88	2.87	2.86	2.62	2.50				
51.00	52.50					2.92		2.67	2.53				
52.50	54.00							2.69	2.59				
54.00	55.50							2.71	2.61				
55.50	57.00							2.87	2.66				
57.00	58.50							2.89	2.68				
58.50	60.00							2.90	2.70				
60.00	61.50								2.71				
61.50	63.00								2.73				
63.00	64.50								2.74				
64.50	66.00								2.76				
66.00	67.50								2.78				

Depth (m)		Abrasion Value												
Top	Bottom	BH49	BH50	BH51	BH52	BH53	BH54	BH55	BH56	BH57	BH58	BH59	BH60	BH61
0.00	1.50	----	----	---	---	----		----	---	----	----	----	----	----
1.50	3.00	----	----	---	---	----	----	----	---	----	----	----	----	----
3.00	4.50	----	----	---	---	----	----	----	---	----	----	----	----	----
4.50	6.00	----	----	0.89	---	----	----	----	---	----	----	----	----	----
6.00	7.50	----	----	1.02	1.08	----	----	----	---	----	----	----	----	----
7.50	9.00	----	----	---	---	1.49	----	----	---	----	----	----	----	----
9.00	10.50	----	1.09	---	1.14	1.53	1.12	----	---	----	----	----	----	----
10.50	12.00	----	1.12	1.08	1.16	1.58	----	----	---	----	1.19	----	----	----
12.00	13.50	----	1.16	1.13	1.19	1.63	1.17	----	1.18	----	1.21	----	1.18	----
13.50	15.00	----	1.24	1.18	---	1.67	1.20	----	---	----	1.23	----	----	----
15.00	16.50	1.18	1.32	1.23	1.31	1.72	1.23	----	1.27	----	1.27	1.25	----	1.32
16.50	18.00	1.31	1.38	1.42	1.40	1.75	1.27	----	---	----	1.29	1.27	1.24	1.34
18.00	19.50	1.42	1.42	1.46	1.42		2.29	----	---	----	1.31	1.50	----	1.43
19.50	21.00	1.61	1.47	1.49			1.46	----	---	----	1.33	1.53	----	1.46
21.00	22.50	1.72	1.52				1.49	----	---	1.49	1.37	1.57	1.33	1.75
22.50	24.00	1.93	1.56				1.51	----	1.40	1.52	1.40	1.62	1.36	1.77
24.00	25.50	1.95	1.92				1.54	----	1.43	1.56	1.42	1.65	1.39	1.78
25.50	27.00	1.97	1.94				1.58	----	1.44	1.57	1.46	1.67	1.48	
27.00	28.50	2.01	1.97				1.64	----	1.46	1.59	1.50	1.69	1.50	
28.50	30.00	2.04	2.00				1.67	----	1.49	1.61	1.52	1.70	1.51	
30.00	31.50	2.08	2.05				1.74	----	1.53	1.63	1.79	1.72	1.76	
31.50	33.00	2.10	2.07				1.76	----	1.62	1.87	1.83	1.73	1.78	
33.00	34.50	2.13	2.09				1.73	1.76	1.66	1.94	1.87	1.77	1.84	
34.50	36.00	2.15	2.14				1.79	2.08	1.69	2.02	1.92	1.78	1.88	
36.00	37.50	2.17						2.10	2.09	2.16	1.96	1.80	1.93	
37.50	39.00	2.21						2.13	2.13		2.06	1.83	1.99	
39.00	40.50	2.23						2.18	1.18		2.12	1.85		
40.50	42.00	2.24						2.22	2.24		2.23	1.88		
42.00	43.50							2.24				1.91		
43.50	45.00							2.28				1.92		
45.00	46.50							2.29				2.06		
46.50	48.00							2.33				2.09		
48.00	49.50											2.12		
49.50	51.00											2.20		
51.00	52.50													
52.50	54.00													
54.00	55.50													
55.50	57.00													
57.00	58.50													
58.50	60.00													
60.00	61.50													
61.50	63.00													
63.00	64.50													
64.50	66.00													
66.00	67.50													

5.1.3 Annexure- C (RMR LOGS)

Tunnel:		BH:		T5BH01		TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
4.5	6.0	2	3	5	4	4	1	4	3	16	4	-2	28	Class 4 (POOR)
6.0	7.5	2	3	5	4	4	1	4	3	16	4	-2	28	Class 4 (POOR)
7.5	9.0	2	8	15	4	6	6	6	6	28	15	-2	66	Class 2(GOOD)
9.0	10.5	2	8	8	4	6	6	6	6	28	15	-2	59	Class 3(FAIR)
10.5	12.0	4	3	8	4	6	6	6	6	28	15	-2	56	Class 3(FAIR)
12.0	13.5	4	13	15	4	6	6	6	6	28	15	-2	73	Class 2(GOOD)
13.5	15.0	4	13	8	4	4	6	6	6	26	15	-2	64	Class 2(GOOD)
15.0	16.5	4	3	8	4	4	6	6	6	26	15	-2	54	Class 3(FAIR)
16.5	18.0	4	3	5	4	4	6	6	6	26	15	-2	51	Class 3(FAIR)
18.0	19.5	4	3	5	2	4	6	6	6	24	15	-2	49	Class 3(FAIR)
19.5	21.0	4	8	5	4	4	6	6	6	26	15	-2	56	Class 3(FAIR)
21.0	22.5	4	3	5	2	4	6	6	6	24	15	-2	49	Class 3(FAIR)

Tunnel:		BH:		T5BH2									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
4.5	6.0	2	3	5	4	4	5	4	3	20	7	-5	32	Class 4 (POOR)

Tunnel:		BH:		T5BH2									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
6.0	7.5	2	3	5	4	4	5	4	3	20	15	-5	40	Class 4 (POOR)
7.5	9.0	2	3	8	4	4	5	6	5	24	15	-5	47	Class 3(FAIR)
9.0	10.5	2	3	8	4	4	5	4	5	22	15	-5	45	Class 3(FAIR)
10.5	12.0	4	8	8	4	4	5	6	5	24	15	-5	54	Class 3(FAIR)
12.0	13.5	4	3	10	4	5	5	6	6	26	15	-5	53	Class 3(FAIR)
13.5	15.0	4	3	10	4	5	5	6	6	26	15	-5	53	Class 3(FAIR)
15.0	16.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
16.5	18.0	4	8	15	4	6	6	6	6	28	15	-5	65	Class 2(GOOD)
18.0	19.5	4	8	15	4	6	6	6	6	28	15	-5	65	Class 2(GOOD)
19.5	21.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
21.0	22.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
22.5	24.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
24.0	25.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
27.0	28.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)

Tunnel:		BH:		T5BH3									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	4	4	5	4	3	20	7	-2	33	Class 4 (POOR)
6.0	7.5	2	3	5	4	4	5	4	3	20	15	-2	43	Class 3(FAIR)
7.5	9.0	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3(FAIR)
9.0	10.5	2	3	8	4	4	5	4	5	22	15	-2	48	Class 3(FAIR)
10.5	12.0	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3(FAIR)
12.0	13.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
13.5	15.0	2	8	10	4	5	5	6	6	26	15	-2	59	Class 3(FAIR)

Tunnel:		BH:		T5BH3									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
16.5	18.0	2	3	15	4	6	6	6	6	28	15	-2	61	Class 2(GOOD)
18.0	19.5	2	8	15	4	6	6	6	6	28	15	-2	66	Class 2(GOOD)
19.5	21.0	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
21.0	22.5	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
22.5	24.0	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
24.0	25.5	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3(FAIR)
25.5	27.0	2	8	8	4	4	5	4	5	22	15	-2	53	Class 3(FAIR)
27.0	28.5	2	8	8	4	4	5	6	5	24	15	-2	55	Class 3(FAIR)
28.5	30.0	2	8	10	4	5	5	6	6	26	15	-2	59	Class 3(FAIR)
30.0	31.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
31.5	33.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
33.0	34.5	4	8	15	4	6	6	6	6	28	15	-2	68	Class 2(GOOD)
34.5	36.0	0	3	15	4	6	6	6	6	28	15	-2	59	Class 3(FAIR)
36.0	37.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
37.5	39.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
39.0	40.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
40.5	42.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)

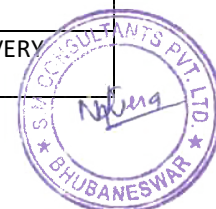
Tunnel:		BH:		T5BH4									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	15	-2	21	Class 4 (POOR)
6.0	7.5	0	3	5	2	4	3	4	3	16	15	-2	37	Class 4 (POOR)
7.5	9.0	2	3	5	2	4	3	4	3	16	15	-2	39	Class 4 (POOR)
9.0	10.5	2	3	5	2	4	3	4	3	16	15	-2	39	Class 4 (POOR)

Tunnel:		BH:		T5BH4									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
10.5	12.0	2	3	5	2	4	3	4	3	16	15	-2	39	Class 4 (POOR)
12.0	13.5	2	3	5	2	4	3	4	3	16	15	-2	39	Class 4 (POOR)
13.5	15.0	2	3	5	2	4	3	4	3	16	15	-2	39	Class 4 (POOR)
15.0	16.5	2	3	5	2	4	3	4	5	18	15	-2	41	Class 3 (FAIR)
16.5	18.0	2	3	5	2	4	3	4	5	18	15	-2	41	Class 3 (FAIR)
18.0	19.5	2	3	5	4	4	5	4	5	22	15	-2	45	Class 3 (FAIR)
19.5	21.0	2	3	5	4	4	5	4	5	22	15	-2	45	Class 3 (FAIR)
21.0	22.5	2	8	5	4	4	5	4	5	22	15	-2	50	Class 3 (FAIR)
22.5	24.0	2	8	8	6	6	6	6	6	30	15	-2	61	Class 2 (GOOD)
24.0	25.5	2	3	8	6	6	6	6	6	30	15	-2	56	Class 3 (FAIR)
25.5	27.0	2	3	8	6	6	6	6	6	30	15	-2	56	Class 3 (FAIR)
27.0	28.5	2	3	10	6	6	6	6	6	30	15	-2	58	Class 3 (FAIR)
28.5	30.0	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2 (GOOD)
30.0	31.5	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
31.5	33.0	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2 (GOOD)
33.0	34.5	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
34.5	36.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
36.0	37.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
37.5	39.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
39.0	40.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
40.5	42.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
42.0	43.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
43.5	45.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2 (GOOD)

Tunnel: 05		BH-10		T5BH5									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	1	1	2	1	5	4	-2	15	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	1	1	2	1	5	4	-2	15	Class 5 (VERY POOR)

Tunnel: 05			BH-10		T5BH5								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
3.0	4.5	2	3	5	0	1	1	2	1	5	4	-2	17	Class 5 (VERY POOR)
4.5	6.0	2	3	8	0	1	1	2	3	7	10	-2	28	Class 4 (POOR)
6.0	7.5	2	3	8	1	5	1	2	3	12	10	-2	33	Class 4 (POOR)
7.5	9.0	2	8	8	1	5	3	4	5	18	10	-2	44	Class 3 (FAIR)
9.0	10.5	2	3	8	1	5	3	4	5	18	10	-2	39	Class 4 (POOR)
10.5	12.0	4	3	8	1	5	3	4	5	18	15	-2	46	Class 3 (FAIR)
12.0	13.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
13.5	15.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
15.0	16.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
16.5	18.0	4	3	8	4	5	5	4	6	24	15	-2	52	Class 3 (FAIR)
18.0	19.5	4	3	8	4	5	5	4	6	24	10	2	51	Class 3 (FAIR)
19.5	21.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
21.0	22.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
22.5	24.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
24.0	25.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
27.0	28.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
28.5	30.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)

Tunnel:		BH:			T5BH6								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)



Tunnel:		BH:		T5BH6									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
4.5	6.0	0	3	5	0	0	0	0	0	0	15	-5	18	Class 5 (VERY POOR)
6.0	7.5	0	3	5	2	4	3	4	3	16	15	-5	34	Class 4 (POOR)
7.5	9.0	0	3	5	2	4	3	4	3	16	15	-5	34	Class 4 (POOR)
9.0	10.5	2	3	5	2	4	3	4	3	16	15	-5	36	Class 4 (POOR)
10.5	12.0	0	3	5	2	4	3	4	3	16	15	-5	34	Class 4 (POOR)
12.0	13.5	2	3	5	2	4	3	4	3	16	15	-5	36	Class 4 (POOR)
13.5	15.0	2	3	5	2	4	3	4	3	16	15	-5	36	Class 4 (POOR)
15.0	16.5	2	3	5	2	4	3	4	5	18	15	-5	38	Class 4 (POOR)
16.5	18.0	2	3	5	2	4	3	4	5	18	15	-5	38	Class 4 (POOR)
18.0	19.5	2	3	5	4	4	5	4	5	22	15	-5	42	Class 3 (FAIR)
19.5	21.0	2	3	5	4	4	5	4	5	22	15	-5	42	Class 3 (FAIR)
21.0	22.5	2	3	5	4	4	5	4	5	22	15	-5	42	Class 3 (FAIR)
22.5	24.0	2	3	8	6	6	6	6	6	30	15	-5	53	Class 3 (FAIR)
24.0	25.5	4	3	8	6	6	6	6	6	30	15	-5	55	Class 3 (FAIR)
25.5	27.0	4	3	8	6	6	6	6	6	30	15	-5	55	Class 3 (FAIR)
27.0	28.5	4	8	10	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
28.5	30.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
30.0	31.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)
31.5	33.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)
33.0	34.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2 (GOOD)

Tunnel:		BH:		T5BH07									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	2	3	5	2	1	1	2	3	9	4	-5	18	Class 5 (VERY POOR)
7.5	9.0	0	3	5	2	1	3	2	6	14	4	-5	21	Class 4 (POOR)
9.0	10.5	0	3	8	2	1	3	2	6	14	4	-5	24	Class 4 (POOR)

Tunnel:		BH:		T5BH07									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	2	3	8	2	4	3	2	6	17	10	-5	35	Class 4 (POOR)
12.0	13.5	2	3	8	4	4	5	6	6	25	10	-5	43	Class 3 (FAIR)
13.5	15.0	4	8	10	4	4	5	6	6	25	15	-5	57	Class 3 (FAIR)
15.0	16.5	4	3	10	6	6	6	6	6	30	15	-5	57	Class 3 (FAIR)
16.5	18.0	4	3	10	6	6	6	6	6	30	15	-5	57	Class 3 (FAIR)
18.0	19.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
19.5	21.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
21.0	22.5	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
22.5	24.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
24.0	25.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
25.5	27.0	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
27.0	28.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
28.5	30.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
30.0	31.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)
31.5	33.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
33.0	34.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)
34.5	36.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)

Tunnel:		BH:		T5BH8		TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	0	5	0	0	0	0	0	0	0	-2	3	Class 5 (VERY POOR)
1.5	3.0	0	0	5	0	0	0	0	0	0	0	-2	3	Class 5 (VERY POOR)
3.0	4.5	0	0	5	0	0	0	0	0	0	0	-2	3	Class 5 (VERY POOR)
4.5	6.0	2	0	5	0	0	0	0	0	0	0	-2	5	Class 5 (VERY POOR)
6.0	7.5	2	0	8	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)
7.5	9.0	2	0	8	4	1	5	2	3	15	4	-2	27	Class 4 (POOR)
9.0	10.5	2	0	8	4	1	5	2	3	15	4	-2	27	Class 4 (POOR)

Tunnel:		BH:			T5BH8		TOTAL DEPTH:					RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	2	0	8	4	1	5	2	3	15	4	-2	27	Class 4 (POOR)
12.0	13.5	2	2	8	4	1	5	2	3	15	4	-2	29	Class 4 (POOR)
13.5	15.0	2	2	8	4	1	5	2	3	15	4	-2	29	Class 4 (POOR)
15.0	16.5	2	2	8	4	1	5	2	3	15	4	-2	29	Class 4 (POOR)
16.5	18.0	2	4	8	6	5	5	6	6	28	4	-2	44	Class 3(FAIR)
18.0	19.5	2	4	8	6	5	5	6	6	28	10	-2	50	Class 3(FAIR)
19.5	21.0	4	4	10	6	6	6	6	6	30	10	-2	56	Class 3(FAIR)
21.0	22.5	4	4	10	6	6	6	6	6	30	10	-2	56	Class 3(FAIR)
22.5	24.0	4	4	10	6	6	6	6	6	30	10	-2	56	Class 3(FAIR)
24.0	25.5	4	4	10	6	6	6	6	6	30	10	-2	56	Class 3(FAIR)
25.5	27.0	4	4	10	6	6	6	6	6	30	10	-2	56	Class 3(FAIR)
27.0	28.5	4	7	10	6	6	6	6	6	30	10	-2	59	Class 3(FAIR)
28.5	30.0	4	4	10	6	6	6	6	6	30	10	-2	56	Class 3(FAIR)

Tunnel:		BH:		T5BH09									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
6.0	7.5	2	3	8	4	0	0	0	0	4	4	-5	16	Class 5 (VERY POOR)
7.5	9.0	2	8	8	6	6	6	6	6	30	15	-5	58	Class 3(FAIR)
9.0	10.5	2	8	8	6	6	6	6	6	30	15	-5	58	Class 3(FAIR)
10.5	12.0	4	8	8	6	6	6	6	6	30	15	-5	60	Class 3(FAIR)
12.0	13.5	4	13	8	6	6	6	6	6	30	15	-5	65	Class 2(GOOD)
13.5	15.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
15.0	16.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)
16.5	18.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
18.0	19.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)

Tunnel:		BH:		T5BH09									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
19.5	21.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)

Tunnel: 05			BH-10										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	1	1	2	1	5	4	-2	15	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	1	1	2	1	5	4	-2	15	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	1	1	2	1	5	4	-2	17	Class 5 (VERY POOR)
4.5	6.0	2	3	8	0	1	1	2	3	7	10	-2	28	Class 4 (POOR)
6.0	7.5	2	3	8	1	5	1	2	3	12	10	-2	33	Class 4 (POOR)
7.5	9.0	2	8	8	1	5	3	4	5	18	10	-2	44	Class 3(FAIR)
9.0	10.5	2	3	8	1	5	3	4	5	18	10	-2	39	Class 4 (POOR)
10.5	12.0	4	3	8	1	5	3	4	5	18	15	-2	46	Class 3(FAIR)
12.0	13.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
13.5	15.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
15.0	16.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
16.5	18.0	4	3	8	4	5	5	4	6	24	15	-2	52	Class 3(FAIR)
18.0	19.5	4	3	8	4	5	5	4	6	24	10	2	51	Class 3(FAIR)
19.5	21.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
21.0	22.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
22.5	24.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
24.0	25.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
27.0	28.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
28.5	30.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)

Tunnel:		BH:			T5BH11									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)	
6.0	7.5	0	3	8	0	0	0	0	0	0	0	-2	9	Class 5 (VERY POOR)	
7.5	9.0	0	3	8	4	1	5	2	3	15	4	-2	28	Class 4 (POOR)	
9.0	10.5	0	3	8	4	1	5	2	3	15	4	-2	28	Class 4 (POOR)	
10.5	12.0	0	3	8	4	1	5	2	3	15	4	-2	28	Class 4 (POOR)	
12.0	13.5	2	3	8	4	1	5	2	3	15	4	-2	30	Class 4 (POOR)	
13.5	15.0	4	8	8	4	1	5	2	3	15	4	-2	37	Class 4 (POOR)	
15.0	16.5	4	8	8	4	1	5	2	3	15	4	-2	37	Class 4 (POOR)	
16.5	18.0	4	3	8	6	5	5	6	6	28	4	-2	45	Class 3(FAIR)	
18.0	19.5	4	8	8	6	5	5	6	6	28	10	-2	56	Class 3(FAIR)	
19.5	21.0	4	13	10	6	6	6	6	6	30	10	-2	65	Class 2(GOOD)	
21.0	22.5	4	3	10	6	6	6	6	6	30	10	-2	55	Class 3(FAIR)	
22.5	24.0	4	13	10	6	6	6	6	6	30	10	-2	65	Class 2(GOOD)	
24.0	25.5	4	13	10	6	6	6	6	6	30	10	-2	65	Class 2(GOOD)	

Tunnel:			BH:		T5BH12									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5				0	3	5	0	1						1
1.5	3.0	0	3	5	0	1	1	0	1	3	0	-5	6	Class 5 (VERY POOR)	
3.0	4.5	2	3	8	2	1	1	0	1	5	4	-5	17	Class 5 (VERY POOR)	

Tunnel:		BH:		T5BH12									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
4.5	6.0	2	3	8	2	1	1	0	3	7	4	-5	19	Class 5 (VERY POOR)
6.0	7.5	2	3	8	2	1	1	0	1	5	4	-5	17	Class 5 (VERY POOR)
7.5	9.0	2	3	8	2	1	1	0	1	5	4	-5	17	Class 5 (VERY POOR)
9.0	10.5	4	3	8	2	1	1	0	3	7	4	-5	21	Class 4 (POOR)
10.5	12.0	4	3	8	4	4	3	4	3	18	4	-5	32	Class 4 (POOR)
12.0	13.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
13.5	15.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
15.0	16.5	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
16.5	18.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
18.0	19.5	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
19.5	20.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
21.0	22.5	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)

Tunnel:		BH:		T5BH13		TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
7.5	9.0	2	3	8	2	1	3	4	3	13	4	-10	20	Class 5 (VERY POOR)
9.0	10.5	2	3	8	2	1	3	4	3	13	4	-10	20	Class 5 (VERY POOR)

Tunnel:		BH:		T5BH13		TOTAL DEPTH:					RMR			
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	0	3	8	2	1	3	4	3	13	4	-10	18	Class 5 (VERY POOR)
12.0	13.5	2	3	8	2	1	3	4	5	15	4	-10	22	Class 4 (POOR)
13.5	15.0	2	3	8	2	1	5	4	5	17	4	-10	24	Class 4 (POOR)
15.0	16.5	2	3	8	4	4	5	4	5	22	4	-10	29	Class 4 (POOR)
16.5	18.0	4	3	8	4	4	5	4	5	22	4	-10	31	Class 4 (POOR)
18.0	19.5	4	8	10	4	4	6	6	5	25	15	-10	52	Class 3 (FAIR)
19.5	21.0	4	8	10	4	4	6	6	3	23	15	-10	50	Class 3 (FAIR)
21.0	22.5	4	8	10	2	4	6	6	3	21	15	-10	48	Class 3 (FAIR)
22.5	24.0	4	8	10	2	4	3	4	3	16	15	-10	43	Class 3 (FAIR)
24.0	25.5	4	13	10	2	4	0	2	3	11	15	-10	43	Class 3 (FAIR)

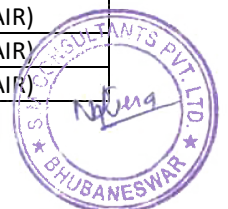
Tunnel:		BH:		T5BH14		TOTAL DEPTH:					RMR			
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)

Tunnel:		BH:		T5BH14									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	0	3	5	1	1	3	2	3	10	4	-5	17	Class 5 (VERY POOR)
15.0	16.5	0	3	5	1	1	3	2	3	10	4	-5	17	Class 5 (VERY POOR)
16.5	18.0	0	3	5	1	1	3	2	3	10	4	-5	17	Class 5 (VERY POOR)
18.0	19.5	0	3	5	1	1	3	2	3	10	4	-5	17	Class 5 (VERY POOR)
19.5	21.0	2	3	5	2	2	3	2	3	12	4	-5	21	Class 4 (POOR)
21.0	22.5	0	3	5	2	2	5	2	3	14	4	-5	21	Class 4 (POOR)
22.5	24.0	4	3	5	2	2	5	2	3	14	4	-5	25	Class 4 (POOR)
24.0	25.5	4	3	8	2	4	5	2	3	16	4	-5	30	Class 4 (POOR)
25.5	27.0	4	3	8	4	4	5	2	3	18	4	-5	32	Class 4 (POOR)
27.0	28.5	4	3	8	4	4	5	2	3	18	4	-5	32	Class 4 (POOR)

Tunnel:05			BH-15										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
7.5	9.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
9.0	10.5	0	3	5	1	1	5	4	3	14	10	-2	30	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
13.5	15.0	2	8	5	1	1	5	4	3	14	10	-2	37	Class 4 (POOR)

Tunnel:05			BH-15										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
16.5	18.0	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
18.0	19.5	2	3	5	1	1	5	4	3	14	10	-2	32	Class 4 (POOR)
19.5	21.0	2	3	8	1	1	5	4	3	14	10	-2	35	Class 4 (POOR)
21.0	22.5	4	3	5	1	1	5	4	3	14	10	-2	34	Class 4 (POOR)
22.5	24.0	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
24.0	25.5	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
25.5	27.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
27.0	28.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
28.5	30.0	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
30.0	31.5	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
31.5	33.0	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
33.0	34.5	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)
34.5	36.0	4	3	5	1	1	5	2	3	12	10	-2	32	Class 4 (POOR)

Tunnel:		BH:			T5BH16								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	4	4	5	4	3	20	7	-2	33	Class 4 (POOR)
6.0	7.5	0	3	5	4	4	5	4	3	20	7	-2	33	Class 4 (POOR)
7.5	9.0	2	3	8	4	4	5	6	5	24	7	-2	42	Class 3(FAIR)
9.0	10.5	2	3	8	4	4	5	4	5	22	7	-2	40	Class 4 (POOR)
10.5	12.0	2	3	8	4	4	5	6	5	24	7	-2	42	Class 3(FAIR)
12.0	13.5	2	3	10	4	5	5	6	6	26	7	-2	46	Class 3(FAIR)
13.5	15.0	2	3	10	4	5	5	6	6	26	7	-2	46	Class 3(FAIR)
15.0	16.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)



Tunnel:		BH:		T5BH16									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
16.5	18.0	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)
18.0	19.5	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)
19.5	21.0	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)
21.0	22.5	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)
22.5	24.0	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)
24.0	25.5	4	3	8	6	6	6	6	6	30	15	-2	58	Class 3(FAIR)
25.5	27.0	4	3	8	6	6	6	6	6	30	15	-2	58	Class 3(FAIR)
27.0	28.5	4	3	10	6	6	6	6	6	30	15	-2	60	Class 3(FAIR)
28.5	30.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
30.0	31.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
31.5	33.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
33.0	34.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
34.5	36.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
36.0	37.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
37.5	39.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
39.0	40.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 5		BH: 17			Ch:	Date:					RMR				
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
6.0	7.5	2	3	5	0	0	0	0	0	0	0	-5	5	Class 5 (VERY POOR)	
7.5	9.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)	
9.0	10.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)	
10.5	12.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)	
12.0	13.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)	

Tunnel: 5		BH: 17			Ch:		Date:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)
15.0	16.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
16.5	18.0	4	8	10	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
18.0	19.5	4	13	10	6	6	6	6	5	29	15	-5	66	Class 2(GOOD)
19.5	21.0	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
21.0	22.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
22.5	24.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
25.5	27.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
27.0	28.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
28.5	30.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	17	15	6	6	6	6	5	29	15	-5	78	Class 2(GOOD)
33.0	34.5	7	17	15	6	6	6	6	5	29	15	-5	78	Class 2(GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
36.0	37.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
37.5	39.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)

Tunnel:		BH:			T5BH18								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	4	4	5	4	3	20	4	-2	30	Class 4 (POOR)
6.0	7.5	2	3	8	4	4	5	6	5	24	4	-2	39	Class 4 (POOR)
7.5	9.0	2	3	8	4	4	5	4	5	22	4	-2	37	Class 4 (POOR)
9.0	10.5	4	3	8	4	4	5	6	5	24	15	-2	52	Class 3(FAIR)
10.5	12.0	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
12.0	13.5	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
13.5	15.0	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)

Tunnel:		BH:		T5BH18									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	4	13	10	4	5	5	6	6	26	15	-2	66	Class 2(GOOD)
16.5	18.0	4	13	10	4	5	5	6	6	26	15	-2	66	Class 2(GOOD)
18.0	19.5	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
19.5	21.0	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
21.0	22.5	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
22.5	24.0	4	8	8	6	6	6	6	6	30	15	-2	63	Class 2(GOOD)
24.0	25.5	4	13	8	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
25.5	27.0	4	13	10	4	5	5	6	6	26	15	-2	66	Class 2(GOOD)
27.0	28.5	7	13	10	4	5	5	6	6	26	15	-2	69	Class 2(GOOD)
28.5	30.0	7	13	15	4	6	6	6	6	28	15	-2	76	Class 2(GOOD)
30.0	31.5	7	13	15	4	6	6	6	6	28	15	-2	76	Class 2(GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
33.0	34.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
34.5	36.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
36.0	37.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)

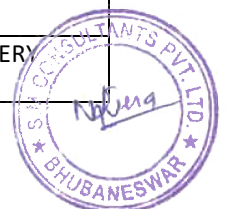
Tunnel:		BH:		T5BH19									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	4	4	5	4	3	20	4	-2	30	Class 4 (POOR)
6.0	7.5	0	3	8	4	4	5	6	5	24	4	-2	37	Class 4 (POOR)
7.5	9.0	0	3	8	4	4	5	4	5	22	4	-2	35	Class 4 (POOR)
9.0	10.5	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3(FAIR)
10.5	12.0	0	3	10	4	5	5	6	6	26	15	-2	52	Class 3(FAIR)

Tunnel:		BH:		T5BH19									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
12.0	13.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
13.5	15.0	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
15.0	16.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
16.5	18.0	0	3	10	4	5	5	6	6	26	15	-2	52	Class 3(FAIR)
18.0	19.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
19.5	21.0	2	8	10	4	5	5	6	6	26	15	-2	59	Class 3(FAIR)
21.0	22.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
22.5	24.0	2	8	10	4	5	5	6	6	26	15	-2	59	Class 3(FAIR)
24.0	25.5	2	8	10	4	5	5	6	6	26	15	-2	59	Class 3(FAIR)
25.5	27.0	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
27.0	28.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3(FAIR)
28.5	30.0	4	3	15	4	6	6	6	6	28	15	-2	63	Class 2(GOOD)
30.0	31.5	4	3	15	4	6	6	6	6	28	15	-2	63	Class 2(GOOD)
31.5	33.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
33.0	34.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
34.5	36.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
36.0	37.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
37.5	39.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
39.0	40.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)

Tunnel:		BH:		T5BH20									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	4	4	5	4	3	20	4	-2	30	Class 4 (POOR)
6.0	7.5	2	3	8	4	4	5	6	5	24	4	-2	39	Class 4 (POOR)
7.5	9.0	2	3	8	4	4	5	4	5	22	4	-2	37	Class 4 (POOR)

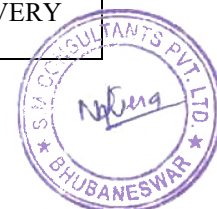
Tunnel:		BH:		T5BH20									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
9.0	10.5	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3(FAIR)
10.5	12.0	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
12.0	13.5	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3(FAIR)
13.5	15.0	4	3	5	2	4	3	4	3	16	15	-2	41	Class 3(FAIR)
15.0	16.5	4	3	5	2	4	3	4	3	16	15	-2	41	Class 3(FAIR)
16.5	18.0	4	3	5	2	4	3	4	3	16	15	-2	41	Class 3(FAIR)
18.0	19.5	4	3	5	2	4	3	4	3	16	15	-2	41	Class 3(FAIR)
19.5	21.0	4	3	5	2	4	3	4	5	18	15	-2	43	Class 3(FAIR)
21.0	22.5	4	3	5	2	4	3	4	5	18	15	-2	43	Class 3(FAIR)
22.5	24.0	4	13	5	4	4	5	4	5	22	15	-2	57	Class 3(FAIR)
24.0	25.5	7	8	5	4	4	5	4	5	22	15	-2	55	Class 3(FAIR)
25.5	27.0	7	8	5	4	4	5	4	5	22	15	-2	55	Class 3(FAIR)
27.0	28.5	7	8	8	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
28.5	30.0	7	13	8	6	6	6	6	6	30	15	-2	71	Class 2(GOOD)
30.0	31.5	7	8	8	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
31.5	33.0	7	8	8	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
33.0	34.5	7	8	8	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
34.5	36.0	7	8	8	6	6	6	6	6	30	15	-2	66	Class 2(GOOD)
36.0	37.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
37.5	39.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel:		BH:		T5BH21									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)



Tunnel:		BH:		T5BH21									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
4.5	6.0	0	3	5	4	4	5	4	3	20	4	-2	30	Class 4 (POOR)
6.0	7.5	0	3	8	4	4	5	6	5	24	4	-2	37	Class 4 (POOR)
7.5	9.0	0	3	8	4	4	5	4	5	22	4	-2	35	Class 4 (POOR)
9.0	10.5	0	3	8	4	4	5	6	5	24	15	-2	48	Class 3 (FAIR)
10.5	12.0	2	3	5	4	4	5	4	3	20	15	-2	43	Class 3 (FAIR)
12.0	13.5	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3 (FAIR)
13.5	15.0	2	3	8	4	4	5	4	5	22	15	-2	48	Class 3 (FAIR)
15.0	16.5	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3 (FAIR)
16.5	18.0	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3 (FAIR)
18.0	19.5	2	3	10	4	5	5	6	6	26	15	-2	54	Class 3 (FAIR)
19.5	21.0	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3 (FAIR)
21.0	22.5	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3 (FAIR)
22.5	24.0	4	3	10	4	5	5	6	6	26	15	-2	56	Class 3 (FAIR)
24.0	25.5	7	8	10	4	5	5	6	6	26	15	-2	64	Class 2 (GOOD)
25.5	27.0	7	3	10	4	5	5	6	6	26	15	-2	59	Class 3 (FAIR)
27.0	28.5	7	8							0			15	Class 5 (VERY POOR)
28.5	30.0	7	8	10	4	5	5	6	6	26	15	-2	64	Class 2 (GOOD)
30.0	31.5	7	3	10	4	5	5	6	6	26	15	-2	59	Class 3 (FAIR)
31.5	33.0	7	3	10	4	5	5	6	6	26	15	-2	59	Class 3 (FAIR)
33.0	34.5	7	3	10	4	5	5	6	6	26	15	-2	59	Class 3 (FAIR)
34.5	36.0	7	8	10	4	5	5	6	6	26	15	-2	64	Class 2 (GOOD)
36.0	37.5	7	3	10	4	5	5	6	6	26	15	-2	59	Class 3 (FAIR)
37.5	39.0	7	8	10	4	5	5	6	6	26	15	-2	64	Class 2 (GOOD)
39.0	40.5	0	3	10	4	5	5	6	6	26	15	-2	52	Class 3 (FAIR)

Tunnel:05			BH-22											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	1	1	1	1	1	5	4	-2	15	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	1	1	1	1	1	5	4	-2	15	Class 5 (VERY POOR)	
3.0	4.5	2	3	5	2	4	1	2	3	12	10	-2	30	Class 4 (POOR)	
4.5	6.0	2	3	5	2	4	1	2	5	14	10	-2	32	Class 4 (POOR)	
6.0	7.5	2	3	5	4	5	5	4	5	23	10	-2	41	Class 3(FAIR)	
7.5	9.0	2	8	8	4	5	5	4	5	23	10	-2	49	Class 3(FAIR)	
9.0	10.5	2	13	8	4	4	5	4	5	22	15	-2	58	Class 3(FAIR)	
10.5	12.0	4	13	8	4	5	5	4	5	23	15	-2	61	Class 2(GOOD)	
12.0	13.5	4	13	15	4	5	5	4	5	23	15	-2	68	Class 2(GOOD)	
13.5	15.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)	
15.0	16.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)	
16.5	18.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)	
18.0	19.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)	
19.5	21.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
21.0	22.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
22.5	24.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
24.0	25.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
33.0	34.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)	
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)	



Tunnel:05			BH-22										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 5		BH: 23		Ch:	Date:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	1	2	1	4	0	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	1	2	1	4	0	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	1	2	1	4	0	-5	7	Class 5 (VERY POOR)
4.5	6.0	2	8	8	1	4	3	2	3	13	0	-5	26	Class 4 (POOR)
6.0	7.5	2	8	10	2	4	5	4	5	20	4	-5	39	Class 4 (POOR)
7.5	9.0	2	8	10	4	4	5	4	5	22	4	-5	41	Class 3 (FAIR)
9.0	10.5	2	8	10	4	4	5	4	5	22	4	-5	41	Class 3 (FAIR)
10.5	12.0	2	3	15	4	4	3	2	3	16	4	-5	35	Class 4 (POOR)
12.0	13.5	4	8	15	6	4	5	6	6	27	4	-5	53	Class 3 (FAIR)
13.5	15.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
15.0	16.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
16.5	18.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2 (GOOD)
18.0	19.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
19.5	21.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
21.0	22.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
25.5	27.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
27.0	28.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)



Tunnel: 5		BH: 23			Ch:		Date:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
43.5	45.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
45.0	46.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
46.5	48.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)

Tunnel: 5		BH: 24			Ch:		Date:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	8	2	1	1	2	1	7	0	-5	13	Class 5 (VERY POOR)
1.5	3.0	0	3	8	2	1	1	2	1	7	0	-5	13	Class 5 (VERY POOR)
3.0	4.5	0	3	8	2	1	1	2	1	7	0	-5	13	Class 5 (VERY POOR)
4.5	6.0	0	3	8	2	1	1	2	1	7	0	-5	13	Class 5 (VERY POOR)
6.0	7.5	0	3	8	2	1	3	2	1	9	0	-5	15	Class 5 (VERY POOR)
7.5	9.0	0	3	8	2	1	3	2	1	9	0	-5	15	Class 5 (VERY POOR)
9.0	10.5	2	13	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
10.5	12.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)
12.0	13.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
13.5	15.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
15.0	16.5	4	3	10	4	4	5	4	5	22	15	-5	49	Class 3(FAIR)
16.5	18.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
18.0	19.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)
19.5	21.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)
21.0	22.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
25.5	27.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
27.0	28.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)

Tunnel: 5		BH: 24			Ch:		Date:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
33.0	34.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
34.5	36.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
36.0	37.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
37.5	39.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
39.0	40.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
40.5	42.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
43.5	45.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
49.5	51.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)

Tunnel:		BH:			T5BH25								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
6.0	7.5	2	3	8	4	4	5	6	5	24	15	-2	50	Class 3(FAIR)
7.5	9.0	4	3	8	4	4	5	4	5	22	15	-2	50	Class 3(FAIR)
9.0	10.5	4	3	8	4	4	5	6	5	24	15	-2	52	Class 3(FAIR)
10.5	12.0	4	3	8	6	6	6	6	6	30	15	-2	58	Class 3(FAIR)
12.0	13.5	4	8	8	6	6	6	6	6	30	15	-2	63	Class 2(GOOD)
13.5	15.0	4	13	8	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
15.0	16.5	4	8	8	6	6	6	6	6	30	15	-2	63	Class 2(GOOD)

Tunnel:		BH:			T5BH25								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
16.5	18.0	4	13	8	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
18.0	19.5	4	13	10	4	5	5	6	6	26	15	-2	66	Class 2(GOOD)
19.5	21.0	4	13	10	4	5	5	6	6	26	15	-2	66	Class 2(GOOD)
21.0	22.5	4	13	10	4	5	5	6	6	26	15	-2	66	Class 2(GOOD)
22.5	24.0	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
24.0	25.5	4	8	10	4	5	5	6	6	26	15	-2	61	Class 2(GOOD)
25.5	27.0	7	8	10	4	5	5	6	6	26	15	-2	64	Class 2(GOOD)
27.0	28.5	7	8	10	4	5	5	6	6	26	15	-2	64	Class 2(GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
30.0	31.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
33.0	34.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
34.5	36.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
36.0	37.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
37.5	39.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
39.0	40.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
40.5	42.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
42.0	43.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 5		BH: 26			Ch:	Date:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	8	0	1	1	2	1	5	0	-2	14	Class 5 (VERY POOR)
1.5	3.0	0	3	8	0	1	1	2	1	5	0	-2	14	Class 5 (VERY POOR)
3.0	4.5	0	3	8	0	1	1	2	1	5	0	-2	14	Class 5 (VERY POOR)
4.5	6.0	0	3	8	0	1	1	2	1	5	0	-2	14	Class 5 (VERY POOR)
6.0	7.5	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
7.5	9.0	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
9.0	10.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
10.5	12.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
12.0	13.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
13.5	15.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
15.0	16.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
16.5	18.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
18.0	19.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
19.5	21.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
21.0	22.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
22.5	24.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
24.0	25.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
27.0	28.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
30.0	31.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
31.5	33.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
33.0	34.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
34.5	36.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
36.0	37.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
37.5	39.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
39.0	40.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
40.5	42.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
42.0	43.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
43.5	45.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 5		BH: 27											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	1	1	0	-5	6	Class 5 (VERY POOR)
12.0	13.5	4	3	5	0	0	1	0	1	2	0	-5	9	Class 5 (VERY POOR)
13.5	15.0	4	3	8	0	0	1	0	2	3	0	-5	13	Class 5 (VERY POOR)
15.0	16.5	4	3	8	1	0	3	0	2	6	0	-5	16	Class 5 (VERY POOR)
16.5	18.0	4	8	8	1	0	3	0	2	6	10	-5	31	Class 4 (POOR)
18.0	19.5	4	13	10	6	6	5	6	2	25	10	-5	57	Class 3 (FAIR)
19.5	21.0	4	17	10	6	6	6	6	6	30	15	-5	71	Class 2 (GOOD)
21.0	22.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
22.5	24.0	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
24.0	25.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
25.5	27.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 5		BH: 28			Ch:	Date:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	10	6	6	6	6	5	29	10	-5	47	Class 3 (FAIR)
1.5	3.0	0	3	10	6	6	6	6	5	29	10	-5	47	Class 3 (FAIR)
3.0	4.5	0	3	10	6	6	6	6	5	29	10	-5	47	Class 3 (FAIR)
4.5	6.0	2	3	10	6	6	6	6	5	29	10	-5	49	Class 3 (FAIR)
6.0	7.5	2	3	10	6	6	6	6	5	29	10	-5	49	Class 3 (FAIR)
7.5	9.0	2	8	10	6	6	6	6	6	30	10	-5	55	Class 3 (FAIR)
9.0	10.5	2	3	10	6	6	6	6	6	30	15	-5	55	Class 3 (FAIR)
10.5	12.0	4	3	10	6	6	6	6	6	30	15	-5	57	Class 3 (FAIR)
12.0	13.5	4	3	10	6	6	6	6	6	30	15	-5	57	Class 3 (FAIR)
13.5	15.0	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
15.0	16.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
16.5	18.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
18.0	19.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
19.5	21.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
21.0	22.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
25.5	27.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 5			BH: 29										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5				0	3	5	0	0					
1.5	3.0	0	3	5	0	0	1	2	1	4	7	-2	17	Class 5 (VERY POOR)

Tunnel: 5		BH: 29											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
3.0	4.5	0	3	5	0	0	1	2	1	4	7	-2	17	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	1	2	1	4	7	-2	17	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	1	2	1	4	7	-2	17	Class 5 (VERY POOR)
7.5	9.0	2	3	5	0	0	1	2	1	4	7	-2	19	Class 5 (VERY POOR)
9.0	10.5	4	8	8	1	1	5	4	3	14	10	-2	42	Class 3 (FAIR)
10.5	12.0	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2 (GOOD)
12.0	13.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
13.5	15.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
15.0	16.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
16.5	18.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
18.0	19.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
19.5	21.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
21.0	22.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
24.0	25.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
25.5	27.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
27.0	28.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
28.5	30.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 5		BH: 30			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	2	3	12	7	-2	25	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	2	3	12	7	-2	25	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	5	2	3	12	7	-2	25	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
6.0	7.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
7.5	9.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
9.0	10.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)

Tunnel: 5		BH: 30			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
12.0	13.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
13.5	15.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
15.0	16.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
16.5	18.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
18.0	19.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
19.5	21.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
21.0	22.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
24.0	25.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 05		BH: 31			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	4	13	10	4	5	5	6	6	26	15	-5	63	Class 2(GOOD)
9.0	10.5	4	17	10	4	5	5	6	6	26	15	-5	67	Class 2(GOOD)
10.5	12.0	4	17	10	4	5	5	6	6	26	15	-5	67	Class 2(GOOD)
12.0	13.5	4	17	10	4	5	5	6	6	26	15	-5	67	Class 2(GOOD)
13.5	15.0	4	13	15	4	6	6	6	6	28	15	-5	70	Class 2(GOOD)
15.0	16.5	4	17	15	4	6	6	6	6	28	15	-5	74	Class 2(GOOD)
16.5	18.0	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)

Tunnel: 05		BH: 31			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
18.0	19.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
19.5	21.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
21.0	22.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
22.5	24.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)

Tunnel: 05		BH:32			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	4	20	10	4	5	5	6	6	26	15	-5	70	Class 2(GOOD)
12.0	13.5	4	20	10	4	5	5	6	6	26	15	-5	70	Class 2(GOOD)
13.5	15.0	4	20	10	4	5	5	6	6	26	15	-5	70	Class 2(GOOD)
15.0	16.5	4	20	10	4	5	5	6	6	26	15	-5	70	Class 2(GOOD)
16.5	18.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)

Tunnel: 05		BH:32			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
18.0	19.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
19.5	21.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
21.0	22.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
22.5	24.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
24.0	25.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 05		BH:33			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
6.0	7.5	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
7.5	9.0	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
9.0	10.5	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
10.5	12.0	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3 (FAIR)
12.0	13.5	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3 (FAIR)
13.5	15.0	4	13	10	4	5	5	6	6	26	10	-5	58	Class 3 (FAIR)
15.0	16.5	4	13	10	4	5	5	6	6	26	15	-5	63	Class 2 (GOOD)
16.5	18.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2 (GOOD)
18.0	19.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
19.5	21.0	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
21.0	22.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 05		BH:33			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
43.5	45.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

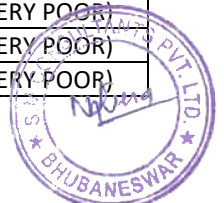
Tunnel: 05		BH:34			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	4	17	10	4	5	5	6	6	26	10	-5	62	Class 2 (GOOD)

Tunnel: 05		BH:34			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	4	13	10	4	5	5	6	6	26	10	-5	58	Class 3(FAIR)
15.0	16.5	4	20	10	4	5	5	6	6	26	10	-5	65	Class 2(GOOD)
16.5	18.0	4	20	10	4	5	5	6	6	26	15	-5	70	Class 2(GOOD)
18.0	19.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
19.5	21.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
21.0	22.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
22.5	24.0	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
24.0	25.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
25.5	27.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
43.5	45.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
45.0	46.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
46.5	48.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 05		BH:35			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
9.0	10.5	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
10.5	12.0	4	8	8	4	4	5	6	5	24	15	-5	54	Class 3 (FAIR)
12.0	13.5	4	8	8	4	4	5	4	5	22	15	-5	52	Class 3 (FAIR)
13.5	15.0	4	13	8	4	4	5	6	5	24	15	-5	59	Class 3 (FAIR)
15.0	16.5	4	17	8	6	6	6	6	6	30	15	-5	69	Class 2 (GOOD)
16.5	18.0	4	20	10	4	5	5	6	6	26	10	-5	65	Class 2 (GOOD)
18.0	19.5	4	20	10	4	5	5	6	6	26	10	-5	65	Class 2 (GOOD)
19.5	21.0	4	20	10	4	5	5	6	6	26	15	-5	70	Class 2 (GOOD)
21.0	22.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
22.5	24.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
24.0	25.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 05		BH:35			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 5		BH: 36											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	0	0	0	-5	5	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
12.0	13.5	2	3	5	2	0	3	0	1	6	4	-5	15	Class 5 (VERY POOR)
13.5	15.0	4	3	5	2	0	3	0	1	6	4	-5	17	Class 5 (VERY POOR)
15.0	16.5	0	3	5	2	0	3	0	1	6	4	-5	13	Class 5 (VERY POOR)
16.5	18.0	0	3	5	2	0	3	0	3	8	4	-5	15	Class 5 (VERY POOR)
18.0	19.5	0	3	5	2	0	3	0	3	8	4	-5	15	Class 5 (VERY POOR)
19.5	21.0	0	3	5	2	0	3	0	3	8	4	-5	15	Class 5 (VERY POOR)
21.0	22.5	0	3	5	2	1	3	0	3	9	4	-5	16	Class 5 (VERY POOR)



Tunnel: 5		BH: 36											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
22.5	24.0	0	3	5	2		3	0	3	8	4	-5	15	Class 5 (VERY POOR)
24.0	25.5	4	3	10	4	4	6	2	5	21	7	-5	40	Class 4 (POOR)
25.5	27.0	4	8	10	4	4	6	2	5	21	7	-5	45	Class 3(FAIR)
27.0	28.5	7	8	10	4	4	6	2	5	21	7	-5	48	Class 3(FAIR)
28.5	30.0	7	3	10	4	4	6	2	5	21	7	-5	43	Class 3(FAIR)
30.0	31.5	7	3	10	4	4	6	2	5	21	7	-5	43	Class 3(FAIR)
31.5	33.0	7	8	10	4	4	6	2	5	21	7	-5	48	Class 3(FAIR)
33.0	34.5	7	3	8	4	4	6	2	5	21	7	-5	41	Class 3(FAIR)
34.5	36.0	7	8	8	4	4	6	2	5	21	7	-5	46	Class 3(FAIR)

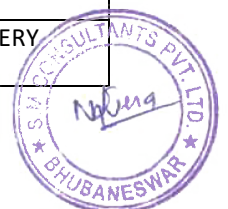
Tunnel: 05			BH:37				TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)	
10.5	12.0	4	3	8	4	4	5	6	5	24	15	-5	49	Class 3(FAIR)	
12.0	13.5	4	3	8	4	4	5	4	5	22	15	-5	47	Class 3(FAIR)	

Tunnel: 05		BH:37			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	4	3	8	4	4	5	6	5	24	15	-5	49	Class 3(FAIR)
15.0	16.5	4	3	8	6	6	6	6	6	30	15	-5	55	Class 3(FAIR)
16.5	18.0	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)
18.0	19.5	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)
19.5	21.0	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)
21.0	22.5	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)
22.5	24.0	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)
24.0	25.5	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)
25.5	27.0	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3(FAIR)

Tunnel: 5		BH: 38											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
16.5	18.0	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
18.0	19.5	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
19.5	21.0	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)

Tunnel: 5		BH: 39											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
16.5	18.0	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
18.0	19.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
19.5	21.0	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
21.0	22.5	4	3	5	0	0	0	0	0	0	4	-5	11	Class 5 (VERY POOR)
22.5	24.0	4	3	5	2	1	1	2	3	9	4	-5	20	Class 5 (VERY POOR)
24.0	25.5	4	3	5	2	1	1	2	3	9	4	-5	20	Class 5 (VERY POOR)
25.5	27.0	4	3	5	2	1	1	2	3	9	4	-5	20	Class 5 (VERY POOR)
27.0	28.5	4	3	8	2	1	1	2	3	9	4	-5	23	Class 4 (POOR)
28.5	30.0	7	3	8	2	1	1	2	3	9	4	-5	26	Class 4 (POOR)
30.0	31.5	7	3	8	4	1	1	2	3	11	4	-5	28	Class 4 (POOR)
31.5	33.0	7	3	8	4	1	3	2	3	13	4	-5	30	Class 4 (POOR)
33.0	34.5	7	8	8	4	1	3	2	3	13	10	-5	41	Class 3 (FAIR)
34.5	36.0	7	8	8	4	1	3	2	3	13	10	-5	41	Class 3 (FAIR)

Tunnel: 05		BH:40			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	4	3	8	4	4	5	6	5	24	10	-5	44	Class 3 (FAIR)
7.5	9.0	4	8	8	4	4	5	4	5	22	10	-5	47	Class 3 (FAIR)
9.0	10.5	4	8	8	4	4	5	4	5	22	10	-5	47	Class 3 (FAIR)
10.5	12.0	4	8	8	4	4	5	4	5	22	10	-5	47	Class 3 (FAIR)
12.0	13.5	4	13	8	4	4	5	4	5	22	10	-5	52	Class 3 (FAIR)
13.5	15.0	4	13	8	4	4	5	4	5	22	10	-5	52	Class 3 (FAIR)
15.0	16.5	4	17	10	4	5	5	6	6	26	10	-5	62	Class 2 (GOOD)
16.5	18.0	4	17	10	4	5	5	6	6	26	10	-5	62	Class 2 (GOOD)
18.0	19.5	4	17	10	4	5	5	6	6	26	10	-5	62	Class 2 (GOOD)
19.5	21.0	4	17	10	4	5	5	6	6	26	10	-5	62	Class 2 (GOOD)
21.0	22.5	4	20	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
22.5	24.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
24.0	25.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
28.5	30.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
31.5	33.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
34.5	36.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
39.0	40.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)



Tunnel: 05		BH:40			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
43.5	45.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
45.0	46.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
46.5	48.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
48.0	49.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)
49.5	51.0	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 5			BH: 41		Ch:	Date:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock		
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating							
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-10	3	Class 5 (VERY POOR)		
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-10	3	Class 5 (VERY POOR)		
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-10	3	Class 5 (VERY POOR)		
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-10	3	Class 5 (VERY POOR)		
6.0	7.5	0	3	8	0	0	0	0	1	1	4	-10	6	Class 5 (VERY POOR)		
7.5	9.0	0	3	8	0	0	0	0	1	1	4	-10	6	Class 5 (VERY POOR)		
9.0	10.5	0	3	8	0	0	0	0	1	1	7	-10	9	Class 5 (VERY POOR)		
10.5	12.0	0	3	8	0	0	0	0	1	1	7	-10	9	Class 5 (VERY POOR)		
12.0	13.5	0	3	8	0	0	0	0	1	1	7	-10	9	Class 5 (VERY POOR)		
13.5	15.0	0	3	8	0	0	0	0	1	1	7	-10	9	Class 5 (VERY POOR)		
15.0	16.5	0	3	10	0	1	1	1	1	4	7	-5	19	Class 5 (VERY POOR)		
16.5	18.0	0	3	20	6	6	6	6	6	30	15	-5	63	Class 2(GOOD)		
18.0	19.5	0	3	20	6	6	6	6	6	30	15	-5	63	Class 2(GOOD)		
19.5	21.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)		
21.0	22.5	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2(GOOD)		

Tunnel: 5		BH: 41			Ch:	Date:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
22.5	24.0	0	3	8	2	2	2	2	3	11	4	-5	21	Class 4 (POOR)
24.0	25.5	0	3	8	2	2	2	2	3	11	4	-5	21	Class 4 (POOR)
25.5	27.0	0	3	5	1	1	1	1	3	7	4	-5	14	Class 5 (VERY POOR)
27.0	28.5	0	3	5	1	1	1	1	3	7	4	-5	14	Class 5 (VERY POOR)
28.5	30.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
30.0	31.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
33.0	34.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
34.5	36.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
36.0	37.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
37.5	39.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
39.0	40.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
40.5	42.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
42.0	43.5	7	8	8	2	4	5	6	5	22	10	-5	50	Class 3(FAIR)
43.5	45.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
45.0	46.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
46.5	48.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
48.0	49.5	7	8	8	2	4	5	6	5	22	10	-5	50	Class 3(FAIR)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
51.0	52.5	7	13	8	2	4	5	6	5	22	10	-5	55	Class 3(FAIR)

Tunnel: 05			BH:42			TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)

Tunnel: 05		BH:42			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
13.5	15.0	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
15.0	16.5	4	8	8	4	4	5	4	5	22	10	-5	47	Class 3 (FAIR)
16.5	18.0	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
18.0	19.5	4	8	8	4	4	5	4	5	22	10	-5	47	Class 3 (FAIR)
19.5	21.0	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3 (FAIR)
21.0	22.5	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3 (FAIR)
22.5	24.0	4	3	10	4	5	5	6	6	26	10	-5	48	Class 3 (FAIR)
24.0	25.5	4	8	10	4	5	5	6	6	26	10	-5	53	Class 3 (FAIR)
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)
27.0	28.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
28.5	30.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
30.0	31.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
31.5	33.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
33.0	34.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
34.5	36.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
36.0	37.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
37.5	39.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
39.0	40.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
40.5	42.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
42.0	43.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
43.5	45.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
45.0	46.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)

Tunnel: 5		BH: 43			Ch:		Date:						RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
6.0	7.5	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
7.5	9.0	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
9.0	10.5	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
10.5	12.0	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
12.0	13.5	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
13.5	15.0	0	3	5	1	1	1	0	1	4	0	-10	2	Class 5 (VERY POOR)	
15.0	16.5	2	3	15	6	6	6	6	6	30	15	-5	60	Class 3 (FAIR)	
16.5	18.0	2	3	15	6	6	6	6	6	30	15	-5	60	Class 3 (FAIR)	
18.0	19.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)	
19.5	21.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)	
21.0	22.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)	
22.5	24.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)	
24.0	25.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)	
25.5	27.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)	
27.0	28.5	4	8	20	6	6	5	6	5	28	15	-5	70	Class 2 (GOOD)	
28.5	30.0	4	8	20	6	6	5	6	5	28	15	-5	70	Class 2 (GOOD)	
30.0	31.5	4	13	20	6	6	5	6	5	28	15	-5	75	Class 2 (GOOD)	
31.5	33.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)	
33.0	34.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)	
34.5	36.0	4	8	10	4	5	6	4	6	25	15	-5	57	Class 3 (FAIR)	
36.0	37.5	4	8	20	6	5	5	4	5	25	15	-5	67	Class 2 (GOOD)	
37.5	39.0	4	8	20	6	5	6	2	6	25	15	-5	67	Class 2 (GOOD)	
39.0	40.5	4	13	10	4	5	3	2	6	20	15	-5	57	Class 3 (FAIR)	
40.5	42.0	7	3	10	4	5	3	4	6	22	10	-5	47	Class 3 (FAIR)	
42.0	43.5	0	3	10	4	5	6	4	6	25	15	-5	48	Class 3 (FAIR)	
43.5	45.0	0	3	10	4	5	5	2	5	21	10	-5	39	Class 4 (POOR)	
45.0	46.5	0	3	10	4	5	3	6	6	24	15	-5	47	Class 3 (FAIR)	
46.5	48.0	7	3	20	6	6	6	6	6	30	15	-5	70	Class 2 (GOOD)	
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)	
49.5	51.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)	
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)	
52.5	54.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)	
54.0	55.5	0	3	20	4	5	3	2	5	19	10	-5	47	Class 3 (FAIR)	
55.5	57.0	7	3	20	6	6	6	6	6	30	15	-5	70	Class 2 (GOOD)	
57.0	58.5	7	8	15	6	5	5	4	5	25	15	-5	65	Class 2 (GOOD)	
58.5	60.0	0	3	10	4	5	3	2	3	17	15	-5	40	Class 4 (POOR)	

Tunnel: 05		BH:44			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
18.0	19.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
19.5	21.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
21.0	22.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
22.5	24.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
24.0	25.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
25.5	27.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
27.0	28.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
28.5	30.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
30.0	31.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
31.5	33.0	0	3	10	4	5	5	6	6	26	10	-5	44	Class 3 (FAIR)
33.0	34.5	4	3	10	4	5	5	6	6	26	10	-5	48	Class 3 (FAIR)
34.5	36.0	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
36.0	37.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
37.5	39.0	4	8	20	6	6	6	6	6	30	15	-5	72	Class 2 (GOOD)
39.0	40.5	4	3	20	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
40.5	42.0	7	3	20	6	6	6	6	6	30	15	-5	70	Class 2 (GOOD)
42.0	43.5	7	3	20	6	6	6	6	6	30	15	-5	70	Class 2 (GOOD)
43.5	45.0	7	3	20	6	6	6	6	6	30	15	-5	70	Class 2 (GOOD)
45.0	46.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2 (GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2 (GOOD)

Tunnel: 05		BH:44			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
51.0	52.5	7	3	20	6	6	6	6	6	30	15	-5	70	Class 2(GOOD)
52.5	54.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
54.0	55.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
57.0	58.5	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
58.5	60.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
60.0	61.5	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
61.5	63.0	7	8	20	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
66.0	67.5	7	20	20	6	6	6	6	6	30	15	-5	87	Class 1 (VERY GOOD)

Tunnel: 5		BH: 45											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)

Tunnel: 5		BH: 45											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
18.0	19.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
19.5	21.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
21.0	22.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
22.5	24.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
24.0	25.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
25.5	27.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
27.0	28.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
28.5	30.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
30.0	31.5	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
31.5	33.0	0	3	5	0	0	0	0	0	0	0	-10	-2	Class 5 (VERY POOR)
33.0	34.5	0	3	5	1	1	1	1	1	5	4	-5	12	Class 5 (VERY POOR)
34.5	36.0	4	3	5	1	1	1	1	1	5	4	-5	16	Class 5 (VERY POOR)
36.0	37.5	4	3	5	1	1	1	1	1	5	4	-5	16	Class 5 (VERY POOR)
37.5	39.0	4	3	5	1	1	1	1	1	5	4	-5	16	Class 5 (VERY POOR)
39.0	40.5	4	3	5	1	1	1	1	1	5	4	-5	16	Class 5 (VERY POOR)
40.5	42.0	4	3	5	2	4	1	4	3	14	4	-5	25	Class 4 (POOR)
42.0	43.5	4	8	8	2	4	3	4	3	16	4	-5	35	Class 4 (POOR)
43.5	45.0	4	13	8	4	4	3	4	3	18	4	-5	42	Class 3 (FAIR)
45.0	46.5	4	8	8	4	4	3	4	3	18	4	-5	37	Class 4 (POOR)
46.5	48.0	4	8	8	4	4	3	4	3	18	4	-5	37	Class 4 (POOR)
48.0	49.5	4	13	15	4	5	5	5	5	24	10	-5	61	Class 2 (GOOD)
49.5	51.0	7	17	15	4	5	5	5	5	24	10	-5	68	Class 2 (GOOD)

Tunnel:05			BH-46										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
18.0	19.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
19.5	21.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
21.0	22.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
22.5	24.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
24.0	25.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
25.5	27.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
27.0	28.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
28.5	30.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
30.0	31.5	4	8	20	6	6	6	6	6	30	10	-5	67	Class 2(GOOD)
31.5	33.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)
33.0	34.5	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)
34.5	36.0	4	13	10	6	6	6	6	5	29	10	-5	61	Class 2(GOOD)
36.0	37.5	4	13	10	4	4	5	4	5	22	10	-5	54	Class 3(FAIR)

Tunnel:05			BH-46										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
37.5	39.0	4	8	8	4	4	6	4	5	23	10	-5	48	Class 3(FAIR)
39.0	40.5	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3(FAIR)
40.5	42.0	4	3	8	4	4	5	4	6	23	10	-5	43	Class 3(FAIR)
42.0	43.5	7	3	15	6	6	6	6	6	30	15	-5	65	Class 2(GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)
45.0	46.5	7	17	20	6	6	6	6	6	30	15	-5	84	Class 1 (VERY GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-5	80	Class 2(GOOD)

Tunnel: 05			BH:47		T5BH47								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	1	1	1	1	6		-5	9	Class 5 (VERY POOR)
1.5	3.0	0	3	5	2	1	1	1	1	6		-5	9	Class 5 (VERY POOR)
3.0	4.5	0	3	5	2	1	1	1	1	6		-5	9	Class 5 (VERY POOR)
4.5	6.0	0	3	5	2	1	1	1	1	6	4	-5	13	Class 5 (VERY POOR)
6.0	7.5	0	3	5	2	1	1	1	1	6	4	-5	13	Class 5 (VERY POOR)
7.5	9.0	0	3	5	2	1	1	1	1	6	4	-5	13	Class 5 (VERY POOR)
9.0	10.5	0	3	5	2	1	1	1	1	6	4	-5	13	Class 5 (VERY POOR)
10.5	12.0	0	3	5	2	1	1	1	1	6	4	-5	13	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	1	1	5	4	-5	12	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)

Tunnel: 05		BH:47		T5BH47									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
16.5	18.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
18.0	19.5	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
19.5	21.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
21.0	22.5	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
22.5	24.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
24.0	25.5	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
25.5	27.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
27.0	28.5	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
28.5	30.0	2	3	5	1	1	1	2	2	7	4	-5	16	Class 5 (VERY POOR)
30.0	31.5	4	3	5	1	1	1	2	2	7	4	-5	18	Class 5 (VERY POOR)
31.5	33.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
33.0	34.5	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
34.5	36.0	0	3	5	1	1	1	2	2	7	4	-5	14	Class 5 (VERY POOR)
36.0	37.5	0	3	5	2	1	3	2	2	10	4	-5	17	Class 5 (VERY POOR)
37.5	39.0	0	3	5	2	1	3	2	2	10	4	-5	17	Class 5 (VERY POOR)
39.0	40.5	0	3	5	2	1	3	2	2	10	4	-5	17	Class 5 (VERY POOR)
40.5	42.0	4	3	5	2	1	3	2	2	10	4	-5	21	Class 4 (POOR)
42.0	43.5	4	3	5	2	1	3	2	2	10	7	-5	24	Class 4 (POOR)
43.5	45.0	4	3	5	2	1	3	2	2	10	7	-5	24	Class 4 (POOR)

Tunnel: 05		BH:48			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
15.0	16.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
16.5	18.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
18.0	19.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
19.5	21.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
21.0	22.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
22.5	24.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
24.0	25.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
25.5	27.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
27.0	28.5	0	3	8	4	4	5	4	5	22	11	-5	39	Class 4 (POOR)
28.5	30.0	0	3	8	4	4	5	4	5	22	12	-5	40	Class 4 (POOR)
30.0	31.5	0	3	8	4	4	5	4	5	22	13	-5	41	Class 3 (FAIR)
31.5	33.0	0	3	8	4	4	5	4	5	22	14	-5	42	Class 3 (FAIR)
33.0	34.5	0	3	10	4	5	5	6	6	26	10	-5	44	Class 3 (FAIR)
34.5	36.0	0	3	10	4	5	5	6	6	26	10	-5	44	Class 3 (FAIR)
36.0	37.5	0	3	10	4	5	5	6	6	26	11	-5	45	Class 3 (FAIR)
37.5	39.0	0	3	10	4	5	5	6	6	26	12	-5	46	Class 3 (FAIR)
39.0	40.5	0	3	10	4	5	5	6	6	26	13	-5	47	Class 3 (FAIR)
40.5	42.0	4	3	10	4	5	5	6	6	26	14	-5	52	Class 3 (FAIR)
42.0	43.5	4	3	10	4	5	5	6	6	26	15	-5	53	Class 3 (FAIR)
43.5	45.0	4	3	10	4	5	5	6	6	26	16	-5	54	Class 3 (FAIR)
45.0	46.5	0	3	10	4	5	5	6	6	26	17	-5	51	Class 3 (FAIR)
46.5	48.0	4	3	10	4	5	5	6	6	26	18	-5	56	Class 3 (FAIR)
48.0	49.5	4	3	10	4	5	5	6	6	26	19	-5	57	Class 3 (FAIR)

Tunnel: 5		BH: 49											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (Combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
18.0	19.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
19.5	21.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
21.0	22.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
22.5	24.0	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
24.0	25.5	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
25.5	27.0	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
27.0	28.5	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
28.5	30.0	4	3	5	0	0	0	0	0	0	0	-5	7	Class 5 (VERY POOR)
30.0	31.5	4	8	5	0	0	0	0	0	0	0	-5	12	Class 5 (VERY POOR)
31.5	33.0	4	8	5	1	0	1	0	3	5	4	-5	21	Class 4 (POOR)
33.0	34.5	4	8	5	1	0	1	0	3	5	4	-5	21	Class 4 (POOR)
34.5	36.0	4	8	5	1	0	1	0	3	5	4	-5	21	Class 4 (POOR)
36.0	37.5	4	8	5	1	0	1	0	3	5	4	-5	21	Class 4 (POOR)
37.5	39.0	7	8	5	1	0	1	0	3	5	4	-5	24	Class 4 (POOR)
39.0	40.5	7	8	5	1	0	1	0	3	5	4	-5	24	Class 4 (POOR)
40.5	42.0	7	8	5	2	0	1	0	3	6	4	-5	25	Class 4 (POOR)

Tunnel: 5		BH: 50			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
18.0	19.5	0	3	8	2	1	3	0	3	9	4	-5	19	Class 5 (VERY POOR)
19.5	21.0	0	3	8	2	1	3	2	3	11	4	-5	21	Class 4 (POOR)
21.0	22.5	0	3	8	2	1	3	2	3	11	4	-5	21	Class 4 (POOR)
22.5	24.0	4	3	8	2	1	3	2	3	11	4	-5	25	Class 4 (POOR)
24.0	25.5	4	3	8	2	1	3	2	3	11	4	-5	25	Class 4 (POOR)
25.5	27.0	4	3	8	2	1	3	2	3	11	4	-5	25	Class 4 (POOR)
27.0	28.5	4	3	8	2	1	3	2	3	11	4	-5	25	Class 4 (POOR)
28.5	30.0	4	3	8	2	1	3	2	3	11	4	-5	25	Class 4 (POOR)
30.0	31.5	4	8	8	2	1	3	2	3	11	4	-5	30	Class 4 (POOR)
31.5	33.0	4	8	8	2	1	3	2	3	11	4	-5	30	Class 4 (POOR)
33.0	34.5	4	8	8	2	1	3	2	3	11	4	-5	30	Class 4 (POOR)
34.5	36.0	4	3	8	2	1	3	2	3	11	4	-5	25	Class 4 (POOR)

Tunnel: 5		BH: 51			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)

Tunnel: 5		BH: 51											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
13.5	15.0	2	3	5	0	0	0	0	0	0	4	-5	9	Class 5 (VERY POOR)
15.0	16.5	2	3	5	1	1	1	0	3	6	4	-5	15	Class 5 (VERY POOR)
16.5	18.0	2	3	8	2	1	1	0	3	7	4	-5	19	Class 5 (VERY POOR)
18.0	19.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2(GOOD)
19.5	21.0	4	17	20	6	6	6	6	6	30	15	-5	81	Class 1 (VERY GOOD)

Tunnel:		BH:		T5BH52									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (Combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0		8	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0		8	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0		8	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0		8	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0		8	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	4		12	Class 5 (VERY POOR)
18.0	19.5	0	3	5	0	0	3	0	3	6	4		18	Class 5 (VERY POOR)
19.5	21.0			5	0	0	3	0	3	6	4		15	Class 5 (VERY POOR)

Tunnel: 5		BH: 53											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	4	8	5	0	0	0	0	0	0	10	-5	22	Class 4 (POOR)
9.0	10.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
10.5	12.0	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
12.0	13.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
13.5	15.0	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
15.0	16.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)
16.5	18.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)

Tunnel: 05		BH:54											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	1	1	1	2	1	6	4	-5	13	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	1	2	1	6	4	-5	13	Class 5 (VERY POOR)
10.5	12.0	0	3	5	1	1	1	2	1	6	4	-5	13	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	2	5	10	4	-5	17	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	1	2	5	10	7	-5	20	Class 5 (VERY POOR)
15.0	16.5	2	3	5	1	1	3	2	5	12	7	-5	24	Class 4 (POOR)
16.5	18.0	2	3	5	1	4	3	2	5	15	7	-5	27	Class 4 (POOR)
18.0	19.5	2	3	5	1	4	3	2	5	15	7	-5	27	Class 4 (POOR)
19.5	21.0	2	3	8	1	4	3	2	5	15	7	-5	30	Class 4 (POOR)
21.0	22.5	4	8	8	2	4	3	2	6	17	7	-5	39	Class 4 (POOR)
22.5	24.0	4	3	8	2	4	3	2	6	17	15	-5	42	Class 3 (FAIR)
24.0	25.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
25.5	27.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
27.0	28.5	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
28.5	30.0	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
30.0	31.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
31.5	33.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
33.0	34.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)
34.5	36.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2 (GOOD)
36.0	37.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2 (GOOD)

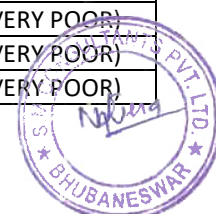
Tunnel: 05		BH: 55			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
18.0	19.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
19.5	21.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
21.0	22.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
22.5	24.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
24.0	25.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
25.5	27.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
27.0	28.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
28.5	30.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
30.0	31.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
31.5	33.0	0	3	10	4	5	5	6	6	26	10	-5	44	Class 3 (FAIR)
33.0	34.5	4	3	10	4	5	5	6	6	26	10	-5	48	Class 3 (FAIR)
34.5	36.0	4	3	10	4	5	5	6	6	26	11	-5	49	Class 3 (FAIR)
36.0	37.5	4	3	10	4	5	5	6	6	26	12		55	Class 3 (FAIR)
37.5	39.0	4	3	10	4	5	5	6	6	26	13		56	Class 3 (FAIR)
39.0	40.5	4	8	10	4	5	5	6	6	26	14		62	Class 2 (GOOD)
40.5	42.0	7	8	10	4	5	5	6	6	26	15		66	Class 2 (GOOD)
42.0	43.5	7	8	10	4	5	5	6	6	26	16		67	Class 2 (GOOD)
43.5	45.0	7	8	20	6	6	6	6	6	30	15		80	Class 2 (GOOD)
45.0	46.5	7	8	20	6	6	6	6	6	30	15		80	Class 2 (GOOD)

Tunnel: 05			BH: 55			TOTAL DEPTH:						RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
46.5	48.0	7	13	20	6	6	6	6	6	30	15		85	Class 1 (VERY GOOD)

Tunnel: 05			BH: 56		T5BH56									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	1	0	0	0	0	1	4	-5	8	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	1	1	0	0	0	2	4	-5	9	Class 5 (VERY POOR)	
6.0	7.5	0	3	5	1	1	0	0	0	2	4	-5	9	Class 5 (VERY POOR)	
7.5	9.0	0	3	5	1	1	0	0	0	2	4	-5	9	Class 5 (VERY POOR)	
9.0	10.5	0	3	5	1	1	0	0	0	2	4	-5	9	Class 5 (VERY POOR)	
10.5	12.0	0	3	5	1	1	0	0	0	2	4	-5	9	Class 5 (VERY POOR)	
12.0	13.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
13.5	15.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
15.0	16.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
16.5	18.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
18.0	19.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	

Tunnel: 05			BH: 56		T5BH56									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
19.5	21.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
21.0	22.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
22.5	24.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
24.0	25.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
25.5	27.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
27.0	28.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
28.5	30.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)	
30.0	31.5	0	3	5	1	1	1	0	3	6	4	-5	13	Class 5 (VERY POOR)	
31.5	33.0	0	3	5	1	1	1	0	3	6	4	-5	13	Class 5 (VERY POOR)	
33.0	34.5	4	3	5	2	1	1	0	3	7	4	-5	18	Class 5 (VERY POOR)	
34.5	36.0	4	3	15	6	4	5	4	6	25	15	-5	57	Class 3(FAIR)	
36.0	37.5	4	3	15	6	6	6	6	6	30	15	-5	62	Class 2(GOOD)	
37.5	39.0	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)	
39.0	40.5	4	8	15	6	6	6	6	6	30	15	-5	67	Class 2(GOOD)	
40.5	42.0	7	13	15	6	6	6	6	6	30	15	-5	75	Class 2(GOOD)	

Tunnel: 5		BH: 57											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)



Tunnel: 5			BH: 57										RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
9.0	10.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
10.5	12.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
12.0	13.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
13.5	15.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
15.0	16.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
16.5	18.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
18.0	19.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
19.5	21.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)	
21.0	22.5	4	3	10	4	4	3	2	3	16	4	-5	32	Class 4 (POOR)	
22.5	24.0	4	8	10	4	4	3	2	3	16	4	-5	37	Class 4 (POOR)	
24.0	25.5	4	8	10	4	4	3	4	3	18	7	-5	42	Class 3(FAIR)	
25.5	27.0	4	3	10	4	4	1	1	1	11	7	-5	30	Class 4 (POOR)	
27.0	28.5	0	3	5	0	0	1	0	1	2	7	-5	12	Class 5 (VERY POOR)	
28.5	30.0	4	3	10	4	4	5	4	5	22	15	-5	49	Class 3(FAIR)	
30.0	31.5	4	3	10	6	4	5	4	5	24	15	-5	51	Class 3(FAIR)	
31.5	33.0	4	3	10	6	4	5	4	6	25	15	-5	52	Class 3(FAIR)	
33.0	34.5	4	3	10	6	6	5	4	6	27	15	-5	54	Class 3(FAIR)	
34.5	36.0	4	8	10	6	6	5	4	6	27	15	-5	59	Class 3(FAIR)	
36.0	37.5	4	13	10	6	6	5	4	6	27	15	-5	64	Class 2(GOOD)	

Tunnel: 5		BH: 58											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)



Tunnel: 5		BH: 58											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
7.5	9.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
10.5	12.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
15.0	16.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
16.5	18.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
18.0	19.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
19.5	21.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
21.0	22.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
22.5	24.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
24.0	25.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
25.5	27.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
27.0	28.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
28.5	30.0	0	3	8	1	1	1	0	1	4	4	-5	14	Class 5 (VERY POOR)
30.0	31.5	4	3	8	1	1	1	0	1	4	4	-5	18	Class 5 (VERY POOR)
31.5	33.0	4	3	8	1	1	1	2	3	8	4	-5	22	Class 4 (POOR)
33.0	34.5	4	3	8	4	4	5	2	3	18	10	-5	38	Class 4 (POOR)
34.5	36.0	4	3	8	4	4	5	2	5	20	10	-5	40	Class 4 (POOR)
36.0	37.5	4	8	8	6	5	6	2	5	24	10	-5	49	Class 3 (FAIR)
37.5	39.0	4	8	10	6	5	6	2	6	25	10	-5	52	Class 3 (FAIR)
39.0	40.5	4	8	10	6	5	6	2	6	25	10	-5	52	Class 3 (FAIR)
40.5	42.0	7	13	10	6	5	6	2	6	25	10	-5	60	Class 3 (FAIR)

Tunnel: 05		BH:59			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)

Tunnel: 05		BH:59			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
12.0	13.5	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
13.5	15.0	0	3	8	4	4	5	4	5	22	10	-5	38	Class 4 (POOR)
15.0	16.5	2	3	8	4	4	5	4	5	22	10	-5	40	Class 4 (POOR)
16.5	18.0	2	3	8	4	4	5	4	5	22	10	-5	40	Class 4 (POOR)
18.0	19.5	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
19.5	21.0	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
21.0	22.5	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
22.5	24.0	4	3	8	4	4	5	4	5	22	10	-5	42	Class 3 (FAIR)
24.0	25.5	4	3	10	4	5	5	6	6	26	10	-5	48	Class 3 (FAIR)
25.5	27.0	4	3	10	4	5	5	6	6	26	10	-5	48	Class 3 (FAIR)
27.0	28.5	4	3	10	4	5	5	6	6	26	11	-5	49	Class 3 (FAIR)
28.5	30.0	4	3	10	4	5	5	6	6	26	12	-5	50	Class 3 (FAIR)
30.0	31.5	4	8	10	4	5	5	6	6	26	13	-5	56	Class 3 (FAIR)
31.5	33.0	4	8	10	4	5	5	6	6	26	14	-5	57	Class 3 (FAIR)
33.0	34.5	4	8	10	4	5	5	6	6	26	15	-5	58	Class 3 (FAIR)
34.5	36.0	4	8	10	4	5	5	6	6	26	16	-5	59	Class 3 (FAIR)
36.0	37.5	4	8	10	4	5	5	6	6	26	17	-5	60	Class 3 (FAIR)
37.5	39.0	4	8	10	4	5	5	6	6	26	18	-5	61	Class 2 (GOOD)
39.0	40.5	4	8	10	4	5	5	6	6	26	19	-5	62	Class 2 (GOOD)
40.5	42.0	4	8	10	4	5	5	6	6	26	20	-5	63	Class 2 (GOOD)
42.0	43.5	4	8	10	4	5	5	6	6	26	15	-5	58	Class 3 (FAIR)
43.5	45.0	4	13	10	4	5	5	6	6	26	16	-5	64	Class 2 (GOOD)
45.0	46.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2 (GOOD)
46.5	48.0	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2 (GOOD)
48.0	49.5	4	13	20	6	6	6	6	6	30	15	-5	77	Class 2 (GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	16	-5	81	Class 1 (VERY GOOD)

Tunnel: 5		BH: 60											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	0	-5	3	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	1	1	0	0	2	4	-5	9	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	1	1	0	1	3	4	-5	10	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	1	1	0	1	3	4	-5	10	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	1	1	0	1	3	4	-5	10	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	1	1	0	1	3	4	-5	10	Class 5 (VERY POOR)
15.0	16.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
16.5	18.0	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
18.0	19.5	0	3	5	1	1	1	0	1	4	4	-5	11	Class 5 (VERY POOR)
19.5	21.0	0	3	5	1	1	3	0	1	6	4	-5	13	Class 5 (VERY POOR)
21.0	22.5	2	3	5	1	1	3	0	1	6	4	-5	15	Class 5 (VERY POOR)
22.5	24.0	2	3	5	1	1	3	0	1	6	4	-5	15	Class 5 (VERY POOR)
24.0	25.5	0	3	5	1	1	3	0	1	6	4	-5	13	Class 5 (VERY POOR)
25.5	27.0	4	3	5	2	1	3	0	1	7	4	-5	18	Class 5 (VERY POOR)
27.0	28.5	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
28.5	30.0	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
30.0	31.5	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
31.5	33.0	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
33.0	34.5	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
34.5	36.0	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
36.0	37.5	4	3	8	2	4	3	2	3	14	7	-5	31	Class 4 (POOR)
37.5	39.0	4	13	8	2	4	3	2	3	14	7	-5	41	Class 3 (FAIR)

Tunnel: 5		BH: 61											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)

Tunnel: 5		BH: 61											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-5	7	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	1	0	1	4	7	-5	14	Class 5 (VERY POOR)
10.5	12.0	0	3	5	1	1	1	2	1	6	7	-5	16	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	2	1	6	7	-5	16	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	3	2	3	10	7	-5	20	Class 5 (VERY POOR)
15.0	16.5	0	3	5	1	1	3	2	3	10	7	-5	20	Class 5 (VERY POOR)
16.5	18.0	2	3	5	1	4	3	2	5	15	7	-5	27	Class 4 (POOR)
18.0	19.5	2	3	8	1	4	5	2	5	17	7	-5	32	Class 4 (POOR)
19.5	21.0	4	3	8	1	4	5	2	5	17	7	-5	34	Class 4 (POOR)
21.0	22.5	4	3	8	1	4	5	2	5	17	15	-5	42	Class 3 (FAIR)
22.5	24.0	4	3	8	1	4	5	2	5	17	15	-5	42	Class 3 (FAIR)
24.0	25.5	4	3	8	1	4	5	2	5	17	15	-5	42	Class 3 (FAIR)

5.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-01)

Test Section	7.5 m-10.5 m		radius in cm=		3.8				Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
7.50	10.50	3	300	2.52	18	11.52	1	2152	1.30	2.60	4.10	3.4	11.3	0.00001221	1.20	Turbulent
7.50	10.50	3	300	2.52	18	11.52	2	3152	2.20	3.50	5.20	4.4	14.7	0.00001079	1.10	
7.50	10.50	3	300	2.52	18	11.52	3	4152	3.40	4.10	6.30	5.2	17.3	0.00000968	1.00	
7.50	10.50	3	300	2.52	18	11.52	2	3152	2.50	3.60	5.80	4.7	15.7	0.00001152	1.20	
7.50	10.50	3	300	2.52	18	11.52	1	2152	1.80	2.90	4.70	3.8	12.7	0.00001364	1.40	
													Avr.	0.00001157	1.00	



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-02)

Test Section	18.0 m- 21.0 m	radius in cm=	3. 8				Intake (Lit.)									

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-03)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-04)

Test Section	28.50 m- 31.5 m	radius in cm=		3. 8				Intake (Lit.)						Flow Condition		



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-05)

Test Section	22.50 m-25.5 m	radius in cm=		3.8				Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-06)

Test Section	19.50 m-22.5 m	radius in cm=	3.8			Intake (Lit.)									
						1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition		
Upper Part of Test Section (m)					Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.								
					GWL of hole m										
					Hght Of water Swivel from GL										
					L=Test Section in cm.										
					L=Test Section in m.										
					Lower Part of Test Section (m)										
					Upper Part of Test Section (m)										
19.50	22.50	3	300	2.52	22.4	24.92	1	3492	15.60	31.80	41.20	36.5	121.7	0.00008076	8.10
19.50	22.50	3	300	2.52	22.4	24.92	2	4492	24.30	42.60	58.90	50.8	169.4	0.00008738	8.70
19.50	22.50	3	300	2.52	22.4	24.92	3	5492	26.70	52.90	73.90	63.4	211.4	0.00008919	8.90
19.50	22.50	3	300	2.52	22.4	24.92	2	4492	27.60	53.90	70.10	62.0	206.7	0.00010664	10.70
19.50	22.50	3	300	2.52	22.4	24.92	1	3492	18.70	42.10	62.00	52.1	173.7	0.00011527	11.50
												Avr.		0.00009585	11.50

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-07)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-08)

Test Section		6.0 m-9.0 m	radius in cm=	3.8					Intake (Lit.)							
																Flow Condition
																Lugeon
																K cm/sec
																Q (cm ³ /sec)
																Avg.
																3 (15 min)
																2 (10 min)
																1 (5 min)
																Differential Head of Water H=(Hg+Hp) cm.
																Hp (Pressure at monometer) kg/cm ²
																Hg in m.
																GWL of hole m
																Hight Of water Swivel from GL
																L=Test Section in cm.
																L=Test Section in m.
																Lower Part of Test Section (m)
																Upper Part of Test Section (m)
6.00	9.00	3	300	2.55	21.6	10.05	1	2005	4.30	20.30	19.40	19.9	66.3	0.00007668	7.70	Dilation
6.00	9.00	3	300	2.55	21.6	10.05	2	3005	10.80	29.10	36.30	32.7	109.0	0.00008408	8.40	
6.00	9.00	3	300	2.55	21.6	10.05	3	4005	16.90	39.30	56.10	47.7	159.0	0.00009202	9.20	
6.00	9.00	3	300	2.55	21.6	10.05	2	3005	8.60	29.80	34.20	32.0	106.7	0.00008228	8.20	
6.00	9.00	3	300	2.55	21.6	10.05	1	2005	3.50	19.70	22.60	21.2	70.7	0.00008169	8.20	
													Average	0.00008335	7.70	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-09)

Test Section	6.0 m- 9.0 m	radius in cm=	3. 8				Intake (Lit.)									
Upper Part of Test Section (m)			Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Lower Part of Test Section (m)				L=Test Section in m.					8.50	24.60	32.60	28.6	95.4	0.00011026	11.00	
6.00	9.00	3	300	2.54	18.4	10.04	1	2004	8.50	24.60	32.60	28.6	95.4	0.00011026	11.00	
6.00	9.00	3	300	2.54	18.4	10.04	2	3004	15.30	43.10	39.40	41.3	137.7	0.00010622	10.60	
6.00	9.00	3	300	2.54	18.4	10.04	3	4004	20.70	46.70	52.30	49.5	165.0	0.00009552	9.60	Void Filling
6.00	9.00	3	300	2.54	18.4	10.04	2	3004	19.60	30.50	41.60	36.1	120.4	0.00009285	9.30	
6.00	9.00	3	300	2.54	18.4	10.04	1	2004	11.70	21.60	24.30	23.0	76.7	0.00008867	8.90	
													Av r.	0.00009871	8.90	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-10)

Test Section	13.5 m-16.5 m	radius in cm=	3.8				Intake (Lit.)									
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
13.50	16.50	3	300	2.5	19.2	17.5	1	2750	0.70	2.60	4.10	3.4	11.3	0.00000955	1.00	Turbulent
13.50	16.50	3	300	2.5	19.2	17.5	2	3750	1.30	3.50	5.40	4.5	15.0	0.00000927	0.90	
13.50	16.50	3	300	2.5	19.2	17.5	3	4750	2.20	4.00	6.40	5.2	17.3	0.00000846	0.80	
13.50	16.50	3	300	2.5	19.2	17.5	2	3750	1.70	3.90	5.80	4.9	16.3	0.00001010	1.00	
13.50	16.50	3	300	2.5	19.2	17.5	1	2750	1.50	2.80	3.30	3.1	10.3	0.00000871	0.90	
													Avr.	0.00000922	0.80	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-11)

Test Section	9.0 m-12.0 m	radius in cm=	3.8					Intake (Lit.)													
									Flow Condition	Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL
			</																		

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-12)

Test Section	7.5 m-10.5 m	radius in cm=	3 · 8			Intake (Lit.)																																																														
						Flow Condition	Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)																																														
7.50	10.50	3	300	2.5	--	11.5	1	2150	9.70	17.60	35.30	26.5	88.4	0.00009523	9.50	Turbulent																																																				
																					7.50	10.50	3	300	2.5	--	11.5	2	3150	13.20	25.70	40.90	33.3	111.0	0.00008168	8.20																																
																																					7.50	10.50	3	300	2.5	--	11.5	3	4150	20.40	32.60	45.30	39.0	130.0	0.00007261	7.30																
																																																					7.50	10.50	3	300	2.5	--	11.5	2	3150	10.80	22.20	43.20	32.7	109.0	0.00008021	8.00
												Avg.	0.00008592	7.30																																																						

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-13)

Test Section	10.50 m-13.5 m	radius in cm=	3.8				Intake (Lit.)									
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition		
Upper Part of Test Section (m)						Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.								
						GWL of hole m										
						Hight Of water Swivel from GL										
						L=Test Section in cm.										
						L=Test Section in m.										
						Lower Part of Test Section (m)										
						Upper Part of Test Section (m)										
10.50	13.50	3	300	2.52	11.2	13.72	1	2372	15.70	30.50	32.40	31.5	105.0	0.00010260	10.30	Turbulent
10.50	13.50	3	300	2.52	11.2	13.72	2	3372	26.60	46.60	42.30	44.5	148.4	0.00010196	10.20	
10.50	13.50	3	300	2.52	11.2	13.72	3	4372	18.90	40.40	55.30	47.9	159.7	0.00008465	8.50	
10.50	13.50	3	300	2.52	11.2	13.72	2	3372	25.10	38.60	47.20	42.9	143.0	0.00009830	9.80	
10.50	13.50	3	300	2.52	11.2	13.72	1	2372	16.70	27.70	36.70	32.2	107.4	0.00010488	10.50	
													Avg.	0.00009848	8.50	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-14)

Test Section n	12.0 m- 15.0 m	radius in cm=		3 · 8			Intake (Lit.)								
								</							

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-15)

Test Section	21.0 m-24.0 m	radius in cm=		3.8				Intake (Lit.)								
					GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL												
21.00	24.00	3	300	2.52	11.35	13.87	1	2387	8.40	20.10	25.50	22.8	76.0	0.00007380	7.40	Dilation
21.00	24.00	3	300	2.52	11.35	13.87	2	3387	15.30	31.40	38.60	35.0	116.7	0.00007984	8.00	
21.00	24.00	3	300	2.52	11.35	13.87	3	4387	19.10	39.90	53.60	46.8	156.0	0.00008242	8.20	
21.00	24.00	3	300	2.52	11.35	13.87	2	3387	12.70	29.70	39.20	34.5	115.0	0.00007870	7.90	
21.00	24.00	3	300	2.52	11.35	13.87	1	2387	10.30	22.80	25.10	24.0	80.0	0.00007768	7.80	
													Avr.	0.00007849	7.60	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-16)

Test Section n	25.50 m- 28.5 m	radius in cm=	3. 8				Intake (Lit.)									
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
25.50	28.50	3	300	2.5	14.1	16.6	1	2660	9.40	25.30	27.70	26.5	88.4	0.00007697	7.70	Dila tion
25.50	28.50	3	300	2.5	14.1	16.6	2	3660	18.60	33.70	44.60	39.2	130.7	0.00008275	8.30	
25.50	28.50	3	300	2.5	14.1	16.6	3	4660	23.40	46.90	59.40	53.2	177.4	0.00008821	8.80	
25.50	28.50	3	300	2.5	14.1	16.6	2	3660	14.20	31.50	45.30	38.4	128.0	0.00008106	8.10	
25.50	28.50	3	300	2.5	14.1	16.6	1	2660	11.60	23.60	30.10	26.9	89.7	0.00007813	7.80	
													Av r.	0.00008142	7.80	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-17)

Test Section	22.50 m-25.5 m	radius in cm=	3.8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
22.50	25.50	3	300	2.51	8.11	10.61	1	2061	0.90	1.90	3.10	2.5	8.3	0.0000937	0.90	Laminar
22.50	25.50	3	300	2.51	8.11	10.61	2	3061	1.10	2.50	3.80	3.2	10.7	0.00000808	0.80	
22.50	25.50	3	300	2.51	8.11	10.61	3	4061	1.40	3.50	4.90	4.2	14.0	0.00000799	0.80	
22.50	25.50	3	300	2.51	8.11	10.61	2	3061	1.70	2.70	4.10	3.4	11.3	0.00000858	0.90	
22.50	25.50	3	300	2.51	8.11	10.61	1	2061	0.80	2.50	2.30	2.4	8.0	0.00000900	0.90	
													Avg.	0.00000860	0.90	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-18)

Test Section	22.50 m-25.5 m	radius in cm=	3.8						Intake (Lit.)									Flow Condition
								</										

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-19)

Test Section n	25.5 m- 28.5 m	radius in cm=	3. 8				Intake (Lit.)									
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition		
Upper Part of Test Section (m)							Differential Head of Water H=(Hg+Hp) cm.									
							Hp (Pressure at monometer) kg/cm2									
							Hg in m.									
							GWL of hole m									
							Hight Of water Swivel from GL									
							L=Test Section in cm.									
							L=Test Section in m.									
							Lower Part of Test Section (m)									
							Upper Part of Test Section (m)									
25.50	28.5 0	3	30 0	2.5 1	13 .4	15.9 1	1	25 91	14. 30	30. 30	23. 80	27 .1	90. 4	0.000 08081	8.1 0	
25.50	28.5 0	3	30 0	2.5 1	13 .4	15.9 1	2	35 91	18. 60	36. 10	47. 50	41 .8	13 9.4	0.000 08994	9.0 0	
25.50	28.5 0	3	30 0	2.5 1	13 .4	15.9 1	3	45 91	22. 90	49. 90	60. 90	55 .4	18 4.7	0.000 09323	9.3 0	
25.50	28.5 0	3	30 0	2.5 1	13 .4	15.9 1	2	35 91	19. 80	42. 80	50. 30	46 .6	15 5.4	0.000 10026	10. 00	
25.50	28.5 0	3	30 0	2.5 1	13 .4	15.9 1	1	25 91	15. 30	33. 40	46. 60	40 .0	13 3.4	0.000 11928	11. 90	
													Av r.	0.000 09670	11. 90	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-20)

Test Section	22.50 m-25.5 m	radius in cm=		3.8			Intake (Lit.)									
Flow Condition	Lugeon	K cm/sec	Q <small>(cm³/sec)</small>	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)
Void Filling	2.70	0.00002651	29.0	8.7	8.20	9.10	3.50	2536	1	15.36	12.85	2.51	300	3	25.50	22.50
	2.30	0.00002272	34.7	10.4	11.50	9.30	2.90	3536	2	15.36	12.85	2.51	300	3	25.50	22.50
	2.10	0.00002112	41.3	12.4	13.50	11.20	4.80	4536	3	15.36	12.85	2.51	300	3	25.50	22.50
	2.10	0.00002054	31.3	9.4	11.30	7.50	3.80	3536	2	15.36	12.85	2.51	300	3	25.50	22.50
	1.80	0.00001828	20.0	6.0	6.20	5.80	2.20	2536	1	15.36	12.85	2.51	300	3	25.50	22.50
	1.80	0.00002183	Avr.													

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-21)

Test Section	24.0 m- 27.0 m	radius in cm=	3. 8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
24.00	27.0 0	3	300	2.5	6.8	9.3	1	1930	0.60	2.30	3.10	2.7	9.0	0.00001081	1.10	Turbu lent
24.00	27.0 0	3	300	2.5	6.8	9.3	2	2930	0.80	2.70	4.10	3.4	11.3	0.00000897	0.90	
24.00	27.0 0	3	300	2.5	6.8	9.3	3	3930	1.20	3.30	5.30	4.3	14.3	0.00000845	0.80	
24.00	27.0 0	3	300	2.5	6.8	9.3	2	2930	0.70	3.10	4.20	3.7	12.3	0.00000976	1.00	
24.00	27.0 0	3	300	2.5	6.8	9.3	1	1930	1.10	2.20	3.30	2.8	9.3	0.00001121	1.10	
													Av r.	0.00000984	0.80	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-22)

Test Section	25.50 m-28.5 m	radius in cm=	3.8						Intake (Lit.)					Flow Condition		

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-23)

Test Section	33.0 m-36.0 m	radius in cm=		3.8					Intake (Lit.)																																
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1	0.10	0.30	0.15	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition																								
																		1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition																
																										1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition								
																																		1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
33.00	36.00	3	30	2.55	6.85	9.4	1	19	0.10	0.30	0.15	0.3	1.0	0.00000119	0.10	Laminar																									
33.00	36.00	3	30	2.55	6.85	9.4	2	29	0.10	0.60	0.50	0.6	2.0	0.00000158	0.20																										
33.00	36.00	3	30	2.55	6.85	9.4	3	39	0.30	0.70	1.10	0.9	3.0	0.00000176	0.20																										
33.00	36.00	3	30	2.55	6.85	9.4	2	29	0.00	0.50	0.60	0.6	2.0	0.00000158	0.20																										
33.00	36.00	3	30	2.55	6.85	9.4	1	19	0.20	0.40	0.60	0.5	1.7	0.00000199	0.20																										
														Avr.	0.00000162	0.20																									



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-24)

Test Section	40.5 m- 43.5 m	radius in cm=	3.8				Intake (Lit.)						Flow Condition				
							1	2	3	Avg.	Q (cm ³ /sec)		K cm/sec	Lugeon			
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	
	40.50	43.50	3	300	2.51	20.8	23.31	1	3331	2.90	7.20	8.90	8.1	27.0	0.0001879	1.90	Void Filling
	40.50	43.50	3	300	2.51	20.8	23.31	2	4331	3.20	8.80	10.60	9.7	32.3	0.0001730	1.70	
	40.50	43.50	3	300	2.51	20.8	23.31	3	5331	5.10	10.20	12.10	11.2	37.3	0.0001623	1.60	
	40.50	43.50	3	300	2.51	20.8	23.31	2	4331	4.50	7.10	9.90	8.5	28.3	0.0001516	1.50	
	40.50	43.50	3	300	2.51	20.8	23.31	1	3331	3.10	4.90	5.90	5.4	18.0	0.0001253	1.30	
														Av r.	0.0001600	1.30	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-25)

Test Section	33.0 m-36.0 m	radius in cm=	3.8				Intake (Lit.)							
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)						Differential Head of Water $H=(H_g+H_p)$ cm.								
						H_p (Pressure at monometer) kg/cm ²								
						H_g in m.								
						GWL of hole m								
						Hight Of water Swivel from GL								
						L=Test Section in cm.								
						L=Test Section in m.								
						Lower Part of Test Section (m)								
						Upper Part of Test Section (m)								
33.00	36.00	3	300	2.53	14.85	17.38	1	2738	3.50	11.20	11.40	38.00	0.00003217	3.20
33.00	36.00	3	300	2.53	14.85	17.38	2	3738	9.40	15.50	11.30	44.70	0.00002770	2.80
33.00	36.00	3	300	2.53	14.85	17.38	3	4738	8.60	13.10	16.90	49.70	0.00002430	2.40
33.00	36.00	3	300	2.53	14.85	17.38	2	3738	10.00	14.30	19.80	56.00	0.00003472	3.50
33.00	36.00	3	300	2.53	14.85	17.38	1	2738	4.40	9.90	15.12	42.00	0.00003556	3.60
											Avr.	0.00003089	2.40	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-26)

Test Section	30.0 m-33.0 m		radius in cm=		3.8				Intake (Lit.)						Flow Condition		
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition	
30.00	33.00	3	300	2.55	30	32.55	1	4255	1.10	3.40	8.10	5.8	19.3	0.00001053	1.10	Turbulent	
30.00	33.00	3	300	2.55	30	32.55	2	5255	2.30	4.20	9.90	7.1	23.7	0.00001044	1.00		
30.00	33.00	3	300	2.55	30	32.55	3	6255	2.60	4.60	7.30	6.0	20.0	0.00000741	0.70		
30.00	33.00	3	300	2.55	30	32.55	2	5255	1.90	3.90	8.80	6.4	21.3	0.00000941	0.90		
30.00	33.00	3	300	2.55	30	32.55	1	4255	1.70	3.10	7.60	5.4	18.0	0.00000981	1.00		
													Avg. r.	0.00000952	0.70		

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-27)

Test Section	21.0 m- 24.0 m	radius in cm=	3. 8					Intake (Lit.)									Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp)	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon		
21.00	24.0 0	3	30 0	2.5 1	12 .2	14.7 1	1	24 71	0. 50	1. 50	2. 80	2. 2	7.3	0.0000 0688	0. 70	Lam inar	
21.00	24.0 0	3	30 0	2.5 1	12 .2	14.7 1	2	34 71	0. 90	2. 30	3. 50	2. 9	9.7	0.0000 0646	0. 60		
21.00	24.0 0	3	30 0	2.5 1	12 .2	14.7 1	3	44 71	1. 60	3. 30	4. 70	4. 0	13. 3	0.0000 0691	0. 70		
21.00	24.0 0	3	30 0	2.5 1	12 .2	14.7 1	2	34 71	1. 40	2. 50	4. 00	3. 3	11. 0	0.0000 0735	0. 70		
21.00	24.0 0	3	30 0	2.5 1	12 .2	14.7 1	1	24 71	1. 20	2. 40	2. 10	2. 3	7.7	0.0000 0719	0. 70		
													Av r.	0.0000 0696	0. 70		

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-28)

Test Section	22.50 m-25.5 m	radius in cm=	3.8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
22.50	25.50	3	300	2.55	9.2	11.75	1	2175	0.20	0.80	0.90	0.9	3.0	0.00000320	0.30	Laminar
22.50	25.50	3	300	2.55	9.2	11.75	2	3175	0.50	1.10	1.30	1.2	4.0	0.00000292	0.30	
22.50	25.50	3	300	2.55	9.2	11.75	3	4175	0.40	0.90	1.10	1.0	3.3	0.00000185	0.20	
22.50	25.50	3	300	2.55	9.2	11.75	2	3175	0.60	1.00	1.00	1.0	3.3	0.00000243	0.20	
22.50	25.50	3	300	2.55	9.2	11.75	1	2175	0.30	0.90	0.80	0.9	3.0	0.00000320	0.30	
													Avg.	0.00000272	0.30	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-29)

Test Section	19.50 m-22.5 m	radius in cm=	3.8						Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition	
19.50	22.50	3	300	2.58	8.2	10.78	1	2078	0.60	1.10	1.80	1.5	5.0	0.00000558	0.60	Lam inar	
19.50	22.50	3	300	2.55	8.2	10.75	2	3075	1.10	2.30	3.20	2.8	9.3	0.00000704	0.70		
19.50	22.50	3	300	2.55	8.2	10.75	3	4075	1.90	3.50	4.10	3.8	12.7	0.00000720	0.70		
19.50	22.50	3	300	2.55	8.2	10.75	2	3075	0.90	2.10	2.90	2.5	8.3	0.00000628	0.60		
19.50	22.50	3	300	2.55	8.2	10.75	1	2075	0.50	1.30	2.00	1.7	5.7	0.00000633	0.60		
													Av r.	0.00000649	0.60		

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-30)

Test Section		9.0 m-12.0 m	radius in cm=	3.8				Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-31)

Test Section		6.0 m-9.0 m		radius in cm=		3.8				Intake (Lit.)						
														Flow Condition		
														Lugeon		
														K cm/sec		
														Q (cm ³ /sec)		
														Avg.		
														3 (15 min)		
														2 (10 min)		
														1 (5 min)		
														Differential Head of Water H=(Hg+Hp) cm.		
														Hp (Pressure at monometer) kg/cm ²		
														Hg in m.		
														GWL of hole m		
														Hight Of water Swivel from GL		
														L=Test Section in cm.		
														L=Test Section in m.		
														Lower Part of Test Section (m)		
														Upper Part of Test Section (m)		
6.00	9.00	3	300	2.55	3.15	5.7	1	1570	0.30	0.90	1.60	1.3	4.3	0.00000640	0.60	Laminar
6.00	9.00	3	300	2.55	3.15	5.7	2	2570	0.60	1.50	2.20	1.9	6.3	0.00000571	0.60	
6.00	9.00	3	300	2.55	3.15	5.7	3	3570	1.10	2.10	2.80	2.5	8.3	0.00000541	0.50	
6.00	9.00	3	300	2.55	3.15	5.7	2	2570	0.70	1.30	2.20	1.8	6.0	0.00000541	0.50	
6.00	9.00	3	300	2.55	3.15	5.7	1	1570	0.50	1.20	1.80	1.5	5.0	0.00000738	0.70	
													Average	0.00000606	0.60	



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-32)

Test Section	22.50 m-25.5 m	radius in cm=	3.8						Intake (Lit.)							
				Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.													
22.50	25.50	3	300	2.51	6.3	8.81	1	1881	0.10	0.20	0.30	0.3	1.0	0.00000123	0.10	Laminar
22.50	25.50	3	300	2.51	6.3	8.81	2	2881	0.10	0.30	0.80	0.6	2.0	0.00000161	0.20	
22.50	25.50	3	300	2.51	6.3	8.81	3	3881	0.30	0.50	0.90	0.7	2.3	0.00000139	0.10	
22.50	25.50	3	300	2.51	6.3	8.81	2	2881	0.20	0.50	0.60	0.6	2.0	0.00000161	0.20	
22.50	25.50	3	300	2.51	6.3	8.81	1	1881	0.10	0.30	0.40	0.4	1.3	0.00000164	0.20	
													Avr.	0.00000150	0.20	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-33)

Test Section		25.50 m- 28.5 m	radius in cm=	3. 8				Intake (Lit.)								
													Flow Condition			
													Lugeon			
													K cm/sec			
													Q (cm3/sec)			
									Avg.							
									3 (15 min)							
									2 (10 min)							
									1 (5 min)							
									Differential Head of Water H=(Hg+Hp) cm.							
									Hp (Pressure at monometer) kg/cm2							
									Hg in m.							
									GWL of hole m							
									Hight Of water Swivel from GL							
									L=Test Section in cm.							
									L=Test Section in m.							
									Lower Part of Test Section (m)							
									Upper Part of Test Section (m)							
25.50	28.5 0	3	30 0	2.5 4	21 .5	24.0 4	1	34 04	0. 20	0. 50	0. 90	0. 7	2.3	0.0000 0159	0. 20	Lam inar
25.50	28.5 0	3	30 0	2.5 4	21 .5	24.0 4	2	44 04	0. 60	1. 20	1. 80	1. 5	5.0	0.0000 0263	0. 30	
25.50	28.5 0	3	30 0	2.5 4	21 .5	24.0 4	3	54 04	0. 90	2. 20	2. 90	2. 6	8.7	0.0000 0372	0. 40	
25.50	28.5 0	3	30 0	2.5 4	21 .5	24.0 4	2	44 04	1. 20	2. 30	1. 80	2. 1	7.0	0.0000 0368	0. 40	
25.50	28.5 0	3	30 0	2.5 4	21 .5	24.0 4	1	34 04	0. 90	1. 60	1. 50	1. 6	5.3	0.0000 0363	0. 40	
													Av r.	0.0000 0305	0. 30	



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-34)

Test Section	31.50 m-34.5 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
31.50	34.50	3	300	2.57	36.8	35.57	1	4557	0.80	2.20	1.20	1.7	5.7	0.00000288	0.30	Laminar
31.50	34.50	3	300	2.57	36.8	35.57	2	5557	1.00	1.80	3.50	2.7	9.0	0.00000375	0.40	
31.50	34.50	3	300	2.57	36.8	35.57	3	6557	1.30	2.50	4.10	3.3	11.0	0.00000389	0.40	
31.50	34.50	3	300	2.57	36.8	35.57	2	5557	1.10	1.60	3.90	2.8	9.3	0.00000389	0.40	
31.50	34.50	3	300	2.57	36.8	35.57	1	4557	0.40	1.10	1.80	1.5	5.0	0.00000254	0.30	
													Avr.	0.00000339	0.40	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-35)

Test Section		22.50 m-25.5 m	radius in cm=	3.8				Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
22.50	25.50	3	300	2.5	24.7	27.2	1	3720	0.10	0.30	0.60	0.5	1.7	0.00000104	0.10	Lam inar
22.50	25.50	3	300	2.5	24.7	27.2	2	4720	0.20	0.50	1.20	0.9	3.0	0.00000147	0.10	
22.50	25.50	3	300	2.5	24.7	27.2	3	5720	0.60	1.40	1.90	1.7	5.7	0.00000230	0.20	
22.50	25.50	3	300	2.5	24.7	27.2	2	4720	0.70	1.20	0.60	0.9	3.0	0.00000147	0.10	
22.50	25.50	3	300	2.5	24.7	27.2	1	3720	0.30	0.60	1.50	1.1	3.7	0.00000228	0.20	
													Av r.	0.00000171	0.10	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-36)

Test Section	21.0 m- 24.0 m	radius in cm=	3. 8				Intake (Lit.)									
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition		
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
21.00	24.00	3	300	2.55	18.2	20.75	1	3075	9.80	20.20	33.30	26.8	89.4	0.00006734	6.70	Was hout
21.00	24.00	3	300	2.55	18.2	20.75	2	4075	16.60	38.60	45.20	41.9	139.7	0.00007944	7.90	
21.00	24.00	3	300	2.55	18.2	20.75	3	5075	24.30	51.70	65.10	58.4	194.7	0.00008891	8.90	
21.00	24.00	3	300	2.55	18.2	20.75	2	4075	21.90	44.60	60.10	52.4	174.7	0.00009935	9.90	
21.00	24.00	3	300	2.55	18.2	20.75	1	3075	15.50	32.50	48.60	40.6	135.4	0.00010201	10.20	
													Avg. r.	0.00008741	10.20	



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-37)

Test Section	10.5 m-13.5 m	radius in cm=	3.8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
10.50	13.50	3	300	2.52	7.3	9.82	1	1982	6.80	15.60	26.70	21.2	70.7	0.00008264	8.30	Dilation
10.50	13.50	3	300	2.52	7.3	9.82	2	2982	15.00	30.10	38.60	34.4	114.7	0.00008913	8.90	
10.50	13.50	3	300	2.52	7.3	9.82	3	3982	17.60	35.50	65.50	50.5	168.4	0.00009798	9.80	
10.50	13.50	3	300	2.52	7.3	9.82	2	2982	13.20	32.80	37.10	35.0	116.7	0.00009068	9.10	
10.50	13.50	3	300	2.52	7.3	9.82	1	1982	8.90	18.90	24.60	21.8	72.7	0.00008498	8.50	
													Avr.	0.00008908	8.30	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-38)

Test Section	4.5 m-7.5 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
4.50	7.50	3	300	2.48	--	8.48	1	1848	15.30	28.60	22.10	25.4	84.7	0.00010619	10.60	Was hout
4.50	7.50	3	300	2.48	--	8.48	2	2848	19.20	34.10	49.90	42.0	140.0	0.00011394	11.40	
4.50	7.50	3	300	2.48	--	8.48	3	3848	25.90	55.90	70.60	63.3	211.0	0.00012710	12.70	
4.50	7.50	3	300	2.48	--	8.48	2	2848	22.70	48.60	63.30	56.0	186.7	0.00015192	15.20	
4.50	7.50	3	300	2.48	--	8.48	1	1848	16.30	35.50	52.60	44.1	147.0	0.00018438	18.40	
													Av r.	0.00013671	18.40	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-39)

Test Section n	9.0 m- 12.0 m	radius in cm=	3. 8					Intake (Lit.)															
Flow Condition								Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)
9.00	12.00	3	300	2.56	18.2	13.06	1	2306	18.60	40.30	23.20	31.8	106.0	0.00010655	10.70	Was hout							
9.00	12.00	3	300	2.56	18.2	13.06	2	3306	19.20	41.10	51.70	46.4	154.7	0.00010844	10.80								
9.00	12.00	3	300	2.56	18.2	13.06	3	4306	28.10	58.90	68.10	63.5	211.7	0.00011394	11.40								
9.00	12.00	3	300	2.56	18.2	13.06	2	3306	24.90	47.50	70.10	58.8	196.0	0.00013742	13.70								
9.00	12.00	3	300	2.56	18.2	13.06	1	2306	22.60	34.90	49.70	42.3	141.0	0.00014173	14.20								
												Av r.	0.00012161	14.20									



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-40)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-41)

Test Section	37.50 m-40.5 m	radius in cm=		3.8					Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-42)

Test Section	34.50 m- 37.5 m	radius in cm=	3. 8					Intake (Lit.)								
Flow Condition																
Lugeon																
K cm/sec																
Q (cm ³ /sec)																
Avg.																
3 (15 min)																
2 (10 min)																
1 (5 min)																
Differential Head of Water H=(Hg+Hp) cm.																
Hp (Pressure at monometer) kg/cm2																
Hg in m.																
GWL of hole m																
Hight Of water Swivel from GL																
L=Test Section in cm.																
L=Test Section in m.																
Lower Part of Test Section (m)																
Upper Part of Test Section (m)																
34.50	37.50	3	300	2.51	16.8	19.31	1	2931	6.30	13.50	21.30	17.4	58.0	0.0004587	4.60	Turbulent
34.50	37.50	3	300	2.51	16.8	19.31	2	3931	10.20	18.60	25.50	22.1	73.7	0.00044344	4.30	
34.50	37.50	3	300	2.51	16.8	19.31	3	4931	8.80	18.80	29.30	24.1	80.3	0.0003776	3.80	
34.50	37.50	3	300	2.51	16.8	19.31	2	3931	11.50	21.60	27.60	24.6	82.0	0.0004835	4.80	
34.50	37.50	3	300	2.51	16.8	19.31	1	2931	10.50	20.90	28.30	24.6	82.0	0.0006485	6.50	
													Avg.	0.0004805	3.80	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-43)

Test Section	39.0 m- 42.0 m	radius in cm=		3.8				Intake (Lit.)								
Upper Part of Test Section (m)		L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
39.00	42.00	3	300	2.5	17.25	19.75	1	29.75	12.30	22.20	27.60	24.9	83.0	0.00006467	6.50	Was hout
39.00	42.00	3	300	2.5	17.25	19.75	2	39.75	19.50	29.60	42.20	35.9	119.7	0.00006978	7.00	
39.00	42.00	3	300	2.5	17.25	19.75	3	49.75	33.30	41.10	55.50	48.3	161.0	0.00007501	7.50	
39.00	42.00	3	300	2.5	17.25	19.75	2	39.75	26.50	43.50	39.20	41.4	138.0	0.00008047	8.00	
39.00	42.00	3	300	2.5	17.25	19.75	1	29.75	24.50	28.40	43.60	36.0	120.0	0.00009349	9.30	
													Av r.	0.00007668	9.30	



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-44)

Test Section	52.50 m- 55.5 m	radius in cm=	3. 8						Intake (Lit.)				Flow Condition			
									1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	9.0	28.	35.	31	10	0.0000	4.	Dila tion	
								0	10	30	.7	5.7	4797	80		
								10.	30.	49.	40	13	0.0000	5.		
								30	90	80	.4	4.7	5112	10		
								12.	46.	59.	53	17	0.0000	5.		
00	30	90	.1	7.0	5773	80										
11.	46.	32.	39	13	0.0000	5.										
60	20	10	.2	0.7	4960	00										
51	35.	26.	31	10	0.0000	4.										
06	60	50	.1	3.7	4706	70										
												Av r.	0.0000	4.		
													5070	80		



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-45)

Test Section	22.5 m-25.5 m	radius in cm=	3.8				Intake (Lit.)									
									</							

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-46)

Test Section n	33.0 m- 36.0 m		radius in cm=		3.8				Intake (Lit.)							
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon
5 min										10 min	15 min					
33.00	36.00	3	300	2.53	21.65	24.18	1	3418	4.50	10.10	9.20	9.7	32.3	0.00002193	2.20	Void Filling
33.00	36.00	3	300	2.53	21.65	24.18	2	4418	3.90	10.30	12.50	11.4	38.0	0.00001994	2.00	
33.00	36.00	3	300	2.53	21.65	24.18	3	5418	5.80	12.20	14.50	13.4	44.7	0.00001911	1.90	
33.00	36.00	3	300	2.53	21.65	24.18	2	4418	4.80	8.50	12.30	10.4	34.7	0.00001819	1.80	
33.00	36.00	3	300	2.53	21.65	24.18	1	3418	3.20	6.80	7.20	7.0	23.3	0.00001582	1.60	
													Av r.	0.00001900	1.60	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-47)

Test Section	30.0 m-33.0 m	radius in cm=	3.8						Intake (Lit.)									Flow Condition

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-48)

Test Section n	34.5 m- 37.5 m	radius in cm=		3. 8					Intake (Lit.)							
									</							



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-49)

Test Section	22.5 m-25.5 m	radius in cm=	3.8						Intake (Lit.)							
	</															

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-50)

Test Section	16.5 m-19.5 m	radius in cm=	3.8					Intake (Lit.)							
Flow Condition															
Lugeon															
K cm/sec															
Q (cm ³ /sec)															
Avg.															
3 (15 min)															
2 (10 min)															
1 (5 min)															
Differential Head of Water H=(Hg+Hp) cm.															
Hp (Pressure at monometer) kg/cm ²															
Hg in m.															
GWL of hole m															
Hight Of water Swivel from GL															
L=Test Section in cm.															
L=Test Section in m.															
Lower Part of Test Section (m)															
Upper Part of Test Section (m)															
16.50	19.50	3	300	2.48	20.2	20.48	1	3048	15.30	28.10	35.50	31.8	106.0	0.00008061	8.10
16.50	19.50	3	300	2.48	20.2	20.48	2	4048	18.60	38.50	55.30	46.9	156.4	0.00008952	9.00
16.50	19.50	3	300	2.48	20.2	20.48	3	5048	29.40	54.30	66.60	60.5	201.7	0.00009260	9.30
16.50	19.50	3	300	2.48	20.2	20.48	2	4048	22.50	48.50	56.40	52.5	175.0	0.00010020	10.00
16.50	19.50	3	300	2.48	20.2	20.48	1	3048	18.30	38.30	46.30	42.3	141.0	0.00010722	10.70
												Avr.	0.00009403	10.80	



PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-51)

Test Section	6.0 m- 9.0 m	radius in cm=	3. 8			Intake (Lit.)									
						Flow Condition									

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-52)

Test Section		4.5 m-7.5 m	radius in cm=	3.8				Intake (Lit.)								
																Flow Condition

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-53)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-54)

Test Section	27.0 m-30.0 m	radius in cm=	3.8						Intake (Lit.)							
Flow Condition									Dila tion							
Lugeon									6.80							
K cm/sec									8.00							
Q (cm ³ /sec)									112.0							
Avg.									33.6							
3 (15 min)									36.40							
2 (10 min)									30.70							
1 (5 min)									13.90							
Differential Head of Water H=(Hg+Hp) cm.									37.95							
Hp (Pressure at monometer) kg/cm2									47.95							
Hg in m.									27.95							
GWL of hole m									25.4							
Hight Of water Swivel from GL									2.55							
L=Test Section in cm.									300							
L=Test Section in m.									3							
Lower Part of Test Section (m)									30.00							
Upper Part of Test Section (m)									27.00							

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-55)

Test Section	30.0 m- 33.0 m	radius in cm=	3. 8					Intake (Lit.)							
								1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)								44.00	31.30	41.20	36.3	12.1.0	0.0000 6374	6.40	
							1	54.00	40.90	58.60	49.8	16.6.0	0.0000 7125	7.10	Was hout
							2	54.00	52.30	65.30	58.8	19.6.0	0.0000 8413	8.40	
							3	64.00	58.70	70.70	64.7	21.5.7	0.0000 7811	7.80	
							2	54.00	43.10	56.20	49.7	16.5.7	0.0000 8727	8.70	
												Av r.	0.0000 7690	8.70	

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-56)

Test Section n	27.0 m- 30.0 m	radius in cm=	3. 8				Intake (Lit.)									
				</												

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-57)

Test Section	22.5 m- 25.5 m	radius in cm=	3. 8						Intake (Lit.)							
																Flow Condition

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-58)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-59)

Test Section	34.50 m-37.5 m	radius in cm=	3.8					Intake (Lit.)									
Flow Condition																	
Lugeon																	
K cm/sec																	
Q (cm ³ /sec)																	
Avg.																	
3 (15 min)																	
2 (10 min)																	
1 (5 min)																	
Differential Head of Water H=(Hg+Hp) cm.																	
Hp (Pressure at monometer) kg/cm2																	
Hg in m.																	
GWL of hole m																	
Hight Of water Swivel from GL																	
L=Test Section in cm.																	
L=Test Section in m.																	
Lower Part of Test Section (m)																	
Upper Part of Test Section (m)																	
34.50	37.50	3	300	2.58	36.2	38.78	1	4878	7.70	22.10	41.30	31.7	105.7	0.00005021	5.00	Turbulent	
34.50	37.50	3	300	2.58	36.2	38.78	2	5878	11.30	21.30	51.20	36.3	12.0	0.00004771	4.80		
34.50	37.50	3	300	2.58	36.2	38.78	3	6878	14.60	32.50	41.60	37.1	12.3.7	0.00004168	4.20		
34.50	37.50	3	300	2.58	36.2	38.78	2	5878	10.30	23.10	47.40	35.3	11.7.7	0.00004640	4.60		
34.50	37.50	3	300	2.58	36.2	38.78	1	4878	11.60	25.50	45.30	35.4	11.8.0	0.00005607	5.60		
													Avg.	0.00004841	4.20		

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-60)

Test Section n	15.0 m- 18.0 m	radius in cm=	3. 8					Intake (Lit.)																																																																													
									Flow Condition	Lugeon	K cm/sec	Q (cm ³ /sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)																																																																					
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	28 95	4.3 0	18. 00	31. 10	24 .6	82. 0	0.0000 6565	6. 60																																																																					
																		15.00	18.0 0	3	30 0	2.4 5	36 .2	18.9 5	1	28 95	4.3 0	18. 00	31. 10	24 .6	82. 0	0.0000 6565	6. 60																																																				
																																			15.00	18.0 0	3	30 0	2.4 5	36 .2	18.9 5	2	38 95	8.8 0	29. 10	48. 40	38 .8	12 9.4	0.0000 7696	7. 70																																			
																																																				15.00	18.0 0	3	30 0	2.4 5	36 .2	18.9 5	3	48 95	15. 30	41. 90	56. 90	49 .4	16 4.7	0.0000 7797	7. 80																		
																																																																					15.00	18.0 0	3	30 0	2.4 5	36 .2	18.9 5	2	38 95	11. 20	32. 90	49. 80	41 .4	13 8.0	0.0000 8212	8. 20	
													Av r.	0.0000 7832	8. 90																																																																						

PERMEABILITY TEST RESULT OF TUNNEL-05 (BH-61)

Test Section n	9.0 m- 12.0 m	radius in cm=	3. 8					Intake (Lit.)		Flow Condition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
										Lugeon	K cm/sec	Q (cm3/sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm2	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

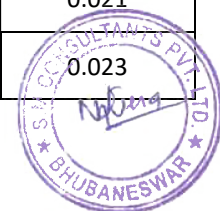
Lugen test result



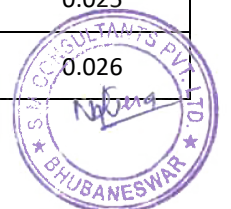
5.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.5	BH-1	At 0.5 m depth	6.11	15.26	0.022
2		BH-2	At 0.5 m depth	6.05	16.89	0.023
3			At. 1.5 m depth	6.13	17.02	0.025
4			At.3.0 m depth	6.25	18.32	0.026
5		BH-3	At 0.5 m depth	6.47	20.01	0.032
6			At. 1.5 m depth	6.32	22.35	0.035
7			At.3.0 m depth	6.58	24.56	0.038
8			At 4.5 m depth	6.61	28.98	0.024
9			At. 6.0 m depth	6.67	30.02	0.021
10		BH-4	At 0.5 m depth	6.72	29.04	0.020
11			At.3.0 m depth	6.78	27.01	0.029
12			At 4.5 m depth	6.82	25.35	0.026
13		BH-5	At 0.5 m depth	6.74	30.02	0.025
14			At. 1.5 m depth	6.54	29.68	0.024
15			At.3.0 m depth	6.53	32.14	0.031
16			At 4.5 m depth	6.50	30.01	0.035
17			At. 6.0 m depth	6.47	35.41	0.028
18		BH-6	At 0.5 m depth	6.89	30.02	0.021
19			At. 1.5 m depth	6.92	28.75	0.032
20			At.3.0 m depth	6.62	26.74	0.034
21			At 4.5 m depth	6.43	25.98	0.029

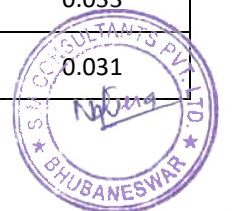
CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
22		BH-7	At 0.5 m depth	6.54	27.33	0.034
23			At. 1.5 m depth	6.58	30.08	0.037
24			At.3.0 m depth	6.71	31.26	0.025
25			At 4.5 m depth	6.89	34.12	0.021
26			At. 6.0 m depth	6.75	35.32	0.023
27		BH-8	At. 1.5 m depth	6.48	36.41	0.026
28			At.3.0 m depth	6.43	30.07	0.027
29		BH-9	At. 1.5 m depth	6.59	28.65	0.025
30			At.3.0 m depth	6.57	27.68	0.034
31		BH-10	At. 1.5 m depth	6.77	25.31	0.032
32			At.3.0 m depth	6.64	22.14	0.023
33		BH-11	At. 1.5 m depth	6.53	30.25	0.025
34			At.3.0 m depth	6.50	32.69	0.026
35		BH-12	At. 0.5 m depth	6.42	35.24	0.028
36		BH-13	At. 1.5 m depth	6.34	29.87	0.021
37			At.3.0 m depth	6.28	26.54	0.023
38		BH-14	At. 0.5 m depth	6.72	28.62	0.032
39		BH-15	At 1.5 m depth	6.92	30.05	0.031
40			At 3.0 m depth	6.85	31.24	0.035
41		BH-16	At 1.5 m depth	6.74	33.64	0.026
42			At 3.0 m depth	6.34	29.98	0.027
43		BH-17	At 0.5 m depth	6.58	27.86	0.022
44			At 1.5 m depth	6.66	28.13	0.021
45		BH-18	At 0.5 m depth	6.67	19.65	0.023



CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
46			At 1.5 m depth	6.58	20.03	0.025
47			At 3.0 m depth	6.47	22.47	0.024
48		BH-19	At 0.5 m depth	6.35	23.56	0.021
49			At 4.5 m depth	6.26	25.68	0.026
50			At 6.0 m depth	6.15	26.39	0.029
51		BH-20	At 0.5 m depth	6.28	29.6	0.03
52			At 1.5 m depth	6.35	30.02	0.035
53		BH-21	At 0.5 m depth	6.39	31.25	0.032
54			At 3.0 m depth	6.41	32.47	0.031
55		BH-22	At 0.5 m depth	6.52	33.58	0.028
56		BH-23	At 0.5 m depth	6.62	28.62	0.026
57		BH-24	At 0.5 m depth	6.68	25.64	0.031
58		BH-25	At 0.5 m depth	6.75	25.01	0.035
59			At 4.5 m depth	6.24	23.47	0.032
60		BH-26	At 0.5 m depth	6.87	25.62	0.037
61		BH-27	At 0.5 m depth	6.52	27.89	0.031
62		BH-28	At 0.5 m depth	6.78	30.02	0.026
63		BH-29	At 0.5 m depth	6.62	29.65	0.032
64		BH-30	At 0.5 m depth	6.65	26.54	0.023
65		BH-31	At 0.5 m depth	6.23	18.92	0.021
66		BH-32	At 0.5 m depth	6.87	22.54	0.029
67		BH-33	At 0.5 m depth	6.28	22.36	0.035
68		BH-34	At 0.5 m depth	6.31	26.41	0.025
69		BH-35	At 0.5 m depth	6.28	28.02	0.026



CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
70		BH-36	At 0.5 m depth	6.42	32.15	0.021
71		BH-37	At 0.5 m depth	6.59	31.11	0.028
72			At 1.5 m depth	6.74	29.68	0.031
73		BH-38	At 0.5 m depth	6.66	28.69	0.035
74		BH-39	At 0.5 m depth	6.41	32.01	0.026
75		BH-40	At 0.5 m depth	6.32	29.86	0.025
76		BH-41	At 0.5 m depth	6.12	25.64	0.023
77			At 1.5 m depth	6.34	21.34	0.03
78			At 3.0 m depth	6.34	22.37	0.032
79			At 4.5 m depth	6.58	20.01	0.035
80		BH-42	At 0.5 m depth	6.61	22.36	0.031
81		BH-43	At 0.5 m depth	6.59	30.01	0.029
82		BH-44	At 0.5 m depth	6.67	29.63	0.027
83			At 1.5 m depth	6.68	28.67	0.022
84		BH-45	At 1.5 m depth	6.72	25.36	0.023
85			At 3.0 m depth	6.78	22.47	0.021
86		BH-46	At 1.5 m depth	6.82	21.25	0.021
87			At 3.0 m depth	6.89	20.03	0.022
88		BH-47	At 0.5 m depth	6.92	19.62	0.025
89			At 3.0 m depth	6.75	18.62	0.027
90		BH-48	At 0.5 m depth	6.54	20.31	0.024
91			At 1.5 m depth	6.43	17.25	0.028
92			At 3.0 m depth	6.32	16.52	0.033
93		BH-49	At 0.5 m depth	6.25	15.68	0.031

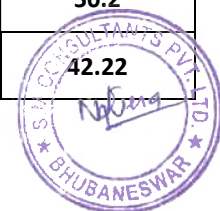


CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
94		BH-50	At 0.5 m depth	6.31	17.89	0.032
95		BH-51	At 0.5 m depth	6.38	18.21	0.028
96		BH-52	At 0.5 m depth	6.42	20.32	0.025
97		BH-53	At 0.5 m depth	6.45	22.69	0.034
98		BH-54	At 0.5 m depth	6.47	26.41	0.036
99			At 1.5 m depth	6.82	28.91	0.028
100			At 7.5 m depth	6.75	30.21	0.021
101		BH-55	At 0.5 m depth	6.70	35.14	0.022
102		BH-56	At 0.5 m depth	6.64	36.21	0.025
103		BH-57	At 0.5 m depth	6.54	38.61	0.024
104		BH-58	At 0.5 m depth	6.53	31.02	0.037
105		BH-59	At 0.5 m depth	6.47	30.54	0.036
106		BH-60	At 0.5 m depth	6.52	29.68	0.031
107		BH-61	At 0.5 m depth	6.87	30.01	0.028

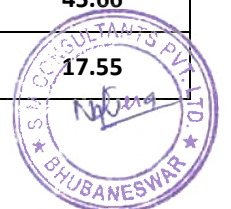
5.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.5	BH-1	21.00	6.58	26.87	24.55
2			22.00	6.57	31.25	22.25
3		BH-2	12.00	6.71	36.55	28.87
4			15.00	6.7	37.22	25.55
5		BH-3	25.5	6.82	42.21	31.45
6			30.0	6.8	40.07	34.44
7		BH-4	25.5	6.88	42.22	34.51
8			28.5	6.92	48.77	36.66
9		BH-5	21.0	6.86	34.55	27.85
10			24.0	6.95	36.22	24.66
11		BH-6	24.0	7.04	41.2	35.65
12			27.0	7.06	42.23	36.55
13		BH-7	22.5	7.01	34.5	42.25
14			25.5	7.0	32.22	41.33
15		BH-8	22.5	6.85	47.86	32.22
16			25.5	6.77	51.22	34.57
17		BH-9	19.5	6.96	55.54	34.57
18			21.0	6.85	52.22	30.22
19		BH-10	21.0	7.06	47.66	28.87
20			25.5	7.08	46.2	26.54
21		BH-11	15.0	6.98	53.58	42.22
22			18.0	6.99	56.44	40.12
25		BH-13	12.0	6.68	42.02	38.74

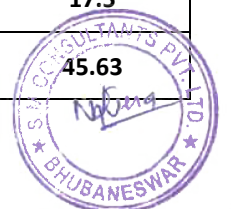
CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
26		BH-14	18.0	6.87	37.56	36.08
27			6	6.75	28.75	41.2
28			10.5	6.73	26.45	42.22
29		BH-15	12	6.69	35.55	42.2
30			15	6.74	34.63	41.28
31		BH-16	15	6.9	38.56	28.96
32			18	6.92	40.22	27.66
33		BH-17	10.5	7.02	28.78	18.55
34			15	7.04	26.44	17.2
35		BH-18	9	6.9	49.85	33.02
36			16.5	6.93	46.55	34.56
37		BH-19	15	7.05	44.21	31.2
38			19.5	7.03	38.89	28.96
39		BH-20	15.5	6.9	40.01	32.22
40			16.5	6.88	42.33	34.87
41		BH-21	7.5	7.02	24.55	36.55
42			12.0	6.98	41.22	45.66
43		BH-22	9.0	6.97	38.85	28.66
44			15.0	6.99	26.55	40.22
45		BH-23	7.5	6.75	28.96	35.55
46			12	6.76	42.25	30.1
47		BH-24	21	6.85	44.59	56.86
48			24	6.98	48.52	50.2
49		BH-25	7.5	6.66	53.63	42.22



CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
50		BH-26	13.5	6.72	51.23	50.22
51			31.5	7.01	28.55	18.33
52			36	7.06	25.66	16.54
53		BH-27	13.5	6.96	31.22	31.2
54			18	6.9	29.96	33.25
55		BH-28	10.5	6.99	42.29	35.66
56			15	6.69	37.52	25.55
57		BH-29	9	6.62	56.66	48.96
58			13.5	7.05	52.22	42.22
59		BH-30	3	7.06	25.66	28.33
60			6	7.0	26.33	31.22
61		BH-31	4.5	7.03	44.52	40.01
62			9	6.66	32.2	47.98
63		BH-32	7.5	6.63	24.55	18.52
64			13.5	6.77	26.2	21.22
65		BH-33	22.5	6.72	37.41	41.2
66			27	6.68	43.2	47.85
67		BH-34	37.5	6.62	40.06	45.22
68			40.5	7.05	30.02	41.25
69		BH-35	25.5	7.04	53.22	35.63
70			28.5	6.69	48.56	36.22
71		BH-36	21	6.62	42.98	48.63
72			24	6.63	40.12	45.66
73		BH-37	9	6.78	25.56	17.55



CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
74		BH-39	12	6.89	26.22	15.63
77			19.5	7.02	32.56	45.52
78			22.5	7.05	38.69	49.63
79		BH-40	22.5	6.98	45.63	52.2
80			25.5	6.92	44.21	48.52
81		BH-41	25.5	6.90	31.11	36.56
82			30	6.97	34.56	42.69
83		BH-42	18	6.85	24.56	33.21
84			21	6.77	28.63	36.54
85		BH-43	18	6.75	58.56	43.66
86			24	6.70	59.85	38.41
87		BH-44	39	6.65	30.1	36.55
88			49.5	7.01	34.58	42.22
89		BH-45	28.5	6.98	42.25	38.56
90			33	6.95	41.02	32.58
91		BH-46	22.5	6.90	58.63	51.22
92			25.5	6.94	61.24	48.65
93		BH-47	25.5	6.88	45.63	28.66
94			30	6.7	42.63	30.89
95		BH-48	33	6.73	35.67	44.5
96			43.5	6.66	34.78	40.1
97		BH-49	36	7.05	26.5	18.96
98			39	6.88	28.75	17.5
99		BH-50	21	6.82	32.25	45.63



CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
100		BH-54	25.5	6.63	32.22	46.85
107			27	6.66	34.6	51.22
108			30	6.78	32.6	42.22
109		BH-55	36.5	6.88	33.56	44.57
110			39	6.63	28.56	21.25
111		BH-56	25.5	6.75	26.55	16.52
112			28.5	6.79	29.56	222.55
113		BH-57	24	6.88	35.66	45.52
114			28.5	6.99	38.66	46.54
115		BH-58	22.5	6.96	41.22	40.25
116			25.5	6.9	42.56	38.52
117		BH-59	37.5	6.89	38.55	46.55
118			40.5	7.03	42.63	41.22
119		BH-60	31.5	7.0	32.52	28.56
120			34.5	6.95	34.52	31.56
121		BH-61	21	6.65	33.54	28.56
122			24	6.66	25.55	16.52

5.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
LABORATORY TEST RESULT FOR BH-1 (T-5), CH. 50177															
1	0.0 -	DS	7.94	2.35	21.15	63.04	5.52		18	----	Np	2.66	0	----	SP- SM
LABORATORY TEST RESULT FOR BH-2 (T-5), CH. 50227															
1	0.0 -	DS	0.13	0.21	11.12	51.52	37.02		22	----	Np	2.66	0	----	SM
2	0.5 -	SPT	0.00	0.15	17.57	75.01	7.27		----	----	----	2.65	----	N >	Note*
3	1.5 -	SPT	0.30	0.19	20.78	58.20	20.53		----	----	----	2.65	----	N >	
NOTE*:- From 0.5m to 3.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-3 (T-5), CH. 50277															
1	0.0 -	DS	3.67	2.60	16.31	42.43	34.99		20	---	Np	2.65	0	----	SM
2	0.5 -	SPT	1.78	4.66	51.22	24.33	18.01		----	----	----	2.65	----	N >	Note*
3	1.5 -	SPT	1.34	7.36	62.14	20.48	8.68		----	----	----	2.65	----	N >	
4	3.0 -	SPT	1.00	8.46	70.19	15.32	5.03		----	----	----	2.64	----	N >	
5	4.5 -	SPT	0.32	9.80	72.48	13.12	4.28		----	----	----	2.64	----	N >	
NOTE*:- From 0.5m to 6.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-4 (T-5), CH. 50327															
1	0.0 -	DS	4.22	3.08	15.86	40.55	25.85	10.44	31	19	12	2.69	0	----	SC

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
4	3.0 -	SPT	1.11	8.94	68.55	15.32	6.08		----	----	----	2.66	----	N >	Note*
5	4.5 -	SPT	0.85	9.42	70.24	13.12			6.37	----	----	----	2.66	----	
NOTE*:- From 3.0m to 6.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-5 (T-5), CH. 50377															
1	0.0 -	DS	1.86	2.48	18.22	50.41	25.47	27.03	21	----	Np	2.65	0	----	SM
2	0.5 -	SPT	2.44	3.88	18.56	38.40		11.25	30	19	11	2.69	10	N =	SC
3	1.5 -	SPT	0.00	1.23	30.58	60.22	7.97	6.74	----	----	----	2.65	----	N >	Note*
4	3.0 -	SPT	0.00	2.05	35.96	55.25			----	----	----	2.65	----	N >	
5	4.5 -	SPT	1.12	3.36	36.58	50.48			8.46	----	----	----	2.65	----	
NOTE*:- From 1.5m to 6.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-6 (T-6), CH. 50427															
1	0.0 -	DS	1.54	2.02	20.62	53.36	24.60	22.46	20	----	Np	2.65	0	----	SM
2	0.5 -	SPT	0.15	1.89	19.49	44.32		9.55	29	19	10	2.69	0	N =	SC
3	1.5 -	SPT	0.00	0.09	31.22	67.50	1.19	3.58	----	----	----	2.65	----	N >	Note*
4	3.0 -	SPT	0.00	0.06	36.12	60.24			----	----	----	2.65	----	N >	
NOTE*:- From 1.5m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
1			2	3	4	5	6	7	8	9	10				11
LABORATORY TEST RESULT FOR BH-7 (T-5), CH. 50477															
	1	2	3	4	5										
	0.0 -	0.5 -	1.5 -	3.0 -	4.5 -	DS	SPT	SPT	SPT	SPT	0.00	0.00	0.00	0.07	13.06

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
3	1.5 -	SPT	0.55	1.49	40.19	54.16	3.61		----	----	----	2.65	----	N >	
4	3.0 -	SPT	0.37	1.76	42.57	51.37	3.93		----	----	----	2.65	----	N >	
NOTE*:- From 0.5m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-10 (T-5), CH. 50627															
1	0.0 -	DS	7.80	3.76	10.80	42.70	34.94		22	----	Np	2.66	0	----	Note*
2	0.5 -	SPT	0.51	13.04	79.68	1.09	5.68		----	----	----	2.65	----	N >	
3	1.5 -	SPT	1.25	0.05	16.24	73.82	8.64		----	----	----	2.65	----	N >	
NOTE*:- From 0.5m to 3.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-11 (T-5), CH. 50677															
1	0.0 -	DS	1.17	0.76	9.64	47.38	28.00		32	21	11	2.69	10	----	Note*
2	0.5 -	SPT	0.00	0.39	11.89	45.01	30.17		32	20	12	2.69	10	N =	
3	1.5 -	SPT	0.00	1.16	16.34	72.51	9.99		----	----	----	2.65	----	N >	
4	3.0 -	SPT	0.00	2.64	47.58	40.60	9.18		----	----	----	2.65	----	N >	
5	4.5 -	SPT	0.00	3.55	50.23	38.63	7.59		----	----	----	2.65	----	N >	
NOTE*:- From 1.5m to 6.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-12 (T-5), CH. 50727															

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970																
1	Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
				Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
1	0.0 -	DS	2.00	2.35	17.81	50.29	27.55	21	----	Np	2.65	0	----	SM		
LABORATORY TEST RESULT FOR BH-13 (T-5), CH. 50777																
1	0.0 -	DS	1.44	1.78	14.24	51.91	30.63	21	----	Np	2.65	0	----	SM		
2	0.5 -	SPT	0.00	0.03	1.20	84.77	14.00	----	----	----	2.65	----	N >	Note*		
3	1.5 -	SPT	0.00	0.00	1.35	88.39	10.26	----	----	----	2.65	----	N >			
4	3.0 -	SPT	0.00	0.00	1.66	88.80	9.54	----	----	----	2.65	----	N >			
NOTE*:- From 0.5m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																
LABORATORY TEST RESULT FOR BH-14 (T-5), CH. 50827																
1	0.0 -	DS	0.00	0.12	7.53	46.79	28.98	16.58	30	20	10	2.69	10	----	SC	
LABORATORY TEST RESULT FOR BH-15 (T-5), CH. 50877																
1	0.0 -	DS	33.55	9.81	9.62	34.10	12.92	19	----	Np	2.65	0	----	SM		
2	0.5 -	SPT	0.00	0.00	6.09	82.30	11.61	----	----	----	2.65	----	N >	Note*		
3	1.5 -	SPT	1.05	0.08	6.13	82.39	10.35	----	----	----	2.65	----	N >			
NOTE*:- From 0.5m to 3.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																
LABORATORY TEST RESULT FOR BH-16 (T-5), CH. 50927																
1	0.0 -	DS	30.22	7.92	8.66	32.55	20.65	19	----	Np	2.65	0	----	SM		
2	0.5 -	SPT	0.00	3.33	6.85	80.86	8.96	----	----	----	2.65	----	N >	Note*		

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
3	1.5 -	SPT	1.84	2.45	7.66	83.40	4.65		----	----	----	2.65	----	N >	
4	3.0 -	SPT	2.04	3.65	10.42	79.56	4.33		----	----	----	2.65	----	N >	
NOTE*:- From 0.5m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-17 (T-5), CH. 50977															
1	0.0 -	DS	2.30	1.66	15.42	53.03	27.59		20	---	Np	2.65	0	----	SM
2	0.5 -	SPT	1.45	0.20	12.04	76.08	10.23		19	----	Np	2.65	0	N =	SP-
LABORATORY TEST RESULT FOR BH-18 (T-5), CH. 51027															
1	0.0 -	DS	2.75	2.36	15.86	55.12	23.91		19	---	Np	2.65	0	----	SM
3	1.5 -	SPT	1.94	1.75	13.72	75.34	7.25		19	----	Np	2.65	0	N =	SP-
4	3.0 -	SPT	2.78	8.78	30.44	30.12	27.88		----	----	----	2.66	----	N >	*Note
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-19 (T-5), CH. 51077															
1	0.0 -	DS	13.77	6.62	16.13	33.87	29.61		22	----	Np	2.65	0	----	SM
5	4.5 -	SPT	3.35	7.97	28.70	9.09	50.89		----	----	----	2.66	----	N >	*Note
6	6.0 -	SPT	0.00	0.63	51.18	43.26	4.93		----	----	----	2.65	----	N >	
NOTE*:- From 4.5m to 7.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970																
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.	
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %					
LABORATORY TEST RESULT FOR BH-20 (T-5), CH. 51127																
1	0.0 -	DS	2.30	1.66	15.42	53.03		27.59		20	---	Np	2.65	0	----	SM
2	0.5 -	SPT	1.45	0.20	12.04	76.08		10.23		19	----	Np	2.65	0	N =	SM
LABORATORY TEST RESULT FOR BH-21 (T-5), CH. 51177																
1	0.0 -	DS	1.03	3.49	22.21	48.41		24.86		21	----	Np	2.65	0	----	SM
4	3.0 -	SPT	0.36	0.73	56.53	38.98		3.40		----	----	----	2.65	----	N >	*Note
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																
LABORATORY TEST RESULT FOR BH-22 (T-5), CH. 51227																
1	0.0 -	DS	1.58	2.01	17.90	45.18		23.77	9.56	30	20	10	2.69	0	----	SC
LABORATORY TEST RESULT FOR BH-23 (T-5), CH. 51277																
1	0.0 -	DS	0.00	0.42	14.62	49.92		25.82	9.22	29	19	10	2.69	0	----	SC
LABORATORY TEST RESULT FOR BH-24 (T-5), CH. 51327																
1	0.0 -	DS	2.94	5.15	15.23	48.72		17.64	10.32	29	19	10	2.65	10	----	SC
LABORATORY TEST RESULT FOR BH-25 (T-5), CH. 51377																
1	0.0 -	DS	3.68	3.55	15.55	45.22		21.78	10.22	29	20	9	2.68	0	----	SC
5	4.5 -	SPT	0.58	1.72	50.24	35.66		11.80		----	----	----	2.65	----	N >	*Note
NOTE*:- From 4.5m to 6.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
LABORATORY TEST RESULT FOR BH-26 (T-5), CH. 51427															
1	0.0 -	DS	10.18	0.58	11.01	41.63	26.29	10.31	29	19	10	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-27 (T-5), CH. 51477															
1	0.0 -	DS	5.68	1.94	14.08	52.60	25.70		21	----	Np	2.65	0	----	SM
LABORATORY TEST RESULT FOR BH-28 (T-5), CH. 51527															
1	0.0 -	DS	0.00	0.14	17.88	67.37	14.61		18	----	Np	2.65	0	----	SM
LABORATORY TEST RESULT FOR BH-29 (T-5), CH. 51577															
1	0.0 -	DS	16.11	5.28	16.78	33.14	28.69		21	----	Np	2.65	0	----	SM
LABORATORY TEST RESULT FOR BH-30 (T-5), CH. 51627															
1	0.0 -	DS	18.50	2.66	4.86	27.45	31.18	15.35	31	20	11	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-31 (T-5), CH. 51677															
1	0.0 -	DS	6.24	3.65	7.28	35.44	32.17	15.22	32	20	12	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-32 (T-5), CH. 51727															
1	0.0 -	DS	0.56	1.73	9.70	44.45	27.31	16.25	32	20	12	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-33 (T-5), CH. 51777															
1	0.0 -	DS	0.88	2.53	12.18	51.32	23.04	10.05	30	19	11	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-34 (T-5), CH. 51827															
1	0.0 -	DS	1.05	2.54	15.53	56.07	24.81		20	---	Np	2.65	0	----	SM

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
LABORATORY TEST RESULT FOR BH-35 (T-5), CH. 51877															
1	0.0 -	DS	4.25	3.47	10.48	42.75	28.63	10.42	30	19	11	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-36 (T-5), CH. 51927															
1	0.0 -	DS	43.47	3.13	3.78	21.02	28.60		18	----	Np	2.64	0	----	GM
LABORATORY TEST RESULT FOR BH-37 (T-5), CH. 51977															
1	0.0 -	DS	42.36	2.56	5.23	18.86	21.84	9.15	30	19	11	2.69	0	----	GC
2	0.5 -	UDS	7.52	4.86	6.75	22.48	33.27	25.12	32	20	12	2.70	14	----	CL
LABORATORY TEST RESULT FOR BH-38 (T-5), CH. 52027															
1	0.0 -	DS	45.32	0.42	1.71	13.62	28.68	10.25	30	19	11	2.69	0	----	GC
LABORATORY TEST RESULT FOR BH-39 (T-5), CH. 52077															
1	0.0 -	DS	4.30	0.85	3.91	30.32	39.94	20.68	32	20	12	2.70	12	----	CL
LABORATORY TEST RESULT FOR BH-40 (T-5), CH. 52127															
1	0.0 -	DS	2.36	1.56	4.44	22.36	46.53	22.75	32	20	12	2.69	10	----	CL
LABORATORY TEST RESULT FOR BH-41 (T-5), CH. 52177															
1	0.0 -	DS	1.41	2.23	5.42	15.33	50.39	25.22	32	21	11	2.70	15	----	CL
2	0.5 -	SPT	0.00	0.06	18.47	25.24	56.23		----	----	----	2.69	----	N >	*Note
3	1.5 -	SPT	0.00	0.04	20.45	71.39	8.12		----	----	----	2.65	----	N >	
4	3.0 -	SPT	0.47	0.12	17.38	73.63	8.40		----	----	----	2.65	----	N >	

TEST CONDUCTED AS PER IS : 2720 (Pt. II , Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970																
Sl. No	Soil / Rock samples collected from		Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
				Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
NOTE*:- From 0.5m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																
LABORATORY TEST RESULT FOR BH-42 (T-5), CH. 52227																
1	0.0 -	DS	1.53	2.64	5.71	14.66	50.93	24.53	32	20	12	2.69	15	----	CL	
LABORATORY TEST RESULT FOR BH-43 (T-5), CH. 52277																
1	0.0 -	DS	0.30	0.92	3.64	14.82	57.09	23.23	32	20	12	2.70	15	----	CL	
LABORATORY TEST RESULT FOR BH-44 (T-5), CH. 52327																
1	0.0 -	DS	0.00	1.83	5.87	15.65	54.11	22.54	32	21	11	2.70	15	----	CL	
2	0.5 -	SPT	0.00	0.56	16.25	39.01	27.86	16.32	30	19	11	2.69	12	N =	SC	
3	1.5 -	SPT	0.30	4.21	37.07	20.11	38.31		----	----	----	2.69	----	N >	*Note	
NOTE*:- From 1.5m to 3.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																
LABORATORY TEST RESULT FOR BH-45 (T-5), CH. 52377																
2	1.5 -	SPT	0.00	0.00	2.02	79.25	18.73		----	----	----	2.64	----	N >	*Note	
3	3.0 -	SPT	0.25	0.02	2.05	80.25	17.43		----	----	----	2.64	----	N >		
NOTE*:- From 1.5m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																
LABORATORY TEST RESULT FOR BH-46 (T-5), CH. 52427																
2	1.5 -	SPT	2.06	1.86	7.57	20.57	43.83	24.11	31	20	11	2.69	15	N =	CL	
3	3.0 -	SPT	0.00	0.00	0.34	83.17	16.49		----	----	----	2.65	----	N >	*Note	

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970																		
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.			
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %							
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																		
LABORATORY TEST RESULT FOR BH-47 (T-5), CH. 52477																		
1	0.0 -	DS	0.00	0.24	6.92	31.13	39.36	22.35	31	20	11	2.70	12	---	CL			
4	3.0 -	SPT	0.00	0.00	6.15	65.33	28.52		---	---	---	2.65	---	N >	*Note			
8	9.0 -	SPT	0.00	0.00	5.03	67.56	27.41		---	---	---	2.65	---	N >	*Note			
9	10.5 -	SPT	0.00	0.00	5.60	64.35	30.05		---	---	---	2.65	---	N >	*Note			
NOTE*:- From 3.0m to 4.5m depth & 9.0m to 12.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																		
LABORATORY TEST RESULT FOR BH-48 (T-5), CH. 52527																		
1	0.0 -	DS	31.36	0.71	3.53	20.88	29.16	14.36	31	20	11	2.69	10	---	SC			
2	0.5 -	SPT	0.00	0.12	69.41	28.81	1.66		---	---	---	2.65	---	N >	*Note			
3	1.5 -	SPT	0.00	0.84	64.96	26.43	7.77		---	---	---	2.65	---	N >	*Note			
NOTE*:- From 0.5m to 3.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																		
LABORATORY TEST RESULT FOR BH-49 (T-5), CH. 52577																		
1	0.0 -	DS	30.24	5.34	4.77	15.34	29.47	14.84	32	20	12	2.69	10	---	SC			
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.																		
LABORATORY TEST RESULT FOR BH-50 (T-5), CH. 52627																		

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
1	0.0 -	DS	33.69	7.30	7.12	7.15	29.38	15.36	31	20	11	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-51 (T-5), CH. 52677															
1	0.0 -	DS	79.51	1.39	1.53	7.56	10.01		18	----	Np	2.64	0	----	GP-
LABORATORY TEST RESULT FOR BH-52 (T-5), CH. 52727															
1	0.0 -	DS	17.93	3.76	5.07	27.68	28.92	16.64	31	20	11	2.69	10	----	SC
LABORATORY TEST RESULT FOR BH-53 (T-5), CH. 52777															
1	0.0 -	DS	73.22	0.91	1.35	10.46	14.06		18	----	Np	2.64	0	----	GM
LABORATORY TEST RESULT FOR BH-54 (T-5), CH. 52827															
1	0.0 -	DS	45.04	1.44	2.36	13.11	25.71	12.34	29	20	9	2.68	10	----	GC
2	0.5 -	SPT	20.58	2.10	5.58	20.25	35.81	15.68	31	19	12	2.69	12	N =	CL
6	6.0 -	SPT	0.00	0.00	0.86	76.85	22.29		----	----	----	2.65	----	N >	*Note
NOTE*:- From 6.0m to 7.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-55 (T-5), CH. 52877															
1	0.0 -	DS	48.45	5.68	8.78	12.24	24.85		21	----	Np	2.64	0	----	GM
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-56 (T-5), CH. 52927															

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V & Pt. XXXX) AND IS: 1498 – 1970															
Sl. No	Soil / Rock samples collected from	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Specific gravity	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In % (20mm to 4.75mm)	Coarse Sand In % (4.75mm to 2.0mm)	Medium Sand In % (2.0mm to 0.425mm)	Fine Sand in % (0.425mm to 0.075 mm)	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %				
1	0.0 -	DS	59.28	8.05	12.34	11.19	9.14		19	----	Np	2.64	0	----	GP-
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-57 (T-5), CH. 52977															
1	0.0 -	DS	0.46	1.27	7.57	38.56	36.02	16.12	30	19	11	2.69	10	----	CL
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-58 (T-5), CH. 53027															
1	0.0 -	DS	45.26	0.72	2.29	13.60	27.81	10.32	29	19	10	2.69	0	----	GC
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-59, CH. 53077															
1	0.0 -	DS	51.23	1.41	2.65	12.56	32.15		21	----	Np	2.64	0	----	GM
NOTE*:- From 0.5m to 3.0m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-60, CH. 53127															
1	0.0 -	DS	64.00	2.36	3.55	10.71	19.38		20	---	Np	2.64	0	----	GM
NOTE*:- From 3.0m to 4.5m depth, a highly weathered rock material strata encountered, from which core specimens could not be collected and only washed out samples were collected.															
LABORATORY TEST RESULT FOR BH-61,CH. 53177															
1	0.0 -	DS	42.82	3.69	5.54	15.42	32.53		21	----	Np	2.65	0	----	GM

6. T6

6.1 Annexures

6.1.1 ANNEXURE- A (BORELOG)

6.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

6.1.2.1 Specific gravity

Top	Bottom	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
0.5	1.5							2.77	2.77		2.77		
1.5	3				2.77	2.77		----	----		2.77		
3	4.5				----	2.77		----	----		2.77		
4.5	6				----	2.77		----	2.77	2.74	2.77		2.77
6	7.5		2.76		----	2.77	2.76	2.77	2.77	2.75	----		2.77
7.5	9		2.76		----	2.77	2.76	2.78	2.78	2.76	2.77		2.77
9	10.5		----		2.77	2.78	2.76	2.78	2.78	2.77	2.77	2.77	2.78
10.5	12	2.76	2.76		2.77	2.78	2.76	2.79	2.78	2.77	2.77	2.77	2.81
12	13.5	2.78	2.76		2.77	2.78	2.77	2.79	2.78	2.78	2.78	2.77	2.81
13.5	15	2.81	2.76		2.77	2.78	2.77	2.79	2.78	2.81	2.78	2.78	2.81
15	16.5	2.83	2.76		2.77	2.78	2.77	2.80	2.78	2.82	2.78	2.78	2.81
16.5	18		2.76		2.77	2.78	2.77	2.80	2.78	2.83	2.78	2.78	2.81
18	19.5		2.77		2.77	2.78	2.77	2.80	2.78	2.84	2.78	2.78	2.81
19.5	21		2.77		2.77	2.79	2.77	2.80	2.79	2.85	2.80	2.79	2.81
21	22.5		2.78		2.78	2.79	2.77	2.80	2.79	2.78	2.80	2.79	2.82
22.5	24		2.78		2.78	2.80	2.77	2.81	2.79	2.82	2.80	2.80	2.82
24	25.5				2.78	2.79	2.77	2.81	2.79	2.85	2.81	2.80	2.83
25.5	27				2.78	2.79	2.77	2.81	2.81	2.89	2.81	2.80	2.83
27	28.5					2.79	2.77	2.81	2.81	2.89	2.81	2.80	2.83
28.5	30					2.79	2.77	2.81	2.81	2.88	2.81	2.80	2.84
30	31.5					2.79	2.78	2.81	2.81	2.88	2.81	2.81	2.84
31.5	33					2.79	2.78	2.81	2.81	2.85	2.81	2.81	2.84
33	34.5					2.79	2.78	2.81	2.81	2.85	2.81	2.81	2.84
34.5	36					2.79	2.78	2.81	2.81	2.86	2.81	2.81	2.84
36	37.5					2.79	2.78	2.81	2.81	2.86	2.81	2.81	2.84
37.5	39					2.80	2.78		2.81	2.87	2.81	2.79	2.84
39	40.5					2.80			2.81	2.87	2.81	2.79	2.84
40.5	42					2.80			2.81	2.88	2.81	2.80	2.84
42	43.5					2.80			2.81	2.88	2.82	2.80	2.84
43.5	45					2.80				2.85	2.82	2.80	2.84
45	46.5									2.85	2.83	2.80	2.84

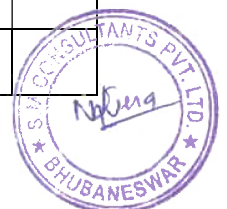
Top	Bottom	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
46.5	48									2.87	2.83	2.81	2.84
48	49.5									2.87	2.83	2.81	2.84
49.5	51									2.86	2.84	2.82	2.84
51	52.5									2.84	2.84	2.82	2.84
52.5	54									2.84	2.84	2.83	2.84
54	55.5										2.84	2.83	2.84
55.5	57										2.84	2.83	2.84
57	58.5										2.84	2.84	2.84
58.5	60										2.84	2.84	2.84
60	61.5										2.84	2.84	2.84
61.5	63											2.84	2.84
63	64.5											2.84	2.84
64.5	66												2.84
66	67.5												2.84
67.5	69												2.84

Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
0.5	1.5					2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
1.5	3			2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
3	4.5			2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
4.5	6		2.77	2.77	2.77	2.78	2.78	2.77	----	2.77	2.77	----	2.77
6	7.5	2.77	2.78	2.78	2.78	2.78	2.78	2.77	----	2.77	2.77	----	2.77
7.5	9	2.77	2.78	2.78	2.78	2.78	2.78	2.77	----	----	----	----	2.77
9	10.5	2.77	2.78	2.78	2.78	2.78	2.78	2.78	----	----	----	----	2.77
10.5	12	2.81	2.78	2.78	2.78	2.79	2.78	2.78	----	----	2.77	2.77	2.77
12	13.5	2.81	2.79	2.79	2.79	2.79	2.78	2.78	----	----	2.77	2.77	2.77
13.5	15	2.81	2.79	2.79	2.79	2.79	2.79	2.78	2.77	----	2.77	2.77	2.77
15	16.5	2.81	2.79	2.79	2.79	2.80	2.79	2.78	2.77	----	2.77	2.77	2.77
16.5	18	2.81	2.80	2.80	2.80	2.80	2.79	2.78	2.77	2.77	2.77	2.77	2.77
18	19.5	2.81	2.80	2.80	2.80	2.80	2.79	2.78	2.77	2.77	2.77	2.77	2.77
19.5	21	2.81	2.80	2.80	2.80	2.80	2.80	2.79	2.77	2.77	2.77	2.77	2.77
21	22.5	2.82	2.80	2.80	2.80	2.80	2.80	2.79	2.77	2.77	2.77	2.77	2.77
22.5	24	2.82	2.80	2.80	2.80	2.81	2.80	2.79	2.77	2.77	2.77	----	2.77
24	25.5	2.83	2.81	2.81	2.81	2.81	2.80	2.79	2.77	2.77	2.77	----	2.77
25.5	27	2.83	2.81	2.81	2.81	2.81	2.80	2.79	2.77	2.77	2.77	----	2.77
27	28.5	2.83	2.81	2.81	2.81	2.81	2.80	2.79	2.77	2.77	2.77	2.77	2.78
28.5	30	2.84	2.81	2.81	2.81	2.81	2.80	2.79	2.77	2.77	2.77	2.77	2.78
30	31.5	2.84	2.81	2.81	2.81	2.81	2.80	2.79	2.78	2.77	2.78	2.77	2.78
31.5	33	2.84	2.81	2.81	2.81	2.81	2.80	2.79	2.78	2.77	2.78	2.77	2.78
33	34.5	2.84	2.81	2.81	2.81	2.81	2.80	2.79	2.78	2.77	2.78	2.77	2.78

Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
34.5	36	2.84	2.81	2.81	2.81	2.81	2.80	2.79	2.78	2.77	2.78	2.77	2.79
36	37.5	2.84	2.81	2.81	2.81	2.81	2.80	2.80	2.78	2.78	2.78	2.77	2.79
37.5	39	2.84	2.81	2.81	2.81	2.81	2.80	2.80	2.78	2.78	2.79	2.78	2.79
39	40.5	2.84	2.81	2.81	2.81	2.81	2.81	2.80	2.78	2.78	2.79	2.78	2.79
40.5	42	2.84	2.81	2.81	2.81	2.82	2.81	2.80	2.78	2.78	2.79	2.78	2.80
42	43.5	2.84	2.82	2.82	2.82	2.82	2.81	2.80	2.78	2.78	2.79	2.78	2.80
43.5	45	2.84	2.82	2.82	2.82	2.83	2.82	2.80	2.79	2.79	2.80	2.78	2.80
45	46.5	2.84	2.83	2.83	2.83	2.83	2.82	2.81	2.79	2.79	2.80	2.79	2.81
46.5	48	2.84	2.83	2.83	2.83	2.83	2.82	2.81	2.79	2.79	2.80	2.79	2.81
48	49.5	2.84	2.83	2.83	2.83	2.84	2.83	2.81	2.79	2.79	2.81	2.79	2.81
49.5	51	2.84	2.84	2.84	2.84	2.84	2.83	2.81	2.80	2.80	2.81	2.79	2.81
51	52.5	2.84	2.84	2.84	2.84	2.84	2.83	2.81	2.80	2.80	2.81	2.80	2.81
52.5	54	2.84	2.84	2.84	2.84	2.84	2.83	2.81	2.80	2.80	2.81	2.80	2.81
54	55.5	2.84	2.84	2.84	2.84	2.84	2.83	2.81	2.81	2.81	2.81	2.80	2.81
55.5	57	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.81	2.81	2.81	2.81	2.82
57	58.5	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.81	2.81	2.81	2.81	2.82
58.5	60	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.81	2.81	2.82	2.81	2.82
60	61.5	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.81	2.81	2.82	2.81	2.82
61.5	63	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.81	2.81	2.82	2.81	2.82
63	64.5	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.81	2.81	2.82	2.81	2.82
64.5	66	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.81	2.82
66	67.5	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.82	2.82
67.5	69	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.82	2.82
69	70.5	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.82	2.82
70.5	72	2.84	2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.82	2.82
72	73.5		2.84	2.84	2.84	2.84	2.84	2.82	2.82	2.82	2.82	2.82	2.82
73.5	75		2.84	2.84	2.84	2.84	2.84	2.82	2.82	2.82	2.82	2.82	2.82
75	76.5			2.84	2.84	2.84	2.84	2.82	2.82	2.82	2.82	2.82	2.82
76.5	78			2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.83
78	79.5			2.84	2.84	2.84	2.84	2.83	2.82	2.82	2.82	2.82	2.83
79.5	81				2.84	2.84	2.84	2.83	2.82	2.82	2.83	2.82	2.83
81	82.5				2.84	2.84	2.84	2.83	2.82	2.82	2.83	2.82	2.83
82.5	84				2.84	2.84	2.84	2.83	2.82	2.82	2.83	2.82	2.83
84	85.5					2.84	2.84	2.83	2.82	2.82	2.83	2.82	2.83
85.5	87					2.84	2.84	2.83	2.83	2.83	2.83	2.82	2.83
87	88.5						2.84	2.84	2.83	2.83	2.83	2.83	2.84
88.5	90						2.84	2.84	2.83	2.83	2.83	2.83	2.84
90	91.5						2.84	2.84	2.83	2.83	2.84	2.83	2.84
91.5	93						2.84	2.84	2.83	2.83	2.84	2.83	2.84
93	94.5						2.84	2.84	2.83	2.83	2.84	2.83	2.84
94.5	96						2.84	2.84	2.83	2.83	2.84	2.83	2.84
96	97.5						2.84	2.84	2.84	2.84	2.84	2.83	2.84
97.5	99						2.84	2.84	2.84	2.84	2.84	2.84	2.84
99	100.5							2.84	2.84	2.84	2.84	2.84	2.84
100.5	102								2.84	2.84	2.84	2.84	2.84
102	103.5								2.84	2.84	2.84	2.84	
103.5	105								2.84	2.84	2.84	2.84	
105	106.5									2.84	2.84	2.84	

Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
106.5	108										2.84	2.84	
108	109.5										2.84	2.84	
109.5	111										2.84	2.84	
111	112.5										2.84	2.84	
112.5	114										2.84	2.84	
114	115.5										2.84		
115.5	117										2.84		
117	118.5										2.84		

Top	Bottom	BH2 5	BH2 6	BH2 7	BH2 8	BH2 9	BH3 0	BH3 1	BH3 2	BH3 3	BH3 4	BH3 5	BH3 6
0.5	1.5	2.77	2.77				2.77	2.77	2.77			2.77	2.77
1.5	3	2.77	2.77				2.77	2.77	----			2.77	2.77
3	4.5	2.77	----		2.77		2.77	2.77	----		2.76	2.77	2.77
4.5	6	2.77	----	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.76	----	2.77
6	7.5	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.76	----	2.77
7.5	9	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.76	2.77	2.77
9	10.5	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.78	2.76	2.76	2.77	2.77
10.5	12	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.78	2.76	2.76	2.77	2.77
12	13.5	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.78	2.76	2.76	2.77	2.77
13.5	15	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.78	2.76	2.76	2.77	2.77
15	16.5	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.76	2.77	2.77
16.5	18	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.79	2.78	2.78	2.77	2.77
18	19.5	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.79	2.78	2.78	2.77	2.77
19.5	21	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.79	2.78	2.78	2.77	2.77
21	22.5	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.79	2.78	2.78	2.77	2.77
22.5	24	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.79	2.79	2.78	2.77	2.77
24	25.5	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.80	2.79	2.78	2.77	
25.5	27	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.80	2.79	2.78	2.77	
27	28.5	2.78	2.77	2.77	2.77	2.77	2.78	2.78	2.80	2.79	2.81	2.77	
28.5	30	2.78	2.77	2.77	2.77	2.77	2.78	2.78	2.80	2.79	2.81	2.77	
30	31.5	2.78	2.78	2.77	2.78	2.77	2.79	2.78	2.80	2.79	2.81	2.78	
31.5	33	2.78	2.78	2.78	2.78	2.78	2.79	2.79	2.80	2.79	2.81	2.78	
33	34.5	2.78	2.78	2.78	2.78	2.78	2.79	2.79	2.80	2.82	2.81	2.78	
34.5	36	2.79	2.78	2.78	2.78	2.78	2.79	2.79	2.80	2.82	2.81	2.78	
36	37.5	2.79	2.78	2.78	2.78	2.78	2.79	2.79	2.80	2.82	2.81	2.78	
37.5	39	2.79	2.79	2.78	2.79	2.78	2.79	2.80	2.80	2.82	2.81	2.79	



Top	Bottom	BH2 5	BH2 6	BH2 7	BH2 8	BH2 9	BH3 0	BH3 1	BH3 2	BH3 3	BH3 4	BH3 5	BH3 6
39	40.5	2.79	2.79	2.79	2.79	2.79	2.79	2.80	2.83	2.82	2.81	2.79	
40.	42	2.80	2.79	2.79	2.79	2.79	2.79	2.80	2.83	2.83	2.82	2.79	
42	43.5	2.80	2.79	2.79	2.79	2.79	2.79	2.80	2.83	2.83	2.82		
43.	45	2.80	2.80	2.79	2.80	2.79	2.79	2.80	2.83	2.83	2.82		
45	46.5	2.81	2.80	2.80	2.80	2.80	2.79	2.80	2.83	2.83	2.82		
46.	48	2.81	2.80	2.80	2.80	2.80	2.79	2.80	2.83	2.83	2.82		
48	49.5	2.81	2.81	2.80	2.81	2.80	2.80	2.81	2.83	2.83	2.82		
49.	51	2.81	2.81	2.81	2.81	2.81	2.80	2.81	2.83	2.84	2.83		
51	52.5	2.81	2.81	2.81	2.81	2.81	2.80	2.81	2.84	2.84	2.83		
52.	54	2.81	2.81	2.81	2.81	2.81	2.80	2.81	2.84	2.84	2.83		
54	55.5	2.81	2.81	2.81	2.81	2.81	2.80	2.81	2.84	2.84	2.83		
55.	57	2.82	2.81	2.81	2.81	2.81	2.81	2.81	2.84	2.84	2.83		
57	58.5	2.82	2.81	2.81	2.81	2.81	2.81	2.81	2.84	2.84			
58.	60	2.82	2.82	2.81	2.82	2.81	2.81	2.81	2.84	2.84			
60	61.5	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.84	2.84			
61.	63	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.84	2.84			
63	64.5	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.84	2.84			
64.	66	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.85	2.84			
66	67.5	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.85	2.84			
67.	69	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.85				
69	70.5	2.82	2.82	2.82	2.82	2.82	2.81	2.82	2.85				
70.	72	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.85				
72	73.5	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.85				
73.	75	2.82	2.82	2.82	2.82	2.82	2.82	2.82					
75	76.5	2.82	2.82	2.82	2.82	2.82	2.82	2.82					
76.	78	2.83	2.82	2.82	2.82	2.82	2.82	2.82					
78	79.5	2.83	2.82	2.82	2.82	2.82	2.82						
79.	81	2.83	2.83	2.82	2.82	2.82	2.82						
81	82.5	2.83	2.83		2.82	2.82	2.82						
82.	84	2.83	2.83		2.82	2.82							
84	85.5	2.83	2.83			2.82							
85.	87	2.83				2.82							
87	88.5	2.84											
88.	90	2.84											
90	91.5	2.84											

Top	Bottom	BH2 5	BH2 6	BH2 7	BH2 8	BH2 9	BH3 0	BH3 1	BH3 2	BH3 3	BH3 4	BH3 5	BH3 6
91.5	93	2.84											

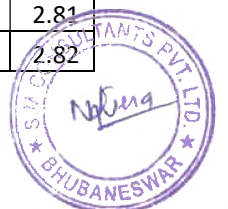
6.1.2.2 Density

Top	Bottom	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
0.5	1.5							2.70	2.70		2.70		
1.5	3				2.70	2.70		----	----		2.71		
3	4.5				----	2.71		----	----		2.71		
4.5	6				----	2.72		----	2.71	2.66	2.71		2.70
6	7.5		2.70		----	2.74	2.70	2.71	2.72	2.69	----		2.71
7.5	9		2.71		----	2.74	2.71	2.75	2.72	2.72	2.72		2.72
9	10.5		----		2.71	2.74	2.72	2.75	2.72	2.70	2.72	2.70	2.73
10.5	12	2.72	2.72		2.71	2.74	2.73	2.75	2.72	2.72	2.72	2.71	2.77
12	13.5	2.74	2.73		2.71	2.74	2.74	2.76	2.72	2.74	2.72	2.72	2.77
13.5	15	2.79	2.72		2.71	2.74	2.74	2.76	2.72	2.78	2.72	2.73	2.77
15	16.5	2.79	2.72		2.72	2.74	2.74	2.77	2.72	2.79	2.76	2.74	2.77
16.5	18		2.72		2.72	2.74	2.74	2.77	2.72	2.80	2.77	2.75	2.77
18	19.5		2.73		2.73	2.77	2.74	2.77	2.72	2.81	2.77	2.75	2.77
19.5	21		2.74		2.73	2.77	2.74	2.77	2.74	2.81	2.77	2.75	2.77
21	22.5		2.74		2.73	2.77	2.74	2.78	2.74	2.72	2.77	2.76	2.77
22.5	24		2.75		2.73	2.78	2.74	2.78	2.74	2.80	2.78	2.76	2.77
24	25.5				2.73	2.77	2.74	2.78	2.74	2.80	2.78	2.77	2.77
25.5	27				2.73	2.77	2.74	2.77	2.75	2.81	2.78	2.77	2.77
27	28.5					2.77	2.74	2.77	2.75	2.81	2.78	2.77	2.78
28.5	30					2.77	2.74	2.77	2.75	2.81	2.78	2.77	2.78
30	31.5					2.77	2.74	2.77	2.75	2.81	2.76	2.78	2.78
31.5	33					2.77	2.75	2.77	2.75	2.82	2.77	2.78	2.78
33	34.5					2.77	2.75	2.77	2.75	2.82	2.77	2.78	2.78
34.5	36					2.77	2.75	2.78	2.75	2.81	2.77	2.78	2.78
36	37.5					2.78	2.75	2.78	2.77	2.81	2.78	2.78	2.78
37.5	39					2.78	2.75		2.77	2.82	2.78	2.76	2.78
39	40.5					2.79			2.78	2.82	2.79	2.77	2.80
40.5	42					2.79			2.78	2.81	2.79	2.77	2.80
42	43.5					2.79			2.78	2.81	2.80	2.77	2.80
43.5	45					2.78				2.82	2.80	2.78	2.80

Top	Bottom	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
45	46.5									2.82	2.80	2.78	2.80
46.5	48									2.81	2.81	2.79	2.80
48	49.5									2.81	2.81	2.79	2.80
49.5	51									2.82	2.80	2.80	2.80
51	52.5									2.82	2.80	2.80	2.80
52.5	54									2.82	2.80	2.80	2.81
54	55.5										2.80	2.81	2.81
55.5	57										2.80	2.81	2.81
57	58.5										2.80	2.82	2.81
58.5	60										2.80	2.82	2.82
60	61.5										2.80	2.82	2.82
61.5	63											2.82	2.82
63	64.5											2.82	2.82
64.5	66												2.82
66	67.5												2.82
67.5	69												2.82

Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
0.5	1.5					2.70	2.70	2.71	2.71	2.71	2.71	2.71	2.71
1.5	3			2.70	2.70	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71
3	4.5			2.71	2.71	2.72	2.72	2.72	2.72	2.71	2.71	2.71	2.71
4.5	6		2.72	2.72	2.72	2.73	2.73	2.73	----	2.71	2.71	----	2.71
6	7.5	2.70	2.73	2.73	2.73	2.74	2.74	2.74	----	2.72	2.72	----	2.71
7.5	9	2.71	2.74	2.74	2.74	2.75	2.75	2.74	----	----	----	----	2.71
9	10.5	2.72	2.75	2.75	2.75	2.75	2.75	2.74	----	----	----	----	2.71
10.5	12	2.77	2.75	2.75	2.75	2.75	2.75	2.74	----	----	2.72	2.71	2.71
12	13.5	2.77	2.75	2.75	2.75	2.76	2.76	2.74	----	----	2.72	2.71	2.71
13.5	15	2.77	2.76	2.76	2.76	2.76	2.76	2.74	2.73	----	2.72	2.71	2.71
15	16.5	2.77	2.76	2.76	2.76	2.77	2.77	2.74	2.74	----	2.72	2.71	2.71
16.5	18	2.77	2.77	2.77	2.77	2.77	2.77	2.74	2.74	2.72	2.72	2.71	2.72
18	19.5	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.74	2.72	2.72	2.71	2.72
19.5	21	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.74	2.72	2.72	2.71	2.72
21	22.5	2.77	2.77	2.77	2.77	2.78	2.78	2.77	2.74	2.72	2.72	2.71	2.72
22.5	24	2.77	2.78	2.78	2.78	2.78	2.78	2.77	2.74	2.72	2.72	----	2.73
24	25.5	2.77	2.78	2.78	2.78	2.78	2.78	2.77	2.74	2.72	2.72	----	2.73
25.5	27	2.77	2.78	2.78	2.78	2.77	2.78	2.77	2.74	2.72	2.73	----	2.73
27	28.5	2.78	2.78	2.78	2.78	2.77	2.78	2.77	2.74	2.72	2.73	2.72	2.73
28.5	30	2.78	2.78	2.78	2.78	2.77	2.76	2.77	2.74	2.72	2.73	2.72	2.73

Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
30	31.5	2.78	2.76	2.76	2.76	2.77	2.77	2.77	2.74	2.72	2.73	2.72	2.73
31.5	33	2.78	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.73	2.73	2.72	2.74
33	34.5	2.78	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.73	2.73	2.73	2.74
34.5	36	2.78	2.77	2.77	2.77	2.78	2.78	2.78	2.76	2.73	2.74	2.73	2.74
36	37.5	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.76	2.73	2.74	2.73	2.74
37.5	39	2.78	2.78	2.78	2.78	2.79	2.79	2.79	2.76	2.73	2.74	2.73	2.74
39	40.5	2.80	2.79	2.79	2.79	2.79	2.79	2.79	2.77	2.73	2.74	2.73	2.74
40.5	42	2.80	2.79	2.79	2.79	2.80	2.80	2.79	2.77	2.74	2.74	2.73	2.75
42	43.5	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.77	2.74	2.74	2.74	2.75
43.5	45	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.78	2.74	2.74	2.74	2.75
45	46.5	2.80	2.80	2.80	2.80	2.81	2.81	2.78	2.78	2.74	2.74	2.74	2.75
46.5	48	2.80	2.81	2.81	2.81	2.81	2.81	2.78	2.78	2.74	2.74	2.74	2.75
48	49.5	2.80	2.81	2.81	2.81	2.80	2.80	2.80	2.78	2.74	2.74	2.74	2.76
49.5	51	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.74	2.76	2.74	2.76
51	52.5	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.74	2.76	2.75	2.76
52.5	54	2.81	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.74	2.76	2.75	2.76
54	55.5	2.81	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.74	2.76	2.75	2.76
55.5	57	2.81	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.76	2.76	2.75	2.76
57	58.5	2.81	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.76	2.76	2.75	2.78
58.5	60	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.76	2.76	2.76	2.78
60	61.5	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.76	2.76	2.76	2.78
61.5	63	2.82	2.80	2.80	2.80	2.81	2.82	2.80	2.78	2.76	2.76	2.76	2.78
63	64.5	2.82	2.82	2.82	2.82	2.81	2.82	2.80	2.78	2.76	2.76	2.76	2.78
64.5	66	2.82	2.82	2.82	2.82	2.81	2.82	2.80	2.78	2.76	2.78	2.76	2.78
66	67.5	2.82	2.82	2.82	2.82	2.81	2.82	2.80	2.78	2.76	2.78	2.76	2.78
67.5	69	2.82	2.82	2.82	2.82	2.82	2.82	2.80	2.78	2.76	2.78	2.78	2.78
69	70.5	2.82	2.82	2.82	2.82	2.82	2.82	2.80	2.78	2.76	2.78	2.78	2.78
70.5	72	2.82	2.82	2.82	2.82	2.82	2.82	2.80	2.78	2.78	2.78	2.78	2.78
72	73.5		2.82	2.82	2.82	2.82	2.82	2.80	2.78	2.78	2.78	2.78	2.78
73.5	75		2.82	2.82	2.82	2.82	2.82	2.80	2.80	2.78	2.78	2.78	2.78
75	76.5			2.82	2.82	2.82	2.82	2.80	2.80	2.78	2.78	2.78	2.78
76.5	78			2.82	2.82	2.82	2.82	2.82	2.80	2.78	2.78	2.78	2.78
78	79.5			2.82	2.82	2.82	2.82	2.82	2.82	2.78	2.78	2.78	2.78
79.5	81				2.82	2.82	2.82	2.82	2.81	2.78	2.78	2.78	2.78
81	82.5				2.82	2.82	2.82	2.82	2.81	2.78	2.78	2.78	2.80
82.5	84				2.82	2.82	2.82	2.82	2.81	2.78	2.78	2.78	2.80
84	85.5					2.82	2.82	2.82	2.81	2.78	2.82	2.78	2.80
85.5	87					2.82	2.82	2.82	2.82	2.78	2.82	2.78	2.80
87	88.5						2.82	2.82	2.82	2.78	2.82	2.78	2.81
88.5	90						2.82	2.82	2.82	2.78	2.82	2.78	2.81
90	91.5						2.82	2.81	2.82	2.82	2.82	2.78	2.81
91.5	93						2.82	2.81	2.82	2.82	2.82	2.80	2.81
93	94.5						2.82	2.81	2.82	2.82	2.81	2.80	2.81
94.5	96						2.82	2.81	2.82	2.82	2.81	2.80	2.82



Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
96	97.5						2.82	2.82	2.82	2.82	2.81	2.80	2.82
97.5	99						2.82	2.82	2.82	2.82	2.82	2.81	2.82
99	100.5							2.82	2.81	2.81	2.82	2.81	2.82
100.5	102								2.81	2.81	2.82	2.81	2.82
102	103.5								2.81	2.81	2.82	2.81	
103.5	105								2.82	2.82	2.81	2.81	
105	106.5									2.82	2.81	2.82	
106.5	108										2.81	2.82	
108	109.5										2.82	2.82	
109.5	111										2.82	2.82	
111	112.5										2.82	2.82	
112.5	114										2.82	2.82	
114	115.5										2.81		
115.5	117										2.81		
117	118.5										2.81		

		BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	2.71	2.71				2.71	2.71	2.71			2.71	2.71
1.5	3	2.71	2.71				2.71	2.71	----			2.71	2.71
3	4.5	2.71	----		2.71		2.71	2.71	----		2.70	2.71	2.71
4.5	6	2.71	----	2.71	2.71	2.71	2.71	2.71	2.71	2.69	2.70	----	2.71
6	7.5	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.69	2.70	----	2.71
7.5	9	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.69	2.71	2.71	2.71
9	10.5	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.72	2.69	2.72	2.71	2.71
10.5	12	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.72	2.69	2.72	2.71	2.72
12	13.5	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.72	2.69	2.72	2.71	2.72
13.5	15	2.71	2.72	2.71	2.72	2.71	2.72	2.71	2.72	2.69	2.72	2.72	2.72
15	16.5	2.71	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
16.5	18	2.71	2.72	2.72	2.72	2.72	2.72	2.72	2.73	2.72	2.74	2.72	2.72
18	19.5	2.71	2.72	2.72	2.72	2.72	2.72	2.72	2.73	2.72	2.74	2.72	2.72
19.5	21	2.71	2.72	2.72	2.72	2.72	2.72	2.72	2.73	2.72	2.74	2.72	2.72
21	22.5	2.71	2.72	2.72	2.72	2.72	2.72	2.72	2.73	2.72	2.74	2.72	2.72
22.5	24	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.73	2.74	2.74	2.72	2.72
24	25.5	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.75	2.74	2.74	2.72	
25.5	27	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.75	2.74	2.74	2.72	
27	28.5	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.75	2.74	2.77	2.72	
28.5	30	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.75	2.74	2.77	2.72	
30	31.5	2.72	2.72	2.72	2.72	2.72	2.72	2.73	2.75	2.74	2.77	2.72	
31.5	33	2.73	2.73	2.72	2.73	2.72	2.72	2.73	2.75	2.74	2.77	2.73	
33	34.5	2.73	2.73	2.73	2.73	2.73	2.72	2.73	2.75	2.77	2.77	2.73	

		BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
34.5	36	2.73	2.73	2.73	2.73	2.73	2.72	2.73	2.75	2.77	2.77	2.73	
36	37.5	2.73	2.73	2.73	2.73	2.73	2.72	2.73	2.75	2.77	2.77	2.73	
37.5	39	2.73	2.73	2.73	2.73	2.73	2.72	2.74	2.75	2.77	2.77	2.73	
39	40.5	2.74	2.73	2.73	2.73	2.73	2.73	2.74	2.78	2.77	2.77	2.73	
40.5	42	2.74	2.73	2.73	2.73	2.73	2.73	2.74	2.78	2.79	2.79	2.73	
42	43.5	2.74	2.74	2.73	2.74	2.73	2.73	2.74	2.78	2.79	2.79		
43.5	45	2.75	2.74	2.74	2.74	2.74	2.73	2.74	2.78	2.79	2.79		
45	46.5	2.75	2.74	2.74	2.74	2.74	2.73	2.74	2.78	2.79	2.79		
46.5	48	2.75	2.75	2.74	2.75	2.74	2.73	2.74	2.78	2.79	2.79		
48	49.5	2.76	2.75	2.75	2.75	2.75	2.73	2.75	2.78	2.79	2.79		
49.5	51	2.76	2.75	2.75	2.75	2.75	2.73	2.75	2.78	2.80	2.81		
51	52.5	2.76	2.76	2.75	2.76	2.75	2.73	2.75	2.80	2.80	2.81		
52.5	54	2.76	2.76	2.76	2.76	2.76	2.74	2.75	2.80	2.80	2.81		
54	55.5	2.76	2.76	2.76	2.76	2.76	2.74	2.75	2.80	2.80	2.81		
55.5	57	2.76	2.76	2.76	2.76	2.76	2.74	2.75	2.80	2.80	2.81		
57	58.5	2.78	2.76	2.76	2.76	2.76	2.74	2.75	2.80	2.80			
58.5	60	2.78	2.76	2.76	2.76	2.76	2.74	2.75	2.80	2.81			
60	61.5	2.78	2.78	2.76	2.78	2.76	2.75	2.76	2.80	2.81			
61.5	63	2.78	2.78	2.78	2.78	2.78	2.75	2.76	2.80	2.81			
63	64.5	2.78	2.78	2.78	2.78	2.78	2.75	2.76	2.80	2.81			
64.5	66	2.78	2.78	2.78	2.78	2.78	2.75	2.76	2.82	2.81			
66	67.5	2.78	2.78	2.78	2.78	2.78	2.75	2.76	2.82	2.81			
67.5	69	2.78	2.78	2.78	2.78	2.78	2.75	2.77	2.82				
69	70.5	2.78	2.78	2.78	2.78	2.78	2.76	2.77	2.82				
70.5	72	2.78	2.78	2.78	2.78	2.78	2.76	2.77	2.82				
72	73.5	2.78	2.78	2.78	2.78	2.78	2.76	2.78	2.82				
73.5	75	2.78	2.78	2.78	2.78	2.78	2.76	2.78					
75	76.5	2.78	2.78	2.78	2.78	2.78	2.76	2.78					
76.5	78	2.78	2.78	2.78	2.78	2.78	2.77	2.78					
78	79.5	2.78	2.78	2.78	2.78	2.78	2.77						
79.5	81	2.78	2.78	2.78	2.78	2.78	2.77						
81	82.5	2.80	2.78		2.78	2.78	2.77						
82.5	84	2.80	2.78		2.78	2.78							
84	85.5	2.80	2.80			2.78							
85.5	87	2.80				2.78							
87	88.5	2.81											
88.5	90	2.81											
90	91.5	2.81											

6.1.2.3 Water Absorption

Top	Botto m	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
0.5	1.5							0.45	0.45		0.45		
1.5	3				0.45	0.45		----	----		0.43		
3	4.5				----	0.43		----	----		0.40		
4.5	6				----	0.40		----	0.43	0.40	0.37		0.45

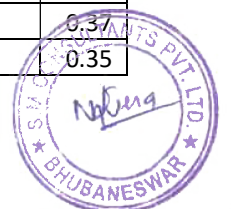
Top	Bottom	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
6	7.5		0.45		----	0.35	0.45	0.43	0.40	0.37	----		0.43
7.5	9		0.43		----	0.30	0.43	0.29	0.29	0.35	0.35		0.40
9	10.5		----		0.43	0.28	0.40	0.28	0.28	0.32	0.30	0.45	0.37
10.5	12	0.45	0.40		0.40	0.27	0.37	0.27	0.27	0.31	0.28	0.43	0.12
12	13.5	0.35	0.37		0.37	0.27	0.35	0.26	0.26	0.30	0.27	0.40	0.11
13.5	15	0.13	0.38		0.38	0.25	0.34	0.25	0.25	0.26	0.27	0.37	0.09
15	16.5	0.10	0.35		0.35	0.25	0.33	0.25	0.25	0.21	0.25	0.35	0.09
16.5	18		0.32		0.32	0.22	0.30	0.22	0.22	0.17	0.25	0.30	0.09
18	19.5		0.29		0.29	0.21	0.28	0.21	0.21	0.12	0.22	0.28	0.08
19.5	21		0.27		0.27	0.21	0.27	0.20	0.20	0.11	0.21	0.27	0.08
21	22.5		0.25		0.25	0.19	0.27	0.19	0.19	0.30	0.21	0.27	0.07
22.5	24		0.22		0.22	0.19	0.25	0.19	0.19	0.12	0.19	0.25	0.07
24	25.5				0.22	0.19	0.25	0.18	0.18	0.10	0.19	0.25	0.07
25.5	27				0.22	0.18	0.22	0.17	0.17	0.09	0.18	0.22	0.07
27	28.5					0.18	0.21	0.17	0.17	0.09	0.18	0.21	0.07
28.5	30					0.18	0.21	0.13	0.13	0.09	0.18	0.21	0.07
30	31.5					0.12	0.19	0.12	0.12	0.09	0.12	0.19	0.07
31.5	33					0.12	0.19	0.11	0.11	0.09	0.12	0.19	0.07
33	34.5					0.11	0.18	0.09	0.09	0.09	0.11	0.18	0.07
34.5	36					0.09	0.18	0.09	0.09	0.08	0.09	0.18	0.07
36	37.5					0.09	0.18	0.09	0.09	0.08	0.09	0.18	0.07
37.5	39					0.09	0.12		0.09	0.08	0.09	0.35	0.05
39	40.5					0.08			0.09	0.09	0.08	0.32	0.05
40.5	42					0.08			0.09	0.09	0.08	0.07	0.05
42	43.5					0.07			0.09	0.08	0.07	0.07	0.05
43.5	45					0.07				0.08	0.07	0.08	0.05
45	46.5									0.08	0.07	0.08	0.05
46.5	48									0.08	0.07	0.08	0.05
48	49.5									0.09	0.07	0.08	0.05
49.5	51									0.09	0.08	0.07	0.05
51	52.5									0.08	0.08	0.07	0.05
52.5	54									0.08	0.08	0.07	0.04
54	55.5										0.07	0.08	0.04
55.5	57										0.07	0.08	0.04
57	58.5										0.07	0.08	0.04

Top	Bottom	BH0 1	BH0 2	BH0 3	BH0 4	BH0 5	BH0 6	BH0 7	BH0 8	BH0 9	BH1 0	BH1 1	BH1 2
58.5	60										0.05	0.08	0.04
60	61.5										0.05	0.08	0.04
61.5	63											0.07	0.04
63	64.5											0.07	0.04
64.5	66												0.04
66	67.5												0.04
67.5	69												0.04

Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5					0.44	0.45	0.45	0.45	0.45	0.45	0.45	0.45
1.5	3			0.45	0.45	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
3	4.5			0.43	0.43	0.39	0.40	0.40	0.40	0.40	0.40	0.40	0.40
4.5	6		0.40	0.40	0.40	0.37	0.37	0.37	----	0.37	0.37	----	0.37
6	7.5	0.45	0.37	0.37	0.37	0.35	0.35	0.35	----	0.35	0.35	----	0.35
7.5	9	0.43	0.35	0.35	0.35	0.29	0.30	0.30	----	----	----	----	0.30
9	10.5	0.40	0.30	0.30	0.30	0.28	0.28	0.28	----	----	----	----	0.28
10.5	12	0.12	0.28	0.28	0.28	0.27	0.27	0.27	----	----	0.30	0.37	0.27
12	13.5	0.11	0.27	0.27	0.27	0.26	0.27	0.27	----	----	0.28	0.35	0.27
13.5	15	0.09	0.27	0.27	0.27	0.25	0.25	0.25	0.37	----	0.27	0.30	0.25
15	16.5	0.09	0.25	0.25	0.25	0.25	0.25	0.25	0.35	----	0.27	0.28	0.25
16.5	18	0.09	0.25	0.25	0.25	0.22	0.22	0.22	0.30	0.30	0.25	0.27	0.22
18	19.5	0.08	0.22	0.22	0.22	0.21	0.21	0.21	0.28	0.28	0.25	0.27	0.21
19.5	21	0.08	0.21	0.21	0.21	0.20	0.21	0.21	0.27	0.27	0.22	0.25	0.21
21	22.5	0.07	0.21	0.21	0.21	0.19	0.19	0.19	0.27	0.27	0.21	0.25	0.19
22.5	24	0.07	0.19	0.19	0.19	0.19	0.19	0.19	0.25	0.25	0.21	----	0.19
24	25.5	0.07	0.19	0.19	0.19	0.18	0.18	0.18	0.25	0.25	0.19	----	0.18
25.5	27	0.07	0.18	0.18	0.18	0.17	0.18	0.18	0.22	0.22	0.19	----	0.18
27	28.5	0.07	0.18	0.18	0.18	0.17	0.18	0.18	0.21	0.21	0.18	0.22	0.18
28.5	30	0.07	0.18	0.18	0.18	0.13	0.12	0.12	0.21	0.21	0.18	0.21	0.12
30	31.5	0.07	0.12	0.12	0.12	0.12	0.12	0.12	0.19	0.19	0.18	0.21	0.12
31.5	33	0.07	0.12	0.12	0.12	0.11	0.11	0.11	0.19	0.19	0.12	0.19	0.11
33	34.5	0.07	0.11	0.11	0.11	0.09	0.09	0.09	0.18	0.18	0.12	0.19	0.09
34.5	36	0.07	0.09	0.09	0.09	0.09	0.09	0.09	0.18	0.18	0.11	0.18	0.09
36	37.5	0.07	0.09	0.09	0.09	0.08	0.09	0.09	0.18	0.18	0.09	0.18	0.09
37.5	39	0.05	0.09	0.09	0.09	0.08	0.08	0.08	0.12	0.12	0.09	0.18	0.08
39	40.5	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.12	0.12	0.09	0.12	0.08
40.5	42	0.05	0.08	0.08	0.08	0.07	0.07	0.07	0.11	0.11	0.08	0.12	0.07
42	43.5	0.05	0.07	0.07	0.07	0.07	0.07	0.07	0.09	0.09	0.08	0.11	0.07
43.5	45	0.05	0.07	0.07	0.07	0.07	0.07	0.07	0.09	0.09	0.07	0.09	0.07
45	46.5	0.05	0.07	0.07	0.07	0.07	0.07	0.07	0.09	0.09	0.07	0.09	0.07
46.5	48	0.05	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.09	0.07
48	49.5	0.05	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.08
49.5	51	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.08	0.08
51	52.5	0.05	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.08	0.07	0.08
52.5	54	0.04	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.07

54	55.5	0.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.07
55.5	57	0.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
57	58.5	0.04	0.07	0.07	0.07	0.05	0.05	0.05	0.08	0.08	0.07	0.07	0.05
58.5	60	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.07	0.08	0.05
60	61.5	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.05	0.08	0.05
61.5	63	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.07	0.05	0.08	0.05
63	64.5	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.07	0.05	0.07	0.05
64.5	66	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.07	0.05	0.07	0.05
66	67.5	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05
67.5	69	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
69	70.5	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
70.5	72	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
72	73.5		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
73.5	75		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
75	76.5			0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
76.5	78			0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
78	79.5			0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
79.5	81				0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
81	82.5				0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
82.5	84				0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
84	85.5					0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
85.5	87					0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
87	88.5						0.05	0.05	0.05	0.05	0.05	0.05	0.05
88.5	90						0.05	0.05	0.05	0.05	0.05	0.05	0.05
90	91.5						0.05	0.05	0.05	0.05	0.05	0.05	0.05
91.5	93						0.05	0.05	0.05	0.05	0.05	0.05	0.05
93	94.5						0.05	0.05	0.05	0.05	0.05	0.05	0.05
94.5	96						0.05	0.05	0.05	0.05	0.05	0.05	0.05
96	97.5						0.05	0.05	0.05	0.05	0.05	0.05	0.05
97.5	99						0.05	0.05	0.05	0.05	0.05	0.05	0.05
99	100.5							0.05	0.05	0.05	0.05	0.05	0.05
100.5	102								0.05	0.05	0.05	0.05	0.05
102	103.5								0.05	0.05	0.05	0.05	
103.5	105								0.05	0.05	0.05	0.05	
105	106.5									0.05	0.05	0.05	
106.5	108										0.05	0.05	
108	109.5										0.05	0.05	
109.5	111										0.05	0.05	
111	112.5										0.05	0.05	
112.5	114										0.05	0.05	
114	115.5										0.05		
115.5	117										0.05		
117	118.5										0.05		

		BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	0.45	0.45				0.47	0.47	0.43			0.45	0.45
1.5	3	0.43	0.43				0.47	0.47	----			0.43	0.43
3	4.5	0.40	----		0.45		0.47	0.46	----		0.53	0.40	0.40
4.5	6	0.37	----	0.45	0.43	0.45	0.46	0.45	0.43	0.53	0.53	----	0.37
6	7.5	0.35	0.40	0.43	0.40	0.43	0.37	0.45	0.41	0.48	0.50	----	0.35

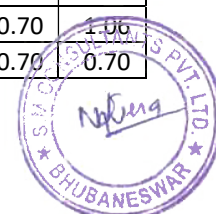


		BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
7.5	9	0.30	0.37	0.40	0.37	0.40	0.37	0.43	0.40	0.52	0.49	0.37	0.30
9	10.5	0.28	0.35	0.37	0.35	0.37	0.32	0.37	0.38	0.53	0.47	0.35	0.28
10.5	12	0.27	0.30	0.35	0.30	0.35	0.29	0.35	0.38	0.57	0.46	0.30	0.27
12	13.5	0.27	0.28	0.30	0.28	0.30	0.28	0.32	0.37	0.52	0.45	0.28	0.27
13.5	15	0.25	0.27	0.28	0.27	0.28	0.27	0.30	0.36	0.48	0.46	0.27	0.25
15	16.5	0.25	0.27	0.27	0.27	0.27	0.26	0.28	0.36	0.42	0.54	0.27	0.25
16.5	18	0.22	0.25	0.27	0.25	0.27	0.26	0.26	0.34	0.36	0.48	0.25	0.22
18	19.5	0.21	0.25	0.25	0.25	0.25	0.26	0.25	0.34	0.35	0.46	0.25	0.21
19.5	21	0.21	0.22	0.25	0.22	0.25	0.23	0.22	0.33	0.38	0.42	0.22	0.21
21	22.5	0.19	0.21	0.22	0.21	0.22	0.23	0.21	0.32	0.34	0.49	0.21	0.19
22.5	24	0.19	0.21	0.21	0.21	0.21	0.19	0.19	0.32	0.39	0.47	0.21	0.19
24	25.5	0.18	0.19	0.21	0.19	0.21	0.19	0.19	0.31	0.32	0.42	0.19	
25.5	27	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.31	0.28	0.39	0.19	
27	28.5	0.18	0.18	0.19	0.18	0.19	0.19	0.19	0.29	0.29	0.35	0.18	
28.5	30	0.12	0.18	0.18	0.18	0.18	0.19	0.18	0.26	0.45	0.34	0.18	
30	31.5	0.12	0.18	0.18	0.18	0.18	0.18	0.18	0.26	0.48	0.29	0.18	
31.5	33	0.11	0.12	0.18	0.12	0.18	0.17	0.17	0.25	0.53	0.34	0.12	
33	34.5	0.09	0.12	0.12	0.12	0.12	0.17	0.16	0.25	0.51	0.28	0.12	
34.5	36	0.09	0.11	0.12	0.11	0.12	0.16	0.16	0.23	0.47	0.36	0.11	
36	37.5	0.09	0.09	0.11	0.09	0.11	0.16	0.15	0.23	0.42	0.29	0.09	
37.5	39	0.08	0.09	0.09	0.09	0.09	0.16	0.15	0.23	0.36	0.34	0.09	
39	40.5	0.08	0.09	0.09	0.09	0.09	0.16	0.15	0.21	0.32	0.28	0.09	
40.5	42	0.07	0.08	0.09	0.08	0.09	0.14	0.14	0.21	0.29	0.21	0.08	
42	43.5	0.07	0.08	0.08	0.08	0.08	0.14	0.14	0.18	0.26	0.26		
43.5	45	0.07	0.07	0.08	0.07	0.08	0.13	0.13	0.18	0.19	0.27		
45	46.5	0.07	0.07	0.07	0.07	0.07	0.13	0.13	0.18	0.25	0.20		
46.5	48	0.07	0.07	0.07	0.07	0.07	0.13	0.12	0.15	0.34	0.18		
48	49.5	0.08	0.07	0.07	0.07	0.07	0.12	0.11	0.15	0.28	0.26		
49.5	51	0.08	0.07	0.07	0.07	0.07	0.12	0.10	0.15	0.23	0.28		
51	52.5	0.08	0.08	0.07	0.08	0.07	0.12	0.90	0.14	0.21	0.33		
52.5	54	0.07	0.08	0.08	0.08	0.08	0.12	0.90	0.14	0.24	0.18		
54	55.5	0.07	0.08	0.08	0.08	0.08	0.11	0.80	0.13	0.22	0.18		
55.5	57	0.07	0.07	0.08	0.07	0.08	0.11	0.80	0.12	0.18	0.16		
57	58.5	0.05	0.07	0.07	0.07	0.07	0.11	0.70	0.12	0.23			
58.5	60	0.05	0.07	0.07	0.07	0.07	0.11	0.70	0.11	0.19			
60	61.5	0.05	0.05	0.07	0.05	0.07	0.11	0.70	0.11	0.17			
61.5	63	0.05	0.05	0.05	0.05	0.05	0.11	0.70	0.09	0.24			
63	64.5	0.05	0.05	0.05	0.05	0.05	0.11	0.70	0.09	0.25			
64.5	66	0.05	0.05	0.05	0.05	0.05	0.09	0.70	0.08	0.16			
66	67.5	0.05	0.05	0.05	0.05	0.05	0.09	0.60	0.08	0.12			
67.5	69	0.05	0.05	0.05	0.05	0.05	0.09	0.60	0.08				
69	70.5	0.05	0.05	0.05	0.05	0.05	0.07	0.50	0.07				
70.5	72	0.05	0.05	0.05	0.05	0.05	0.07	0.50	0.07				
72	73.5	0.05	0.05	0.05	0.05	0.05	0.07	0.40	0.07				
73.5	75	0.05	0.05	0.05	0.05	0.05	0.07	0.40					
75	76.5	0.05	0.05	0.05	0.05	0.05	0.06	0.30					
76.5	78	0.05	0.05	0.05	0.05	0.05	0.06	0.30					
78	79.5	0.05	0.05	0.05	0.05	0.05	0.06						
79.5	81	0.05	0.05	0.05	0.05	0.05	0.06						
81	82.5	0.05	0.05		0.05	0.05	0.06						

		BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
82.5	84	0.05	0.05		0.05	0.05							
84	85.5	0.05	0.05			0.05							
85.5	87	0.05				0.05							
87	88.5	0.05											
88.5	90	0.05											
90	91.5	0.05											
91.5	93	0.05											

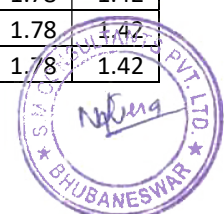
6.1.2.4 Porosity

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							2.53	2.53		2.53		
1.5	3				2.53	2.53		----	----		2.17		
3	4.5				----	2.17		----	----		2.17		
4.5	6				----	1.81		----	2.17	2.92	2.17		2.53
6	7.5		2.17		----	1.08	2.17	2.17	1.81	2.18	----		2.17
7.5	9		1.81		----	1.08	1.81	1.08	2.16	1.45	1.81		1.81
9	10.5		----		2.17	1.44	1.45	1.08	2.16	2.53	1.81	2.53	1.80
10.5	12	1.45	1.45		2.17	1.44	1.09	1.43	2.16	1.81	1.81	2.17	1.42
12	13.5	1.44	1.09		2.17	1.44	1.08	1.08	2.16	1.44	2.16	1.81	1.42
13.5	15	0.71	1.45		2.17	1.44	1.08	1.08	2.16	1.07	2.16	1.80	1.42
15	16.5	1.41	1.45		1.81	1.44	1.08	1.07	2.16	1.06	0.72	1.44	1.42
16.5	18		1.45		1.81	1.44	1.08	1.07	2.16	1.06	0.36	1.08	1.42
18	19.5		1.44		1.44	0.36	1.08	1.07	2.16	1.06	0.36	1.08	1.42
19.5	21		1.08		1.44	0.72	1.08	1.07	1.79	1.40	1.07	1.43	1.42
21	22.5		1.44		1.80	0.72	1.08	0.71	1.79	2.16	1.07	1.08	1.77
22.5	24		1.08		1.80	0.71	1.08	1.07	1.79	0.71	0.71	1.43	1.77
24	25.5				1.80	0.72	1.08	1.07	1.79	1.75	1.07	1.07	2.12
25.5	27				1.80	0.72	1.08	1.42	2.14	2.77	1.07	1.07	2.12
27	28.5					0.72	1.08	1.42	2.14	2.77	1.07	1.07	1.77
28.5	30					0.72	1.08	1.42	2.14	2.43	1.07	1.07	2.11
30	31.5					0.72	1.44	1.42	2.14	2.43	1.78	1.07	2.11
31.5	33					0.72	1.08	1.42	2.14	1.05	1.42	1.07	2.11
33	34.5					0.72	1.08	1.42	2.14	1.05	1.42	1.07	2.11
34.5	36					0.72	1.08	1.07	2.14	1.75	1.42	1.07	2.11
36	37.5					0.36	1.08	1.07	1.42	1.75	1.07	1.07	2.11
37.5	39					0.71	1.08		1.42	1.74	1.07	1.08	2.11
39	40.5					0.36			1.07	1.74	0.71	0.72	1.41
40.5	42					0.36			1.07	2.43	0.71	1.07	1.41
42	43.5					0.36			1.07	2.43	0.71	1.07	1.41
43.5	45					0.71				1.05	0.71	0.71	1.41
45	46.5									1.05	1.06	0.71	1.41
46.5	48									2.09	0.71	0.71	1.41
48	49.5									2.09	0.71	0.71	1.41
49.5	51									1.40	1.41	0.71	1.41
51	52.5									0.70	1.41	0.71	1.41
52.5	54									0.70	1.41	1.06	1.06
54	55.5										1.41	0.71	1.06
55.5	57										1.41	0.71	1.06
57	58.5										1.41	0.70	1.06
58.5	60										1.41	0.70	0.70



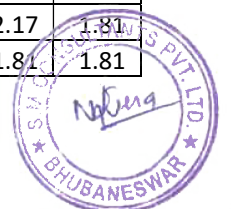
60	61.5										1.41	0.70	0.70
61.5	63											0.70	0.70
63	64.5											0.70	0.70
64.5	66												0.70
66	67.5												0.70
67.5	69												0.70

Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5					2.53	2.53	2.17	2.17	2.17	2.17	2.17	2.17
1.5	3			2.53	2.53	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17
3	4.5			2.17	2.17	1.81	1.81	1.81	1.81	2.17	2.17	2.17	2.17
4.5	6		1.81	1.81	1.81	1.80	1.80	1.44	----	2.17	2.17	----	2.17
6	7.5	2.53	1.80	1.80	1.80	1.44	1.44	1.08	----	1.81	1.81	----	2.17
7.5	9	2.17	1.44	1.44	1.44	1.08	1.08	1.08	----	----	----	----	2.17
9	10.5	1.81	1.08	1.08	1.08	1.08	1.08	1.44	----	----	----	----	2.17
10.5	12	1.42	1.08	1.08	1.08	1.43	1.08	1.44	----	----	1.81	2.17	2.17
12	13.5	1.42	1.43	1.43	1.43	1.08	0.72	1.44	----	----	1.81	2.17	2.17
13.5	15	1.42	1.08	1.08	1.08	1.08	1.08	1.44	1.44	----	1.81	2.17	2.17
15	16.5	1.42	1.08	1.08	1.08	1.07	0.72	1.44	1.08	----	1.81	2.17	2.17
16.5	18	1.42	1.07	1.07	1.07	1.07	0.72	1.44	1.08	1.81	1.81	2.17	1.81
18	19.5	1.42	1.07	1.07	1.07	1.07	0.72	0.36	1.08	1.81	1.81	2.17	1.81
19.5	21	1.42	1.07	1.07	1.07	1.07	1.07	0.72	1.08	1.81	1.81	2.17	1.81
21	22.5	1.77	1.07	1.07	1.07	0.71	0.71	0.72	1.08	1.81	1.81	2.17	1.81
22.5	24	1.77	0.71	0.71	0.71	1.07	0.71	0.72	1.08	1.81	1.81	----	1.44
24	25.5	2.12	1.07	1.07	1.07	1.07	0.71	0.72	1.08	1.81	1.81	----	1.44
25.5	27	2.12	1.07	1.07	1.07	1.42	0.71	0.72	1.08	1.81	1.44	----	1.44
27	28.5	1.77	1.07	1.07	1.07	1.42	0.71	0.72	1.08	1.81	1.44	1.81	1.80
28.5	30	2.11	1.07	1.07	1.07	1.42	1.43	0.72	1.08	1.81	1.44	1.81	1.80
30	31.5	2.11	1.78	1.78	1.78	1.42	1.07	0.72	1.44	1.81	1.80	1.81	1.80
31.5	33	2.11	1.42	1.42	1.42	1.42	1.07	0.72	0.72	1.44	1.80	1.81	1.44
33	34.5	2.11	1.42	1.42	1.42	1.42	1.07	0.72	0.72	1.44	1.80	1.44	1.44
34.5	36	2.11	1.42	1.42	1.42	1.07	0.71	0.36	0.72	1.44	1.44	1.44	1.79
36	37.5	2.11	1.07	1.07	1.07	1.07	0.71	0.71	0.72	1.80	1.44	1.44	1.79
37.5	39	2.11	1.07	1.07	1.07	0.71	0.36	0.36	0.72	1.80	1.79	1.80	1.79
39	40.5	1.41	0.71	0.71	0.71	0.71	0.71	0.36	0.36	1.80	1.79	1.80	1.79
40.5	42	1.41	0.71	0.71	0.71	0.71	0.36	0.36	0.36	1.44	1.79	1.80	1.79
42	43.5	1.41	0.71	0.71	0.71	0.71	0.36	0.71	0.36	1.44	1.79	1.44	1.79
43.5	45	1.41	0.71	0.71	0.71	1.06	0.71	0.71	0.36	1.79	2.14	1.44	1.79
45	46.5	1.41	1.06	1.06	1.06	0.71	0.35	1.07	0.36	1.79	2.14	1.79	2.14
46.5	48	1.41	0.71	0.71	0.71	0.71	0.35	1.07	0.36	1.79	2.14	1.79	2.14
48	49.5	1.41		0.71	0.71	1.41	1.06	0.36	0.36	1.79	2.49	1.79	1.78
49.5	51	1.41	1.41	1.41	1.41	1.41	1.06	0.36	0.71	2.14	1.78	1.79	1.78
51	52.5	1.41	1.41	1.41	1.41	1.41	1.06	0.36	0.71	2.14	1.78	1.79	1.78
52.5	54	1.06	1.41	1.41	1.41	1.41	1.06	0.36	0.71	2.14	1.78	1.79	1.78
54	55.5	1.06	1.41	1.41	1.41	1.41	1.06	0.36	1.07	2.49	1.78	1.79	1.78
55.5	57	1.06	1.41	1.41	1.41	1.41	1.06	0.71	1.07	1.78	1.78	2.14	2.13
57	58.5	1.06	1.41	1.41	1.41	1.41	1.06	0.71	1.07	1.78	1.78	2.14	1.42
58.5	60	0.70	1.41	1.41	1.41	1.41	1.06	0.71	1.07	1.78	2.13	1.78	1.42
60	61.5	0.70	1.41	1.41	1.41	1.41	1.06	0.71	1.07	1.78	2.13	1.78	1.42
61.5	63	0.70	1.41	1.41	1.41	1.06	0.35	0.71	1.07	1.78	2.13	1.78	1.42



Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
63	64.5	0.70	0.70	0.70	0.70	1.06	0.35	0.71	1.07	1.78	2.13	1.78	1.42
64.5	66	0.70	0.70	0.70	0.70	1.06	0.35	0.71	1.42	2.13	1.42	1.78	1.42
66	67.5	0.70	0.70	0.70	0.70	1.06	0.35	0.71	1.42	2.13	1.42	2.13	1.42
67.5	69	0.70	0.70	0.70	0.70	0.70	0.35	0.71	1.42	2.13	1.42	1.42	1.42
69	70.5	0.70	0.70	0.70	0.70	0.70	0.35	0.71	1.42	2.13	1.42	1.42	1.42
70.5	72	0.70	0.70	0.70	0.70	0.70	0.35	0.71	1.42	1.42	1.42	1.42	1.42
72	73.5		0.70	0.70	0.70	0.70	0.70	0.71	1.42	1.42	1.42	1.42	1.42
73.5	75		0.70	0.70	0.70	0.70	0.70	0.71	0.71	1.42	1.42	1.42	1.42
75	76.5			0.70	0.70	0.70	0.70	0.71	0.71	1.42	1.42	1.42	1.42
76.5	78			0.70	0.70	0.70	0.70	0.35	0.71	1.42	1.42	1.42	1.77
78	79.5			0.70	0.70	0.70	0.70	0.35	0.00	1.42	1.42	1.42	1.77
79.5	81				0.70	0.70	0.70	0.35	0.35	1.42	1.77	1.42	1.77
81	82.5				0.70	0.70	0.70	0.35	0.35	1.42	1.77	1.42	1.06
82.5	84				0.70	0.70	0.70	0.35	0.35	1.42	1.77	1.42	1.06
84	85.5					0.70	0.70	0.35	0.35	1.42	0.35	1.42	1.06
85.5	87					0.70	0.70	0.35	0.35	1.77	0.35	1.42	1.06
87	88.5						0.70	0.70	0.35	1.77	0.35	1.77	1.06
88.5	90						0.70	0.70	0.35	1.77	0.35	1.77	1.06
90	91.5						0.70	1.06	0.35	0.35	0.70	1.77	1.06
91.5	93						0.70	1.06	0.35	0.35	0.70	1.06	1.06
93	94.5						0.70	1.06	0.35	0.35	1.06	1.06	1.06
94.5	96						0.70	1.06	0.35	0.35	1.06	1.06	0.70
96	97.5						0.70	0.70	0.70	0.70	1.06	1.06	0.70
97.5	99						0.70	0.70	0.70	0.70	0.70	1.06	0.70
99	100.5							0.70	1.06	1.06	0.70	1.06	0.70
100.5	102								1.06	1.06	0.70	1.06	0.70
102	103.5								1.06	1.06	0.70	1.06	
103.5	105								0.70	0.70	1.06	1.06	
105	106.5									0.70	1.06	0.70	
106.5	108										1.06	0.70	
108	109.5										0.70	0.70	
109.5	111										0.70	0.70	
111	112.5										0.70	0.70	
112.5	114										0.70	0.70	
114	115.5										1.06		
115.5	117										1.06		
117	118.5										1.06		

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	2.17	2.17				2.17	2.17	2.17			2.17	2.17
1.5	3	2.17	2.17				2.17	2.17	----			2.17	2.17
3	4.5	2.17	----		2.17		2.17	2.17	----		2.17	2.17	2.17
4.5	6	2.17	----	2.17	2.17	2.17	2.17	2.17	2.17	2.54	2.17	----	2.17
6	7.5	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.54	2.17	----	2.17
7.5	9	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.54	1.81	2.17	2.17
9	10.5	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.16	2.54	1.45	2.17	2.17
10.5	12	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.16	2.54	1.45	2.17	1.81
12	13.5	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.16	2.54	1.45	2.17	1.81
13.5	15	2.17	1.81	2.17	1.81	2.17	1.81	2.17	2.16	2.54	1.45	1.81	1.81

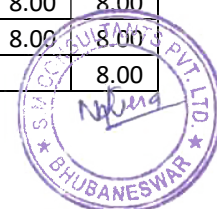


Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
15	16.5	2.17	1.81	1.81	1.81	1.81	1.81	1.81	2.16	2.16	1.45	1.81	1.81
16.5	18	2.17	1.81	1.81	1.81	1.81	2.16	2.16	2.15	2.16	1.44	1.81	1.81
18	19.5	2.17	1.81	1.81	1.81	1.81	2.16	2.16	2.15	2.16	1.44	1.81	1.81
19.5	21	2.17	1.81	1.81	1.81	1.81	2.16	2.16	2.15	2.16	1.44	1.81	1.81
21	22.5	2.17	1.81	1.81	1.81	1.81	2.16	2.16	2.15	2.16	1.44	1.81	1.81
22.5	24	1.81	1.81	1.81	1.81	1.81	2.16	2.16	2.15	1.79	1.44	1.81	1.81
24	25.5	1.81	1.81	1.81	1.81	1.81	2.16	2.16	1.79	1.79	1.44	1.81	
25.5	27	1.81	1.81	1.81	1.81	1.81	2.16	2.16	1.79	1.79	1.44	1.81	
27	28.5	2.16	1.81	1.81	1.81	1.81	2.16	2.16	1.79	1.79	1.42	1.81	
28.5	30	2.16	1.81	1.81	1.81	1.81	2.16	2.16	1.79	1.79	1.42	1.81	
30	31.5	2.16	2.16	1.81	2.16	1.81	2.51	1.80	1.79	1.79	1.42	2.16	
31.5	33	1.80	1.80	2.16	1.80	2.16	2.51	2.15	1.79	1.79	1.42	1.80	
33	34.5	1.80	1.80	1.80	1.80	1.80	2.51	2.15	1.79	1.77	1.42	1.80	
34.5	36	2.15	1.80	1.80	1.80	1.80	2.51	2.15	1.79	1.77	1.42	1.80	
36	37.5	2.15	1.80	1.80	1.80	1.80	2.51	2.15	1.79	1.77	1.42	1.80	
37.5	39	2.15	2.15	1.80	2.15	1.80	2.51	2.14	1.79	1.77	1.42	2.15	
39	40.5	1.79	2.15	2.15	2.15	2.15	2.15	2.14	1.77	1.77	1.42	2.15	
40.5	42	2.14	2.15	2.15	2.15	2.15	2.15	2.14	1.77	1.41	1.06	2.15	
42	43.5	2.14	1.79	2.15	1.79	2.15	2.15	2.14	1.77	1.41	1.06		
43.5	45	1.79	2.14	1.79	2.14	1.79	2.15	2.14	1.77	1.41	1.06		
45	46.5	2.14	2.14	2.14	2.14	2.14	2.15	2.14	1.77	1.41	1.06		
46.5	48	2.14	1.79	2.14	1.79	2.14	2.15	2.14	1.77	1.41	1.06		
48	49.5	1.78	2.14	1.79	2.14	1.79	2.50	2.14	1.77	1.41	1.06		
49.5	51	1.78	2.14	2.14	2.14	2.14	2.50	2.14	1.77	1.41	0.71		
51	52.5	1.78	1.78	2.14	1.78	2.14	2.50	2.14	1.41	1.41	0.71		
52.5	54	1.78	1.78	1.78	1.78	1.78	2.14	2.14	1.41	1.41	0.71		
54	55.5	1.78	1.78	1.78	1.78	1.78	2.14	2.14	1.41	1.41	0.71		
55.5	57	2.13	1.78	1.78	1.78	1.78	2.49	2.14	1.41	1.41	0.71		
57	58.5	1.42	1.78	1.78	1.78	1.78	2.49	2.14	1.41	1.41			
58.5	60	1.42	2.13	1.78	2.13	1.78	2.49	2.14	1.41	1.06			
60	61.5	1.42	1.42	2.13	1.42	2.13	2.14	2.13	1.41	1.06			
61.5	63	1.42	1.42	1.42	1.42	1.42	2.14	2.13	1.41	1.06			
63	64.5	1.42	1.42	1.42	1.42	1.42	2.14	2.13	1.41	1.06			
64.5	66	1.42	1.42	1.42	1.42	1.42	2.14	2.13	1.05	1.06			
66	67.5	1.42	1.42	1.42	1.42	1.42	2.14	2.13	1.05	1.06			
67.5	69	1.42	1.42	1.42	1.42	1.42	2.14	1.77	1.05				
69	70.5	1.42	1.42	1.42	1.42	1.42	1.78	1.77	1.05				
70.5	72	1.42	1.42	1.42	1.42	1.42	2.13	1.77	1.05				
72	73.5	1.42	1.42	1.42	1.42	1.42	2.13	1.42	1.05				
73.5	75	1.42	1.42	1.42	1.42	1.42	2.13	1.42					
75	76.5	1.42	1.42	1.42	1.42	1.42	2.13	1.42					
76.5	78	1.77	1.42	1.42	1.42	1.42	1.77	1.42					
78	79.5	1.77	1.42	1.42	1.42	1.42	1.77						
79.5	81	1.77	1.77	1.42	1.42	1.42	1.77						
81	82.5	1.06	1.77		1.42	1.42	1.77						
82.5	84	1.06	1.77		1.42	1.42							
84	85.5	1.06	1.06			1.42							
85.5	87	1.06				1.42							
87	88.5	1.06											
88.5	90	1.06											

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
90	91.5	1.06											
91.5	93	1.06											

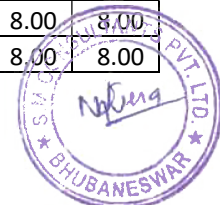
6.1.2.5 Hardness

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							6.00	6.00		6.00		
1.5	3				6.00	6.00		----	----		6.00		
3	4.5				----	6.00		----	----		6.00		
4.5	6				----	6.00		----	6.00	6.00	6.00		6.00
6	7.5		6.00		----	6.00	6.00	6.00	6.00	6.00	----		6.00
7.5	9		6.00		----	6.00	6.00	6.00	6.00	6.00	6.00		6.00
9	10.5		----		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
10.5	12	6.00	6.00		6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	7.00
12	13.5	6.00	6.00		6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	7.00
13.5	15	7.00	6.00		6.00	7.00	6.00	6.00	6.00	7.00	6.00	6.00	7.00
15	16.5	7.00	6.00		6.00	7.00	6.00	6.00	6.00	7.00	6.00	6.00	7.00
16.5	18		6.00		6.00	7.00	7.00	6.00	6.00	8.00	6.00	6.00	7.00
18	19.5		6.00		6.00	7.00	7.00	6.00	6.00	8.00	6.00	6.00	7.00
19.5	21		7.00		7.00	7.00	7.00	6.00	6.00	8.00	6.00	6.00	7.00
21	22.5		7.00		7.00	7.00	7.00	6.00	6.00	6.00	7.00	6.00	7.00
22.5	24		7.00		7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00
24	25.5				7.00	7.00	7.00	7.00	7.00	8.00	7.00	6.00	7.00
25.5	27				7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00
27	28.5					7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
28.5	30					7.00	7.00	7.00	7.00	7.00	7.00	7.00	8.00
30	31.5					7.00	7.00	7.00	7.00	7.00	7.00	7.00	8.00
31.5	33					7.00	7.00	7.00	7.00	8.00	7.00	7.00	8.00
33	34.5					7.00	7.00	7.00	7.00	8.00	7.00	7.00	8.00
34.5	36					7.00	7.00	7.00	7.00	8.00	7.00	7.00	8.00
36	37.5					7.00	7.00	7.00	7.00	7.00	7.00	7.00	8.00
37.5	39					7.00	7.00		7.00	7.00	7.00	7.00	8.00
39	40.5					7.00			7.00	8.00	7.00	7.00	8.00
40.5	42					7.00			7.00	7.00	7.00	7.00	8.00
42	43.5					7.00			7.00	7.00	7.00	7.00	8.00
43.5	45					7.00				8.00	7.00	8.00	8.00
45	46.5									8.00	7.00	8.00	8.00
46.5	48									8.00	8.00	8.00	8.00
48	49.5									7.00	8.00	8.00	8.00
49.5	51									7.00	8.00	8.00	8.00
51	52.5									8.00	8.00	8.00	8.00
52.5	54									8.00	8.00	8.00	8.00
54	55.5										8.00	8.00	8.00
55.5	57										8.00	8.00	8.00
57	58.5										8.00	8.00	8.00
58.5	60										8.00	8.00	8.00
60	61.5										8.00	8.00	8.00
61.5	63											8.00	8.00
63	64.5											8.00	8.00
64.5	66												8.00



Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
66	67.5												8.00
67.5	69												8.00

Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5					6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1.5	3			6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
3	4.5			6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
4.5	6		6.00	6.00	6.00	6.00	6.00	6.00	----	6.00	6.00	----	6.00
6	7.5	6.00	6.00	6.00	6.00	6.00	6.00	6.00	----	6.00	6.00	----	6.00
7.5	9	6.00	6.00	6.00	6.00	6.00	6.00	6.00	----	----	----	----	6.00
9	10.5	6.00	6.00	6.00	6.00	6.00	6.00	6.00	----	----	----	----	6.00
10.5	12	7.00	6.00	6.00	6.00	6.00	6.00	6.00	----	----	6.00	6.00	6.00
12	13.5	7.00	6.00	6.00	6.00	6.00	6.00	6.00	----	----	6.00	6.00	6.00
13.5	15	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	----	6.00	6.00	6.00
15	16.5	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	----	6.00	6.00	6.00
16.5	18	7.00	6.00	6.00	6.00	6.00	7.00	7.00	7.00	6.00	6.00	6.00	6.00
18	19.5	7.00	6.00	6.00	6.00	6.00	7.00	7.00	7.00	6.00	6.00	6.00	7.00
19.5	21	7.00	6.00	6.00	6.00	6.00	7.00	7.00	7.00	6.00	7.00	6.00	7.00
21	22.5	7.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	6.00	7.00	6.00	7.00
22.5	24	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	----	7.00
24	25.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	----	7.00
25.5	27	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	----	7.00
27	28.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00
28.5	30	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
30	31.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
31.5	33	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
33	34.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
34.5	36	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
36	37.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
37.5	39	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
39	40.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
40.5	42	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
42	43.5	8.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
43.5	45	8.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
45	46.5	8.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00
46.5	48	8.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00
48	49.5	8.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00
49.5	51	8.00	8.00	8.00	8.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00
51	52.5	8.00	8.00	8.00	8.00	7.00	7.00	7.00	7.00	8.00	8.00	7.00	7.00
52.5	54	8.00	8.00	8.00	8.00	8.00	8.00	7.00	7.00	8.00	8.00	7.00	8.00
54	55.5	8.00	8.00	8.00	8.00	8.00	8.00	7.00	7.00	8.00	8.00	7.00	8.00
55.5	57	8.00	8.00	8.00	8.00	8.00	8.00	7.00	7.00	8.00	8.00	7.00	8.00
57	58.5	8.00	8.00	8.00	8.00	8.00	8.00	7.00	7.00	8.00	8.00	8.00	8.00
58.5	60	8.00	8.00	8.00	8.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	8.00
60	61.5	8.00	8.00	8.00	8.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	8.00
61.5	63	8.00	8.00	8.00	8.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	8.00
63	64.5	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
64.5	66	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
66	67.5	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00



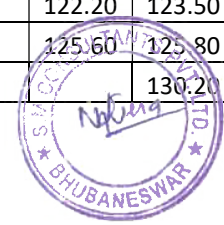
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
67.5	69	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
69	70.5	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
70.5	72	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
72	73.5		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
73.5	75		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
75	76.5			8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
76.5	78			8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
78	79.5			8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
79.5	81				8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
81	82.5				8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
82.5	84				8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
84	85.5					8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
85.5	87					8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
87	88.5						8.00	8.00	8.00	8.00	8.00	8.00	8.00
88.5	90						8.00	8.00	8.00	8.00	8.00	8.00	8.00
90	91.5						8.00	8.00	8.00	8.00	8.00	8.00	8.00
91.5	93						8.00	8.00	8.00	8.00	8.00	8.00	8.00
93	94.5						8.00	8.00	8.00	8.00	8.00	8.00	8.00
94.5	96						8.00	8.00	8.00	8.00	8.00	8.00	8.00
96	97.5						8.00	8.00	8.00	8.00	8.00	8.00	8.00
97.5	99						8.00	8.00	8.00	8.00	8.00	8.00	8.00
99	100.5							8.00	8.00	8.00	8.00	8.00	8.00
100.5	102								8.00	8.00	8.00	8.00	8.00
102	103.5								8.00	8.00	8.00	8.00	
103.5	105								8.00	8.00	8.00	8.00	
105	106.5									8.00	8.00	8.00	
106.5	108										8.00	8.00	
108	109.5										8.00	8.00	
109.5	111										8.00	8.00	
111	112.5										8.00	8.00	
112.5	114										8.00	8.00	
114	115.5										8.00		
115.5	117										8.00		
117	118.5										8.00		

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	6.00	6.00				6.00	6.00	----			6.00	6.00
1.5	3	6.00	6.00				6.00	6.00	----			6.00	6.00
3	4.5	6.00	----		6.00		6.00	6.00	----		6.00	6.00	6.00
4.5	6	6.00	----	6.00	6.00	6.00	6.00	6.00	----	6.00	6.00	----	6.00
6	7.5	6.00	6.00	6.00	6.00	6.00	6.00	6.00	----	6.00	6.00	----	6.00
7.5	9	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
9	10.5	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00	6.00	6.00
10.5	12	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00	6.00	6.00
12	13.5	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00	6.00	6.00
13.5	15	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00	6.00	6.00
15	16.5	7.00	6.00	6.00	6.00	6.00	6.00	7.00	6.00	6.00	6.00	6.00	7.00
16.5	18	7.00	6.00	6.00	6.00	6.00	7.00	7.00	6.00	6.00	6.00	6.00	7.00
18	19.5	7.00	6.00	6.00	7.00	6.00	7.00	7.00	6.00	7.00	6.00	7.00	7.00

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
19.5	21	7.00	6.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	6.00	7.00	7.00
21	22.5	7.00	6.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	7.00
22.5	24	7.00	6.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	7.00
24	25.5	7.00	6.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	
25.5	27	7.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	
27	28.5	7.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	
28.5	30	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	
30	31.5	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00	7.00	7.00	
31.5	33	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00	7.00	7.00	
33	34.5	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00	7.00	7.00	
34.5	36	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00	7.00	7.00	
36	37.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	7.00	7.00	7.00	7.00	
37.5	39	7.00	7.00	7.00	7.00	7.00	8.00	8.00	7.00	7.00	7.00	7.00	
39	40.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	7.00	7.00	7.00	7.00	
40.5	42	7.00	7.00	7.00	7.00	7.00	8.00	8.00	7.00	7.00	7.00	7.00	
42	43.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
43.5	45	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
45	46.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
46.5	48	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
48	49.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
49.5	51	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
51	52.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	8.00	8.00		
52.5	54	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	9.00	8.00		
54	55.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	9.00	8.00		
55.5	57	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	9.00	8.00		
57	58.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	9.00			
58.5	60	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	9.00			
60	61.5	7.00	7.00	7.00	7.00	7.00	8.00	8.00	8.00	9.00			
61.5	63	7.00	7.00	7.00	7.00	7.00	9.00	8.00	8.00	9.00			
63	64.5	7.00	7.00	7.00	7.00	7.00	9.00	9.00	8.00	9.00			
64.5	66	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00	9.00			
66	67.5	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00	9.00			
67.5	69	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00				
69	70.5	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00				
70.5	72	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00				
72	73.5	7.00	7.00	7.00	7.00	7.00	9.00	9.00	9.00				
73.5	75	7.00	7.00	7.00	8.00	7.00	9.00	9.00					
75	76.5	7.00	7.00	8.00	8.00	8.00	9.00	9.00					
76.5	78	8.00	7.00	8.00	8.00	8.00	9.00	9.00					
78	79.5	8.00	7.00	8.00	8.50	8.00	9.00						
79.5	81	8.00	7.00	8.00	8.80	8.50	9.00						
81	82.5	8.00	7.00		9.10	8.80	9.00						
82.5	84	8.00	7.00		8.00	9.10							
84	85.5	8.00	8.00			9.10							
85.5	87	8.00				8.00							
87	88.5	8.00											
88.5	90	8.00											
90	91.5	8.00											
91.5	93	8.00											

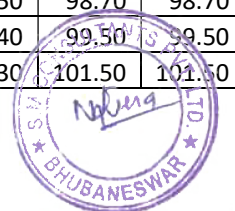
6.1.2.6 Compression Test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							----	----		----		
1.5	3				----	9.26		----	----		----		
3	4.5				----	9.80		----	----		----		
4.5	6				----	11.40		----	10.40	----	12.70		----
6	7.5		----		----	14.20	----	----	12.70	----	----		----
7.5	9		----		----	15.30	----	12.70	13.20	----	12.90		----
9	10.5		----		9.70	16.20	----	14.20	14.40	10.50	13.30	----	18.70
10.5	12	7.50	10.20		10.20	17.40	12.60	14.50	14.70	11.40	13.50	----	22.30
12	13.5	15.60	10.70		10.70	17.50	15.30	14.60	14.90	----	13.70	----	24.20
13.5	15	44.50	12.70		12.70	19.30	16.50	14.90	15.10	35.00	13.90	----	25.60
15	16.5	52.50	13.60		13.60	20.20	18.90	15.10	15.20	50.20	14.20	----	30.40
16.5	18		15.50		15.50	21.30	21.20	15.30	15.40	65.50	15.30	15.60	35.60
18	19.5		17.40		17.40	22.50	22.40	16.10	16.20	80.40	16.40	----	37.80
19.5	21		19.50		19.50	22.60	25.30	16.50	16.40	81.20	17.30	----	39.20
21	22.5		21.50		21.50	24.20	30.00	16.70	16.70	24.60	17.80	----	45.30
22.5	24		23.60		23.60	24.70	32.20	22.10	20.20	48.90	18.40	18.20	46.40
24	25.5				23.78	25.50	33.10	23.40	23.40	69.60	18.90	18.90	50.20
25.5	27				24.46	27.30	34.30	24.50	24.50	90.30	19.20	----	55.60
27	28.5					31.30	35.00	25.30	25.30	92.10	21.40	----	57.80
28.5	30					32.40	38.70	25.70	25.70	93.80	22.10	22.00	59.60
30	31.5					34.60	43.20	27.10	27.10	95.40	22.50	22.60	62.50
31.5	33					34.70	47.30	30.60	30.60	97.20	23.40	26.43	63.40
33	34.5					35.60	49.40	34.90	34.90	98.90	24.20	----	65.30
34.5	36					39.20	50.10	40.80	40.80	100.60	26.40	----	66.40
36	37.5					43.20	51.40	41.12	42.60	102.40	28.90	----	68.70
37.5	39					47.40	53.40		45.30	104.00	30.30	30.50	73.60
39	40.5					49.40			47.90	105.80	44.50	----	74.80
40.5	42					50.20			48.20	107.40	77.50	90.70	85.90
42	43.5					51.30			48.26	109.10	82.40	92.80	90.20
43.5	45					52.20				110.70	85.60	94.80	93.50
45	46.5									112.40	87.90	96.90	94.70
46.5	48									114.20	92.30	98.80	95.80
48	49.5									115.90	100.50	100.70	97.80
49.5	51									117.50	102.80	102.80	99.60
51	52.5									119.10	104.50	104.70	102.30
52.5	54									120.50	106.80	106.80	112.50
54	55.5										108.70	108.90	115.60
55.5	57										109.70	110.80	117.40
57	58.5										112.30	113.20	119.50
58.5	60										114.50	115.40	120.40
60	61.5										117.90	118.70	121.30
61.5	63											122.20	123.50
63	64.5											125.60	125.80
64.5	66												130.20



Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
66	67.5												135.60
67.5	69												137.40

Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5					----	----	----	----	----	----	----	----
1.5	3			9.20	----	----	----	----	----	----	----	----	----
3	4.5			10.30	----	----	----	----	17.20	----	----	----	----
4.5	6		10.40	10.60	----	----	----	13.70	----	----	----	----	----
6	7.5	----	11.10	11.20	----	----	----	14.20	----	----	----	----	----
7.5	9	----	11.40	11.50	13.00	----	----	15.10	----	----	----	----	----
9	10.5	----	11.70	11.80	----	----	13.50	16.30	----	----	----	----	----
10.5	12	22.20	12.50	12.40	----	14.50	14.10	17.20	----	----	----	----	----
12	13.5	24.10	12.70	12.90	----	14.63	15.30	17.50	----	----	12.70	----	----
13.5	15	25.40	13.10	13.30	----	14.89	16.40	19.40	----	----	13.20	----	----
15	16.5	30.20	13.90	14.00	14.00	15.10	17.20	20.30	----	----	13.50	----	----
16.5	18	35.40	15.30	15.50	15.50	15.30	19.40	21.20	----	----	13.60	----	----
18	19.5	37.60	17.80	18.00	18.00	16.10	20.10	22.40	22.40	----	13.90	----	----
19.5	21	39.10	18.30	18.50	18.50	----	21.20	22.60	25.30	14.20	14.20	----	----
21	22.5	45.10	18.80	19.00	19.00	----	22.30	24.30	30.00	----	14.70	----	----
22.5	24	46.20	22.30	22.50	22.50	22.10	22.60	25.40	32.20	17.50	15.20	----	35.20
24	25.5	50.20	24.70	22.80	25.00	23.40	24.30	27.30	33.10	18.90	15.60	----	----
25.5	27	55.30	25.40	25.40	25.50	24.50	25.40	31.20	34.30	20.10	15.80	----	36.20
27	28.5	57.40	26.90	27.00	27.00	25.30	27.30	32.30	35.00	22.60	16.00	16.00	36.20
28.5	30	59.50	30.30	30.50	30.50	25.70	30.20	34.50	38.70	23.40	18.30	18.30	36.20
30	31.5	62.40	35.40	35.60	35.60	27.10	31.50	34.70	43.20	28.10	25.70	25.70	36.20
31.5	33	63.20	40.50	40.70	40.70	30.60	32.70	35.80	47.30	32.40	27.40	27.40	40.70
33	34.5	65.20	41.10	41.20	41.20	34.90	34.70	39.40	49.40	35.30	30.40	30.40	40.70
34.5	36	66.10	45.50	45.50	45.50	40.80	35.80	43.30	50.10	39.40	34.90	34.90	44.50
36	37.5	68.50	47.80	47.80	47.80	41.20	39.40	47.50	51.40	43.50	38.20	38.20	44.50
37.5	39	73.20	52.00	52.10	52.10	45.80	43.50	49.50	53.40	47.50	42.30	42.30	53.40
39	40.5	74.60	55.10	55.30	55.30	47.60	47.50	50.30	53.70	48.30	46.20	46.20	53.40
40.5	42	85.70	70.10	70.20	70.20	52.30	48.30	51.20	54.70	58.30	50.10	50.10	60.20
42	43.5	90.10	80.40	80.30	80.30	55.40	58.30	52.30	55.10	70.20	54.00	54.00	60.20
43.5	45	93.40	85.70	85.70	85.70	70.30	70.20	53.30	56.10	80.20	57.90	57.90	68.20
45	46.5	94.60	86.40	86.40	86.40	80.40	80.20	54.30	57.30	84.30	61.80	61.80	72.20
46.5	48	95.70	87.20	87.20	87.20	85.20	84.30	55.30	58.40	85.30	65.70	65.70	72.20
48	49.5	97.70	88.30	88.30	88.30	86.30	85.30	56.10	59.60	86.40	69.60	69.60	80.20
49.5	51	99.50	92.80	92.80	92.80	87.10	86.40	57.30	70.20	87.50	73.50	73.50	80.20
51	52.5	102.20	94.30	94.30	94.30	88.40	87.50	58.40	80.20	91.10	77.40	77.40	88.20
52.5	54	112.40	95.40	95.40	95.40	91.70	91.10	59.60	84.30	92.50	81.30	81.30	92.20
54	55.5	115.40	96.70	96.70	96.70	93.20	92.50	70.20	85.30	95.40	85.20	85.20	92.20
55.5	57	117.30	97.60	97.60	97.60	94.50	95.40	80.20	86.40	96.40	89.10	89.10	99.20
57	58.5	119.40	98.70	98.70	98.70	96.70	96.40	84.30	87.50	97.10	93.00	93.00	103.20
58.5	60	120.20	99.10	99.10	99.10	98.70	97.10	85.30	91.10	98.30	94.30	94.30	104.20
60	61.5	121.20	100.90	100.90	100.90	98.90	98.30	86.40	92.50	99.50	95.40	95.40	108.20
61.5	63	123.50	102.70	102.70	102.70	99.30	99.50	87.50	95.40	100.50	96.20	96.20	112.20
63	64.5	125.80	115.40	115.40	115.40	100.50	100.50	91.10	96.50	104.50	98.70	98.70	112.20
64.5	66	130.10	118.70	118.70	118.70	102.40	104.50	92.50	97.10	116.40	99.50	99.50	118.20
66	67.5	135.50	121.30	121.30	121.30	114.30	116.40	95.40	98.30	117.30	101.50	101.50	122.20



Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
67.5	69	137.30	123.70	123.70	123.70	117.20	117.30	96.50	99.50	122.40	103.50	103.50	122.40
69	70.5	138.20	124.20	124.20	124.20	122.20	122.40	97.10	100.50	123.40	104.00	104.00	123.40
70.5	72	139.40	125.10	125.10	125.10	123.80	123.40	98.30	104.50	125.40	106.70	106.70	125.40
72	73.5		126.30	126.30	126.30	124.50	125.40	99.50	116.40	126.70	109.50	109.50	126.70
73.5	75		127.20	127.20	127.20	125.70	126.70	100.50	117.30	128.50	110.10	110.10	128.50
75	76.5			128.50	128.50	126.40	128.50	104.50	119.20	129.20	112.50	112.50	129.20
76.5	78			129.30	129.30	127.30	129.20	116.40	124.50	130.50	113.40	113.40	130.50
78	79.5			130.10	130.10	128.60	130.50	117.30	125.40	131.20	114.50	114.50	131.20
79.5	81				132.30	129.70	131.20	119.20	126.70	133.40	115.40	115.40	133.40
81	82.5				133.40	130.30	133.40	124.50	128.50	134.10	116.70	116.70	134.10
82.5	84				134.00	131.20	134.10	125.40	129.20	134.50	120.50	120.50	134.50
84	85.5					133.70	134.50	126.70	131.10	134.90	122.60	122.60	134.90
85.5	87					134.40	134.90	128.50	131.20	135.20	125.30	125.30	135.20
87	88.5						135.20	129.20	132.30	136.40	126.20	126.20	136.40
88.5	90						136.40	131.10	134.10	137.80	127.10	127.10	137.80
90	91.5						137.80	131.20	134.50	139.20	128.40	128.40	139.20
91.5	93						139.20	132.30	134.90	139.50	129.10	129.10	139.50
93	94.5						139.50	134.10	135.30	140.20	130.50	130.50	140.20
94.5	96						140.20	134.50	135.70	140.70	132.40	132.40	140.70
96	97.5						140.70	134.90	135.70	141.30	133.50	133.50	141.30
97.5	99						142.30	135.50	136.40	142.50	134.50	134.50	142.50
99	100.5							136.20	138.40	143.80	135.60	135.60	143.80
100.5	102								139.50	144.50	137.80	137.80	144.50
102	103.5								140.20	145.60	139.20	139.20	145.60
103.5	105								140.50	147.80	140.70	140.70	147.80
105	106.5									148.00	141.60	141.60	148.00
106.5	108										142.40	142.40	148.00
108	109.5										143.50	143.50	148.00
109.5	111										144.60	144.60	148.00
111	112.5										145.90	145.90	148.00
112.5	114										146.10	146.10	148.00
114	115.5										147.20		148.00
115.5	117										147.50		148.00
117	118.5										147.80		148.00

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	----	----				----	----	----			----	----
1.5	3	----	----				----	----	----			----	----
3	4.5	----	----		----		----	----	----		----	----	----
4.5	6	----	----	----	----	----	----	----	----	9.17	8.72	----	----
6	7.5	----	----	----	----	----	10.58	10.56	----	11.80	10.40	----	----
7.5	9	14.84	----	----	11.41	----	11.25	11.15	11.80	13.20	11.30	----	12.45
9	10.5	20.10	----	----	12.36	----	12.42	12.45	13.20	15.50	12.80	----	15.10
10.5	12	22.50	----	----	13.50	10.46	13.59	13.75	15.50	16.80	13.60	14.15	17.75
12	13.5	25.10	----	13.20	14.85	12.28	14.76	15.05	16.80	18.30	15.20	15.10	20.40
13.5	15	27.30	12.70	15.10	16.20	13.13	15.93	16.35	18.30	20.60	17.60	16.05	23.05
15	16.5	28.20	----	16.40	17.55	13.98	22.52	22.54	20.60	21.90	18.50	17.00	25.70
16.5	18	29.40	----	17.80	18.90	14.83	23.14	23.49	21.90	23.50	19.70	17.95	28.35
18	19.5	30.20	13.20	18.90	20.25	15.68	24.60	24.44	23.50	26.30	21.30	21.60	31.00



Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
19.5	21	31.50	----	21.60	21.60	22.23	25.50	25.39	26.30	29.40	22.80	22.75	33.65
21	22.5	33.40	----	22.40	22.95	23.45	26.54	26.34	29.40	31.20	24.60	23.90	36.30
22.5	24	35.60	15.20	24.60	24.30	24.67	31.25	32.60	33.70	32.50	26.50	25.05	38.95
24	25.5	36.40	16.40	25.60	25.65	25.89	33.40	38.86	34.20	34.80	27.30	26.20	
25.5	27	37.30	17.80	27.80	34.60	27.11	38.50	45.12	36.80	35.70	28.60	27.35	
27	28.5	38.20	18.90	32.60	37.40	32.69	41.60	46.52	38.30	37.20	29.40	33.43	
28.5	30	39.40	21.60	33.40	40.20	33.40	43.42	----	41.40	38.60	31.40	37.57	
30	31.5	40.10	22.40	37.50	42.65	38.42	45.24	48.64	42.90	39.50	32.50	42.56	
31.5	33	41.00	24.60	42.60	43.44	42.56	47.06	49.70	44.50	42.10	34.80	43.40	
33	34.5	42.30	25.60	43.40	44.23	43.21	48.88	50.76	47.30	44.60	36.80	44.24	
34.5	36	43.40	27.80	45.40	45.02	45.40	50.70	51.82	49.20	45.80	37.40	45.08	
36	37.5	45.40	32.60	46.30	45.81	46.56	52.52	52.88	50.30	46.20	37.90	45.92	
37.5	39	46.30	33.40	47.80	46.60	47.98	54.34	53.94	51.40	48.70	38.60	46.76	
39	40.5	47.80	37.50	48.90	49.40	49.40	56.16	55.00	52.90	49.30	40.20	47.60	
40.5	42	48.90	42.60	49.40	52.20	50.82	57.98	56.06	54.70	52.20	41.30	48.44	
42	43.5	49.50	43.40	52.10	55.00	52.24	59.80	57.12	55.10	53.50	42.50		
43.5	45	50.10	45.40	52.30	56.43	53.66	61.62	58.18	57.60	55.20	43.60		
45	46.5	52.30	46.30	54.30	57.86	55.08	63.44	59.24	59.30	56.10	45.70		
46.5	48	54.30	47.80	56.20	59.29	56.50	65.26	60.30	60.10	58.40	47.20		
48	49.5	56.40	48.90	57.10	60.72	57.92	67.08	61.36	60.90	60.60	48.50		
49.5	51	57.10	49.50	58.60	62.15	59.34	68.90	62.42	62.30	62.70	50.70		
51	52.5	58.60	50.10	59.30	63.58	60.76	70.72	63.48	62.70	63.30	52.60		
52.5	54	59.30	52.30	60.40	65.01	62.18	72.54	64.54	63.50	63.80	55.40		
54	55.5	60.40	54.30	61.20	66.44	63.60	74.36	65.60	65.20	65.20	56.30		
55.5	57	61.30	56.40	63.10	67.87	65.02	76.18	66.66	67.30	66.70	58.60		
57	58.5	62.40	57.10	64.30	69.30	66.44	83.46	69.54	67.80	68.40			
58.5	60	63.50	58.60	65.70	70.73	67.86	85.28	70.85	68.40	69.70			
60	61.5	66.70	59.30	67.50	72.10	69.28	87.10	72.16	69.60	70.32			
61.5	63	68.90	60.40	69.10	73.50	70.56	88.15	73.47	71.80	71.60			
63	64.5	69.10	61.30	70.50	75.20	72.35	89.20	74.78	72.40	72.40			
64.5	66	70.50	62.40	71.20	76.90	74.14	90.25	76.09	74.30	74.70			
66	67.5	71.20	63.50	73.40	78.60	75.93	91.30	77.40	75.80	75.60			
67.5	69	73.40	66.70	75.60	80.30	77.72	92.35	78.71	77.30				
69	70.5	75.60	68.90	77.40	82.00	79.51	93.40	80.02	80.60				
70.5	72	77.40	69.10	78.20	83.70	81.30	94.45	81.33	84.50				
72	73.5	78.20	70.50	79.80	85.40	83.09	95.50	82.64	90.70				
73.5	75	79.80	71.20	88.40	87.10	84.88	96.55	83.95					
75	76.5	88.40	73.40	92.40	88.80	86.67	97.60	85.26					
76.5	78	92.40	75.60	93.50	90.50	88.46	97.95	86.57					
78	79.5	93.40	77.40	94.70	92.20	90.25	98.30						
79.5	81	98.06	78.20	95.60	93.90	92.04	98.65						
81	82.5	101.40	79.80		95.60	93.83	99.00						
82.5	84	104.80	88.40		97.30	95.62							
84	85.5	108.50	92.40			97.41							
85.5	87	111.60				99.20							
87	88.5	115.40											
88.5	90	121.60											
90	91.5	128.70											
91.5	93	134.20											

6.1.2.7 Point Load Test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							----	----		----		
1.5	3				----	0.45		----	----		----		
3	4.5				----	0.49		----	----		----		
4.5	6				----	0.58		----	----	----	0.63		----
6	7.5		----		----	0.73	----	----	0.61	----	----		----
7.5	9		----		----	0.79	0.52	0.64	0.64	----	0.65		----
9	10.5		----		0.84	0.82	0.57	0.69	0.69	0.53	0.69	----	----
10.5	12	0.39	0.82		0.87	0.89	0.62	0.73	0.72	0.58	0.71	0.39	1.09
12	13.5	0.78	0.91		0.91	0.93	0.75	0.77	0.75	0.82	0.73	0.52	1.17
13.5	15	2.19	0.95		1.03	0.98	0.84	0.79	0.78	1.72	0.76	0.63	1.27
15	16.5	2.64	1.05		1.05	1.05	0.93	0.82	0.80	2.38	0.78	----	1.49
16.5	18		1.10		1.12	1.09	1.04	0.84	0.82	3.16	0.82	0.79	1.78
18	19.5		1.21		1.21	1.14	1.11	0.87	0.85	3.82	0.86	0.83	1.84
19.5	21		1.31		1.32	1.19	1.24	0.91	0.86	3.96	0.89	----	1.97
21	22.5		1.34		1.41	1.22	1.46	0.93	0.89	1.19	0.92	----	2.19
22.5	24		1.47		1.47	1.27	1.55	1.16	1.03	2.34	0.95	0.92	2.23
24	25.5				1.49	1.33	1.62	1.23	1.14	3.36	0.98	0.98	2.46
25.5	27				1.52	1.37	1.71	1.27	1.23	4.36	1.02	0.99	2.68
27	28.5					1.54	1.76	1.33	1.27	4.49	1.08	1.02	2.77
28.5	30					1.62	1.87	1.38	1.32	4.63	1.14	1.06	2.86
30	31.5					1.68	2.09	1.43	1.36	4.51	1.16	1.14	3.02
31.5	33					1.76	2.28	1.56	1.48	4.69	1.21	1.29	3.14
33	34.5					1.83	2.43	1.84	1.69	4.78	1.25	----	3.19
34.5	36					1.94	2.54	2.06	2.03	4.89	1.35	1.34	3.26
36	37.5					2.16	2.68	2.10	2.14	4.94	1.42	----	3.34
37.5	39					2.38	2.75		2.32	5.09	1.53	1.51	3.56
39	40.5					2.49			2.45	5.16	2.27	3.28	3.67
40.5	42					2.58			2.42	5.28	3.76	4.36	4.18
42	43.5					2.66			2.43	5.39	4.08	4.49	4.31
43.5	45					2.76				5.46	4.18	4.57	4.46
45	46.5									5.63	4.27	4.68	4.58
46.5	48									5.79	4.56	4.84	4.74
48	49.5									5.87	4.89	4.93	4.83
49.5	51									5.93	5.03	5.06	4.92
51	52.5									6.19	5.13	5.14	5.02
52.5	54									6.34	5.18	5.26	5.31
54	55.5										5.26	5.39	5.46
55.5	57										5.34	5.42	5.58
57	58.5										5.49	5.78	5.69
58.5	60										5.62	5.82	5.76
60	61.5										5.78	5.97	5.82
61.5	63											6.12	5.89
63	64.5											6.34	5.97
64.5	66												6.18
66	67.5												6.46
67.5	69												6.63

Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
0.5	1.5					----	----	----	----	----	----	0.53	----
1.5	3			0.48	----	----	----	----	----	----	----	0.72	----
3	4.5			0.53	----	----	----	----	0.87	----	----	----	----
4.5	6		0.53	0.56	----	----	----	0.69	----	----	----	----	----
6	7.5	----	0.57	0.61	----	0.59	----	0.72	----	----	----	----	----
7.5	9	----	0.60	0.65	----	----	----	0.77	----	----	----	----	----
9	10.5	----	0.63	0.67	----	0.64	0.68	0.83	----	----	----	----	----
10.5	12	1.12	0.65	0.70	----	0.71	0.72	0.89	----	----	----	----	----
12	13.5	1.19	0.69	0.72	0.58	0.73	0.78	0.93	----	----	0.63	----	----
13.5	15	1.25	0.71	0.73	0.69	0.76	0.83	1.02	----	----	0.65	----	0.69
15	16.5	1.46	0.74	0.76	----	0.77	0.87	1.08	----	----	0.68	----	0.87
16.5	18	1.73	0.79	0.82	0.78	0.80	0.94	1.12	----	----	1.69	----	----
18	19.5	1.82	0.88	0.90	0.89	0.84	0.99	1.17	1.13	0.64	0.72	----	----
19.5	21	1.96	0.91	0.94	0.93	----	1.05	1.21	1.26	0.73	0.75	----	----
21	22.5	2.23	0.95	0.97	0.97	----	1.13	1.29	1.53	0.79	0.79	----	----
22.5	24	2.34	1.09	1.11	1.13	1.09	1.19	1.26	1.67	0.86	0.81	----	----
24	25.5	2.43	1.23	1.16	1.24	1.14	1.23	1.35	1.73	0.89	0.84	----	1.87
25.5	27	2.64	1.28	1.29	1.29	1.19	1.28	1.54	1.79	0.95	0.86	----	1.94
27	28.5	2.85	1.32	1.36	1.36	1.26	1.36	1.62	1.82	1.09	0.88	0.84	1.90
28.5	30	2.95	1.51	1.51	1.52	1.31	1.49	1.69	1.99	1.12	0.92	0.93	1.97
30	31.5	3.12	1.76	1.78	1.77	1.36	1.57	1.73	2.19	1.34	1.26	1.40	2.02
31.5	33	3.19	1.98	1.99	2.02	1.48	1.63	1.77	2.36	1.52	1.34	1.48	2.05
33	34.5	3.26	2.06	2.08	2.13	1.72	1.73	1.91	2.48	1.71	1.52	1.61	2.19
34.5	36	3.31	2.23	2.26	2.25	1.94	1.82	2.12	2.51	1.84	1.71	1.82	2.25
36	37.5	3.43	2.34	2.36	2.45	1.99	1.95	2.32	2.57	2.02	1.86	1.97	2.45
37.5	39	3.58	2.57	2.57	2.61	2.23	2.12	2.45	2.66	2.19	2.08	2.15	2.61
39	40.5	3.73	2.78	2.78	2.75	2.32	2.34	2.49	2.67	2.31	2.29	2.33	2.76
40.5	42	4.09	3.46	3.46	3.75	2.49	2.41	2.56	2.72	2.78	2.46	2.51	2.98
42	43.5	4.28	3.92	3.94	3.92	2.66	2.86	2.62	2.74	3.26	2.64	2.68	3.15
43.5	45	4.49	4.15	4.17	4.00	3.34	3.42	2.71	2.78	3.82	2.83	2.86	3.35
45	46.5	4.56	4.23	4.23	4.21	3.86	3.93	2.78	2.83	3.96	2.98	3.04	3.52
46.5	48	4.64	4.35	4.31	4.23	4.09	4.09	2.84	2.88	4.14	3.17	3.22	3.70
48	49.5	4.82	4.39	4.38	4.27	4.14	4.17	2.92	2.94	4.21	3.43	3.39	3.88
49.5	51	4.97	4.53	4.46	4.56	4.19	4.26	2.98	3.42	4.29	3.60	3.57	4.08
51	52.5	5.08	4.59	4.53	4.58	4.23	4.31	3.06	3.88	4.38	3.71	3.75	4.25
52.5	54	5.35	4.67	4.62	4.61	4.36	4.39	3.11	4.06	4.42	3.93	3.93	4.43
54	55.5	5.43	4.76	4.73	4.72	4.43	4.51	3.39	4.11	4.55	4.11	4.10	4.48
55.5	57	5.56	4.79	4.82	4.84	4.57	4.63	3.95	4.16	4.69	4.36	4.28	4.69
57	58.5	5.68	4.82	4.89	4.92	4.65	4.71	4.09	4.28	4.75	4.58	4.46	4.84
58.5	60	5.74	4.87	4.95	4.98	4.78	4.82	4.16	4.52	4.82	4.62	4.52	4.99
60	61.5	5.82	4.93	5.06	5.06	4.83	4.87	4.23	4.59	4.93	4.69	4.57	5.16
61.5	63	5.96	5.03	5.13	5.13	4.94	4.93	4.34	4.71	4.98	4.72	4.60	5.30
63	64.5	6.11	5.61	5.62	5.61	4.99	5.08	4.51	4.78	5.06	4.85	4.72	5.48
64.5	66	6.21	4.79	5.74	5.75	5.13	5.13	4.56	4.82	5.39	4.91	4.75	5.63
66	67.5	6.46	5.84	5.83	5.86	5.41	5.63	4.63	4.89	5.51	4.96	4.84	5.78
67.5	69	6.53	5.96	5.96	5.93	5.53	5.77	4.78	4.93	5.73	5.11	4.93	5.93
69	70.5	6.68	6.08	6.12	6.12	5.82	5.93	4.85	5.01	5.84	5.16	4.96	6.08
70.5	72	6.84	6.18	6.19	6.34	5.91	5.99	4.89	5.14	5.96	5.21	5.13	6.25
72	73.5		6.23	6.26	6.57	6.06	6.16	4.96	5.75	6.09	5.26	5.28	6.31



Top	Bottom	BH1 3	BH1 4	BH1 5	BH1 6	BH1 7	BH1 8	BH1 9	BH2 0	BH2 1	BH2 2	BH2 3	BH2 4
73.5	75		6.38	6.38	6.72	6.14	6.23	5.04	5.82	6.17	5.34	5.29	6.33
75	76.5			6.52	6.78	6.22	6.29	5.13	5.97	6.19	5.42	5.34	6.39
76.5	78			6.78	6.94	6.29	6.35	5.61	6.17	6.21	5.53	5.38	6.49
78	79.5			6.87	6.99	6.37	6.39	5.69	6.23	6.22	5.57	5.43	6.57
79.5	81				7.08	6.52	6.45	5.78	6.39	6.25	5.62	5.48	6.60
81	82.5				7.16	6.68	6.52	5.98	6.48	6.29	5.78	5.53	6.65
82.5	84				7.26	6.83	6.64	6.12	6.62	6.34	5.83	5.71	6.71
84	85.5					6.92	6.72	6.19	6.75	6.37	5.94	5.80	6.75
85.5	87					7.01	6.85	6.34	6.82	6.42	6.12	5.93	6.79
87	88.5						6.93	6.42	6.93	6.46	6.15	5.97	6.85
88.5	90						7.05	6.51	7.06	6.53	6.23	6.01	6.86
90	91.5						7.16	6.58	7.14	6.58	6.29	6.07	7.00
91.5	93						7.23	6.63	7.19	6.61	6.34	6.10	7.03
93	94.5						7.31	6.75	7.28	6.67	6.37	6.16	7.08
94.5	96						7.36	6.89	7.31	6.71	6.48	6.25	7.11
96	97.5						7.42	6.94	7.36	6.89	6.53	6.30	7.17
97.5	99						7.48	7.08	7.42	6.94	6.57	6.34	7.22
99	100.5							7.18	7.48	7.02	6.63	6.39	7.27
100.5	102								7.56	7.14	6.74	6.49	7.30
102	103.5								7.64	7.19	6.85	6.56	
103.5	105								7.73	7.24	6.93	6.63	
105	106.5									7.32	6.97	6.67	
106.5	108										7.01	6.70	
108	109.5										7.13	6.75	
109.5	111										7.21	6.94	
111	112.5										7.29	7.12	
112.5	114										7.38	7.36	
114	115.5										7.53		
115.5	117										7.59		
117	118.5										7.64		

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	----	----				----	----	----			----	----
1.5	3	----	----				----	0.36	----			----	----
3	4.5	----	----		----		----	0.41	----		0.39	----	----
4.5	6	----	----	----	----	----	----	0.43	----	0.46	0.43	----	----
6	7.5	----	----	----	----	----	0.53	0.52	----	0.59	0.53	----	----
7.5	9	----	----	----	0.56	----	0.59	0.56	0.58	0.63	0.57	----	0.63
9	10.5	0.98	----	----	0.61	----	0.63	0.63	0.64	0.78	0.64	----	0.78
10.5	12	1.17	----	0.61	0.66	0.53	0.68	0.69	0.75	0.86	0.69	0.69	0.87
12	13.5	1.24	----	----	0.74	0.62	0.75	0.72	0.82	0.91	0.75	0.76	1.02
13.5	15	1.35	----	----	0.81	0.68	0.79	----	0.89	1.03	0.86	0.83	1.14
15	16.5	1.41	----	0.81	0.86	0.71	1.11	----	0.98	1.09	0.89	0.91	1.28

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
16.5	18	1.48	0.58	0.87	0.93	0.76	1.16	1.13	1.09	1.17	0.96	0.95	1.39
18	19.5	1.57	0.65	0.93	1.06	0.83	1.21	1.18	1.18	1.28	1.03	1.09	1.54
19.5	21	1.64	----	1.09	1.13	1.15	1.26	1.26	1.31	1.42	1.11	1.13	1.69
21	22.5	1.72	0.78	1.16	1.18	1.20	1.31	1.35	1.42	1.49	1.18	1.24	1.86
22.5	24	1.85	----	1.22	1.24	1.26	1.53	1.59	1.65	1.57	1.28	1.29	2.08
24	25.5	1.88	0.83	1.28	1.35	1.29	1.62	1.66	1.72	1.78	1.35	1.37	
25.5	27	1.93	0.87	1.36	1.59	1.34	1.96	1.89	1.79	1.83	1.42	1.46	
27	28.5	1.97	0.94	1.63	1.82	1.63	2.08	2.06	1.86	1.91	1.49	1.75	
28.5	30	2.02	1.08	1.69	1.95	1.69	2.15	2.14	2.02	1.98	1.58	1.93	
30	31.5	2.05	1.14	1.86	2.03	1.89	2.26	2.23	2.09	2.02	1.67	2.17	
31.5	33	2.09	1.21	2.04	2.09	2.12	2.31	----	2.16	2.09	1.74	2.20	
33	34.5	2.15	1.26	2.15	2.17	2.17	2.39	2.34	2.28	2.11	1.83	2.29	
34.5	36	2.20	1.35	2.24	2.25	2.23	2.46	2.39	2.37	2.21	1.88	2.33	
36	37.5	2.29	1.59	2.38	2.34	2.28	2.62	2.48	2.46	2.26	1.91	2.40	
37.5	39	2.33	1.72	2.45	2.43	2.36	2.68	2.61	2.53	2.34	1.96	2.45	
39	40.5	2.40	1.85	2.52	2.48	2.46	2.78	2.66	2.59	2.48	2.02	2.48	
40.5	42	2.45	2.06	2.59	2.55	2.57	2.83	2.78	2.67	2.52	2.09	2.60	
42	43.5	2.48	2.13	2.71	2.62	2.61	2.97	2.84	2.72	2.61	2.13		
43.5	45	2.51	2.29	2.75	2.68	2.68	3.08	2.93	2.81	2.68	2.16		
45	46.5	2.61	2.33	2.83	2.73	2.78	3.14	3.02	2.88	2.71	2.24		
46.5	48	2.70	2.40	2.91	2.84	2.82	3.23	3.13	2.93	2.77	2.29		
48	49.5	2.79	2.45	2.96	2.92	2.87	3.29	3.17	3.06	2.84	2.38		
49.5	51	2.83	2.48	3.04	3.01	2.96	3.36	3.21	3.11	2.95	2.48		
51	52.5	2.89	2.51	3.12	3.11	3.06	3.46	3.26	3.14	2.98	2.57		
52.5	54	2.93	2.61	3.17	3.16	3.09	3.53	3.31	3.19	3.06	2.71		
54	55.5	2.98	2.70	3.24	3.19	3.12	3.61	3.38	3.22	3.12	2.75		
55.5	57	3.02	2.79	3.32	3.23	3.24	3.74	3.43	3.28	3.15	2.83		
57	58.5	3.07	2.83	3.38	3.28	3.29	4.08	3.47	3.32	3.21			
58.5	60	3.12	2.89	3.45	3.31	3.38	4.15	3.53	3.39	3.26			
60	61.5	3.26	2.93	3.52	3.37	3.41	4.23	3.56	3.41	3.32			
61.5	63	3.36	2.98	3.57	3.42	3.49	4.31	3.62	3.46	3.36			
63	64.5	3.37	3.02	3.66	3.48	3.53	4.39	3.68	3.51	3.46			
64.5	66	3.43	3.07	3.73	3.56	3.65	4.38	3.72	3.58	3.53			
66	67.5	3.47	3.12	3.81	3.58	3.86	4.49	3.75	3.69	3.62			
67.5	69	3.57	3.26	3.85	3.64	3.97	4.53	3.79	3.78				
69	70.5	3.67	3.36	3.91	3.78	4.02	4.58	3.85	3.94				
70.5	72	3.75	3.37	3.99	3.86	4.08	4.62	3.91	4.12				
72	73.5	3.78	3.43	4.12	4.19	4.16	4.68	3.98	4.48				
73.5	75	3.86	3.47	4.43	4.42	4.23	4.73	4.06					
75	76.5	4.25	3.57	4.48	4.51	4.28	4.78	4.13					
76.5	78	4.43	3.67	4.52	4.57	4.36	4.84	4.21					
78	79.5	4.48	3.75	4.59	4.68	4.42	4.89						
79.5	81	4.69	3.78	4.63	4.82	4.51	4.93						
81	82.5	4.84	3.86		4.87	4.63	5.06						
82.5	84	4.99	4.25		4.93	4.74							
84	85.5	5.16	4.43			4.86							
85.5	87	5.30				4.94							
87	88.5	5.48											
88.5	90	5.76											
90	91.5	6.08											

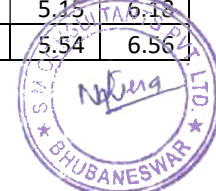
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
91.5	93	6.33											
Top	Bottom												
0.5	1.5												
1.5	3												
3	4.5												
4.5	6												
6	7.5												
7.5	9												
9	10.5												
10.5	12												
12	13.5												
13.5	15												
15	16.5												
16.5	18												
18	19.5												
19.5	21												
21	22.5												
22.5	24												

6.1.2.8 Brazilian Tensile Test

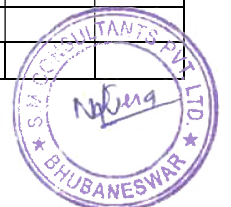
Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							----	----		----		
1.5	3				----	----		----	----		----		
3	4.5				----	1.06		----	----		----		
4.5	6				----	1.18		----	----	----	1.33		----
6	7.5		----		----	1.54	----	----	1.34	----	----		----
7.5	9		----		----	1.61	1.09	1.36	1.42	----	1.39		----
9	10.5		----		0.98	1.78	1.26	1.47	1.57	----	1.43	----	----
10.5	12	0.83	1.05		1.03	1.89	1.31	1.58	1.65	----	1.46	----	2.31
12	13.5	1.69	1.11		1.04	1.93	1.57	1.66	1.73	2.87	1.52	----	2.51
13.5	15	4.66	1.28		1.21	2.06	1.73	1.73	1.83	3.66	1.56	1.28	2.67
15	16.5	5.42	1.39		1.34	2.09	1.94	1.76	1.87	5.18	1.63	----	3.16
16.5	18		1.58		1.51	2.24	2.17	1.80	1.89	6.72	1.68	1.63	3.68
18	19.5		1.72		1.68	2.31	2.33	1.84	1.94	8.13	1.76	----	3.92
19.5	21		1.98		1.94	2.38	2.64	1.89	1.98	8.24	1.84	----	4.08
21	22.5		2.17		2.16	2.57	3.15	1.93	2.02	2.53	1.92	----	4.69
22.5	24		2.31		2.32	2.65	3.42	2.29	2.16	5.07	2.06	1.93	4.78
24	25.5				2.46	2.74	3.49	2.45	2.45	7.12	2.13	2.03	5.13
25.5	27				2.39	2.93	3.63	2.57	2.58	9.19	2.19	2.06	5.69
27	28.5					3.24	3.74	2.65	2.69	9.48	2.26	2.13	5.86
28.5	30					3.36	3.96	2.74	2.76	9.52	2.32	2.28	6.09
30	31.5					3.62	4.52	2.89	2.84	9.76	2.38	2.39	6.42
31.5	33					3.68	4.83	3.12	3.16	9.85	2.46	2.69	6.53
33	34.5					3.78	4.96	3.64	3.58	9.96	2.54	----	6.71
34.5	36					4.06	5.14	4.16	4.14	10.18	2.73	2.85	6.84
36	37.5					4.57	5.29	4.23	4.36	10.34	2.98	----	6.96
37.5	39					4.86	5.46		4.63	10.59	3.12	3.21	7.48
39	40.5					5.12			4.86	10.67	4.62	6.86	7.59
40.5	42					5.19			4.93	10.88	7.89	9.24	8.73

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
42	43.5					5.26			4.79	11.13	8.46	9.38	9.17
43.5	45					5.38				11.25	8.69	9.63	9.46
45	46.5									11.38	8.91	9.84	9.63
46.5	48									11.69	9.45	10.21	9.74
48	49.5									11.84	10.36	10.45	9.86
49.5	51									11.99	10.53	10.63	10.26
51	52.5									12.17	10.64	10.78	10.45
52.5	54									12.36	10.85	10.89	11.36
54	55.5										10.96	11.14	11.66
55.5	57										11.16	11.37	11.84
57	58.5										11.39	11.62	12.08
58.5	60										11.56	11.84	12.19
60	61.5										11.93	12.21	12.26
61.5	63											12.45	12.48
63	64.5											12.92	12.73
64.5	66												13.17
66	67.5												13.68
67.5	69												13.92

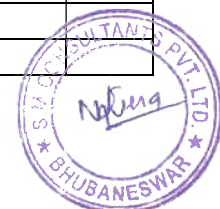
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5					----	----	----	----	----	----	1.36	----
1.5	3			0.97	----	----	----	----	----	----	----	1.52	----
3	4.5			1.08	----	----	----	----	1.84	----	----	----	----
4.5	6		1.08	1.13	----	----	----	1.42	----	----	----	----	----
6	7.5	----	1.16	1.16	----	----	----	1.48	----	----	----	----	----
7.5	9	----	1.19	1.21	1.39	1.23	----	1.56	----	----	----	----	----
9	10.5	----	1.22	1.25	----	1.54	1.39	1.69	----	----	----	----	----
10.5	12	2.33	1.26	1.29	----	1.63	1.45	1.79	----	----	----	----	----
12	13.5	2.51	1.31	1.45	1.42	1.68	1.57	1.85	----	----	1.33	----	----
13.5	15	2.68	1.37	1.49	----	1.72	1.69	1.98	----	----	1.39	----	----
15	16.5	3.14	1.45	1.56	1.48	1.77	1.88	2.09	----	----	1.46	----	----
16.5	18	3.66	1.68	1.67	1.63	1.83	2.02	2.16	----	----	1.53	----	----
18	19.5	3.89	1.82	1.93	1.92	1.92	2.18	2.31	2.32	1.39	1.61	----	----
19.5	21	4.12	1.93	1.98	1.99	----	2.24	2.38	2.61	1.56	1.66	----	----
21	22.5	4.73	1.99	2.03	2.05	----	2.29	2.49	3.09	1.71	1.72	----	----
22.5	24	4.86	2.28	2.31	2.32	2.28	2.38	2.63	3.34	1.83	1.76	----	3.58
24	25.5	5.13	2.56	2.37	2.57	2.45	2.52	2.84	3.41	1.98	1.84	----	3.73
25.5	27	5.74	2.61	2.68	2.62	2.53	2.61	3.17	3.52	2.16	1.87	----	3.78
27	28.5	5.97	2.69	2.79	2.77	2.69	2.85	3.28	3.69	2.36	1.92	1.84	3.81
28.5	30	6.13	3.13	3.11	3.09	2.74	3.12	3.58	3.96	2.43	1.95	2.12	3.96
30	31.5	6.39	3.63	3.62	3.65	2.85	3.22	3.63	4.48	2.95	2.68	2.71	4.08
31.5	33	6.48	4.12	4.12	4.12	3.15	3.35	3.76	4.85	3.38	2.81	2.88	4.15
33	34.5	6.71	4.23	4.63	4.22	3.62	3.56	3.97	4.98	3.67	3.11	3.18	4.45
34.5	36	6.85	4.63	4.65	4.58	4.14	3.72	4.42	5.13	4.08	3.56	3.63	4.59
36	37.5	6.95	4.85	4.88	4.82	4.26	3.98	4.85	5.26	4.49	3.89	3.96	5.03
37.5	39	7.41	5.29	5.34	5.29	4.63	4.42	5.02	5.47	4.89	4.28	4.37	5.38
39	40.5	7.62	5.68	5.71	5.58	4.85	4.82	5.11	5.52	4.93	4.73	4.76	5.70
40.5	42	8.76	7.13	7.16	7.08	5.32	5.03	5.17	5.66	5.97	5.12	5.15	6.18
42	43.5	9.14	8.14	8.21	8.11	5.63	5.92	5.29	5.73	7.06	5.49	5.54	6.56



Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
43.5	45	9.48	8.63	8.69	8.62	7.16	7.35	5.43	5.81	8.16	5.86	5.93	7.01
45	46.5	9.67	8.78	8.82	8.73	8.25	8.14	5.57	5.86	8.57	6.27	6.32	7.38
46.5	48	9.82	8.89	8.89	8.84	8.56	8.52	5.73	5.94	8.67	6.68	6.71	7.78
48	49.5	9.97	8.96	8.96	8.96	8.71	8.62	5.96	6.13	8.78	7.16	7.10	8.16
49.5	51	10.13	9.34	9.34	9.35	8.89	8.75	6.12	7.26	8.89	7.45	7.49	8.60
51	52.5	10.45	9.58	9.52	9.49	8.97	8.82	6.35	8.08	9.25	7.81	7.88	8.98
52.5	54	11.36	9.62	6.63	9.62	9.34	9.21	6.69	8.53	9.39	8.19	8.27	9.38
54	55.5	11.74	9.75	9.82	9.78	9.57	9.35	7.62	8.73	9.68	5.63	8.66	9.48
55.5	57	11.86	9.84	9.95	9.85	9.68	9.61	8.32	8.92	9.78	9.03	9.05	9.95
57	58.5	12.06	9.94	10.05	9.92	9.72	9.78	8.78	9.09	9.85	9.38	9.44	10.49
58.5	60	12.18	10.09	10.13	10.02	9.94	9.84	9.13	9.24	9.97	9.52	9.57	10.85
60	61.5	12.23	10.17	10.19	10.15	10.16	9.96	9.65	9.38	10.09	9.68	9.68	11.36
61.5	63	12.53	10.38	10.34	10.32	10.28	10.16	9.82	9.72	10.19	9.76	9.76	11.87
63	64.5	12.73	11.62	11.68	11.59	10.39	10.35	9.25	9.85	10.59	9.96	9.85	12.25
64.5	66	13.24	11.93	11.93	11.95	10.58	10.58	9.39	9.97	11.78	10.04	10.09	12.56
66	67.5	13.76	12.35	12.26	12.21	11.51	11.78	9.68	10.08	11.87	10.24	10.29	12.89
67.5	69	13.94	12.46	12.48	12.46	11.82	11.86	9.79	10.24	12.38	10.46	10.49	13.08
69	70.5	14.21	12.58	12.62	12.56	12.36	12.34	9.85	10.36	12.48	10.58	10.54	13.32
70.5	72	14.36	12.69	12.78	12.61	12.48	12.52	9.97	10.72	12.68	10.76	10.81	13.48
72	73.5		12.76	12.84	12.68	12.62	12.68	10.09	11.82	12.81	11.12	11.02	13.76
73.5	75		12.94	12.93	12.81	12.79	12.73	10.19	11.95	12.99	11.18	11.15	13.96
75	76.5			13.11	12.92	12.85	12.97	10.59	12.13	13.06	11.34	11.42	14.21
76.5	78			13.24	13.04	13.06	13.16	11.78	12.56	13.19	11.45	11.48	14.39
78	79.5			13.36	13.09	13.17	13.28	11.87	12.71	13.26	11.57	11.59	14.62
79.5	81				13.35	13.27	13.33	12.06	12.84	13.48	11.62	11.72	14.96
81	82.5				13.56	13.42	13.46	12.59	12.98	13.55	11.78	11.93	15.04
82.5	84				13.72	13.72	13.57	12.68	13.18	13.59	12.17	12.19	15.28
84	85.5					13.87	13.66	12.81	13.26	13.63	12.69	12.40	15.54
85.5	87					14.25	13.78	12.99	13.45	13.66	12.85	12.67	15.79
87	88.5						13.89	13.28	13.53	13.78	12.98	12.76	15.96
88.5	90						13.98	13.45	13.72	13.92	13.08	12.85	15.08
90	91.5						14.16	13.62	13.84	14.06	13.09	12.98	15.34
91.5	93						14.28	13.89	13.96	14.18	13.16	13.45	15.56
93	94.5						14.42	13.96	14.11	14.29	13.24	13.69	15.89
94.5	96						14.61	14.32	14.35	14.38	13.36	13.85	16.12
96	97.5						14.78	14.64	14.42	14.56	13.48	14.24	16.42
97.5	99						14.85	15.21	14.53	14.62	13.53	14.45	16.85
99	100.5							15.56	14.61	14.83	13.69	14.62	17.26
100.5	102								14.89	14.95	13.84	14.85	17.56
102	103.5								15.16	15.08	14.12	15.06	
103.5	105								15.48	15.19	14.23	15.36	
105	106.5									15.27	14.34	15.64	
106.5	108										14.39	15.82	
108	109.5										14.48	15.96	
109.5	111										14.62	16.34	
111	112.5										14.71	16.65	
112.5	114										14.83	16.85	
114	115.5										14.96		
115.5	117										15.12		
117	118.5										15.34		



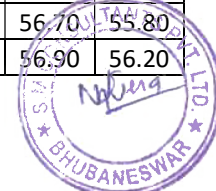
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	----	----				----	----	----			----	----
1.5	3	----	----				----	----	----			----	----
3	4.5	----	----		----		----	----	----		0.84	----	----
4.5	6	----	----	----	----	----	----	----	----	0.96	0.93	----	----
6	7.5	----	----	----	----	----	1.12	1.14	----	1.23	1.09	----	----
7.5	9	----	----	----	1.11	----	1.17	1.24	1.23	1.39	1.19	----	1.39
9	10.5	2.26	----	----	1.23	----	1.28	1.32	1.39	1.64	1.36	----	1.57
10.5	12	2.39	----	1.38	1.34	1.09	1.45	1.44	1.66	1.78	1.42	1.46	1.83
12	13.5	2.65	----	1.46	1.52	1.26	1.52	1.57	1.76	1.92	1.61	1.63	2.12
13.5	15	2.87	----	1.65	1.63	1.38	1.63	1.83	1.94	2.13	1.83	1.73	2.38
15	16.5	2.96	----	1.78	1.78	1.45	2.34	2.28	2.12	2.28	1.97	1.84	2.68
16.5	18	3.08	1.26	1.92	1.89	1.53	2.39	2.39	2.32	2.46	2.08	1.93	2.94
18	19.5	3.16	1.46	2.03	2.14	1.66	2.57	2.58	2.46	2.75	2.24	2.26	3.26
19.5	21	3.29	----	2.30	2.19	2.28	2.69	2.67	2.78	3.08	2.38	2.31	3.51
21	22.5	3.48	1.61	2.38	2.43	2.43	2.78	2.89	3.12	3.18	2.61	2.57	3.96
22.5	24	3.70	1.66	2.60	2.56	2.56	3.19	3.35	3.46	3.34	2.79	2.68	4.33
24	25.5	3.78	1.78	2.70	2.78	2.67	3.46	3.93	3.57	3.56	2.88	2.89	
25.5	27	3.87	1.92	2.92	3.46	2.78	3.98	4.62	3.76	3.69	2.97	3.12	
27	28.5	3.96	2.03	3.40	3.77	3.35	4.23	4.76	3.96	3.75	3.09	3.48	
28.5	30	4.08	2.30	3.48	3.89	3.42	4.42	----	4.19	3.98	3.21	3.89	
30	31.5	4.15	2.38	3.89	4.29	3.94	4.68	4.96	4.37	4.08	3.34	4.40	
31.5	33	4.24	2.60	4.40	4.36	4.36	4.82	----	4.54	4.27	3.56	4.48	
33	34.5	4.37	2.70	4.48	4.47	4.45	4.96	5.13	4.82	4.52	3.79	4.68	
34.5	36	4.48	2.92	4.68	4.53	4.68	5.17	5.27	4.97	4.69	3.85	4.77	
36	37.5	4.68	3.40	4.77	4.65	4.76	5.34	5.36	5.13	4.86	3.92	4.92	
37.5	39	4.77	3.48	4.92	4.72	4.89	5.52	5.48	5.26	5.09	3.97	5.03	
39	40.5	4.92	3.89	5.03	4.91	4.96	5.78	5.61	5.38	5.16	4.09	5.08	
40.5	42	5.03	4.40	5.08	5.17	5.13	5.93	5.73	5.57	5.59	4.21	5.35	
42	43.5	5.09	4.48	5.35	5.38	5.28	6.12	5.84	5.68	5.39	5.37		
43.5	45	5.15	4.68	5.37	5.68	5.46	6.23	5.98	5.83	5.58	4.48		
45	46.5	5.37	4.77	5.57	5.76	5.63	6.48	6.21	6.01	5.68	4.68		
46.5	48	5.57	4.92	5.76	5.92	5.69	6.61	6.48	6.11	5.93	4.84		
48	49.5	5.78	5.03	5.85	6.38	5.82	6.78	6.15	6.18	6.11	4.93		
49.5	51	5.85	5.09	6.00	6.48	6.06	6.94	6.23	6.32	6.32	5.13		
51	52.5	6.00	5.15	6.07	6.41	6.18	7.13	6.42	6.38	6.41	5.36		
52.5	54	6.07	5.37	6.18	6.62	6.29	7.32	6.54	6.45	6.48	5.68		
54	55.5	6.18	5.57	6.26	6.71	6.45	7.56	6.68	6.58	6.63	5.79		
55.5	57	6.27	5.78	6.45	6.87	6.61	7.75	6.86	6.83	6.78	5.97		
57	58.5	6.38	5.85	6.57	7.08	6.73	8.43	7.02	6.89	6.87			
58.5	60	6.49	6.00	6.71	7.27	6.85	8.62	7.16	6.97	7.03			
60	61.5	6.81	6.07	6.89	7.32	6.99	8.79	7.29	7.08	7.14			
61.5	63	7.03	6.18	7.05	7.49	7.15	8.94	7.43	7.26	7.21			
63	64.5	7.05	6.27	7.19	7.56	7.38	9.06	7.54	7.32	7.39			
64.5	66	7.19	6.38	7.26	7.86	7.53	9.12	7.69	7.53	5.57			
66	67.5	7.26	6.49	7.48	7.99	7.69	9.18	7.82	7.69	7.78			
67.5	69	7.48	6.81	7.70	8.12	7.85	9.36	7.93	7.84				
69	70.5	7.70	7.03	7.88	8.28	8.12	9.47	8.14	8.17				
70.5	72	7.88	7.05	7.96	8.43	8.19	9.56	8.36	8.56				



Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
72	73.5	7.96	7.19	8.12	8.53	8.43	9.68	8.45	9.14				
73.5	75	8.12	7.26	8.98	8.98	8.56	9.76	4.52					
75	76.5	8.98	7.48	9.38	9.08	8.79	9.85	8.61					
76.5	78	9.38	7.70	9.49	9.14	8.93	9.97	8.79					
78	79.5	9.48	7.88	9.61	9.34	9.15	10.08						
79.5	81	9.95	7.96	9.84	9.56	9.32	10.15						
81	82.5	10.28	8.12		9.73	9.48	10.26						
82.5	84	10.62	8.98		9.94	9.61							
84	85.5	10.99	9.38			9.83							
85.5	87	11.30				10.34							
87	88.5	11.84											
88.5	90	12.89											
90	91.5	13.78											
91.5	93	14.25											

6.1.2.9 Modulus of Elasticity

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							----	----		----		
1.5	3				----	----		----	----		----		
3	4.5				----	25.10		----	----		----		
4.5	6				----	----		----	----	----	25.50		----
6	7.5		----		----	26.90	----	----	25.40	----	----		----
7.5	9		----		----	27.60	----	25.80	25.80	----	25.90		----
9	10.5		----		24.60	28.20	----	----	26.20	25.70	26.20	----	----
10.5	12	25.40	25.30		25.60	28.70	26.40	26.30	26.60	26.30	26.50	----	30.40
12	13.5	31.70	25.70		25.90	29.40	28.20	26.90	27.50	----	26.90	----	31.30
13.5	15	45.10	26.00		27.20	30.10	28.50	27.50	27.90	37.20	27.20	----	32.10
15	16.5	46.50	27.10		27.70	30.60	29.80	27.60	28.30	45.40	27.50	----	35.60
16.5	18		27.60		28.30	31.10	31.60	28.30	28.70	53.10	27.60	27.80	37.40
18	19.5		28.40		29.20	31.60	32.20	28.70	29.10	58.70	28.10	----	37.80
19.5	21		30.20		29.70	32.20	33.70	29.40	29.40	59.40	28.50	----	40.40
21	22.5		31.50		31.40	32.70	35.20	30.10	29.60	32.50	28.80	----	42.30
22.5	24		32.40		32.60	33.40	35.80	31.60	30.40	44.60	29.40	29.20	42.70
24	25.5				32.80	34.00	36.60	32.40	31.50	51.20	29.70	29.60	45.60
25.5	27				33.02	34.70	37.20	32.70	33.40	53.60	30.50	----	47.10
27	28.5					35.80	38.70	33.20	33.80	53.70	30.80	----	47.60
28.5	30					36.20	39.20	32.80	34.20	54.10	31.40	30.70	48.30
30	31.5					36.70	42.50	33.60	34.80	54.40	31.60	31.20	48.60
31.5	33					37.20	44.10	35.40	35.20	54.90	32.40	----	49.00
33	34.5					38.50	44.70	37.30	37.20	55.10	32.70	----	49.70
34.5	36					40.40	45.20	41.40	40.80	55.70	33.20	----	50.40
36	37.5					42.80	46.80	41.58	41.60	56.30	33.80	----	50.90
37.5	39					43.60	47.20		42.70	56.80	34.10	35.80	52.30
39	40.5					45.20			43.60	57.10	40.30	----	52.80
40.5	42					45.70			44.10	57.50	51.30	55.60	54.40
42	43.5					46.80			44.03	57.70	52.50	55.80	54.90
43.5	45					47.30				58.30	52.90	56.20	55.50
45	46.5									58.70	53.30	56.70	55.80
46.5	48									59.30	53.70	56.90	56.20

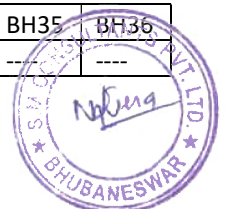


Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
48	49.5									59.80	54.10	57.20	56.80
49.5	51									60.00	54.50	57.40	57.30
51	52.5									60.30	55.30	57.70	57.70
52.5	54									60.60	55.70	58.20	58.10
54	55.5										56.20	58.60	58.60
55.5	57										56.70	59.20	59.20
57	58.5										57.40	59.60	59.80
58.5	60										57.60	59.80	60.40
60	61.5										58.10	60.20	60.60
61.5	63											60.60	61.30
63	64.5											61.20	61.80
64.5	66												62.30
66	67.5												62.70
67.5	69												63.40

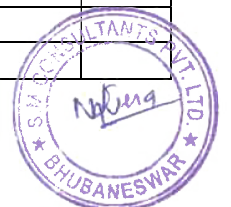
Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5			----		----	----	----	----	----	----	----	----
1.5	3			24.70	----	----	----	----	----	----	----	----	----
3	4.5			25.60	----	----	----	----	28.30	----	----	----	----
4.5	6		24.80	25.90	----	----	----	25.90	----	----	----	----	----
6	7.5	----	25.20	26.30	----	----	----	26.30	----	----	----	----	----
7.5	9	----	25.60	26.70	----	----	----	26.80	----	----	----	----	----
9	10.5	----	25.90	26.90	----	----	26.30	27.30	----	----	----	----	----
10.5	12	30.70	26.30	27.50	----	27.30	27.50	27.80	----	----	----	----	----
12	13.5	32.40	26.70	27.80	----	----	28.20	28.10	----	----	26.30	----	----
13.5	15	32.80	27.30	28.30	----	----	28.60	29.30	----	----	26.70	----	----
15	16.5	34.10	28.20	28.60	26.30	28.20	29.10	30.40	----	----	27.30	----	----
16.5	18	37.40	28.60	28.90	26.80	28.70	29.70	31.20	----	----	27.50	----	----
18	19.5	38.30	29.80	29.40	27.50	29.50	30.40	31.70	31.70	----	27.70	----	----
19.5	21	40.40	30.40	29.70	27.90	----	30.8	32.30	33.40	27.60	28.20	----	----
21	22.5	42.60	31.10	30.20	28.20	----	31.30	32.80	35.10	----	28.40	----	----
22.5	24	43.20	31.60	31.60	30.40	31.80	31.70	33.20	35.70	28.20	28.70	----	36.80
24	25.5	45.50	32.40	31.80	32.10	32.20	32.50	34.50	36.30	28.80	29.00	----	----
25.5	27	47.30	32.90	32.70	32.30	32.60	33.20	36.20	36.80	29.60	29.30	----	37.80
27	28.5	47.90	33.40	32.90	33.70	33.20	33.70	36.50	37.40	30.50	29.50	----	38.20
28.5	30	48.20	34.70	33.26	35.40	33.40	34.80	37.10	39.40	31.30	29.80	29.40	39.50
30	31.5	48.70	36.40	36.20	36.80	33.80	35.30	37.80	42.50	33.20	32.10	33.10	40.40
31.5	33	49.10	41.50	41.10	41.30	35.10	35.90	38.20	43.20	34.10	32.70	33.80	40.80
33	34.5	49.60	42.30	41.70	42.30	36.60	36.20	40.20	43.70	34.70	34.60	35.20	41.70
34.5	36	50.00	42.70	43.40	44.80	41.30	37.20	43.70	45.20	40.60	35.60	36.40	42.40
36	37.5	50.40	43.50	43.80	45.20	42.50	40.30	44.20	45.60	41.70	36.10	39.50	43.40
37.5	39	51.30	44.80	45.40	46.20	43.70	42.50	44.70	46.30	42.40	41.70	43.40	44.90
39	40.5	51.80	46.30	45.80	46.80	44.20	43.20	45.20	46.80	43.20	43.10	44.10	45.70
40.5	42	52.60	50.60	52.40	50.60	44.80	43.70	45.60	47.10	45.70	45.40	45.20	46.20
42	43.5	53.40	51.80	52.80	51.20	47.20	47.30	46.40	47.30	48.30	45.80	46.20	46.80
43.5	45	53.80	52.30	53.70	51.90	50.00	52.60	46.80	47.80	51.40	46.30	46.80	48.20
45	46.5	54.50	52.70	53.90	52.30	50.60	54.10	47.30	48.20	51.80	47.40	47.30	48.70
46.5	48	54.80	53.20	54.50	52.70	51.20	54.60	47.90	48.50	52.30	47.90	47.70	49.20
48	49.5	55.20	53.60	54.90	53.20	51.70	54.90	48.30	48.90	52.60	48.20	48.20	49.50

Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
49.5	51	55.50	54.30	55.20	53.80	51.90	55.20	48.70	50.60	52.90	50.40	48.60	49.80
51	52.5	55.90	54.70	55.70	54.10	52.20	55.30	49.30	52.50	53.40	50.70	49.20	50.30
52.5	54	56.30	55.00	56.20	54.60	52.50	55.70	49.50	53.50	53.80	51.30	49.60	50.60
54	55.5	56.50	55.40	56.60	54.90	52.80	55.90	52.70	53.60	54.20	51.60	49.90	50.80
55.5	57	56.80	56.20	57.20	55.30	53.10	56.10	54.20	53.90	54.60	51.90	50.30	51.50
57	58.5	57.20	56.60	57.50	55.50	53.50	56.30	55.10	54.20	54.90	52.40	50.70	51.90
58.5	60	57.60	57.50	57.60	55.90	53.80	56.70	55.30	54.60	55.20	52.60	50.90	52.30
60	61.5	57.90	57.80	58.10	56.20	54.30	57.20	55.70	54.90	55.60	52.80	51.20	52.50
61.5	63	58.40	58.30	58.40	56.50	53.70	57.50	56.10	55.10	55.80	53.30	51.60	52.80
63	64.5	58.70	58.60	58.70	56.80	53.90	57.90	56.30	55.30	56.10	53.70	51.80	53.30
64.5	66	59.20	59.10	59.30	57.10	54.20	58.10	56.60	55.60	56.40	53.80	52.20	53.70
66	67.5	60.40	59.50	59.80	57.30	54.50	58.40	56.90	55.80	56.80	54.20	52.60	53.90
67.5	69	60.80	59.80	60.00	57.60	54.80	58.50	57.20	56.10	57.10	54.50	52.80	54.50
69	70.5	61.30	60.50	60.40	57.90	55.10	58.80	57.40	56.30	57.40	54.70	52.10	54.80
70.5	72	62.50	61.00	60.80	58.30	55.30	59.20	57.20	56.70	57.70	55.00	52.80	55.20
72	73.5		61.50	61.10	58.60	55.50	59.60	57.80	56.90	57.90	55.20	53.20	55.60
73.5	75		61.80	61.50	58.80	55.80	59.40	58.10	57.00	58.30	55.50	53.50	55.90
75	76.5			61.60	59.10	56.20	59.80	58.30	57.20	58.60	55.80	53.80	56.30
76.5	78			62.30	59.30	56.60	60.10	58.50	57.50	58.80	56.00	54.10	56.80
78	79.5			62.70	59.50	56.90	60.30	58.80	57.80	59.10	56.40	54.30	57.40
79.5	81				59.90	57.20	60.50	58.60	58.20	59.40	56.70	54.80	57.70
81	82.5				60.20	57.70	60.20	59.10	58.50	59.70	56.90	55.10	58.20
82.5	84				60.50	58.20	60.60	59.30	58.70	59.90	57.10	55.40	58.60
84	85.5					58.60	60.20	59.70	59.10	60.20	57.40	55.60	59.40
85.5	87					59.70	61.50	60.20	59.50	60.40	57.60	55.80	59.80
87	88.5						61.20	60.50	59.80	60.70	57.90	56.10	60.70
88.5	90						61.60	60.80	60.20	60.80	58.30	56.50	61.00
90	91.5						61.90	61.10	60.60	61.20	58.60	57.20	61.40
91.5	93						62.40	61.40	61.30	61.40	58.80	57.60	61.60
93	94.5						62.80	61.60	61.70	61.70	59.20	57.90	61.80
94.5	96						63.00	62.20	62.00	61.90	59.50	58.10	62.20
96	97.5						63.30	62.70	62.40	62.20	59.70	58.40	62.50
97.5	99						63.80	63.10	62.80	62.50	60.20	58.70	62.70
99	100.5							63.50	63.10	62.60	60.50	59.30	63.20
100.5	102								63.50	62.80	60.80	59.50	63.50
102	103.5								63.70	63.10	61.10	59.80	
103.5	105								64.20	63.50	61.40	60.20	
105	106.5									63.80	61.70	60.50	
106.5	108										61.80	60.70	
108	109.5										62.40	61.20	
109.5	111										62.60	61.60	
111	112.5										62.90	61.90	
112.5	114										63.30	62.30	
114	115.5										63.60		
115.5	117										64.00		
117	118.5										64.20		

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	----	----				----	----	----			----	----



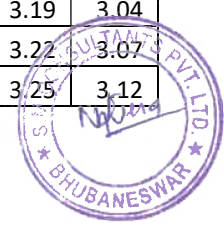
Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
1.5	3	----	----				----	----	----			----	----
3	4.5	----	----		----		----	----	----		----	----	----
4.5	6	----	----	----	----	----	----	----	----	----	----	----	----
6	7.5	----	----	----	----	----	----	24.80	----	26.30	25.40	----	----
7.5	9	----	----	----	26.20	----	----	----	26.30	27.40	25.80	----	26.40
9	10.5	30.30	----	----	26.80	----	26.60	27.30	26.80	28.10	26.30	----	27.20
10.5	12	31.60	----	----	27.60	25.80	27.20	27.90	28.20	28.70	26.80	----	28.60
12	13.5	32.40	----	----	28.30	26.40	27.60	28.60	28.50	29.20	27.60	26.40	30.60
13.5	15	33.40	----	----	28.70	26.80	28.30	----	29.20	30.40	28.20	26.80	31.50
15	16.5	33.80	----	27.50	29.40	27.10	30.60	----	30.50	30.80	28.70	27.40	32.20
16.5	18	34.20	----	28.20	29.70	28.30	31.50	30.90	30.90	31.60	29.50	29.20	32.80
18	19.5	35.40	27.60	28.80	30.40	28.60	31.80	31.30	31.60	32.50	30.80	30.40	34.60
19.5	21	35.70	----	30.40	30.80	31.20	32.40	31.80	32.40	34.20	31.20	31.30	35.10
21	22.5	36.10	----	30.70	31.60	31.80	32.80	32.60	33.40	35.60	31.90	31.70	38.30
22.5	24	36.50	----	31.30	32.50	32.20	34.20	----	35.60	36.20	32.70	32.60	40.10
24	25.5	37.60	28.40	32.40	33.40	32.70	34.70	39.40	36.30	36.80	33.50	33.40	
25.5	27	38.10	29.40	32.90	35.40	33.40	38.60	41.80	37.40	37.40	34.20	35.10	
27	28.5	38.60	29.80	35.60	36.10	35.50	40.20	42.40	37.90	37.90	34.70	35.70	
28.5	30	40.40	30.60	35.80	38.40	35.90	41.60	----	40.60	39.20	35.60	38.30	
30	31.5	40.70	31.20	37.10	41.50	39.20	42.70	43.10	41.50	39.70	35.90	40.80	
31.5	33	41.30	32.40	41.50	41.80	41.70	43.40	----	41.80	40.40	36.80	41.60	
33	34.5	41.90	32.80	42.70	42.60	42.20	44.60	43.60	42.30	40.80	37.20	42.50	
34.5	36	42.60	33.50	43.50	42.90	43.70	45.10	43.80	42.60	42.10	37.50	43.10	
36	37.5	42.90	35.10	44.20	43.40	43.90	45.30	44.20	42.90	42.70	38.30	43.80	
37.5	39	43.50	36.20	44.60	43.60	44.20	45.60	44.60	43.30	42.90	39.50	44.30	
39	40.5	43.80	39.50	45.10	43.90	44.60	45.90	44.90	43.60	43.30	40.60	44.60	
40.5	42	44.30	42.30	45.40	44.30	44.80	46.30	45.10	43.80	43.70	40.90	45.30	
42	43.5	44.70	42.80	46.30	44.60	45.30	46.50	----	44.20	44.00	42.40		
43.5	45	44.90	43.50	46.80	44.80	45.70	46.80	45.70	44.50	44.30	42.60		
45	46.5	45.60	43.70	47.10	45.20	45.90	47.10	45.90	44.90	44.70	43.30		
46.5	48	45.80	44.30	47.70	45.70	46.20	47.40	46.30	45.30	45.20	43.70		
48	49.5	46.30	44.80	48.30	45.90	46.40	47.80	46.50	45.60	45.60	44.20		
49.5	51	46.80	45.20	48.50	46.20	46.70	47.90	46.60	45.80	45.90	44.80		
51	52.5	47.20	45.60	49.40	46.40	47.10	48.20	47.00	46.30	46.20	45.50		
52.5	54	47.50	46.20	49.80	46.50	47.30	48.40	47.30	46.70	46.60	46.30		
54	55.5	47.09	46.70	50.20	46.80	47.50	48.50	47.50	47.00	47.30	47.20		
55.5	57	48.30	47.30	50.70	47.00	48.10	48.70	47.80	47.40	47.80	47.60		
57	58.5	48.60	47.80	51.50	47.30	48.50	49.40	48.10	47.80	48.50			
58.5	60	48.80	48.50	51.80	47.60	48.70	49.60	48.20	48.40	48.70			
60	61.5	49.20	48.90	52.40	48.20	49.20	49.80	48.40	48.60	49.20			
61.5	63	49.70	49.60	52.70	48.50	49.5	50.00	48.70	49.20	49.70			
63	64.5	50.20	50.40	53.50	48.60	49.60	50.30	48.90	49.70	50.00			
64.5	66	50.60	50.80	53.80	49.10	49.90	50.50	49.10	50.80	50.80			
66	67.5	50.80	51.60	54.30	49.50	50.10	50.70	49.40	51.20	51.40			
67.5	69	51.40	51.90	54.70	49.80	50.30	50.80	49.50	51.60				
69	70.5	51.70	52.50	55.30	50.10	50.80	51.30	49.80	52.00				
70.5	72	52.40	52.80	55.50	50.40	51.30	51.60	50.10	52.80				
72	73.5	52.60	53.40	55.90	51.80	51.60	51.70	50.30	53.20				
73.5	75	53.80	53.80	56.60	52.40	51.80	51.90	50.60					
75	76.5	54.10	54.70	57.20	52.70	52.10	52.50	51.20					



Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
76.5	78	55.20	55.30	57.50	52.90	52.50	52.70	51.50					
78	79.5	55.60	55.90	58.30	53.30	52.80	52.90						
79.5	81	56.20	56.40	58.70	53.50	53.20	53.40						
81	82.5	56.70	56.80		53.80	53.60	53.80						
82.5	84	56.90	57.80		54.10	54.40							
84	85.5	57.30	58.40			54.70							
85.5	87	57.80				55.20							
87	88.5	58.20											
88.5	90	58.60											
90	91.5	59.50											
91.5	93	60.40											

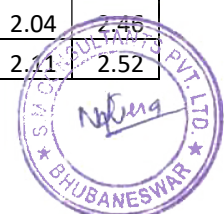
6.1.2.10 Abrasion test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
0.5	1.5							----	----		----		
1.5	3				----	0.92		----	----		----		
3	4.5				----	0.95		----	----		----		
4.5	6				----	1.02		----	0.93	----	1.02		----
6	7.5		----		----	1.08	----	----	0.96	----	----		----
7.5	9		----		----	1.11	0.86	1.03	1.02	----	1.06		----
9	10.5		----		0.94	1.15	0.93	1.07	1.06	1.04	1.09	----	1.23
10.5	12	0.84	1.03		0.98	1.18	1.08	1.11	1.09	1.11	1.12	0.87	1.35
12	13.5	1.17	1.06		1.02	1.22	1.15	1.15	1.11	1.34	1.14	0.93	1.39
13.5	15	2.03	1.11		1.06	1.26	1.19	1.18	1.14	1.75	1.16	1.08	1.43
15	16.5	2.27	1.15		1.13	1.31	1.24	1.22	1.16	2.20	1.20	----	1.56
16.5	18		1.19		1.17	1.34	1.32	1.26	1.19	2.66	1.22	1.17	1.64
18	19.5		1.23		1.21	1.38	1.35	1.28	1.21	2.94	1.24	1.21	1.75
19.5	21		1.27		1.26	1.41	1.44	1.31	1.25	2.97	1.27	----	1.84
21	22.5		1.33		1.35	1.46	1.57	1.35	1.27	1.42	1.29	----	1.93
22.5	24		1.39		1.41	1.48	1.64	1.39	1.32	2.13	1.32	1.24	1.99
24	25.5				1.43	1.51	1.69	1.41	1.37	2.71	1.35	1.26	2.06
25.5	27				1.50	1.54	1.73	1.45	1.43	3.14	1.36	1.29	2.14
27	28.5					1.62	1.78	1.49	1.46	3.18	1.39	1.33	2.23
28.5	30					1.66	1.84	1.52	1.48	3.21	1.41	1.36	2.29
30	31.5					1.71	1.95	1.56	1.53	3.22	1.44	1.39	2.38
31.5	33					1.75	2.08	1.60	1.57	3.26	1.48	1.41	2.45
33	34.5					1.79	2.14	1.76	1.64	3.29	1.51	----	2.53
34.5	36					1.85	2.19	1.87	1.78	3.31	1.53	1.48	2.57
36	37.5					1.93	2.23	1.89	1.85	3.34	1.57	----	2.62
37.5	39					1.98	2.28		1.93	3.37	1.61	1.62	2.69
39	40.5					2.04			2.06	3.37	1.98	1.82	2.75
40.5	42					2.09			2.10	3.41	2.79	3.06	2.87
42	43.5					2.15			2.09	3.43	2.84	3.09	2.94
43.5	45					2.19				3.44	2.93	3.13	2.98
45	46.5									3.47	2.98	3.19	3.04
46.5	48									3.51	3.02	3.22	3.07
48	49.5									3.50	3.06	3.25	3.12

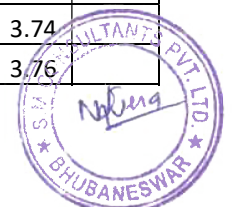


Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12
49.5	51									3.53	3.09	3.29	3.16
51	52.5									3.57	3.14	3.28	3.22
52.5	54									3.59	3.17	3.31	3.29
54	55.5										3.21	3.34	3.33
55.5	57										3.25	3.39	3.36
57	58.5										3.29	3.42	3.45
58.5	60										3.31	3.46	3.48
60	61.5										3.36	3.55	3.51
61.5	63											3.58	3.53
63	64.5											3.63	3.56
64.5	66												3.59
66	67.5												3.61
67.5	69												3.65

Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
0.5	1.5					----	----	----	----	----	----	1.06	----
1.5	3			0.93	----	----	----	----	----	----	----	1.11	----
3	4.5			0.97	----	----	----	----	1.17	----	----	----	----
4.5	6		0.96	0.99	----	----	----	0.92	----	----	----	----	----
6	7.5	----	1.02	1.03	----	0.87	----	0.99	----	----	----	----	----
7.5	9	----	1.06	1.06	1.04	0.91	----	1.05	----	----	----	----	----
9	10.5	----	1.09	1.09	----	1.03	0.97	1.12	----	----	----	----	----
10.5	12	1.32	1.11	1.12	----	1.09	1.06	1.16	----	----	----	----	----
12	13.5	1.37	1.12	1.14	1.09	1.11	1.13	1.22	----	----	1.06	----	----
13.5	15	1.44	1.14	1.17	1.12	1.12	1.15	1.28	----	----	1.08	----	----
15	16.5	1.53	1.15	1.20	1.16	1.15	1.19	1.32	----	----	1.11	----	1.16
16.5	18	1.59	1.18	1.23	1.19	1.18	1.24	1.35	----	----	1.12	----	----
18	19.5	1.63	1.20	1.25	1.22	1.22	1.30	1.39	1.33	1.06	1.14	----	----
19.5	21	1.74	1.23	1.26	1.24	----	1.32	1.42	1.46	1.13	1.17	----	----
21	22.5	1.87	1.26	1.30	1.26	----	1.36	1.44	1.53	1.16	1.19	----	----
22.5	24	1.93	1.31	1.33	1.33	1.32	1.39	1.52	1.59	1.19	1.21	----	1.75
24	25.5	1.96	1.35	1.35	1.42	1.36	1.43	1.55	1.62	1.24	1.24	----	1.80
25.5	27	2.04	1.38	1.37	1.45	1.39	1.46	1.58	1.66	1.29	1.29	----	1.83
27	28.5	2.08	1.41	1.43	1.52	1.45	1.52	1.62	1.73	1.32	1.31	1.19	1.85
28.5	30	2.16	1.49	1.52	1.57	1.48	1.58	1.64	1.79	1.34	1.36	1.24	1.91
30	31.5	2.21	1.53	1.56	1.68	1.53	1.63	1.66	1.84	1.49	1.45	1.36	1.93
31.5	33	2.25	1.66	1.66	1.82	1.62	1.66	1.69	1.94	1.56	1.52	1.42	1.99
33	34.5	2.31	1.73	1.74	1.88	1.69	1.72	1.73	2.08	1.66	1.57	1.51	2.04
34.5	36	2.36	1.84	1.82	2.00	1.86	1.75	1.79	2.14	1.82	1.63	1.63	2.08
36	37.5	2.44	1.92	1.86	2.08	1.92	1.82	1.81	2.21	1.94	1.75	1.75	2.14
37.5	39	2.51	1.97	2.03	2.19	2.05	1.86	1.87	2.25	2.06	1.89	1.83	2.23
39	40.5	2.55	2.02	2.14	2.26	2.13	1.93	1.92	2.28	2.11	1.93	1.94	2.28
40.5	42	2.71	2.23	2.36	2.68	2.26	1.98	2.04	2.31	2.36	2.05	2.04	2.46
42	43.5	2.83	2.41	2.48	2.79	2.34	2.16	2.11	2.35	2.64	2.14	2.11	2.52



Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
43.5	45	2.86	2.57	2.56	2.96	2.62	2.34	2.16	2.37	2.85	2.19	2.24	2.64
45	46.5	2.92	2.61	2.61	2.98	2.77	2.56	2.21	2.39	2.89	2.25	2.36	2.69
46.5	48	2.96	2.64	2.68	3.06	2.82	2.63	2.26	2.42	2.91	2.31	2.47	2.75
48	49.5	3.08	2.69	2.75	3.09	2.85	2.82	2.39	2.46	2.94	2.38	2.56	2.84
49.5	51	3.14	2.73	2.83	3.11	2.88	2.89	2.42	2.51	2.97	2.46	2.66	2.89
51	52.5	3.26	2.78	2.86	3.14	2.93	2.93	2.45	2.66	3.01	2.56	2.75	2.92
52.5	54	3.34	2.82	2.90	3.17	2.96	2.95	2.48	2.69	3.05	2.62	2.87	2.95
54	55.5	3.39	2.86	2.94	3.18	2.99	2.98	2.75	2.72	3.14	2.69	2.91	2.98
55.5	57	3.43	2.92	2.98	3.21	3.04	3.02	2.92	2.74	3.17	2.71	2.93	3.02
57	58.5	3.46	2.97	3.04	3.24	3.08	3.07	2.96	2.79	3.19	2.75	2.94	3.05
58.5	60	3.51	3.04	3.09	3.26	3.13	3.11	2.93	2.82	3.22	2.79	2.96	3.08
60	61.5	3.54	3.09	3.14	3.28	3.16	3.14	2.65	2.85	3.25	2.80	2.98	3.11
61.5	63	3.57	3.15	3.21	3.31	3.20	3.16	2.98	2.89	3.28	2.82	3.02	3.13
63	64.5	3.59	3.28	3.26	3.33	2.23	3.19	3.01	2.93	3.31	2.85	3.06	3.14
64.5	66	3.63	3.33	3.29	3.36	3.26	3.22	3.04	2.96	3.33	2.86	3.09	3.16
66	67.5	3.66	3.42	3.34	3.38	3.29	3.24	3.00	3.00	3.34	2.91	3.12	3.18
67.5	69	3.69	3.46	3.38	3.41	3.32	3.27	3.02	3.05	3.36	2.93	3.16	3.20
69	70.5	3.72	3.49	3.43	3.44	3.36	3.31	3.06	3.09	3.38	2.96	3.18	3.23
70.5	72	3.75	3.52	3.47	3.46	3.41	3.33	3.09	3.14	3.41	2.98	3.21	3.24
72	73.5		3.58	3.50	3.49	3.43	3.35	3.11	3.18	3.43	3.01	3.24	3.26
73.5	75		3.62	3.53	3.52	3.46	3.33	3.14	3.22	3.44	3.07	3.25	3.28
75	76.5			3.57	3.55	3.49	3.37	3.15	3.26	3.47	3.11	3.28	3.30
76.5	78			3.61	3.56	3.52	3.36	3.18	3.31	3.49	3.15	3.31	3.33
78	79.5			3.64	3.59	3.55	3.41	3.20	3.32	3.51	3.19	3.33	3.35
79.5	81				3.61	3.57	3.44	3.22	3.34	3.49	3.21	3.36	3.38
81	82.5				3.63	3.60	3.45	3.25	3.38	3.52	3.23	3.39	3.41
82.5	84				3.66	3.64	3.44	3.28	3.41	3.55	3.25	3.42	3.44
84	85.5					3.66	3.46	3.31	3.36	3.56	3.26	3.45	3.47
85.5	87					3.69	3.49	3.33	3.37	3.54	3.28	3.47	3.50
87	88.5						3.51	3.36	3.42	3.57	3.31	3.50	3.53
88.5	90						3.55	3.39	3.45	3.58	3.33	3.51	3.56
90	91.5						3.58	3.42	3.41	3.61	3.35	3.53	3.58
91.5	93						3.59	3.45	3.44	3.63	3.37	3.55	3.63
93	94.5						3.63	3.46	3.48	3.65	3.39	3.56	3.65
94.5	96						3.67	3.48	3.43	3.68	3.40	3.59	3.68
96	97.5						3.70	3.51	3.46	3.66	3.42	3.60	3.72
97.5	99						3.72	3.55	3.49	3.69	3.45	3.62	3.76
99	100.5							3.58	3.51	3.65	3.47	3.64	3.79
100.5	102								3.54	3.71	3.49	3.66	3.82
102	103.5								3.58	3.72	3.52	3.68	
103.5	105								3.61	3.74	3.55	3.69	
105	106.5									3.79	3.56	3.71	
106.5	108										3.59	3.73	
108	109.5										3.62	3.74	
109.5	111										3.64	3.76	



Top	Bottom	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24
111	112.5										3.66	3.77	
112.5	114										3.69	3.80	
114	115.5										3.73		
115.5	117										3.75		
117	118.5										3.78		

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
0.5	1.5	----	----				----	----	----			----	----
1.5	3	----	----				----	0.82	----			----	----
3	4.5	----	----		----		0.94	0.87	----		0.82	----	----
4.5	6	----	----	----	----	----	----	0.91	----	0.94	0.92	----	----
6	7.5	----	----	----	----	----	0.97	0.95	----	0.98	0.97	----	----
7.5	9	1.13	----	----	1.02	----	1.04	1.08	1.03	1.08	1.03	----	1.11
9	10.5	1.24	----	----	1.06	----	1.07	1.12	1.12	1.12	1.09	----	1.16
10.5	12	2.29	----	----	1.12	0.97	1.12	1.17	1.16	1.15	1.14	1.09	1.19
12	13.5	1.36	----	1.12	1.15	1.07	1.14	1.21	1.21	1.23	1.18	1.14	1.24
13.5	15	1.39	1.08	1.16	1.18	1.10	1.16	1.24	1.25	1.26	1.21	1.16	1.26
15	16.5	1.42	----	1.18	1.21	1.11	1.32	1.29	1.28	1.31	1.24	1.22	1.32
16.5	18	1.45	1.07	1.21	1.24	1.13	1.35	1.33	1.35	1.35	1.26	1.25	1.36
18	19.5	1.48	1.11	1.26	1.26	1.15	1.41	1.41	1.39	1.42	1.31	1.31	1.46
19.5	21	1.52	----	1.31	1.30	1.39	1.43	1.46	1.44	1.53	1.35	1.35	1.52
21	22.5	1.59	1.14	1.36	1.35	1.43	1.46	1.53	1.51	1.59	1.41	1.42	1.63
22.5	24	1.61	1.18	1.41	1.38	1.48	1.62	1.57	1.57	1.64	1.45	1.46	1.72
24	25.5	1.64	1.23	1.47	1.42	1.51	1.68	1.66	1.64	1.69	1.48	1.52	
25.5	27	1.71	1.25	1.53	1.66	1.57	1.76	1.72	1.75	1.73	1.54	1.63	
27	28.5	1.75	1.29	1.62	1.74	1.66	1.91	1.78	1.83	1.84	1.57	1.68	
28.5	30	1.80	1.34	1.68	1.82	1.73	1.97	1.83	1.87	1.87	1.63	1.72	
30	31.5	1.84	1.37	1.73	1.85	1.79	2.03	1.87	1.92	1.89	1.68	1.79	
31.5	33	1.87	1.41	1.94	1.88	1.85	2.07	1.93	1.97	1.93	1.72	1.85	
33	34.5	1.91	1.45	1.99	1.92	1.89	2.13	1.96	2.08	1.95	1.75	1.92	
34.5	36	1.96	1.50	2.05	1.95	1.93	2.17	2.02	2.13	1.98	1.79	1.96	
36	37.5	2.02	1.56	2.09	1.98	1.96	2.21	2.06	2.18	2.06	1.80	2.00	
37.5	39	2.07	1.61	2.14	2.02	1.98	2.27	2.11	2.23	2.13	1.84	2.05	
39	40.5	2.11	1.67	2.18	2.05	2.02	2.32	2.13	2.26	2.16	1.87	2.08	
40.5	42	2.14	1.82	2.21	2.08	2.05	2.38	2.16	2.31	2.21	1.91	2.13	
42	43.5	2.17	1.88	2.26	2.11	2.08	2.44	2.21	2.36	2.25	1.94		
43.5	45	2.22	1.93	2.30	2.15	2.12	2.48	2.23	2.40	2.31	1.96		
45	46.5	2.27	1.99	2.36	2.18	2.16	2.51	2.26	2.44	2.35	2.01		
46.5	48	2.32	2.05	2.42	2.22	2.18	2.53	2.30	2.48	2.38	2.06		
48	49.5	2.35	2.09	2.45	2.26	2.18	2.55	2.33	2.51	2.44	2.11		
49.5	51	2.39	2.14	2.49	2.29	2.20	2.56	2.34	2.53	2.48	2.16		
51	52.5	2.44	2.20	2.53	2.31	2.22	2.58	2.38	2.57	2.51	2.21		
52.5	54	2.49	2.24	2.56	2.33	2.25	2.60	2.41	2.61	2.53	2.26		
54	55.5	2.54	2.29	2.59	2.35	2.26	2.61	2.44	2.66	2.56	2.32		

Top	Bottom	BH25	BH26	BH27	BH28	BH29	BH30	BH31	BH32	BH33	BH34	BH35	BH36
55.5	57	2.58	2.35	2.63	2.39	2.28	2.63	2.49	2.69	2.59	2.39		
57	58.5	2.63	2.39	2.68	2.41	2.32	2.65	2.53	2.71	2.61			
58.5	60	2.67	2.45	2.71	2.46	2.36	2.67	2.55	2.73	2.64			
60	61.5	2.71	2.49	2.74	2.48	2.40	2.68	2.57	2.76	2.67			
61.5	63	2.74	2.54	2.78	2.51	2.45	2.70	2.60	2.79	2.70			
63	64.5	2.78	2.59	2.81	2.53	2.47	2.72	2.63	2.82	2.75			
64.5	66	2.82	2.61	2.84	2.56	2.49	2.74	2.67	2.84	2.78			
66	67.5	2.85	2.65	2.86	2.59	2.50	2.76	2.71	2.87	2.82			
67.5	69	2.87	2.69	2.88	2.62	2.51	2.78	2.73	2.90				
69	70.5	2.90	2.73	2.92	2.65	2.53	2.79	2.81	2.94				
70.5	72	2.92	2.78	2.95	2.66	2.54	2.81	2.87	2.97				
72	73.5	2.95	2.85	2.98	2.68	2.57	2.83	2.92	3.06				
73.5	75	2.97	2.89	3.02	2.71	2.61	2.84	2.95					
75	76.5	3.02	2.91	3.09	2.73	2.64	2.86	2.98					
76.5	78	3.05	2.93	3.17	2.75	2.69	2.88	3.02					
78	79.5	3.09	2.98	3.21	2.77	2.75	2.91						
79.5	81	3.14	3.04	3.29	2.79	2.78	2.92						
81	82.5	3.17	3.07		2.81	2.80	2.94						
82.5	84	3.21	3.12		2.84	2.84							
84	85.5	3.25	3.17			2.88							
85.5	87	3.27				2.96							
87	88.5	3.31											
88.5	90	3.36											
90	91.5	3.39											
91.5	93	3.43											

6.1.3 RMR logs

Tunnel:6		BH: 1		TOTAL DEPTH:									RMR	
Top	Bottom	Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
					Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)

6.0	7.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
7.5	9.0	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
9.0	10.5	0	3	5	1	1	5	2	3	12	10	-2	28	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	2	3	12	10	-2	30	Class 4 (POOR)
12.0	13.5	2	13	8	2	4	5	2	3	16	10	-2	47	Class 3 (FAIR)
13.5	15.0	4	13	8	2	4	5	2	3	16	10	-2	49	Class 3 (FAIR)
15.0	16.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 6		BH: 2			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	4	3	14	10	-2	30	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	4	3	14	10	-2	30	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	5	4	3	14	10	-2	30	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	5	4	5	16	10	-2	32	Class 4 (POOR)
6.0	7.5	0	3	5	1	1	5	4	5	16	10	-2	32	Class 4 (POOR)
7.5	9.0	0	3	5	1	1	5	4	5	16	10	-2	32	Class 4 (POOR)
9.0	10.5	0	3	5	1	1	5	4	5	16	15	-2	37	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	5	4	5	16	15	-2	39	Class 4 (POOR)
13.5	15.0	2	8	5	1	1	5	4	5	16	15	-2	44	Class 3 (FAIR)
15.0	16.5	2	13	15	2	4	5	4	5	20	15	-2	63	Class 2 (GOOD)
16.5	18.0	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
18.0	19.5	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
19.5	21.0	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
21.0	22.5	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
22.5	24.0	2	17	20	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)

Tunnel: 6		BH: 4			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	2	3	5	0	0	0	0	1	1	4	-2	13	Class 5 (VERY POOR)
10.5	12.0	2	3	5	0	0	0	0	1	1	4	-2	13	Class 5 (VERY POOR)
12.0	13.5	2	3	5	0	0	0	0	1	1	4	-2	13	Class 5 (VERY POOR)
13.5	15.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
15.0	16.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
16.5	18.0	2	13	5	1	1	5	2	3	12	10	-2	40	Class 4 (POOR)
18.0	19.5	2	13	5	1	1	5	2	3	12	10	-2	40	Class 4 (POOR)
19.5	21.0	2	13	5	1	1	5	2	3	12	10	-2	40	Class 4 (POOR)
21.0	22.5	2	17	5	1	1	5	2	3	12	10	-2	44	Class 3 (FAIR)
22.5	24.0	2	17	5	1	1	5	2	3	12	10	-2	44	Class 3 (FAIR)
24.0	25.5	2	17	8	1	1	5	2	3	12	10	-2	47	Class 3 (FAIR)

Tunnel: 6			BH: 4		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
25.5	27.0	2	17	8	1	1	5	2	3	12	10	-2	47	Class 3(FAIR)

Tunnel: 6			BH: 5			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	2	4	5	2	3	16	10	-2	32	Class 4 (POOR)	
1.5	3.0	2	3	5	2	4	5	2	3	16	10	-2	34	Class 4 (POOR)	
3.0	4.5	2	3	5	2	4	5	2	3	16	10	-2	34	Class 4 (POOR)	
4.5	6.0	2	3	5	2	4	5	2	3	16	10	-2	34	Class 4 (POOR)	
6.0	7.5	2	8	5	2	4	5	2	3	16	10	-2	39	Class 4 (POOR)	
7.5	9.0	2	8	5	2	4	5	2	3	16	10	-2	39	Class 4 (POOR)	
9.0	10.5	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
10.5	12.0	2	17	5	2	4	5	2	3	16	10	-2	48	Class 3(FAIR)	
12.0	13.5	2	17	5	2	4	5	2	3	16	10	-2	48	Class 3(FAIR)	
13.5	15.0	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
15.0	16.5	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
16.5	18.0	2	17	5	2	4	5	2	3	16	10	-2	48	Class 3(FAIR)	
18.0	19.5	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
19.5	21.0	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
21.0	22.5	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
22.5	24.0	2	13	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
24.0	25.5	4	13	5	2	4	5	2	3	16	10	-2	46	Class 3(FAIR)	
25.5	27.0	4	13	5	2	4	5	2	3	16	10	-2	46	Class 3(FAIR)	
27.0	28.5	4	17	8	2	4	5	2	3	16	10	-2	53	Class 3(FAIR)	
28.5	30.0	4	13	8	2	4	5	2	3	16	10	-2	49	Class 3(FAIR)	
30.0	31.5	4	13	8	2	4	5	2	3	16	10	-2	49	Class 3(FAIR)	
31.5	33.0	4	17	5	2	4	5	2	3	16	10	-2	50	Class 3(FAIR)	
33.0	34.5	4	17	5	2	4	5	2	3	16	10	-2	50	Class 3(FAIR)	
34.5	36.0	4	20	5	2	4	5	2	3	16	10	-2	53	Class 3(FAIR)	

Tunnel: 6		BH: 5			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
36.0	37.5	4	20	5	2	4	5	2	3	16	10	-2	53	Class 3(FAIR)
37.5	39.0	4	20	5	2	4	5	2	3	16	10	-2	53	Class 3(FAIR)
39.0	40.5	4	13	5	2	4	5	2	3	16	10	-2	46	Class 3(FAIR)
40.5	42.0	7	17	5	2	4	5	2	3	16	10	-2	53	Class 3(FAIR)
42.0	43.5	7	17	6	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
43.5	45.0	7	20	6	6	6	6	6	6	30	15	-2	76	Class 2(GOOD)

Tunnel: 6		BH: 6			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
4.5	6.0	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
6.0	7.5	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
7.5	9.0	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
9.0	10.5	0	3	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
10.5	12.0	2	8	5	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
12.0	13.5	2	13	5	1	1	3	2	3	10	7	-2	35	Class 4 (POOR)
13.5	15.0	2	13	5	1	1	3	2	3	10	7	-2	35	Class 4 (POOR)
15.0	16.5	2	13	5	1	1	3	2	3	10	7	-2	35	Class 4 (POOR)
16.5	18.0	2	13	5	1	1	3	2	3	10	7	-2	35	Class 4 (POOR)
18.0	19.5	2	17	5	2	4	3	2	3	14	7	-2	43	Class 3(FAIR)
19.5	21.0	4	13	5	2	4	3	2	3	14	7	-2	41	Class 3(FAIR)
21.0	22.5	4	17	5	2	4	3	2	3	14	10	-2	48	Class 3(FAIR)
22.5	24.0	4	17	5	2	4	3	2	3	14	10	-2	48	Class 3(FAIR)
24.0	25.5	4	17	5	2	4	3	2	3	14	10	-2	48	Class 3(FAIR)
25.5	27.0	4	20	5	2	4	3	2	3	14	10	-2	51	Class 3(FAIR)
27.0	28.5	4	20	5	2	4	3	2	3	14	10	-2	51	Class 3(FAIR)
28.5	30.0	4	17	5	2	4	3	2	3	14	10	-2	48	Class 3(FAIR)
30.0	31.5	4	17	5	2	4	3	2	3	14	10	-2	48	Class 3(FAIR)
31.5	33.0	4	20	5	2	4	3	2	3	14	10	-2	51	Class 3(FAIR)

Tunnel: 6		BH: 6			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
33.0	34.5	4	17	6	6	6	6	6	6	30	10	-2	62	Class 2(GOOD)
34.5	36.0	7	17	6	6	6	6	6	6	30	10	-2	58	Class 3(FAIR)
36.0	37.5	7	20	6	6	6	6	6	6	30	10	-2	63	Class 2(GOOD)
37.5	39.0	7	17	6	6	6	6	6	6	30	10	-2	65	Class 2(GOOD)

Tunnel: 6		BH: 7			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
3.0	4.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
4.5	6.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
7.5	9.0	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
9.0	10.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
10.5	12.0	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
12.0	13.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	2	17	5	1	1	1	2	1	6	7	-2	35	Class 4 (POOR)
15.0	16.5	2	8	8	2	4	5	2	3	16	10	-2	42	Class 3(FAIR)
16.5	18.0	2	3	20	6	6	6	6	6	30	15	-2	68	Class 2(GOOD)
18.0	19.5	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
19.5	21.0	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
21.0	22.5	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
22.5	24.0	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
24.0	25.5	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
25.5	27.0	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)

Tunnel: 6		BH: 7			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
27.0	28.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
28.5	30.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
30.0	31.5	4	20	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
31.5	33.0	4	17	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
33.0	34.5	4	20	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
34.5	36.0	4	20	20	6	6	6	6	6	30	15	-2	94	Class 1 (VERY GOOD)
36.0	37.5	4	20	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)

Tunnel: 6		BH: 8			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	2	1	10	7	-2	23	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	2	1	10	7	-2	23	Class 4 (POOR)
3.0	4.5	0	3	5	1	1	5	2	1	10	7	-2	23	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	5	2	1	10	7	-2	25	Class 4 (POOR)
9.0	10.5	2	13	5	1	1	5	2	1	10	7	-2	35	Class 4 (POOR)
10.5	12.0	2	13	5	1	1	5	2	1	10	7	-2	35	Class 4 (POOR)
12.0	13.5	2	17	8	1	1	5	2	1	10	7	-2	42	Class 3 (FAIR)
13.5	15.0	2	13	8	2	2	5	2	1	12	7	-2	40	Class 4 (POOR)
15.0	16.5	2	13	8	2	2	5	2	1	12	7	-2	40	Class 4 (POOR)
16.5	18.0	2	13	8	2	2	5	2	1	12	7	-2	40	Class 4 (POOR)
18.0	19.5	2	20	8	2	2	5	2	1	12	7	-2	47	Class 3 (FAIR)

Tunnel: 6		BH: 8			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
19.5	21.0	2	20	8	2	2	5	2	1	12	10	-2	50	Class 3 (FAIR)
21.0	22.5	2	17	8	2	2	5	2	1	12	10	-2	47	Class 3 (FAIR)
22.5	24.0	2	17	10	2	2	5	2	1	12	10	-2	49	Class 3 (FAIR)
24.0	25.5	2	17	10	2	2	5	2	1	12	7	-2	46	Class 3 (FAIR)
25.5	27.0	2	13	15	2	2	5	2	1	12	7	-2	47	Class 3 (FAIR)
27.0	28.5	4	17	15	2	2	5	2	1	12	7	-2	53	Class 3 (FAIR)
28.5	30.0	4	17	15	2	2	5	2	1	12	7	-2	53	Class 3 (FAIR)
30.0	31.5	4	20	15	2	2	5	2	1	12	7	-2	56	Class 3 (FAIR)
31.5	33.0	4	17	15	2	2	5	2	1	12	10	-2	56	Class 3 (FAIR)
33.0	34.5	4	20	15	1	1	5	2	1	10	10	-2	57	Class 3 (FAIR)
34.5	36.0	4	17	15	2	1	5	2	1	11	7	-2	52	Class 3 (FAIR)
36.0	37.5	4	20	15	2	2	5	2	1	12	7	-2	56	Class 3 (FAIR)
37.5	39.0	4	20	15	1	2	5	2	1	11	7	-2	55	Class 3 (FAIR)
39.0	40.5	4	17	15	1	1	5	2	1	10	7	-2	51	Class 3 (FAIR)
40.5	42.0	4	20	15	1	1	5	2	1	10	7	-2	54	Class 3 (FAIR)
42.0	43.5	4	20	20	6	6	6	6	6	30	10	-2	82	Class 1 (VERY GOOD)

Tunnel: 6		BH: 9			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
3.0	4.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
4.5	6.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)

Tunnel: 6		BH: 9			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
7.5	9.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
9.0	10.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
12.0	13.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
13.5	15.0	4	3	5	1	1	1	2	1	6	7	-2	23	Class 4 (POOR)
15.0	16.5	7	17	8	2	4	5	2	3	16	10	-2	56	Class 3 (FAIR)
16.5	18.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
18.0	19.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
19.5	21.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
21.0	22.5	2	8	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
22.5	24.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
24.0	25.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
25.5	27.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
27.0	28.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
28.5	30.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
30.0	31.5	7	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
33.0	34.5	7	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
34.5	36.0	12	13	20	6	6	6	6	6	30	15	-2	94	Class 1 (VERY GOOD)
36.0	37.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
37.5	39.0	12	17	20	6	6	6	6	6	30	15	-2	94	Class 1 (VERY GOOD)
39.0	40.5	12	13	20	6	6	6	6	6	30	15	-2	97	Class 1 (VERY GOOD)
40.5	42.0	12	20	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
42.0	43.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
43.5	45.0	12	17	20	6	6	6	6	6	30	15	-2	94	Class 1 (VERY GOOD)

Tunnel: 6		BH: 9			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
45.0	46.5	12	17	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
46.5	48.0	12	13	20	6	6	6	6	6	30	15	-2	94	Class 1 (VERY GOOD)
48.0	49.5	12	17	20	6	6	6	6	6	30	15	-2	94	Class 1 (VERY GOOD)
49.5	51.0	12	17	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
51.0	52.5	12	13	20	6	6	6	6	6	30	15	-2	97	Class 1 (VERY GOOD)
52.5	54.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 10			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	4	3	14	10	-5	27	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	4	3	14	10	-5	27	Class 4 (POOR)
3.0	4.5	0	3	5	4	4	5	4	3	20	10	-5	33	Class 4 (POOR)
4.5	6.0	2	3	5	4	4	5	4	5	22	10	-5	37	Class 4 (POOR)
6.0	7.5	0	3	5	4	4	5	4	5	22	10	-5	35	Class 4 (POOR)
7.5	9.0	2	3	5	4	4	5	4	5	22	10	-5	37	Class 4 (POOR)
9.0	10.5	2	8	5	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
10.5	12.0	2	8	5	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
12.0	13.5	2	8	5	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)
13.5	15.0	2	13	5	4	4	5	4	5	22	10	-2	50	Class 3(FAIR)
15.0	16.5	2	13	5	4	5	5	4	5	23	10	-2	51	Class 3(FAIR)
16.5	18.0	2	13	5	4	5	5	4	5	23	10	-2	51	Class 3(FAIR)
18.0	19.5	2	13	5	4	5	5	4	6	24	10	-2	52	Class 3(FAIR)
19.5	21.0	2	13	5	4	5	5	4	6	24	10	-2	52	Class 3(FAIR)
21.0	22.5	2	13	5	4	5	5	4	6	24	10	-2	52	Class 3(FAIR)
22.5	24.0	2	13	5	4	5	5	4	6	24	10	-2	52	Class 3(FAIR)

Tunnel: 6		BH: 10			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
24.0	25.5	2	13	5	4	5	5	4	6	24	10	-2	52	Class 3(FAIR)
25.5	27.0	2	13	5	4	5	5	4	6	24	10	-2	52	Class 3(FAIR)
27.0	28.5	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
28.5	30.0	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
30.0	31.5	2	13	8	2	4	5	2	3	16	10	-2	47	Class 3(FAIR)
31.5	33.0	2	13	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
33.0	34.5	2	17	20	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
34.5	36.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
36.0	37.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
37.5	39.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
39.0	40.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
40.5	42.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
42.0	43.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
45.0	46.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
48.0	49.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
49.5	51.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
51.0	52.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
52.5	54.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
54.0	55.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
55.5	57.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
57.0	58.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
58.5	60.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
60.0	61.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

Tunnel: 6		BH: 11			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	5	4	3	14	10	-5	24	Class 4 (POOR)
1.5	3.0	0	3	5	1	1	5	4	3	14	10	-5	24	Class 4 (POOR)
3.0	4.5	0	3	5	4	4	5	4	3	20	10	-5	30	Class 4 (POOR)
4.5	6.0	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
6.0	7.5	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
7.5	9.0	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
9.0	10.5	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
10.5	12.0	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
12.0	13.5	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
13.5	15.0	0	3	5	4	4	5	4	5	22	10	-5	32	Class 4 (POOR)
15.0	16.5	0	3	5	4	5	5	4	5	23	10	-5	33	Class 4 (POOR)
16.5	18.0	2	3	5	4	5	5	4	5	23	10	-5	33	Class 4 (POOR)
18.0	19.5	0	3	5	4	5	5	4	6	24	10	-5	34	Class 4 (POOR)
19.5	21.0	0	3	5	4	5	5	4	6	24	10	-5	34	Class 4 (POOR)
21.0	22.5	0	3	5	4	5	5	4	6	24	10	-5	34	Class 4 (POOR)
22.5	24.0	2	3	5	4	5	5	4	6	24	10	-5	34	Class 4 (POOR)
24.0	25.5	2	3	5	4	5	5	4	6	24	10	-5	34	Class 4 (POOR)
25.5	27.0	0	3	5	4	5	5	4	6	24	10	-5	34	Class 4 (POOR)
27.0	28.5	0	3	8	1	1	5	2	1	10	7	-2	26	Class 4 (POOR)
28.5	30.0	2	3	8	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
30.0	31.5	2	3	8	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
31.5	33.0	4	3	8	2	2	5	2	1	12	7	-2	32	Class 4 (POOR)
33.0	34.5	0	3	8	2	2	5	2	1	12	7	-2	28	Class 4 (POOR)
34.5	36.0	0	3	8	2	2	5	2	1	12	10	-2	31	Class 4 (POOR)
36.0	37.5	0	3	8	2	2	5	2	1	12	10	-2	31	Class 4 (POOR)
37.5	39.0	4	3	10	2	2	5	2	1	12	10	-2	37	Class 4 (POOR)
39.0	40.5	0	3	10	2	2	5	2	1	12	7	-2	30	Class 4 (POOR)
40.5	42.0	7	8	15	2	2	5	2	1	12	7	-2	47	Class 3 (FAIR)
42.0	43.5	7	8	15	2	2	5	2	1	12	7	-2	47	Class 3 (FAIR)
43.5	45.0	7	17	15	2	2	5	2	1	12	7	-2	56	Class 3 (FAIR)
45.0	46.5	7	13	15	2	2	5	2	1	12	7	-2	52	Class 3 (FAIR)
46.5	48.0	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
48.0	49.5	12	8	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
49.5	51.0	12	8	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
51.0	52.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
52.5	54.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)

Tunnel: 6		BH: 11			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
54.0	55.5	12	8	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
55.5	57.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
57.0	58.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
58.5	60.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
60.0	61.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
61.5	63.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
63.0	64.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

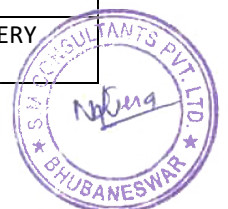
Tunnel: 6		BH: 12			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
3.0	4.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
4.5	6.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
7.5	9.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
9.0	10.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)

Tunnel: 6		BH: 12			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
10.5	12.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
12.0	13.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	4	8	5	1	1	1	2	1	6	7	-2	28	Class 4 (POOR)
15.0	16.5	4	8	8	2	4	5	2	3	16	10	-2	44	Class 3 (FAIR)
16.5	18.0	4	8	10	2	2	5	2	1	12	10	-2	42	Class 3 (FAIR)
18.0	19.5	4	8	10	2	2	2	2	1	9	7	-2	36	Class 4 (POOR)
19.5	21.0	4	8	10	2	2	2	2	3	11	7	-2	38	Class 4 (POOR)
21.0	22.5	4	8	10	2	2	2	2	3	11	7	-2	38	Class 4 (POOR)
22.5	24.0	4	8	10	2	2	2	2	3	11	7	-2	38	Class 4 (POOR)
24.0	25.5	7	8	10	2	2	2	2	3	11	7	-2	41	Class 3 (FAIR)
25.5	27.0	7	8	10	2	2	2	2	3	11	7	-2	41	Class 3 (FAIR)
27.0	28.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
30.0	31.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
33.0	34.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
34.5	36.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
36.0	37.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
37.5	39.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
39.0	40.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
40.5	42.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
42.0	43.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2 (GOOD)
48.0	49.5	7	8	20	6	6	6	6	6	30	10	-2	73	Class 2 (GOOD)
49.5	51.0	7	17	20	6	6	6	6	6	30	10	-2	82	Class 1 (VERY GOOD)
51.0	52.5	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
52.5	54.0	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
54.0	55.5	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
55.5	57.0	12	17	20	6	6	6	6	6	30	10	-2	87	Class 1 (VERY GOOD)
57.0	58.5	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
58.5	60.0	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
60.0	61.5	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
61.5	63.0	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)

Tunnel: 6			BH: 12			TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
63.0	64.5	12	13	20	6	6	6	6	6	30	10	-2	83	Class 1 (VERY GOOD)
64.5	66.0	12	17	20	6	6	6	6	6	30	10	-2	87	Class 1 (VERY GOOD)
66.0	67.5	12	17	20	6	6	6	6	6	30	10	-2	87	Class 1 (VERY GOOD)
67.5	69.0	12	20	20	6	6	6	6	6	30	10	-2	90	Class 1 (VERY GOOD)

Tunnel: 6			BH: 13		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
3.0	4.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
4.5	6.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
7.5	9.0	0	3	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
9.0	10.5	0	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	4	3	5	1	1	1	2	1	6	7	-2	35	Class 4 (POOR)
15.0	16.5	4	8	8	2	2	2	2	2	16	10	-2	42	Class 3(FAIR)
16.5	18.0	4	8	8	2	2	2	2	2	10			30	Class 4 (POOR)
18.0	19.5	4	8	8	2	2	2	2	2	10			30	Class 4 (POOR)
19.5	21.0	4	8	10	2	2	5	2	1	12	7	-2	39	Class 4 (POOR)
21.0	22.5	4	8	15	2	2	5	2	1	12	7	-2	44	Class 3(FAIR)
22.5	24.0	4	8	15	2	2	5	2	1	12	7	-2	44	Class 3(FAIR)
24.0	25.5	7	8	15	2	2	5	2	1	12	7	-2	47	Class 3(FAIR)
25.5	27.0	7	8	15	2	2	5	2	1	12	7	-2	47	Class 3(FAIR)

Tunnel: 6		BH: 13			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
27.0	28.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
28.5	30.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
30.0	31.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
31.5	33.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
33.0	34.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
34.5	36.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
36.0	37.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
37.5	39.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
39.0	40.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
40.5	42.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
42.0	43.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
45.0	46.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
51.0	52.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
52.5	54.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
54.0	55.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
55.5	57.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
57.0	58.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
58.5	60.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
60.0	61.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
61.5	63.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
63.0	64.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)



Tunnel: 6		BH: 13			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
64.5	66.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
66.0	67.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
70.5	72.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6			BH: 14			TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
6.0	7.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
9.0	10.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
10.5	12.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
12.0	13.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
15.0	16.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
16.5	18.0	2	8	15	2	2	5	2	1	12	7	-2	42	Class 3(FAIR)
18.0	19.5	2	8	15	2	2	5	2	1	12	7	-2	42	Class 3(FAIR)
19.5	21.0	2	8	15	2	2	5	2	1	12	7	-2	42	Class 3(FAIR)

Tunnel: 6		BH: 14			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
21.0	22.5	2	8	15	2	2	5	2	1	12	7	-2	42	Class 3(FAIR)
22.5	24.0	2	8	15	2	2	5	5	5	19	15	-2	57	Class 3(FAIR)
24.0	25.5	2	8	15	2	2	5	5	5	19	15	-2	57	Class 3(FAIR)
25.5	27.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
27.0	28.5	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
28.5	30.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
30.0	31.5	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
34.5	36.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
36.0	37.5	4	8	15	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
37.5	39.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
39.0	40.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
40.5	42.0	7	8	15	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
42.0	43.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
43.5	45.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
46.5	48.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
52.5	54.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
54.0	55.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
57.0	58.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
60.0	61.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
61.5	63.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
63.0	64.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
64.5	66.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)

Tunnel: 6		BH: 14			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
66.0	67.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
70.5	72.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
72	73.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
73.5	75	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 15			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
1.5	3.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
3.0	4.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
4.5	6.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
6.0	7.5	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
7.5	9.0	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
9.0	10.5	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
10.5	12.0	2	17	5	1	1	1	2	1	6	7	-2	35	Class 4 (POOR)
12.0	13.5	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
13.5	15.0	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
15.0	16.5	2	13	8	1	1	1	2	1	6	7	-2	34	Class 4 (POOR)
16.5	18.0	2	13	8	1	1	1	2	1	6	7	-2	34	Class 4 (POOR)
18.0	19.5	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
19.5	21.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)

Tunnel: 6		BH: 15			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
21.0	22.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
22.5	24.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
24.0	25.5	2	8	10	2	2	5	2	1	12	7	-2	37	Class 4 (POOR)
25.5	27.0	4	8	10	2	2	5	2	1	12	7	-2	39	Class 4 (POOR)
27.0	28.5	4	13	10	2	2	5	2	1	12	7	-2	44	Class 3 (FAIR)
28.5	30.0	4	13	10	2	2	5	2	1	12	7	-2	44	Class 3 (FAIR)
30.0	31.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
37.5	39.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
39.0	40.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
40.5	42.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
42.0	43.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
43.5	45.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
45.0	46.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
46.5	48.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
48.0	49.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
49.5	51.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
51.0	52.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
52.5	54.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
54.0	55.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
55.5	57.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
57.0	58.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
58.5	60.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
60.0	61.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
61.5	63.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
63.0	64.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
64.5	66.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
66.0	67.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

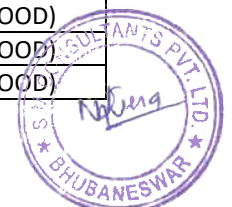
Tunnel: 6		BH: 15			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
70.5	72.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
72	73.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
73.5	75	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
75	76.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
76.5	78	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
78	79.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

Tunnel: 6		BH: 16			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)

Tunnel: 6		BH: 16			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
9.0	10.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
10.5	12.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
15.0	16.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
16.5	18.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
18.0	19.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
19.5	21.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
21.0	22.5	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
22.5	24.0	2	20	8	1	1	1	2	1	6	7	-2	41	Class 3 (FAIR)
24.0	25.5	0	17	8	1	1	1	2	1	6	7	-2	36	Class 4 (POOR)
25.5	27.0	4	13	8	1	1	1	2	1	6	7	-2	36	Class 4 (POOR)
27.0	28.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
28.5	30.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
30.0	31.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
31.5	33.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
37.5	39.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
39.0	40.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
43.5	45.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
46.5	48.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
48.0	49.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
49.5	51.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
51.0	52.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
52.5	54.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH: 16		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
54.0	55.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
55.5	57.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
57.0	58.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
60.0	61.5	12	17	15	2	2	5	5	5	19	15	-2	76	Class 2(GOOD)
61.5	63.0	12	17	15	2	2	5	5	5	19	15	-2	76	Class 2(GOOD)
63.0	64.5	12	13	15	2	2	5	5	5	19	15	-2	72	Class 2(GOOD)
64.5	66.0	12	17	15	2	2	5	5	5	19	15	-2	76	Class 2(GOOD)
66.0	67.5	12	17	15	2	2	5	5	5	19	15	-2	76	Class 2(GOOD)
67.5	69.0	12	20	15	2	2	5	5	5	19	15	-2	79	Class 2(GOOD)
69.0	70.5	12	17	15	2	2	5	5	5	19	15	-2	76	Class 2(GOOD)
70.5	72.0	12	17	15	2	2	5	5	5	19	15	-2	76	Class 2(GOOD)
72	73.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
73.55	75	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
75	76.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
76.45	78	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
77.9	79.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
79.35	81	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
80.8	82.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
82.25	84	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 17			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
10.5	12.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
13.5	15.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
15.0	16.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
16.5	18.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
18.0	19.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
19.5	21.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
21.0	22.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
22.5	24.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
24.0	25.5	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2 (GOOD)
25.5	27.0	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2 (GOOD)
27.0	28.5	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3 (FAIR)
28.5	30.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3 (FAIR)
30.0	31.5	4	3	15	2	2	5	5	5	19	15	-2	54	Class 3 (FAIR)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
34.5	36.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
37.5	39.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
39.0	40.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
40.5	42.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
42.0	43.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
43.5	45.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
45.0	46.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
46.5	48.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
48.0	49.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
49.5	51.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
51.0	52.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
52.5	54.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
54.0	55.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)



Tunnel: 6		BH: 17			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
55.5	57.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
57.0	58.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
58.5	60.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
60.0	61.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
61.5	63.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
63.0	64.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
64.5	66.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
66.0	67.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
70.5	72.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
72.0	73.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
73.5	75.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
75.0	76.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
76.5	78.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
78.0	79.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
79.5	81.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
81.0	82.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
82.5	84.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
84.0	85.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
85.5	87.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 18			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
10.5	12.0	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
12.0	13.5	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
13.5	15.0	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
15.0	16.5	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
16.5	18.0	2	13	8	1	1	1	2	1	6	7	-2	34	Class 4 (POOR)
18.0	19.5	2	13	8	1	1	1	2	1	6	7	-2	34	Class 4 (POOR)
19.5	21.0	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
21.0	22.5	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
22.5	24.0	2	20	5	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
24.0	25.5	2	20	5	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)
25.5	27.0	4	17	5	1	1	1	2	1	6	7	-2	37	Class 4 (POOR)
27.0	28.5	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
28.5	30.0	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
30.0	31.5	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
31.5	33.0	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
33.0	34.5	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
34.5	36.0	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
37.5	39.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
39.0	40.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
40.5	42.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
42.0	43.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
43.5	45.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
45.0	46.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
46.5	48.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
48.0	49.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
49.5	51.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
51.0	52.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
52.5	54.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
54.0	55.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
55.5	57.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)

Tunnel: 6		BH: 18			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
57.0	58.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
58.5	60.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
60.0	61.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
63.0	64.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
64.5	66.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
66.0	67.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
67.5	69.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
69.0	70.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
70.5	72.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
72.0	73.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
73.5	75.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
75.0	76.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
76.5	78.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
78.0	79.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
79.5	81.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
81.0	82.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
82.5	84.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
84.0	85.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
85.5	87.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
87.0	88.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
88.5	90.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 18		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
90.0	91.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
91.5	93.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
93.0	94.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
94.5	96.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
96.0	97.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
97.5	99.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 19		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
6.0	7.5	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
7.5	9.0	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
9.0	10.5	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
10.5	12.0	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
12.0	13.5	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
13.5	15.0	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)

Tunnel: 6		BH: 19			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
16.5	18.0	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
18.0	19.5	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
19.5	21.0	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
21.0	22.5	2	20	15	2	2	5	5	5	19	15	-2	69	Class 2(GOOD)
22.5	24.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
24.0	25.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
25.5	27.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
27.0	28.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
28.5	30.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
30.0	31.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
31.5	33.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
33.0	34.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
34.5	36.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
36.0	37.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
37.5	39.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
39.0	40.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
40.5	42.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
43.5	45.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
45.0	46.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
48.0	49.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
49.5	51.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
52.5	54.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
54.0	55.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
55.5	57.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
57.0	58.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH: 19			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
58.5	60.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
60.0	61.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
67.5	69.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
69.0	70.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
70.5	72.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6		15	-2	87	Class 1 (VERY GOOD)
73.5	75.0	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
75.0	76.5	12	17	20	6	6	6	6	6		15	-2	92	Class 1 (VERY GOOD)
76.5	78.0	12	13	20	6	6	6	6	6		15	-2	88	Class 1 (VERY GOOD)
78.0	79.5	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
79.5	81.0	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
81.0	82.5	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
82.5	84.0	12	13	20	6	6	6	6	6		15	-2	88	Class 1 (VERY GOOD)
84.0	85.5	12	13	20	6	6	6	6	6		15	-2	88	Class 1 (VERY GOOD)
85.5	87.0	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
87.0	88.5	12	17	20	6	6	6	6	6		15	-2	92	Class 1 (VERY GOOD)
88.5	90.0	12	17	20	6	6	6	6	6		15	-2	92	Class 1 (VERY GOOD)

Tunnel: 6		BH: 19			TOTAL DEPTH:							RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
90.0	91.5	12	17	20	6	6	6	6	6		15	-2	92	Class 1 (VERY GOOD)
91.5	93.0	12	13	20	6	6	6	6	6		15	-2	88	Class 1 (VERY GOOD)
93.0	94.5	12	17	20	6	6	6	6	6		15	-2	92	Class 1 (VERY GOOD)
94.5	96.0	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
96.0	97.5	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
97.5	99.0	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)
99.0	100.5	12	20	20	6	6	6	6	6		15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6			BH: 20		TOTAL DEPTH:					RMR				
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	1	1	4	-2	13	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)

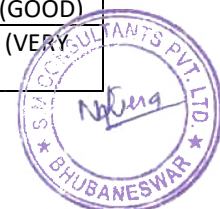
Tunnel: 6		BH: 20			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
15.0	16.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
16.5	18.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
18.0	19.5	2	13	8	1	1	1	2	1	6	7	-2	34	Class 4 (POOR)
19.5	21.0	4	13	8	1	1	1	2	1	6	7	-2	36	Class 4 (POOR)
21.0	22.5	4	17	5	1	1	1	2	1	6	7	-2	37	Class 4 (POOR)
22.5	24.0	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
24.0	25.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
25.5	27.0	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
27.0	28.5	4	20	10	2	1	1	2	1	7	7	-2	46	Class 3 (FAIR)
28.5	30.0	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
30.0	31.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2 (GOOD)
34.5	36.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
36.0	37.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
37.5	39.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
39.0	40.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
40.5	42.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
42.0	43.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
43.5	45.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
45.0	46.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
46.5	48.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
48.0	49.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
49.5	51.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
51.0	52.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
52.5	54.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
54.0	55.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
55.5	57.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
57.0	58.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
58.5	60.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
60.0	61.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
61.5	63.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH: 20			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
67.5	69.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
69.0	70.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
70.5	72.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
72.0	73.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
73.5	75.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
75.0	76.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
76.5	78.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
78.0	79.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
79.5	81.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
81.0	82.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
82.5	84.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
84.0	85.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
85.5	87.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
87.0	88.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
88.5	90.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
90.0	91.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
91.5	93.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
93.0	94.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 20		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
94.5	96.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
96.0	97.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
97.5	99.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
99.0	100.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
100.5	102.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
102.0	103.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
103.5	105.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

Tunnel: 6		BH: 21		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)

Tunnel: 6		BH: 21			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
13.5	15.0	0	3	8	0	0	0	0	1	1	4	-2	14	Class 5 (VERY POOR)
15.0	16.5	0	3	8	0	0	0	0	1	1	4	-2	14	Class 5 (VERY POOR)
16.5	18.0	0	3	8	0	0	0	0	1	1	4	-2	14	Class 5 (VERY POOR)
18.0	19.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
19.5	21.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
21.0	22.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
22.5	24.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
24.0	25.5	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
25.5	27.0	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
27.0	28.5	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
28.5	30.0	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
30.0	31.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
31.5	33.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
37.5	39.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
39.0	40.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
40.5	42.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
42.0	43.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
43.5	45.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
46.5	48.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
48.0	49.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
51.0	52.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
52.5	54.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
54.0	55.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
55.5	57.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

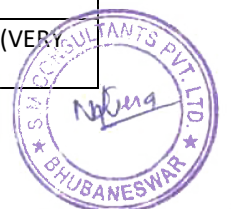


Tunnel: 6		BH: 21			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
57.0	58.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
60.0	61.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
61.5	63.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
63.0	64.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
64.5	66.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
66.0	67.5	12	8	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
67.5	69.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
69.0	70.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
70.5	72.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
72.0	73.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
73.5	75.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
75.0	76.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
76.5	78.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
78.0	79.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
79.5	81.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
81.0	82.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
82.5	84.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
84.0	85.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
85.5	87.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
87.0	88.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)

Tunnel: 6		BH: 21		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
88.5	90.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
90.0	91.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
91.5	93.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
93.0	94.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
94.5	96.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
96.0	97.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
97.5	99.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
99.0	100.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
100.5	102.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
102.0	103.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
103.5	105.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
105.0	106.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 22			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
12.0	13.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
13.5	15.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
15.0	16.5	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
16.5	18.0	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
18.0	19.5	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
19.5	21.0	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
21.0	22.5	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
22.5	24.0	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
24.0	25.5	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
25.5	27.0	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
27.0	28.5	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
28.5	30.0	2	17	15	2	2	5	5	5	19	15	-2	66	Class 2(GOOD)
30.0	31.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
31.5	33.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
36.0	37.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
37.5	39.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
39.0	40.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
40.5	42.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
42.0	43.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
43.5	45.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
45.0	46.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
46.5	48.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
48.0	49.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
49.5	51.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
51.0	52.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
52.5	54.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)

Tunnel: 6		BH: 22			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
54.0	55.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
55.5	57.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
57.0	58.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
58.5	60.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
60.0	61.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
61.5	63.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
63.0	64.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
70.5	72.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
72.0	73.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
73.5	75.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
75.0	76.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
76.5	78.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
78.0	79.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
79.5	81.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
81.0	82.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
82.5	84.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
84.0	85.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
85.5	87.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
87.0	88.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
88.5	90.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
90.0	91.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

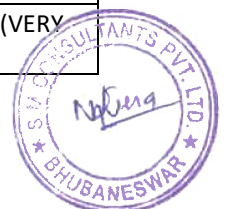


Tunnel: 6		BH: 22		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
91.5	93.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
93.0	94.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
94.5	96.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
96.0	97.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
97.5	99.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
99.0	100.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
100.5	102.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
102.0	103.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
103.5	105.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
105.0	106.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
106.5	108.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
108.0	109.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
109.5	111.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
111.0	112.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
112.5	114.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
114.0	115.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
115.5	117.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
117.0	118.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

Tunnel: 6			BH: 23		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
12.0	13.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
13.5	15.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
15.0	16.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
16.5	18.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
18.0	19.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
19.5	21.0	0	3	8	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
21.0	22.5	0	3	8	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
22.5	24.0	0	3	8	0	0	0	0	1	1	4	-2	14	Class 5 (VERY POOR)
24.0	25.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
25.5	27.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
27.0	28.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
28.5	30.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
30.0	31.5	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
33.0	34.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
34.5	36.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
36.0	37.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
37.5	39.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)

Tunnel: 6			BH: 23		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
39.0	40.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
40.5	42.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
42.0	43.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
43.5	45.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
45.0	46.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
46.5	48.0	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
48.0	49.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
49.5	51.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
51.0	52.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
52.5	54.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
54.0	55.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
55.5	57.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
57.0	58.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
58.5	60.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
60.0	61.5	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
61.5	63.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
63.0	64.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
64.5	66.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
66.0	67.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
70.5	72.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
72.0	73.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
73.5	75.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
75.0	76.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
76.5	78.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
78.0	79.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
79.5	81.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)

Tunnel: 6			BH: 23				TOTAL DEPTH:						RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
81.0	82.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
82.5	84.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	
84.0	85.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
85.5	87.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
87.0	88.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	
88.5	90.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	
90.0	91.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)	
91.5	93.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)	
93.0	94.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)	
94.5	96.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
96.0	97.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)	
97.5	99.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	
99.0	100.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
100.5	102.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
102.0	103.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
103.5	105.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	
105.0	106.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	
106.5	108.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
108.0	109.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
109.5	111.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)	
111.0	112.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)	



Tunnel: 6			BH: 23			TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
112.5	114.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6			BH: 24				TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
7.5	9.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
9.0	10.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)	
10.5	12.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)	
12.0	13.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)	
13.5	15.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)	

Tunnel: 6		BH: 24			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
16.5	18.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
18.0	19.5	0	8	8	1	1	1	2	1	6	7	-2	27	Class 4 (POOR)
19.5	21.0	0	13	8	1	1	1	2	1	6	7	-2	32	Class 4 (POOR)
21.0	22.5	0	13	5	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
22.5	24.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
24.0	25.5	0	13	10	2	1	1	2	1	7	7	-2	35	Class 4 (POOR)
25.5	27.0	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
27.0	28.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
28.5	30.0	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
30.0	31.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
31.5	33.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
33.0	34.5	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
34.5	36.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
37.5	39.0	7	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
39.0	40.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
40.5	42.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
42.0	43.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
43.5	45.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
45.0	46.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
46.5	48.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
48.0	49.5	7	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
49.5	51.0	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
51.0	52.5	7	20	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
52.5	54.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
54.0	55.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
55.5	57.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
57.0	58.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
58.5	60.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
60.0	61.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
61.5	63.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
63.0	64.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
64.5	66.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 24			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
66.0	67.5	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
67.5	69.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
69.0	70.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
70.5	72.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
72.0	73.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
73.5	75.0	12	8	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
75.0	76.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
76.5	78.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
78.0	79.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
79.5	81.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
81.0	82.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
82.5	84.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
84.0	85.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
85.5	87.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
87.0	88.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
88.5	90.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
90.0	91.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
91.5	93.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
93.0	94.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
94.5	96.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
96.0	97.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)

Tunnel: 6			BH: 24				TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
97.5	99.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
99.0	100.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)	
100.5	102.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)	

Tunnel: 6		BH: 25					TOTAL DEPTH:						RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
7.5	9.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)	
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)	
10.5	12.0	2	17	8	1	1	1	2	1	6	7	-2	38	Class 4 (POOR)	
12.0	13.5	4	13	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)	
13.5	15.0	4	17	10	2	1	1	2	1	7	7	-2	35	Class 4 (POOR)	
15.0	16.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)	
16.5	18.0	4	20	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)	
18.0	19.5	4	20	10	2	1	1	2	1	7	7	-2	43	Class 3(FAIR)	
19.5	21.0	4	20	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)	
21.0	22.5	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)	
22.5	24.0	4	8	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)	
24.0	25.5	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)	
25.5	27.0	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)	

Tunnel: 6		BH: 25			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
27.0	28.5	4	17	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
28.5	30.0	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
30.0	31.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
34.5	36.0	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
36.0	37.5	4	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
37.5	39.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
39.0	40.5	4	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
40.5	42.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
42.0	43.5	4	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	7	20	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
52.5	54.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
54.0	55.5	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
57.0	58.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
58.5	60.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
60.0	61.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
61.5	63.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
63.0	64.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
64.5	66.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
66.0	67.5	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
67.5	69.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
69.0	70.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 6		BH: 25		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
70.5	72.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
73.5	75.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
75.0	76.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
76.5	78.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
78.0	79.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
79.5	81.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
81.0	82.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
82.5	84.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
84.0	85.5	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
85.5	87.0	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
87.0	88.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
88.5	90.0	12	13	20	6	6	6	6	6	30	15	-2	88	Class 1 (VERY GOOD)
90.0	91.5	12	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
91.5	93.0	12	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 26			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
9.0	10.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
10.5	12.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
12.0	13.5	0	3	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
13.5	15.0	2	3	10	2	1	1	2	1	7	7	-2	35	Class 4 (POOR)
15.0	16.5	0	8	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
16.5	18.0	0	8	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
18.0	19.5	2	8	10	2	1	1	2	1	7	7	-2	43	Class 3 (FAIR)
19.5	21.0	0	8	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
21.0	22.5	0	8	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
22.5	24.0	2	13	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
24.0	25.5	2	13	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
25.5	27.0	2	13	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
27.0	28.5	2	13	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
28.5	30.0	2	17	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
30.0	31.5	2	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
31.5	33.0	2	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
33.0	34.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
34.5	36.0	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
37.5	39.0	4	17	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
39.0	40.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
40.5	42.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
42.0	43.5	4	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
43.5	45.0	4	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
45.0	46.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	4	20	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
48.0	49.5	4	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 26			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
49.5	51.0	4	20	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
51.0	52.5	7	20	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
52.5	54.0	7	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
54.0	55.5	7	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
55.5	57.0	7	20	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
57.0	58.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
58.5	60.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
60.0	61.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
67.5	69.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
69.0	70.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
70.5	72.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
73.5	75.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
75.0	76.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
76.5	78.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
78.0	79.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
79.5	81.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
81.0	82.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH: 26		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
82.5	84.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
84.0	85.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

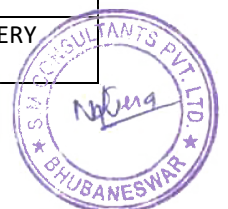
Tunnel: 6			BH: 27		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
9.0	10.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
10.5	12.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
12.0	13.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
13.5	15.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
15.0	16.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
16.5	18.0	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
18.0	19.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
19.5	21.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
21.0	22.5	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
22.5	24.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
24.0	25.5	4	17	10	2	1	1	2	1	7	7	-2	43	Class 3(FAIR)
25.5	27.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)

Tunnel: 6		BH: 27			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
27.0	28.5	4	13	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
28.5	30.0	4	20	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
30.0	31.5	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
31.5	33.0	4	20	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
33.0	34.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
34.5	36.0	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
36.0	37.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
37.5	39.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
39.0	40.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
40.5	42.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
42.0	43.5	7	13	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
43.5	45.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
45.0	46.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
48.0	49.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
49.5	51.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
52.5	54.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
54.0	55.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
57.0	58.5	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
58.5	60.0	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
60.0	61.5	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
63.0	64.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
64.5	66.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
66.0	67.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
67.5	69.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
69.0	70.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 6		BH: 27			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities <small>(combined)</small>	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
70.5	72.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
72.0	73.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
73.5	75.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
75.0	76.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

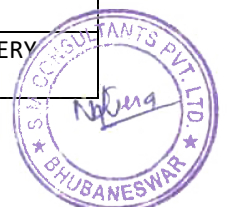
Tunnel: 6			BH: 28		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (Combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)	
7.5	9.0	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)	
9.0	10.5	2	17	10	2	1	1	2	1	7	7	-2	41	Class 3(FAIR)	
10.5	12.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)	
12.0	13.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)	
13.5	15.0	2	3	10	2	1	1	2	1	7	7	-2	27	Class 4 (POOR)	
15.0	16.5	2	3	15	2	2	5	5	5	19	15	-2	52	Class 3(FAIR)	
16.5	18.0	2	3	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)	
18.0	19.5	2	3	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)	
19.5	21.0	2	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)	
21.0	22.5	2	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)	
22.5	24.0	2	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)	
24.0	25.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)	
25.5	27.0	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)	

Tunnel: 6		BH: 28			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
27.0	28.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
28.5	30.0	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
30.0	31.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
31.5	33.0	4	20	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
33.0	34.5	4	20	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
36.0	37.5	4	17	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
37.5	39.0	4	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
39.0	40.5	4	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
40.5	42.0	7	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
42.0	43.5	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
43.5	45.0	7	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
45.0	46.5	7	20	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
46.5	48.0	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
48.0	49.5	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
49.5	51.0	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
51.0	52.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
52.5	54.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
54.0	55.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
57.0	58.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
60.0	61.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)



Tunnel: 6		BH: 28			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
67.5	69.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
69.0	70.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
70.5	72.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
73.5	75.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
75.0	76.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
76.5	78.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
78.0	79.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
79.5	81.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
81.0	82.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
82.5	84.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

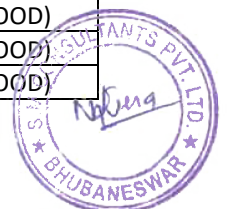
Tunnel: 6		BH:29			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
9.0	10.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
10.5	12.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
12.0	13.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
13.5	15.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
15.0	16.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
16.5	18.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
18.0	19.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
19.5	21.0	2	13	5	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
21.0	22.5	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
22.5	24.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
24.0	25.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
25.5	27.0	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
27.0	28.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
28.5	30.0	4	13	15	2	2	5	5	5	19	15	-2	64	Class 2(GOOD)
30.0	31.5	4	13	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
31.5	33.0	4	17	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
36.0	37.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
37.5	39.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
39.0	40.5	4	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
40.5	42.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
42.0	43.5	7	17	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
43.5	45.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
45.0	46.5	7	13	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
46.5	48.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
48.0	49.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
52.5	54.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)



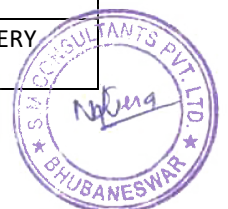
Tunnel: 6		BH:29			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
54.0	55.5	7	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
55.5	57.0	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
57.0	58.5	7	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
58.5	60.0	7	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
60.0	61.5	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
67.5	69.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
69.0	70.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
70.5	72.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
73.5	75.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
75.0	76.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
76.5	78.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
78.0	79.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
79.5	81.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
81.0	82.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
82.5	84.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
84.0	85.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH:29					TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
85.5	87.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH: 30				TOTAL DEPTH:							RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	2	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
7.5	9.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
10.5	12.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
12.0	13.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
13.5	15.0	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
15.0	16.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
16.5	18.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
18.0	19.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
19.5	21.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
21.0	22.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
22.5	24.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
24.0	25.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
25.5	27.0	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
27.0	28.5	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
28.5	30.0	4	8	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
30.0	31.5	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)



Tunnel: 6		BH: 30			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
33.0	34.5	4	8	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
34.5	36.0	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
36.0	37.5	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
37.5	39.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
39.0	40.5	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
40.5	42.0	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
42.0	43.5	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
43.5	45.0	7	8	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
45.0	46.5	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
46.5	48.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2(GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
52.5	54.0	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
54.0	55.5	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
57.0	58.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
60.0	61.5	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
61.5	63.0	7	17	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
63.0	64.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
66.0	67.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
67.5	69.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
69.0	70.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
70.5	72.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)



Tunnel: 6		BH: 30		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
73.5	75.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
75.0	76.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
76.5	78.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
78.0	79.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
79.5	81.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
81.0	82.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 6		BH: 31		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
7.5	9.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
10.5	12.0	2	13	8	1	1	1	2	1	6	7	-2	34	Class 4 (POOR)
12.0	13.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
15.0	16.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
16.5	18.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)

Tunnel: 6		BH: 31			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
18.0	19.5	2	3	10	2	1	1	2	1	7	7	-2	27	Class 4 (POOR)
19.5	21.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
21.0	22.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
22.5	24.0	4	3	10	2	1	1	2	1	7	7	-2	29	Class 4 (POOR)
24.0	25.5	4	3	10	2	1	1	2	1	7	7	-2	29	Class 4 (POOR)
25.5	27.0	4	3	15	2	2	5	5	5	19	15	-2	54	Class 3 (FAIR)
27.0	28.5	4	3	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
28.5	30.0	0	3	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
30.0	31.5	4	3	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
31.5	33.0	4	3	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
33.0	34.5	7	3	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
34.5	36.0	7	3	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
36.0	37.5	7	3	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
37.5	39.0	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
39.0	40.5	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
40.5	42.0	7	3	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
42.0	43.5	7	3	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
43.5	45.0	7	3	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
45.0	46.5	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
46.5	48.0	7	8	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
48.0	49.5	7	8	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
49.5	51.0	7	8	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
51.0	52.5	7	3	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
52.5	54.0	7	8	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
54.0	55.5	7	3	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
55.5	57.0	7	3	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
57.0	58.5	7	3	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
58.5	60.0	7	3	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
60.0	61.5	7	8	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
61.5	63.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
63.0	64.5	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
64.5	66.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 6		BH: 31			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
66.0	67.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
67.5	69.0	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
69.0	70.5	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
70.5	72.0	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
72.0	73.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
73.5	75.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
75.0	76.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
76.5	78.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 6		BH: 32			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
7.5	9.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
10.5	12.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
12.0	13.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)

Tunnel: 6		BH: 32		TOTAL DEPTH:									RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
15.0	16.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
16.5	18.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
18.0	19.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
19.5	21.0	4	3	8	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
21.0	22.5	4	3	8	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
22.5	24.0	4	8	8	1	1	1	2	1	6	7	-2	31	Class 4 (POOR)
24.0	25.5	4	8	5	1	1	1	2	1	6	7	-2	28	Class 4 (POOR)
25.5	27.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
27.0	28.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
28.5	30.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
30.0	31.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
31.5	33.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
33.0	34.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
34.5	36.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3 (FAIR)
36.0	37.5	7	8	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
37.5	39.0	7	8	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
39.0	40.5	7	13	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
40.5	42.0	7	8	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
42.0	43.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
43.5	45.0	7	8	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
45.0	46.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
46.5	48.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
48.0	49.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
49.5	51.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
51.0	52.5	7	13	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
52.5	54.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
54.0	55.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
57.0	58.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
60.0	61.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
61.5	63.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)

Tunnel: 6		BH: 32		TOTAL DEPTH:								RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
63.0	64.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
66.0	67.5	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
67.5	69.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
69.0	70.5	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
70.5	72.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
72.0	73.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 6		BH: 33					TOTAL DEPTH:						RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
7.5	9.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
9.0	10.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
10.5	12.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
12.0	13.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
15.0	16.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)

Tunnel: 6		BH: 33			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
16.5	18.0	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
18.0	19.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
19.5	21.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
21.0	22.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
22.5	24.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3 (FAIR)
24.0	25.5	4	13	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
25.5	27.0	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
27.0	28.5	4	8	15	2	2	5	5	5	19	15	-2	68	Class 2 (GOOD)
28.5	30.0	4	8	15	2	2	5	5	5	19	15	-2	67	Class 2 (GOOD)
30.0	31.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
31.5	33.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
33.0	34.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
34.5	36.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
36.0	37.5	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
37.5	39.0	4	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
39.0	40.5	4	13	15	2	2	5	5	5	19	15	-2	71	Class 2 (GOOD)
40.5	42.0	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
42.0	43.5	7	13	15	2	2	5	5	5	19	15	-2	74	Class 2 (GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	7	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
48.0	49.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
51.0	52.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
52.5	54.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
54.0	55.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
55.5	57.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
57.0	58.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
58.5	60.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
60.0	61.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
61.5	63.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 6			BH: 33			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
63.0	64.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)	
64.5	66.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)	
66.0	67.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)	

Tunnel: 6			BH: 34		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
7.5	9.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
10.5	12.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
12.0	13.5	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
13.5	15.0	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
15.0	16.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
16.5	18.0	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
18.0	19.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
19.5	21.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
21.0	22.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
22.5	24.0	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
24.0	25.5	4	8	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
25.5	27.0	4	8	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
27.0	28.5	4	8	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)

Tunnel: 6		BH: 34			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
28.5	30.0	4	13	15	2	2	5	5	5	19	15	-2	67	Class 2(GOOD)
30.0	31.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
31.5	33.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
33.0	34.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
34.5	36.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
36.0	37.5	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
37.5	39.0	4	8	10	2	1	1	2	1	7	7	-2	34	Class 4 (POOR)
39.0	40.5	4	8	15	2	2	5	5	5	19	15	-2	59	Class 3(FAIR)
40.5	42.0	4	8	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
42.0	43.5	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
43.5	45.0	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
45.0	46.5	4	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
46.5	48.0	4	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
48.0	49.5	4	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
49.5	51.0	7	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
51.0	52.5	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
52.5	54.0	7	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
54.0	55.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
55.5	57.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 6		BH: 35			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)

Tunnel: 6		BH: 35			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
7.5	9.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
10.5	12.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
12.0	13.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
13.5	15.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
15.0	16.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
16.5	18.0	2	8	5	1	1	1	2	1	6	7	-2	26	Class 4 (POOR)
18.0	19.5	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
19.5	21.0	2	8	10	2	1	1	2	1	7	7	-2	32	Class 4 (POOR)
21.0	22.5	2	13	15	2	2	5	5	5	19	15	-2	62	Class 2(GOOD)
22.5	24.0	4	13	15	2	2	5	5	5	19	15	-2	71	Class 2(GOOD)
24.0	25.5	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
25.5	27.0	4	13	15	2	2	5	5	5	19	15	-2	68	Class 2(GOOD)
27.0	28.5	4	13	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
28.5	30.0	4	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
30.0	31.5	4	13	20	6	6	6	6	6	30	15	-2	95	Class 1 (VERY GOOD)
31.5	33.0	4	13	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
33.0	34.5	4	17	20	6	6	6	6	6	30	15	-2	92	Class 1 (VERY GOOD)
34.5	36.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
36.0	37.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
37.5	39.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
39.0	40.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
40.5	42.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)



Tunnel:			BH:36		TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	4	-2	11	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
7.5	9.0	2	3	5	1	1	1	2	1	6	7	-2	21	Class 4 (POOR)
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
10.5	12.0	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
12.0	13.5	2	8	8	1	1	1	2	1	6	7	-2	29	Class 4 (POOR)
13.5	15.0	2	13	10	2	1	1	2	1	7	7	-2	37	Class 4 (POOR)
15.0	16.5	4	13	10	2	1	1	2	1	7	7	-2	39	Class 4 (POOR)
16.5	18.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
18.0	19.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
19.5	21.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
21.0	22.5	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
22.5	24.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)

6.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-04)

Test Section	9.0 m- 12.0 m	radius in cm=	3. 8					Intake (Lit.)								
									Flow Condition	Lugeon	K cm/sec	Q cm ³ /sec	Avg.	3 (15 min)	2 (10 min)	1 (5 min)
						</										

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-05)

Test Section		19.5 m- 22.5 m	radius in cm=	3. 8				Intake (Lit.)								
																Flow Condition

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-06)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-07)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-08)

Test Section	25.5 m-28.5 m		radius in cm=		3.8				Intake (Lit.)							
	</															

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-09)

Test Section			42.0 m-45.0 m		radius in cm=		3.8			Intake (Lit.)							
														Flow Condition			
														Lugeon			
														K cm/sec			
														Q (cm3/sec)			
														Avg.			
														3 (15 min)			
														2 (10 min)			
														1 (5 min)			
														Differential Head of Water H=(Hg+Hp) cm.			
														Hp (Pressure at monometer) kg/cm2			
														Hg in m.			
														GWL of hole m			
														Hight Of water Swivel from GL			
														L=Test Section in cm.			
														L=Test Section in m.			
														Lower Part of Test Section (m)			
														Upper Part of Test Section (m)			
42.00	45.00	3	300	2.48	8.3	10.78	1	2078	4.50	5.20	7.40	6.3	21.0	0.00002342	2.30	Turbulent	
42.00	45.00	3	300	2.48	8.3	10.78	2	3078	6.10	7.10	8.50	7.8	26.0	0.00001958	2.00		
42.00	45.00	3	300	2.48	8.3	10.78	3	4078	7.90	8.50	8.90	8.7	29.0	0.00001648	1.60		
42.00	45.00	3	300	2.48	8.3	10.78	2	3078	6.10	6.50	7.90	7.2	24.0	0.00001807	1.80		
42.00	45.00	3	300	2.48	8.3	10.78	1	2078	5.80	6.30	6.60	6.5	21.7	0.00002417	2.40		
													Avr.	0.00002035	1.60		

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-10)

Test Section	46.5 m-49.5 m	radius in cm=	3.8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
46.50	49.50	3	300	2.55	6.4	8.95	1	1895	0.70	2.80	3.20	3.0	10.0	0.00001223	1.20	Laminar
46.50	49.50	3	300	2.55	6.4	8.95	2	2895	2.10	4.40	4.90	4.7	15.7	0.00001254	1.30	
46.50	49.50	3	300	2.55	6.4	8.95	3	3895	2.30	5.30	6.30	5.8	19.3	0.00001151	1.20	
46.50	49.50	3	300	2.55	6.4	8.95	2	2895	1.90	4.00	4.80	4.4	14.7	0.00001174	1.20	
46.50	49.50	3	300	2.55	6.4	8.95	1	1895	0.90	3.10	2.80	3.0	10.0	0.00001223	1.20	
													Avr .	0.00001205	1.20	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-11)

Test Section	49.5 m-52.5 m		radius in cm=		3 . 8			Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.							
49.50	52.50	3	300	2.53	9.2	11.73	1	2173	7.20	9.60	10.60	10.1	33.7	0.00003591	3.60
49.50	52.50	3	300	2.53	9.2	11.73	2	3173	10.50	13.80	19.40	16.6	55.3	0.00004042	4.00
49.50	52.50	3	300	2.53	9.2	11.73	3	4173	18.90	22.40	26.30	24.4	81.3	0.00004518	4.50
49.50	52.50	3	300	2.53	9.2	11.73	2	3173	11.50	14.50	20.40	17.4	58.0	0.00004237	4.20
49.50	52.50	3	300	2.53	9.2	11.73	1	2173	8.80	10.20	11.10	10.7	35.7	0.00003804	3.80
												Avr .	0.00004038	3.60	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-12)

Test Section	48.0 m-51.0 m	radius in cm=	3.8					Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)							Hg in m.								
							Differential Head of Water H=(Hg+Hp) cm.								
							Hp (Pressure at monometer) kg/cm ²								
							GWL of hole m								
							Hight Of water Swivel from GL								
							L=Test Section in cm.								
							L=Test Section in m.								
							Lower Part of Test Section (m)								
							Upper Part of Test Section (m)								
48.00	51.00	3	300	2.49	13.8	16.29	1	2629	7.30	8.80	9.40	9.1	30.3	0.00002674	2.70
48.00	51.00	3	300	2.49	13.8	16.29	2	3629	8.80	11.10	11.90	11.5	38.3	0.00002448	2.40
48.00	51.00	3	300	2.49	13.8	16.29	3	4629	8.50	10.50	12.30	11.4	38.0	0.00001903	1.90
48.00	51.00	3	300	2.49	13.8	16.29	2	3629	10.60	12.90	8.80	10.9	36.3	0.00002321	2.30
48.00	51.00	3	300	2.49	13.8	16.29	1	2629	7.80	9.50	8.40	9.0	30.0	0.00002645	2.60
												Avr.	0.00002398	1.90	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-13)

Test Section	52.5 m-55.5 m	radius in cm=	3 . 8					Intake (Lit.)							
								1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.							
52.50	55.50	3	300	2.48	7.2	9.68	1	1968	5.50	6.20	6.90	6.6	22.0	0.00002591	2.60
52.50	55.50	3	300	2.48	7.2	9.68	2	2968	7.40	8.10	9.30	8.7	29.0	0.00002265	2.30
52.50	55.50	3	300	2.48	7.2	9.68	3	3968	9.60	10.50	10.00	10.3	34.3	0.00002006	2.00
52.50	55.50	3	300	2.48	7.2	9.68	2	2968	6.80	7.50	8.90	8.2	27.3	0.00002135	2.10
52.50	55.50	3	300	2.48	7.2	9.68	1	1968	5.90	6.50	7.50	7.0	23.3	0.00002748	2.70
												Avr .	0.00002349	2.00	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-14)

Test Section	58.5 m-61.5 m	radius in cm=	3.8				Intake (Lit.)	Flow Condition				Q cm ³ /sec	K cm/sec	Lugeon	
								1	2	3	Avg.				
Upper Part of Test Section (m)	61.50	3	300	2.54	14.4	16.94	2694	6.60	7.50	8.30	7.9	26.3	0.00002266	2.30	Turbulent
Lower Part of Test Section (m)	61.50	3	300	2.54	14.4	16.94	3694	7.20	8.50	9.50	9.0	30.0	0.00001882	1.90	
	61.50	3	300	2.54	14.4	16.94	4694	8.10	9.90	10.50	10.2	34.0	0.00001679	1.70	
	61.50	3	300	2.54	14.4	16.94	3694	6.50	8.10	8.90	8.5	28.3	0.00001778	1.80	
	61.50	3	300	2.54	14.4	16.94	2694	4.80	6.90	7.80	7.4	24.7	0.00002122	2.10	
												Avr.	0.00001945	1.70	



PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-15)

Test Section	64.5 m- 67.5 m	radius in cm=	3. 8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
64.50	67.50	3	300	2.47	3.9	6.37	1	1637	1.90	2.60	2.20	2.4	8.0	0.0000 1133	1.10	Lami nar
64.50	67.50	3	300	2.47	3.9	6.37	2	2637	2.60	3.20	5.10	4.2	14.0	0.0000 1231	1.20	
64.50	67.50	3	300	2.47	3.9	6.37	3	3637	4.20	4.90	5.20	5.1	17.0	0.0000 1083	1.10	
64.50	67.50	3	300	2.47	3.9	6.37	2	2637	3.50	4.10	3.90	4.0	13.3	0.0000 1172	1.20	
64.50	67.50	3	300	2.47	3.9	6.37	1	1637	3.60	2.10	2.50	2.3	7.7	0.0000 1086	1.10	
													Avr .	0.0000 1141	1.10	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-16)

Test Section			67.5 m-70.5 m		radius in cm=		3.8					Intake (Lit.)							
													Q K cm/sec		Lugeon		Flow Condition		
					Hight Of water Swivel from GL		GWL of hole m		Hg in m.		Hp (Pressure at monometer) kg/cm2		Differential Head of Water H=(Hg+Hp) cm.		1 2 3 Avg.				
			L=Test Section in m.		L=Test Section in cm.														
			Lower Part of Test Section (m)																
			Upper Part of Test Section (m)																
67.50			70.50	3	300	2.48	7.25	9.73	1	1973	3.10	3.60	2.80	3.2	10.7	0.00001253	1.30	Lami nar	
67.50			70.50	3	300	2.48	7.25	9.73	2	2973	4.20	4.60	5.50	5.1	17.0	0.00001325	1.30		
67.50			70.50	3	300	2.48	7.25	9.73	3	3973	5.50	6.30	6.80	6.6	22.0	0.00001283	1.30		
67.50			70.50	3	300	2.48	7.25	9.73	2	2973	3.60	4.20	4.50	4.4	14.7	0.00001143	1.10		
67.50			70.50	3	300	2.48	7.25	9.73	1	1973	2.80	3.30	3.50	3.4	11.3	0.00001331	1.30		
														Avr .	0.00001267	1.30			

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-17)

Test Section	72.0 m-75.0 m	radius in cm=	3.8					Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-18)

Test Section	78.0 m-81.0 m	radius in cm=	3.8						Intake (Lit.)							
											</					

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-19)

Test Section	85.5 m-88.5 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
85.50	88.50	3	300	2.51	4.5	7.01	1	1701	1.60	2.20	2.80	2.5	8.3	0.00001136	1.10	Laminar
85.50	88.50	3	300	2.51	4.5	7.01	2	2701	3.40	4.00	4.50	4.3	14.3	0.00001230	1.20	
85.50	88.50	3	300	2.51	4.5	7.01	3	3701	4.00	4.40	5.80	5.1	17.0	0.00001065	1.10	
85.50	88.50	3	300	2.51	4.5	7.01	2	2701	3.30	3.50	4.10	3.8	12.7	0.00001087	1.10	
85.50	88.50	3	300	2.51	4.5	7.01	1	1701	1.80	2.10	3.20	2.7	9.0	0.00001226	1.20	
													Avr.	0.00001149	1.10	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-20)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-21)

Test Section	88.5 m- 91.5 m	radius in cm=	3. 8						Intake (Lit.)							
								</								

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-22)

Test Section	103.5 m- 106.5 m	radius in cm=	3. 8			Intake (Lit.)										

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-23)

Test Section	97.5 m-100.5 m	radius in cm=	3.8						Intake (Lit.)							
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
97.50	100.50	3	300	2.47	13.95	16.42	1	2642	4.90	5.10	4.50	4.8	16.0	0.0000 1404	1.40	Lami nar
97.50	100.50	3	300	2.47	13.95	16.42	2	3642	6.80	6.20	7.00	6.6	22.0	0.0000 1400	1.40	
97.50	100.50	3	300	2.47	13.95	16.42	3	4642	7.20	8.50	9.20	8.9	29.7	0.0000 1481	1.50	
97.50	100.50	3	300	2.47	13.95	16.42	2	3642	6.40	7.00	7.40	7.2	24.0	0.0000 1527	1.50	
97.50	100.50	3	300	2.47	13.95	16.42	1	2642	3.90	4.20	5.50	4.9	16.3	0.0000 1433	1.40	
													Avr.	0.0000 1449	1.40	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-24)

Test Section	87.0 m-90.0 m		radius in cm=		3 . 8				Intake (Lit.)							
												</				

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-25)

Test Section	76.5 m-79.5 m	radius in cm=	3.8			Intake (Lit.)							
						1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.						
76.50	79.50	3	300	2.51	11.4	13.91	2391	8.60	10.70	9.7	32.3	0.00003134	3.10
76.50	79.50	3	300	2.51	11.4	13.91	3391	14.20	15.80	15.0	50.0	0.00003418	3.40
76.50	79.50	3	300	2.51	11.4	13.91	4391	19.50	21.50	20.5	68.3	0.00003607	3.60
76.50	79.50	3	300	2.51	11.4	13.91	3391	14.90	16.20	15.6	52.0	0.00003554	3.60
76.50	79.50	3	300	2.51	11.4	13.91	2391	9.90	11.30	10.6	35.3	0.00003425	3.40
										Avr.	0.00003428	3.00	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-26)

Test Section	70.5 m-73.5 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
70.50	73.50	3	300	2.53	9.2	11.73	1	2173	2.10	2.90	3.50	3.2	10.7	0.00001138	1.10	Laminar
70.50	73.50	3	300	2.53	9.2	11.73	2	3173	3.30	3.80	5.30	4.6	15.3	0.00001120	1.10	
70.50	73.50	3	300	2.53	9.2	11.73	3	4173	4.20	4.90	5.80	5.4	18.0	0.00001000	1.00	
70.50	73.50	3	300	2.53	9.2	11.73	2	3173	3.80	4.20	4.60	4.4	14.7	0.00001071	1.10	
70.50	73.50	3	300	2.53	9.2	11.73	1	2173	2.50	3.10	3.30	3.2	10.7	0.00001138	1.10	
													Avr .	0.00001093	1.10	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-27)

Test Section	87.0 m-90.0 m	radius in cm=	3.8					Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)							Hg in m.								
							Differential Head of Water H=(Hg+Hp) cm.								
							Hp (Pressure at monometer) kg/cm ²								
							GWL of hole m								
							Hight Of water Swivel from GL								
							L=Test Section in cm.								
							L=Test Section in m.								
							Lower Part of Test Section (m)								
							Upper Part of Test Section (m)								
66.00	69.00	3	300	2.49	12.3	14.79	1	2479	7.90	9.60	10.30	10.0	33.3	0.00003117	3.10
66.00	69.00	3	300	2.49	12.3	14.79	2	3479	8.60	10.90	13.50	12.2	40.7	0.00002709	2.70
66.00	69.00	3	300	2.49	12.3	14.79	3	4479	11.20	13.50	15.90	14.7	49.0	0.00002536	2.50
66.00	69.00	3	300	2.49	12.3	14.79	2	3479	9.20	11.10	14.10	12.6	42.0	0.00002798	2.80
66.00	69.00	3	300	2.49	12.3	14.79	1	2479	8.50	10.50	11.00	10.8	36.0	0.00003366	3.40
												Avr.	0.00002905	2.50	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-28)

Test Section	87.0 m-90.0 m	radius in cm=	3.8					Intake (Lit.)								
									</							

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-29)

Test Section	72.0 m-75.0 m		radius in cm=		3.8				Intake (Lit.)							

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-30)

Test Section	67.5 m-70.5 m	radius in cm=	3.8						Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-31)

Test Section	61.5 m- 64.5 m	radius in cm=	3. 8						Intake (Lit.)							
					</											

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-32)

Test Section	58.5 m-61.5 m	radius in cm=	3.8						Intake (Lit.)							
							</									

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-33)

Test Section	52.0 m-55.0 m	radius in cm=	3.8			Intake (Lit.)										
						1	2	3	Avg.	Q <i>(cm3/sec)</i>	K cm/sec	Lugeon	Flow Condition			
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1	2	3	Avg.	Q <i>(cm3/sec)</i>	K cm/sec	Lugeon	Flow Condition
52.00	55.00	3	300	2.51	13.4	15.91	1	2591	1.80	4.80	7.50	6.2	20.7	0.00001849	1.80	Turbulent
52.00	55.00	3	300	2.51	13.4	15.91	2	3591	2.70	6.20	8.90	7.6	25.3	0.00001635	1.60	
52.00	55.00	3	300	2.51	13.4	15.91	3	4591	3.30	5.50	9.60	7.6	25.3	0.00001279	1.30	
52.00	55.00	3	300	2.51	13.4	15.91	2	3591	4.10	6.90	10.40	8.7	29.0	0.00001872	1.90	
52.00	55.00	3	300	2.51	13.4	15.91	1	2591	2.20	5.20	8.80	7.0	23.3	0.00002087	2.10	
													Avr.	0.00001744	1.30	

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-34)

Test Section	42.0 m-45.0 m	radius in cm=	3.8					Intake (Lit.)								
												</				

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-35)

Test Section	27.0 m-30.0 m		radius in cm=		3.8				Intake (Lit.)									
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition		
	27.00	30.00	3	2.42	15.95	18.37	1	2837	8.20	9.10	11.10	10.1	33.7	0.00002751	2.80	Turbulent		
	27.00	30.00	3	2.42	15.95	18.37	2	3837	9.10	10.80	12.40	11.6	38.7	0.00002336	2.30			
	27.00	30.00	3	2.42	15.95	18.37	3	4837	10.50	11.90	13.50	12.7	42.3	0.00002029	2.00			
	27.00	30.00	3	2.42	15.95	18.37	2	3837	8.60	9.50	11.80	10.7	35.7	0.00002155	2.20			
	27.00	30.00	3	2.42	15.95	18.37	1	2837	7.40	8.30	9.60	9.0	30.0	0.00002451	2.50			
													Avr .	0.00002344	2.00			

PERMEABILITY TEST RESULT OF TUNNEL-06 (BH-36)

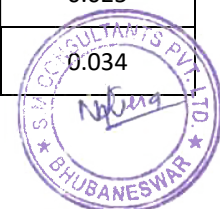
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Lugen test result

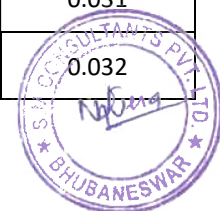


6.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

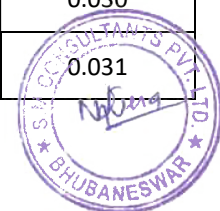
CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.6	BH-1	At 1.5 m depth	6.13	15.62	0.021
2			At 3.0 m depth	6.24	16.58	0.023
3			At 4.5 m depth	6.31	18.62	0.021
4			At 6.0 m depth	6.26	19.24	0.025
5			At 7.5 m depth	6.35	20.01	0.029
6		BH-2	At 0.5 m depth	6.28	17.02	0.025
7			At 1.5 m depth	6.35	18.36	0.024
8			At 3.0 m depth	6.28	20.01	0.026
9			At 4.5 m depth	6.34	21.13	0.025
10			At 6.0 m depth	6.31	22.47	0.021
11		BH-3	At 0.5 m depth	6.47	19.24	0.029
12			At 1.5 m depth	6.25	20.02	0.027
13			At 4.5 m depth	6.31	22.58	0.029
14			At 6.0 m depth	6.38	23.47	0.025
15			At 7.5 m depth	6.42	24.01	0.024
16			At 9.0 m depth	6.45	25.36	0.026
17		BH-4	At 0.5 m depth	6.38	21.32	0.031
18			At 1.5 m depth	6.69	22.35	0.035
19			At 4.5 m depth	6.71	24.36	0.031
20			At 6.0 m depth	6.75	24.58	0.029
21			At 7.5 m depth	6.78	25.62	0.027
22			At 9.0 m depth	6.81	26.31	0.025
23		BH-5	At 0.5 m depth	6.71	23.14	0.034



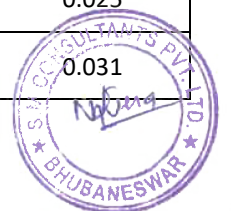
CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
24			At 1.5 m depth	6.75	24.58	0.03
25			At 0.5 m depth	6.54	25.61	0.028
26			At 1.5 m depth	6.52	26.47	0.025
27			At 3.0 m depth	6.54	27.13	0.027
28			At 4.5 m depth	6.58	28.25	0.029
29			At 6.0 m depth	6.61	29.32	0.031
30		BH-7	At 0.5 m depth	6.64	27.88	0.026
31			At 3.0 m depth	6.53	29.52	0.024
32			At 4.5 m depth	6.62	30.01	0.025
33			At 6.0 m depth	6.67	29.18	0.021
34		BH-8	At 0.5 m depth	6.68	30.11	0.022
35			At 3.0 m depth	6.61	32.58	0.021
36			At 4.5 m depth	6.65	33.24	0.025
37		BH-9	At 0.5 m depth	6.65	26.57	0.023
38			At 1.5 m depth	6.72	27.41	0.027
39			At 3.0 m depth	6.81	28.95	0.024
40			At 4.5 m depth	6.87	29.64	0.025
41		BH-10	At 7.5 m depth	6.75	28.11	0.029
42		BH-11	At 0.5 m depth	6.78	29.03	0.031
43			At 1.5 m depth	6.82	30.01	0.033
44		BH-12	At 0.5 m depth	6.89	25.62	0.035
45			At 1.5 m depth	6.92	24.41	0.034
46			At 3.0 m depth	6.85	25.62	0.031
47			At 4.5 m depth	6.81	26.31	0.032



CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
48		BH-13	At 0.5 m depth	6.74	23.87	0.031
49			At 1.5 m depth	6.69	26.52	0.028
50			At 3.0 m depth	6.71	27.11	0.027
51			At 4.5 m depth	6.74	27.89	0.022
52			At 6.0 m depth	6.75	28.26	0.025
53		BH-14	At 0.5 m depth	6.45	27.15	0.026
54			At 1.5 m depth	6.41	28.11	0.025
55			At 3.0 m depth	6.54	29.32	0.026
56			At 4.5 m depth	6.52	28.36	0.021
57		BH-15	At 0.5 m depth	6.38	29.32	0.021
58			At 1.5 m depth	6.25	30.02	0.034
59		BH-16	At 0.5 m depth	6.11	31.01	0.029
60			At 1.5 m depth	6.13	29.65	0.028
61		BH-17	At 0.5 m depth	6.26	28.74	0.024
62		BH-18	At 0.5 m depth	6.24	28.62	0.025
63		BH-19	At 0.5 m depth	6.35	27.32	0.022
64		BH-20	At 6.0 m depth	6.45	26.34	0.023
65			At 7.5 m depth	6.48	28.63	0.025
66			At 9.0 m depth	6.49	30.12	0.022
67			At 10.5 m depth	6.52	27.13	0.025
68			At 12.0 m depth	6.54	31.11	0.024
69		BH-21	At 9.0 m depth	6.71	35.41	0.026
70			At 10.5 m depth	6.35	34.02	0.030
71			At 12.0 m depth	6.31	33.65	0.031



CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
72			At 13.5 m depth	6.54	34.21	0.029
73			At 15.0 m depth	6.52	32.05	0.027
74			At 16.5 m depth	6.61	30.46	0.025
75		BH-22	At 9.0 m depth	6.42	31.06	0.032
76			At 10.5 m depth	6.48	29.65	0.031
77		BH-23	At 6.0 m depth	6.62	28.64	0.025
78			At 7.5 m depth	6.69	27.62	0.026
79			At 9.0 m depth	6.57	27.12	0.035
80			At 24.0 m depth	6.61	28.65	0.032
81			At 25.5 m depth	6.63	29.32	0.031
82			At 27.0 m depth	6.54	30.01	0.029
83		BH-24	At 0.5 m depth	6.58	25.63	0.027
84		BH-26	At 1.0 m depth	6.65	26.87	0.030
85			At 4.5 m depth	6.61	24.89	0.021
86			At 6.0 m depth	6.57	23.47	0.028
87		BH-27	At 0.5 m depth	6.54	21.21	0.021
88			At 1.5 m depth	6.45	22.47	0.023
89			At 3.0 m depth	6.4	23.57	0.025
90			At 4.5 m depth	6.32	25.63	0.024
91		BH-28	At 0.5 m depth	6.25	26.47	0.030
92			At 1.5 m depth	6.20	27.41	0.025
93			At 3.0 m depth	6.13	16.32	0.029
94		BH-29	At 0.5 m depth	6.25	17.58	0.025
95			At 1.5 m depth	6.24	18.62	0.031

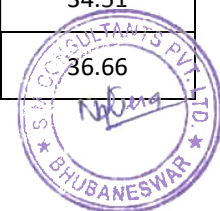


CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
96			At 3.0 m depth	6.32	19.65	0.025
97			At 4.5 m depth	6.38	20.01	0.021
98		BH-30	At 0.5 m depth	6.42	21.35	0.023
99		BH-32	At 3.0 m depth	6.65	24.38	0.025
100			At 4.5 m depth	6.72	32.2	0.024
101		BH-33	At 0.5 m depth	6.74	30.01	0.038
102			At 1.5 m depth	6.7	29.98	0.036
103			At 3.0 m depth	6.39	26.87	0.034
104			At 4.5 m depth	6.42	25.42	0.030
105		BH-34	At 0.5 m depth	6.78	27.32	0.029
106			At 1.5 m depth	6.82	28.92	0.028
107			At 3.0 m depth	6.85	31.24	0.025
108		BH-35	At 0.5 m depth	6.82	29.85	0.027
109			At 6.0 m depth	6.90	32.57	0.026
110			At 7.5 m depth	6.87	33.54	0.024

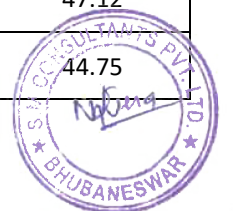
6.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.6	BH-1	12.0	6.61	54.14	14.26
2			15.0	6.65	52.36	16.58
3		BH-2	9.0	6.68	35.36	20.03
4			13.5	6.70	37.18	25.24
5		BH-3	16.5	6.65	30.12	22.47
6			19.5	6.58	34.25	25.63
7		BH-4	10.5	6.52	35.68	30.02
8			13.5	6.54	42.01	31.25
9		BH-5	7.5	6.69	43.56	35.48
10			12.0	6.71	40.13	34.62
11		BH-6	7.5	6.73	45.68	40.01
12			10.5	6.78	50.01	36.55
13		BH-7	13.5	6.82	52.47	42.25
14			18.0	6.85	55.36	41.33
15		BH-8	4.5	6.84	42.36	32.22
16			10.5	6.89	45.69	34.57
17		BH-9	9.0	6.92	48.74	34.57
18			13.5	6.95	51.32	33.21
19		BH-10	7.5	6.98	53.47	38.87
20			15.0	7.00	55.68	26.54
21		BH-11	10.5	7.12	59.62	42.22
22			18.0	7.15	62.14	40.12
23		BH-12	15.0	6.80	42.15	33.56

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
24		BH-13	21.0	6.92	45.36	36.15
25			7.5	6.88	48.62	38.74
26			12.0	6.65	45.69	35.36
27		BH-14	16.5	6.72	56.90	42.00
28			21.0	6.75	67.12	43.21
29		BH-15	4.5	6.78	65.44	46.55
30			9.0	6.92	60.14	48.74
31		BH-16	7.5	6.95	62.33	45.02
32			13.5	6.87	51.22	34.78
33		BH-17	7.5	6.83	53.55	45.36
34			15.0	6.86	37.10	28.44
35		BH-18	6.0	6.57	32.55	27.56
36			10.5	6.71	35.66	27.55
37		BH-19	6.0	6.70	37.22	25.55
38			12.0	6.82	42.21	31.45
39		BH-20	10.5	6.8	40.07	34.44
40			18.0	6.88	42.22	34.51
41		BH-21	10.5	6.92	48.77	36.66
42			15.0	6.86	34.55	27.85
43		BH-22	10.5	6.95	36.22	24.66
44			16.0	7.04	41.20	35.65
45		BH-23	15.0	7.06	42.23	36.55
46			19.5	6.88	42.22	34.51
47		BH-24	10.5	6.92	48.77	36.66



CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
48		BH-25	15.0	6.86	34.55	27.85
49			12.0	6.95	36.22	24.66
50			18.0	6.90	38.56	28.96
51		BH-26	12.0	6.92	40.22	27.66
52			18.0	7.02	28.78	18.55
53		BH-27	13.5	7.04	26.44	17.20
54			19.5	6.90	49.85	33.02
55		BH-28	4.5	6.93	46.55	34.56
56			10.5	7.05	44.21	31.20
57		BH-29	19.5	7.03	38.89	28.96
58			27.0	6.90	40.01	32.22
59		BH-30	19.5	6.88	42.33	34.87
60			25.5	6.82	45.31	35.06
61		BH-31	15.0	6.76	42.14	38.69
62			19.5	6.79	53.22	28.85
63		BH-32	18.0	6.76	45.99	31.55
64			25.5	6.78	42.87	34.62
65		BH-33	16.5	6.80	42.80	31.22
66			22.5	6.83	44.57	36.26
67		BH-34	15.0	6.95	48.64	34.15
68			19.5	6.78	57.21	48.55
69		BH-35	18.0	6.81	46.44	32.66
70			24.0	6.92	58.78	47.12
71		BH-36	16.5	6.98	62.35	44.75




CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
72			21.0	7.02	57.92	45.67

6.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
SL. No		Samples		Type of sample collection		Grain size analysis		Hydrometer analysis		Atterberg's Limits		Field Moisture Content in %		Bulk density in g/cc		Dry density in g/cc		Cohesion (c) Kgf/cm ²		Angle of shearing		Specific gravity		Void ratio		Free swelling Index In %		Un-Confined Compression test		Compression Index (Cc)		Field S.P.T. Value (N)		Group of soil.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-01)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
7	At 10.5	SPT	0.00	0.00	1.73	89.72	8.55																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %												
NOTE* From 6.0 m to 10.52 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-02)																								
			1	2	3	4	5	8																
			At 0.5 m	At 1.5 m	At 3.0 m	At 4.5 m	At 6.0 m	At 10.5																
			DS	UDS	SPT	SPT	SPT	SPT																
			22.93	1.24	0.00	0.00	0.00	0.00																
			7.40	1.79	0.00	0.00	0.00	0.00																
			5.44	18.56	16.88	4.39	4.72	4.39																
			15.10	34.26	34.09	83.60	81.56	83.60																
			33.03	29.35	32.93	12.01	13.72	12.01																
			16.10	14.80	16.10																			
			30	28	32	---	---	---																
			18	17	18	---	---	---																
			12	11	14	---	---	---																
			---	10	---	---	---	---																
			---	14.42	---	---	---	---																
			---	1.870	---	---	---	---																
			---	1.634	---	---	---	---																
			---	0.34	---	---	---	---																
			---	14	---	---	---	---																
			2.69	2.68	2.70	2.65	2.64	2.71																
			---	0.64	---	---	---	---																
			12	10	15	---	---	---																
			---	0.66	---	---	---	---																
			---	0.111	---	---	---	---																
			---	---	N=89	N>100	N>100	N>100																
			SC	SC	SC	NOTE*																		
NOTE* From 4.5 m to 6.07 m and 10.5 m to 10.53 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected only washed out samples have been collected.																								
			1	2																				
			At 0.5 m	At 1.5 m																				
			DS	SPT																				
			22.93	43.58																				
			7.40	0.00																				
			5.44	2.52																				
			15.10	27.48																				
			33.03	26.42																				
			16.10																					
			30	---																				
			18	---																				
			12	---																				
			---	---																				
			---	---																				
			2.69	2.70																				
			---	---																				
			12	---																				
			---	---																				
			---	---																				
			---	N>100																				
			SC	SC																				

MS CONSULTANTS PVT. LTD.
BHUBANESWAR



TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498													
SL. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %	
3	At 3.0 m	UDS	1.89	1.73	18.26	34.69	29.07	14.36	32	20	12	10	SC
4	At 4.5 m	SPT	0.00	0.00	6.32	86.32	7.36	---	---	---	---	---	NOTE* N>100
5	At 6.0 m	SPT	0.00	0.00	7.39	81.32	11.29	---	---	---	---	---	
NOTE* From 4.5 m to 6.02 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.													
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-08)													
1	At 0.5 m	DS	0.00	0.00	14.56	80.36	5.08	---	18	---	NP	---	SP
3	At 3.0 m	SPT	0.00	0.00	4.78	82.36	12.86	---	---	---	---	---	NOTE* N>100
4	At 4.5 m	SPT	0.00	0.00	4.73	85.63	9.64	---	---	---	---	---	
NOTE* From 3.0 m to 4.52 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.													
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-09)													
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	---	19	---	NP	---	SP
2	At 1.5 m	SPT	0.00	0.14	39.57	56.59	3.70	---	---	---	---	---	NOTE* N>100
3	At 3.0 m	SPT	0.00	0.00	36.36	61.97	1.67	---	---	---	---	---	

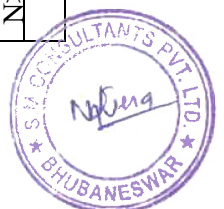
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																										
4	SL.No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.	
	At 4.5 m	SPT	0.00	Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %	---	---	---	---	---	2.71	---	---	---	---	N>100		
	NOTE* From 1.5 m to 4.52 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																									
	LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-10)																									
	1	At 7.5 m	SPT	0.00	0.00	5.36	81.73	12.91	---	---	---	---	---	---	---	---	---	---	2.64	---	---	---	---	N>100		NOTE*
	NOTE* From 7.5 m to 7.51 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																									
	LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-11)																									
	7	At 9.0 m	SPT	0.00	0.00	0.56	83.90	15.54	---	---	---	---	---	---	---	---	---	---	2.71	---	---	---	---	N>100		NOTE* GC
	6	At 7.5 m	SPT	0.00	0.50	12.56	76.00	10.94	---	---	---	---	---	---	---	---	---	---	2.72	---	---	---	---	N>100		
	5	At 6.0 m	SPT	0.00	0.04	4.99	84.22	10.75	---	---	---	---	---	---	---	---	---	---	2.72	---	---	---	---	N>100		
4	At 4.5 m	SPT	19.71	0.28	10.43	62.25	7.33	---	---	---	---	---	---	---	---	---	---	2.71	---	---	---	---	N>100			
3	At 3.0 m	SPT	1.38	0.16	8.44	53.43	36.59	---	---	---	---	---	---	---	---	---	---	2.71	---	---	---	---	N>100			
2	At 1.5 m	SPT	49.65	10.88	7.75	11.86	19.86	---	---	---	---	---	---	---	---	---	---	2.71	---	---	---	---	N>100			
1	At 0.5 m	DS	42.47	10.73	9.13	14.69	22.98	26	16	10	---	---	---	---	---	---	---	2.69	8	---	---	---	---			

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																									
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.	
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %													
NOTE* From 1.5 m to 9.03 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																									
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-12)																									
	1	At 0.5 m	DS	15.36	8.36	7.23	14.96	38.73	15.36	30	18	12	---	---	---	---	---	---	2.69	---	12	---	---	---	SC
	2	At 1.5 m	SPT	0.00	0.00	4.79	82.36	12.85	---	---	---	---	---	---	---	---	---	---	2.64	---	---	---	N>100	---	NOTE*
	3	At 3.0 m	SPT	0.00	0.00	5.24	87.36	7.40	---	---	---	---	---	---	---	---	---	---	2.65	---	---	---	N>100	---	
	4	At 4.5 m	SPT	0.00	0.00	6.32	89.63	4.05	---	---	---	---	---	---	---	---	---	---	2.65	---	---	---	N>100	---	
NOTE* From 1.5 m to 4.62 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																									
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-13)																									
	1	At 0.5 m	DS	37.69	6.14	17.34	10.56	17.37	10.90	28	20	8	---	---	---	---	---	---	2.69	---	10	---	---	---	GC
	2	At 1.5 m	SPT	35.52	4.36	15.47	13.35	19.80	11.50	29	20	9	---	---	---	---	---	---	2.70	---	9	---	N=54	---	NOTE*
	3	At 3.0 m	SPT	0.00	0.00	5.36	81.36	13.28	---	---	---	---	---	---	---	---	---	---	2.65	---	---	---	N>100	---	
	4	At 4.5 m	SPT	0.00	0.00	5.73	86.39	7.88	---	---	---	---	---	---	---	---	---	---	2.64	---	---	---	N>100	---	
	5	At 6.0 m	SPT	0.00	0.00	4.39	82.17	13.44	---	---	---	---	---	---	---	---	---	---	2.65	---	---	---	N>100	---	

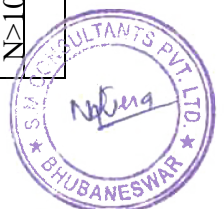
TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl.No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %												
NOTE* From 3.0 m to 6.5 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-14)																								
			4	3	2																			
	At 4.5 m	SPT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		DS	17.63	8.36	6.32	14.74	37.56	15.39	31	19	12	---	---	---	---	---	---	---	---	---	---	---	---	
			0.00	0.00	5.39	87.39	7.22	12.27	13.36	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %												
NOTE* From 1.5 m to 1.9 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-17)																								
1	At 0.5 m	DS	8.56	9.54	12.39	22.46	30.95	16.10	29	16	13	----	----	----	----	----	----	2.68	----	11	----	----	----	SC
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-18)																								
1	At 0.5 m	DS	7.56	8.47	12.56	25.32	29.99	16.10	31	19	12	----	----	----	----	----	----	2.69	----	12	----	----	----	SC
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-19)																								
1	At 0.5 m	DS	8.45	7.40	12.36	28.43	27.26	16.10	29	17	12	----	----	----	----	----	----	2.69	----	11	----	----	----	SC
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-20)																								
3	From 3.0 m to	CORE	ROCK STRATA, CORE RECOVERY=28.67%, R.Q.D=9.33%																			----	----	
2	From 1.5 m to	CORE	ROCK STRATA, CORE RECOVERY=26.00%, R.Q.D=0.00%																			----	----	
1	From 0.0 m to	CORE	ROCK STRATA, CORE RECOVERY=17.33%, R.Q.D=0.00%																			----	----	

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																									
Sl.No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index	In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.	
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %														Shrinkage Limit In %
4	At 6.0 m	SPT	0.00	0.00	38.56	52.12	9.32	---	---	---	---	---	---	---	---	2.64	---	---	---	---	---	N>100	N>100	NOTE*	
5	At 7.5 m	SPT	0.00	0.00	37.63	48.74	13.63	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100		
6	At 9.0 m	SPT	0.00	0.00	35.43	46.78	17.79	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100		
7	At 10.5	SPT	0.00	0.00	34.32	49.81	15.87	---	---	---	---	---	---	---	---	2.64	---	---	---	---	---	N>100	N>100		
8	At 12.0	SPT	0.00	0.00	35.67	48.79	15.54	---	---	---	---	---	---	---	---	2.64	---	---	---	---	---	N>100	N>100		
9	At 13.5	SPT	0.00	0.00	37.64	51.23	11.13	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100		
NOTE* From 6.0 m to 13.51 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																									
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-21)																									
6	At 9.0 m	SPT	0.00	0.00	4.39	34.56	61.05	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100		NOTE*
7	At 10.5	SPT	0.00	0.00	4.89	32.16	62.95	---	---	---	---	---	---	---	---	2.64	---	---	---	---	---	N>100	N>100		
8	At 12.0	SPT	0.00	0.00	5.16	33.65	61.19	---	---	---	---	---	---	---	---	2.64	---	---	---	---	---	N>100	N>100		
9	At 13.5	SPT	0.00	0.00	6.43	34.71	58.86	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100		



TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl.No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index	In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %													
11	At 16.5	SPT	0.00	0.00	4.37	34.65	60.98	---	---	---	---	---	---	---	---	2.64	2.65	---	---	---	---	N>100	N>100	
10	At 15.0	SPT	0.00	0.00	7.52	38.92	53.56	---	---	---	---	---	---	---	---	---	---	---	---	---	---	N>100	N>100	
NOTE* From 9.0 m to 16.52 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-22)																								
6	At 9.0 m	SPT	0.00	0.00	31.32	52.63	16.05	---	---	---	---	---	---	---	---	2.64	---	---	---	---	---	N>100	N>100	NOTE*
7	At 10.5	SPT	0.00	0.00	33.69	52.89	13.42	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100	
NOTE* From 9.0 m to 10.53 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-23)																								
4	At 6.0 m	SPT	0.00	0.00	24.39	62.13	13.48	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100	NOTE*
5	At 7.5 m	SPT	0.00	0.00	26.41	61.52	12.07	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100	
6	At 9.0 m	SPT	0.00	0.00	32.86	54.61	12.53	---	---	---	---	---	---	---	---	2.64	2.65	---	---	---	---	N>100	N>100	
7	At 10.5	SPT	0.00	0.00	35.64	55.62	8.74	---	---	---	---	---	---	---	---	2.64	2.65	---	---	---	---	N>100	N>100	
16	At 24.0	SPT	0.00	0.00	36.49	52.46	11.05	---	---	---	---	---	---	---	---	2.65	---	---	---	---	---	N>100	N>100	



TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl.No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %												
17	At 25.5	SPT	0.00	0.00	31.59	53.46	14.95		---	---	---	---	---	---	---	---	2.65						N>100	
18	At 27.0	SPT	0.00	0.00	34.59	54.89	10.52		---	---	---	---	---	---	---	---	2.65						N>100	
NOTE* From 6.0 m to 10.51 m, and 24.0 m to 27.02 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-24)																								
1	At 0.5 m	DS	5.21	7.40	21.36	18.92	31.01	16.10	30	18	12	---	---	---	---	---	2.69							SC
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-26)																								
1	At 1.0 m	DS	7.82	8.46	14.59	17.91	35.12	16.10	29	17	12	---	---	---	---	---	2.68							SC
4	At 4.5 m	SPT	0.00	0.00	25.69	60.59	13.72		---	---	---	---	---	---	---	---	2.64						N=59	NOTE*
5	At 6.0 m	SPT	0.00	0.00	29.36	58.73	11.91		---	---	---	---	---	---	---	---	2.65						N>100	NOTE*
NOTE* From 4.5 m to 6.2 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-27)																								
1	At 0.5 m	DS	6.53	8.21	17.32	18.92	32.92	16.10	30	18	12	---	---	---	---	---	2.69							SC
2	At 1.5 m	SPT	7.45	9.37	16.88	19.63	30.57	16.10	29	18	11	---	---	---	---	---	2.70						N=34	SC

NOTICE

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TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression test	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %												
NOTE* From 3.0 m to 4.59 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-30)																								
1	At 0.5 m	DS	0.00	2.58	27.39	34.29	24.18	11.56	31	19	12	----	----	----	----	----	----	2.69	----	13	----	----	----	SC
LABORATORY TEST RESULT OF TUNNEL No. 06 (BH-35)																								
6	From 6.0 m to	SPT	0.00	0.00	23.63	61.43	14.94	----	----	----	----	----	----	----	----	----	----	2.64	----	----	----	----	N>100	NOTE*
5	From 4.5 m to	SPT	0.00	0.00	24.36	60.43	15.21	----	----	----	----	----	----	----	----	----	----	2.65	----	----	----	----	N>100	NOTE*
	At 0.5 m	DS	17.38	8.44	4.32	11.39	44.15	14.32	30	17	13	----	----	----	----	----	----	2.69	----	12	----	----	----	SC
NOTE* From 4.5 m to 7.9 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected, only washed out samples have been collected.																								

7. T7

7.1 Annexures

7.1.1 ANNEXURE- A (BORELOG)

7.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

7.1.2.1 Specific Gravity

Depth (m)		Specific Gravity											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	2.80				2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
1.5	3	2.76			2.76	2.76	2.78	2.76	2.76	2.76	2.76	2.76	2.76
3	4.5	2.80		2.76	2.75	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
4.5	6	2.80		2.76	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
6	7.5	2.80		2.76	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
7.5	9	2.80	2.76	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
9	10.5	2.80	2.76	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
10.5	12	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
12	13.5	2.82	2.80	2.80	2.80	2.82	2.82	2.80	2.82	2.82	2.82	2.82	2.82
13.5	15	2.82	2.80	2.80	2.80	2.82	2.82	2.80	2.82	2.82	2.82	2.82	2.82
15	16.5	2.83	2.80	2.82	2.80	2.82	2.82	2.80	2.82	2.82	2.82	2.82	2.82
16.5	18	2.83	2.80	2.82	2.80	2.83	2.83	2.80	2.83	2.83	2.83	2.83	2.83
18	19.5	2.83	2.82	2.82	2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	2.83
19.5	21	2.83	2.82	2.83	2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	2.83
21	22.5	2.83	2.82	2.83	2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	2.83
22.5	24		2.83	2.83	2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	2.83
24	25.5		2.83		2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	
25.5	27		2.83		2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	
27	28.5				2.81	2.83	2.83	2.81	2.83	2.83	2.83		
28.5	30					2.83	2.83	2.82	2.83	2.83	2.83		
30	31.5					2.83	2.83	2.82	2.83	2.83	2.83		
31.5	33					2.83	2.83	2.82	2.83	2.83	2.83		
33	34.5					2.83	2.83	2.82	2.83	2.83	2.83		
34.5	36					2.83	2.83	2.82	2.83		2.83		
36	37.5					2.83	2.83	2.82	2.83		2.83		
37.5	39						2.85	2.82	2.85		2.83		
39	40.5						2.85	2.82	2.85		2.83		
40.5	42						2.85	2.82	2.85				
42	43.5						2.86	2.83	2.86				
43.5	45						2.86	2.83					
45	46.5						2.86	2.83					
46.5	48						2.86	2.83					
48	49.5							2.83					
49.5	51							2.83					
51	52.5							2.83					

7.1.2.2 Dry Density

Depth (m)		Density (gm/cc)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	2.79				2.74	2.74	2.70	2.70	2.70	2.70	2.70	2.70
1.5	3	2.71			2.71	2.75	2.74	2.70	2.70	2.70	2.70	2.70	2.70
3	4.5	2.78		2.75	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71
4.5	6	2.78		2.72	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
6	7.5	2.78		2.71	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
7.5	9	2.78	2.70	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
9	10.5	2.78	2.70	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
10.5	12	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
12	13.5	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
13.5	15	2.79	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
15	16.5	2.79	2.78	2.78	2.78	2.79	2.79	2.78	2.79	2.79	2.79	2.79	2.79
16.5	18	2.79	2.78	2.78	2.78	2.79	2.79	2.78	2.79	2.79	2.79	2.79	2.79
18	19.5	2.79	2.78	2.79	2.78	2.79	2.79	2.78	2.79	2.79	2.79	2.79	2.79
19.5	21	2.80	2.78	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79
21	22.5	2.80	2.79	2.79	2.79	2.80	2.80	2.79	2.80	2.80	2.80	2.80	2.80
22.5	24		2.79	2.79	2.79	2.80	2.80	2.79	2.80	2.80	2.80	2.80	2.80
24	25.5		2.79		2.79	2.80	2.80	2.79	2.80	2.80	2.80	2.80	
25.5	27		2.79		2.79	2.80	2.80	2.79	2.80	2.80	2.80	2.80	
27	28.5				2.79	2.80	2.80	2.79	2.80	2.80	2.80		
28.5	30					2.80	2.80	2.79	2.80	2.80	2.80		
30	31.5					2.80	2.80	2.79	2.80	2.80	2.80		
31.5	33					2.80	2.80	2.79	2.80	2.80	2.80		
33	34.5					2.80	2.80	2.79	2.80	2.80	2.80		
34.5	36					2.80	2.80	2.80	2.80		2.80		
36	37.5					2.80	2.80	2.80	2.80		2.80		
37.5	39						2.80	2.80	2.80		2.80		
39	40.5						2.80	2.80	2.80		2.80		
40.5	42						2.80	2.80	2.80				
42	43.5						2.80	2.80	2.80				
43.5	45						2.80	2.80					
45	46.5						2.80	2.80					
46.5	48						2.80	2.80					
48	49.5							2.80					
49.5	51							2.80					
51	52.5							2.80					

7.1.2.3 Water absorption Test

Depth (m)		Water absorption											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	0.46				0.48	0.46	0.46	0.46	0.46	0.46	0.49	0.50
1.5	3	0.42			0.43	0.45	0.43	0.43	0.43	0.43	0.43	0.45	0.43
3	4.5	0.19		0.46	0.40	0.42	0.40	0.40	0.40	0.40	0.40	0.42	0.41
4.5	6	0.19		0.44	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.17	0.19
6	7.5	0.19		0.42	0.19	0.18	0.18	0.19	0.18	0.18	0.18	0.16	0.17
7.5	9	0.18	0.46	0.20	0.19	0.17	0.17	0.19	0.17	0.17	0.17	0.16	0.17
9	10.5	0.18	0.44	0.20	0.19	0.17	0.17	0.19	0.17	0.17	0.17	0.16	0.17
10.5	12	0.18	0.20	0.19	0.18	0.17	0.17	0.18	0.17	0.17	0.17	0.15	0.17
12	13.5	0.17	0.20	0.17	0.18	0.17	0.17	0.18	0.17	0.17	0.17	0.15	0.16
13.5	15	0.17	0.20	0.17	0.18	0.17	0.17	0.18	0.17	0.17	0.17	0.15	0.16
15	16.5	0.16	0.19	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.14	0.14
16.5	18	0.16	0.17	0.16	0.17	0.16	0.16	0.17	0.16	0.16	0.16	0.14	0.14
18	19.5	0.16	0.17	0.13	0.17	0.15	0.15	0.17	0.15	0.15	0.15	0.14	0.14
19.5	21	0.15	0.17	0.13	0.16	0.15	0.15	0.16	0.15	0.15	0.15	0.13	0.13
21	22.5	0.14	0.16	0.13	0.16	0.15	0.15	0.16	0.15	0.15	0.15	0.13	0.13
22.5	24		0.13	0.12	0.15	0.14	0.14	0.15	0.14	0.14	0.14	0.13	0.13
24	25.5		0.13		0.15	0.14	0.14	0.15	0.14	0.14	0.14	0.12	
25.5	27		0.13		0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.12	
27	28.5				0.15	0.13	0.13	0.14	0.13	0.13	0.13		
28.5	30					0.13	0.13	0.14	0.13	0.13	0.13		
30	31.5					0.13	0.13	0.13	0.13	0.13	0.13		
31.5	33					0.12	0.12	0.13	0.12	0.12	0.12		
33	34.5					0.12	0.12	0.13	0.12	0.12	0.11		
34.5	36					0.11	0.11	0.12	0.11		0.11		
36	37.5					0.11	0.11	0.12	0.11		0.11		
37.5	39						0.11	0.12	0.11		0.11		
39	40.5						0.11	0.12	0.11		0.11		
40.5	42						0.11	0.11	0.11				
42	43.5						0.11	0.11	0.11				
43.5	45						0.11	0.11					
45	46.5						0.11	0.11					
46.5	48						0.10	0.10					
48	49.5							0.10					
49.5	51							0.10					
51	52.5							0.10					

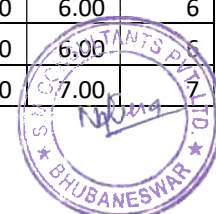
7.1.2.4 Porosity

Depth (m)		Porosity (%)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	0.36				0.72	0.72	2.17	2.17	2.17	2.17	2.17	2.17

Depth (m)		Porosity (%)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
1.5	3	1.81			1.81	0.36	1.44	2.17	2.17	2.17	2.17	2.17	2.17
3	4.5	0.71		0.36	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
4.5	6	0.71		1.45	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
6	7.5	0.71		1.81	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
7.5	9	0.71	2.17	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
9	10.5	0.71	2.17	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
10.5	12	1.42	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
12	13.5	1.42	0.71	0.71	0.71	1.42	1.42	0.71	1.42	1.42	1.42	1.42	1.42
13.5	15	1.06	0.71	0.71	0.71	1.42	1.42	0.71	1.42	1.42	1.42	1.42	1.42
15	16.5	1.41	0.71	1.42	0.71	1.06	1.06	0.71	1.06	1.06	1.06	1.06	1.06
16.5	18	1.41	0.71	1.42	0.71	1.41	1.41	0.71	1.41	1.41	1.41	1.41	1.41
18	19.5	1.41	1.42	1.06	1.07	1.41	1.41	1.07	1.41	1.41	1.41	1.41	1.41
19.5	21	1.06	1.42	1.41	0.71	1.41	1.41	0.71	1.41	1.41	1.41	1.41	1.41
21	22.5	1.06	1.06	1.41	0.71	1.06	1.06	0.71	1.06	1.06	1.06	1.06	1.06
22.5	24		1.41	1.41	0.71	1.06	1.06	0.71	1.06	1.06	1.06	1.06	1.06
24	25.5		1.41		0.71	1.06	1.06	0.71	1.06	1.06	1.06	1.06	
25.5	27		1.41		0.72	1.06	1.06	0.71	1.06	1.06	1.06	1.06	
27	28.5				0.72	1.06	1.06	0.71	1.06	1.06	1.06		
28.5	30					1.06	1.06	1.06	1.06	1.06	1.06		
30	31.5					1.06	1.06	1.06	1.06	1.06	1.06		
31.5	33					1.06	1.06	1.06	1.06	1.06	1.06		
33	34.5					1.06	1.06	1.06	1.06	1.06	1.06		
34.5	36					1.06	1.06	0.71	1.06		1.06		
36	37.5					1.06	1.06	0.71	1.06		1.06		
37.5	39						1.72	0.71	1.72		1.06		
39	40.5						1.81	0.71	1.81		1.06		
40.5	42						1.90	0.71	1.90				
42	43.5						1.99	1.06	1.99				
43.5	45						2.08	1.06					
45	46.5						2.08	1.06					
46.5	48						2.09	1.06					
48	49.5							1.06					
49.5	51							1.06					
51	52.5							1.06					

7.1.2.5 Hardness

Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	6.00				6.00	6.00	6.00	6.00	6.00	6.00	6.00	6
1.5	3	6.00			6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6
3	4.5	7.00		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6
4.5	6	7.00		6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7



Depth (m)		Hardness (Mohr Scale)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
6	7.5	7.00		6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7
7.5	9	7.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7
9	10.5	7.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7
10.5	12	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7
12	13.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7
13.5	15	8.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7
15	16.5	8.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00	8.00	8.00	8.00	8
16.5	18	8.00	7.00	8.00	7.00	8.00	7.00	7.00	7.00	8.00	8.00	8.00	8
18	19.5	8.00	7.00	8.00	7.00	8.00	7.00	7.00	7.00	8.00	8.00	8.00	8
19.5	21	8.00	7.00	8.00	7.00	8.00	7.00	7.00	8.00	8.00	8.00	8.00	8
21	22.5	8.00	8.00	8.00	7.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	8
22.5	24		8.00	8.00	7.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	8
24	25.5		8.00		7.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	
25.5	27		8.00		7.00	8.00	8.00	7.00	8.00	8.00	8.00	8.00	
27	28.5				7.00	8.00	8.00	7.00	8.00	8.00	8.00		
28.5	30					8.00	8.00	7.00	8.00	8.00	8.00		
30	31.5					8.00	8.00	7.00	8.00	8.00	8.00		
31.5	33					8.00	8.00	7.00	8.00	8.00	8.00		
33	34.5					8.00	8.00	7.00	8.00	8.00	8.00		
34.5	36					8.00	8.00	7.00	8.00		8.00		
36	37.5					8.00	8.00	8.00	8.00		8.00		
37.5	39						8.00	8.00	8.00		8.00		
39	40.5						8.00	8.00	8.00		8.00		
40.5	42						8.00	8.00	8.00				
42	43.5						8.00	8.00	8.00				
43.5	45						8.00	8.00					
45	46.5						8.00	8.00					
46.5	48						8.00	8.00					
48	49.5							8.00					
49.5	51							8.00					
51	52.5							8.00					

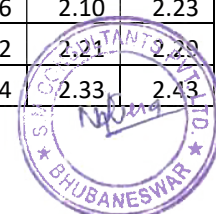
7.1.2.6 Compression Test

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	8.52				9.25	7.35	7.31	6.32	7.96	7.31	7.31	7.59
1.5	3	9.09			----	9.12	8.89	8.52	7.91	9.50	8.52	8.52	8.99
3	4.5	36.21		----	----	9.98	9.35	9.09	8.59	9.96	9.09	9.09	9.39
4.5	6	38.54		----	35.32	35.67	39.42	35.32	35.54	40.03	36.21	36.21	35.42
6	7.5	41.87		9.98	36.85	38.67	40.50	36.98	36.91	41.11	38.54	38.69	38.69

Depth (m)		Unconfined Compression Strength (MPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
7.5	9	45.20	8.85	35.67	38.38	41.67	42.56	38.64	37.22	43.17	40.87	41.17	41.96
9	10.5	48.53	9.54	38.67	39.91	40.78	44.79	40.30	37.53	45.23	43.20	43.65	45.23
10.5	12	51.86	37.54	41.34	41.44	42.60	48.75	41.96	37.84	47.29	45.53	46.13	48.50
12	13.5	55.19	38.43	43.31	42.97	44.42	48.96	43.62	38.15	49.80	47.86	48.61	51.77
13.5	15	56.52	41.67	44.58	44.50	46.24	49.17	45.28	38.46	50.01	50.19	51.09	55.04
15	16.5	56.92	50.19	46.78	46.03	48.06	49.38	46.94	38.77	50.22	52.52	53.57	55.29
16.5	18	57.32	47.67	48.34	47.56	49.88	49.59	48.60	39.08	50.43	54.85	56.05	55.54
18	19.5	57.72	50.67	49.90	49.09	51.61	49.80	50.26	39.39	50.64	55.23	56.95	55.79
19.5	21	58.12	51.12	51.46	50.62	53.63	50.01	51.92	39.70	50.85	55.61	57.85	56.04
21	22.5	58.52	51.57	53.02	52.15	55.65	50.22	53.58	40.01	51.06	55.99	58.75	56.29
22.5	24		52.02	54.58	53.68	55.99	50.43	55.24	40.32	51.27	56.37	59.65	56.54
24	25.5		52.47		54.28	56.33	50.64	56.90	40.63	51.48	56.75	60.55	
25.5	27		52.92		55.12	56.67	50.85	58.56	40.94	52.13	57.13	61.45	
27	28.5				54.76	57.01	51.06	58.72	41.25	52.78	57.51		
28.5	30					57.35	51.27	58.88	41.56	53.43	57.89		
30	31.5					57.69	51.48	59.04	41.87	54.08	58.27		
31.5	33					58.03	51.69	59.20	42.18	54.73	58.65		
33	34.5					58.37	51.90	59.36	42.49	55.38	59.03		
34.5	36					58.71	52.11	59.52	42.80		59.41		
36	37.5					59.05	52.32	59.68	43.11		59.79		
37.5	39						52.53	59.84	43.42		60.17		
39	40.5						52.74	60.00	43.73		60.46		
40.5	42						52.95	60.16	44.04				
42	43.5						53.16	60.32	44.35				
43.5	45						53.37	60.48					
45	46.5						53.56	60.64					
46.5	48						53.62	60.80					
48	49.5							60.96					
49.5	51							61.12					
51	52.5							61.28					

7.1.2.7 Point Load Test

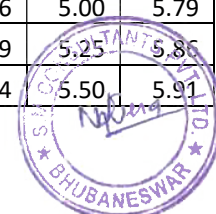
Depth (m)		Point Load Strength (MPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	----				----	0.36	0.37	---	----	----	----	----
1.5	3	----			----	----	0.45	0.43	---	----	----	0.43	0.49
3	4.5	1.88		----	0.91	0.52	0.51	0.46	0.48	0.51	0.46	----	----
4.5	6	1.98		0.34	1.84	1.81	1.83	1.74	---	1.98	1.74	1.88	1.84
6	7.5	2.13		0.51	1.91	1.98	1.94	1.82	1.87	2.06	1.82	1.99	2.06
7.5	9	2.28	0.41	1.96	1.97	2.29	1.98	1.89	1.88	2.16	1.96	2.10	2.23
9	10.5	2.44	0.52	2.12	2.04	2.21	2.16	1.99	1.90	2.29	2.12	2.21	2.29
10.5	12	2.59	1.87	2.17	2.11	2.36	2.31	2.09	1.91	2.34	2.24	2.33	2.43



Depth (m)		Point Load Strength (MPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
12	13.5	2.74	1.93	2.28	2.18	2.42	2.39	2.16	1.92	2.45	2.41	2.44	2.58
13.5	15	2.89	2.12	2.34	2.25	2.56	2.45	2.24	1.94	2.52	2.52	2.55	2.81
15	16.5	2.94	2.46	2.43	2.32	2.63	2.49	2.36	1.95	2.55	2.57	2.67	2.84
16.5	18	3.12	2.41	2.56	2.39	2.69	2.54	2.44	1.97	2.62	2.61	2.78	2.93
18	19.5	3.17	2.51	2.67	2.46	2.82	2.58	2.53	1.98	2.64	2.65	2.89	2.98
19.5	21	3.24	2.57	2.72	2.53	2.98	2.63	2.62	1.99	2.69	2.69	3.00	3.02
21	22.5	3.32	2.61	2.83	2.60	3.02	2.66	2.68	2.01	2.73	2.71	3.12	3.08
22.5	24		2.73	2.91	2.67	3.06	2.72	2.73	2.02	2.75	2.74	3.23	3.14
24	25.5		2.79		2.71	3.09	2.79	2.75	2.04	2.78	2.78	3.34	
25.5	27		2.82		2.75	3.21	2.81	2.79	2.05	2.82	2.81	3.38	
27	28.5				2.71	2.65	2.82	2.75	2.07	2.85	2.86		
28.5	30					2.76	2.84	2.80	2.08	2.88	2.91		
30	31.5					2.89	2.81	2.83	2.09	2.91	2.95		
31.5	33					3.02	2.83	2.80	2.11	2.93	3.01		
33	34.5					3.12	2.85	2.84	2.12	2.97	3.06		
34.5	36					3.19	2.79	2.87	2.14		3.11		
36	37.5					3.27	2.83	2.90	2.15		3.15		
37.5	39						2.85	2.89	2.16		3.17		
39	40.5						2.87	2.91	2.18		3.19		
40.5	42						2.91	2.93	2.19				
42	43.5						2.93	2.98	2.21				
43.5	45						3.02	3.01					
45	46.5						3.11	3.09					
46.5	48						3.09	3.15					
48	49.5							3.21					
49.5	51							3.27					
51	52.5							3.31					

7.1.2.8 Brazilian Test

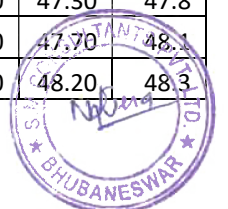
Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	----				----	0.84	0.79	---	----	----	----	----
1.5	3	----			----	----	0.96	0.88	---	----	----	1.02	1.04
3	4.5	3.76		----	----	1.06	1.08	0.92	0.87	1.09	0.98	----	----
4.5	6	3.99		0.92	3.67	3.81	4.31	3.56	---	4.13	3.75	3.76	3.82
6	7.5	4.33		1.06	3.83	3.96	4.36	3.78	3.74	4.19	3.91	4.01	4.32
7.5	9	4.66	0.87	3.73	3.98	4.66	4.48	3.89	3.84	4.42	4.15	4.26	4.64
9	10.5	4.99	1.06	3.89	4.13	4.56	4.54	4.16	4.24	4.56	4.34	4.42	4.66
10.5	12	5.33	3.82	4.35	4.28	4.82	4.87	4.29	4.16	4.78	4.59	4.78	5.43
12	13.5	5.66	3.92	4.33	4.44	4.97	4.92	4.48	4.29	4.99	4.86	5.00	5.79
13.5	15	5.99	4.26	4.54	4.59	5.13	5.06	4.69	4.36	5.09	5.19	5.25	5.86
15	16.5	6.33	5.21	4.72	4.74	5.28	5.14	4.78	4.42	5.15	5.34	5.50	5.91



Depth (m)		Tensile Strength (MPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
16.5	18	6.42	4.77	4.83	4.90	5.36	5.36	5.06	4.49	5.25	5.62	5.75	5.94
18	19.5	6.49	5.07	5.24	5.05	5.48	5.39	5.14	4.47	5.32	5.79	5.99	5.99
19.5	21	6.87	5.37	5.54	5.20	5.56	5.42	5.36	4.51	5.38	5.84	6.24	6.09
21	22.5	6.96	5.67	5.98	5.36	5.73	5.37	5.48	4.58	5.46	5.91	6.56	6.29
22.5	24		5.78	6.34	5.51	5.79	5.41	5.59	4.66	5.53	6.04	6.74	6.36
24	25.5		5.82		5.76	5.84	5.42	5.78	4.72	5.61	6.11	6.99	
25.5	27		6.24		5.96	5.89	5.51	5.96	4.76	5.78	6.24	7.23	
27	28.5				5.63	5.96	5.63	6.04	4.83	5.84	6.35		
28.5	30					6.02	5.74	6.09	4.87	5.93	6.42		
30	31.5					6.16	5.79	6.15	4.93	5.99	6.51		
31.5	33					6.24	5.83	6.26	5.01	6.12	6.58		
33	34.5					6.35	5.89	6.31	5.06	6.28	6.69		
34.5	36					6.42	5.92	6.34	5.11		6.74		
36	37.5					6.57	5.98	6.39	5.16		6.82		
37.5	39						6.02	6.43	5.21		6.96		
39	40.5						6.08	6.51	5.25		7.10		
40.5	42						6.16	6.54	5.27				
42	43.5						6.21	6.62	5.31				
43.5	45						6.26	6.82					
45	46.5						6.38	6.89					
46.5	48						6.53	6.95					
48	49.5							7.08					
49.5	51							7.17					
51	52.5							7.24					

7.1.2.9 Modulus of elasticity test

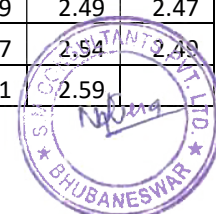
Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	----				----	25.10	25.20	---	----	----	----	----
1.5	3	----			----	----	25.80	25.70	---	----	----	24.60	24.3
3	4.5	37.80		----	----	25.10	27.40	27.60	26.20	25.70	----	----	----
4.5	6	39.40		----	37.20	----	40.10	37.40	---	40.60	37.10	37.40	37.2
6	7.5	42.60		25.20	37.90	39.40	41.30	37.90	37.40	41.80	39.20	39.30	37.8
7.5	9	43.10	24.60	38.20	38.40	42.50	41.70	39.20	37.90	42.50	42.30	41.80	42.4
9	10.5	45.40	25.20	40.40	39.60	41.80	42.40	39.80	38.20	43.40	42.80	44.20	42.8
10.5	12	46.30	38.60	42.60	41.80	42.90	42.60	42.30	38.50	43.80	43.70	44.80	44.9
12	13.5	47.60	39.60	43.10	43.20	43.50	42.90	42.70	38.90	44.60	44.60	45.30	45.6
13.5	15	48.20	42.40	43.60	43.80	44.20	43.20	43.60	39.20	45.20	45.20	45.60	47.3
15	16.5	48.70	45.80	44.20	44.20	44.60	43.50	44.20	39.50	45.70	46.40	46.80	47.6
16.5	18	49.30	44.20	44.70	44.50	45.00	43.70	44.70	38.90	45.50	46.70	47.30	47.8
18	19.5	49.90	46.30	45.80	44.90	45.40	43.90	45.20	39.20	45.80	46.50	47.70	48.1
19.5	21	50.30	47.20	46.20	45.30	46.20	44.00	45.80	39.60	46.30	47.30	48.20	48.3



Depth (m)		Modulus of Elasticity (GPa)											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
21	22.5	51.80	47.60	47.20	46.20	47.30	44.20	46.00	40.80	46.50	47.50	48.90	48.7
22.5	24		48.20	47.70	47.50	47.50	44.50	46.80	40.50	46.20	47.90	49.20	49.2
24	25.5		48.60		48.20	47.20	44.70	47.10	41.30	46.90	48.20	50.50	
25.5	27		47.90		48.87	47.80	44.80	47.50	41.90	47.20	48.50	51.40	
27	28.5				47.96	48.30	45.20	47.80	42.30	47.60	48.70		
28.5	30					48.50	45.40	48.30	42.80	46.90	48.90		
30	31.5					49.20	45.70	48.70	42.50	48.30	49.10		
31.5	33					50.30	45.70	48.90	43.20	48.60	49.30		
33	34.5					50.60	45.90	49.10	42.80	48.50	49.80		
34.5	36					51.40	46.10	49.50	43.20		50.20		
36	37.5					51.60	46.30	49.20	43.80		50.60		
37.5	39						46.70	49.70	44.10		51.40		
39	40.5						46.80	50.40	44.50		51.85		
40.5	42						47.20	50.70	43.90				
42	43.5						47.50	51.10	44.40				
43.5	45						48.20	51.50					
45	46.5						48.79	51.30					
46.5	48						49.19	51.70					
48	49.5							52.30					
49.5	51							52.60					
51	52.5							53.10					

7.1.2.10 Abrasion test

Depth (m)		Abrasion Value											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
0.5	1.5	----				0.96	0.89	0.82	0.79	0.86	0.81	0.79	0.79
1.5	3	----			----	0.87	0.94	0.86	0.85	0.92	0.86	0.84	0.93
3	4.5	1.76		----	0.96	1.01	0.98	0.95	0.92	0.98	0.92	0.96	0.98
4.5	6	1.84		0.87	1.75	1.76	1.87	1.76	1.68	1.92	1.79	1.78	1.76
6	7.5	1.92		0.98	1.81	1.83	1.91	1.81	1.72	1.96	1.83	1.84	1.84
7.5	9	2.05	0.82	1.76	1.85	1.90	1.96	1.86	1.75	2.05	1.93	1.92	1.91
9	10.5	2.13	0.98	1.82	1.89	1.92	2.03	1.90	1.79	2.11	1.98	1.95	2.05
10.5	12	2.21	1.82	1.91	1.93	1.98	2.07	1.93	1.83	2.14	2.09	2.08	2.18
12	13.5	2.35	1.88	1.98	1.98	2.03	2.11	1.96	1.80	2.17	2.14	2.13	2.24
13.5	15	2.38	1.93	2.02	2.04	2.07	2.15	2.03	1.84	2.19	2.18	2.23	2.35
15	16.5	2.39	2.22	2.09	2.08	2.12	2.18	2.08	1.89	2.15	2.23	2.26	2.37
16.5	18	2.41	2.13	2.15	2.14	2.17	2.16	2.12	1.87	2.18	2.29	2.38	2.38
18	19.5	2.44	2.19	2.19	2.19	2.23	2.13	2.19	1.92	2.22	2.34	2.41	2.41
19.5	21	2.49	2.20	2.23	2.23	2.27	2.18	2.23	1.90	2.20	2.36	2.45	2.44
21	22.5	2.52	2.23	2.29	2.29	2.32	2.16	2.27	1.92	2.22	2.39	2.49	2.47
22.5	24		2.26	2.33	2.32	2.34	2.20	2.35	1.94	2.25	2.37	2.54	2.49
24	25.5		2.28		2.33	2.37	2.16	2.38	1.93	2.28	2.41	2.59	



Depth (m)		Abrasion Value											
Top	Bottom	BH 01	BH 02	BH 03	BH 04	BH 05	BH 06	BH 07	BH 08	BH 09	BH 10	BH 11	BH 12
25.5	27		2.31		2.38	2.40	2.18	2.41	1.96	2.27	2.45	2.63	
27	28.5				2.35	2.42	2.19	2.45	1.98	2.24	2.47		
28.5	30					2.45	2.21	2.49	1.95	2.30	2.49		
30	31.5					2.48	2.23	2.54	1.99	2.32	2.44		
31.5	33					2.51	2.25	2.55	1.97	2.35	2.42		
33	34.5					2.54	2.26	2.53	2.02	2.41	2.45		
34.5	36					2.58	2.28	2.58	2.06		2.48		
36	37.5					2.62	2.30	2.62	2.11		2.50		
37.5	39						2.29	2.57	2.14		2.52		
39	40.5						2.30	2.61	2.19		2.53		
40.5	42						2.32	2.63	2.22				
42	43.5						2.34	2.66	2.26				
43.5	45						2.35	2.65					
45	46.5						2.36	2.68					
46.5	48						2.38	2.62					
48	49.5							2.64					
49.5	51							2.63					
51	52.5							2.66					

7.1.3 ANNEXURE- C (RMR LOGS)

Tunnel: 7			BH: 1										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)

Tunnel: 7		BH: 1											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
3.0	4.5	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)
4.5	6.0	4	3	5	2	1	1	1	1	6	7	-2	23	Class 4 (POOR)
6.0	7.5	4	3	5	1	1	1	1	1	5	7	-2	22	Class 4 (POOR)
7.5	9.0	4	3	5	1	1	1	1	1	5	7	-2	22	Class 4 (POOR)
9.0	10.5	4	3	5	2	1	1	1	1	6	7	-2	23	Class 4 (POOR)
10.5	12.0	4	8	5	1	1	3	2	3	10	7	-2	32	Class 4 (POOR)
12.0	13.5	7	8	5	1	1	3	2	3	10	7	-2	35	Class 4 (POOR)
13.5	15.0	7	3	5	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
15.0	16.5	7	8	8	2	4	3	2	3	14	7	-2	42	Class 3 (FAIR)
16.5	18.0	7	8	8	2	4	3	2	3	14	7	-2	42	Class 3 (FAIR)
18.0	19.5	7	8	10	2	4	3	2	3	14	7	-2	44	Class 3 (FAIR)
19.5	21.0	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)
21.0	22.5	7	13	10	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)
22.5	24.0	7	13	10	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)

Tunnel:7		BH02											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
6.0	7.5	0	3	10	2	4	3	2	3	14	7	-2	32	Class 4 (POOR)
7.5	9.0	2	3	10	4	5	5	4	5	23	10	-2	46	Class 3 (FAIR)
9.0	10.5	2	3	15	4	5	5	4	5	23	10	-2	51	Class 3 (FAIR)
10.5	12.0	4	3	15	4	5	5	4	5	23	10	-2	53	Class 3 (FAIR)
12.0	13.5	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3 (FAIR)
13.5	15.0	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3 (FAIR)

Tunnel:7		BH02											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
15.0	16.5	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)
16.5	18.0	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
18.0	19.5	7	3	8	4	5	5	4	5	23	10	-2	49	Class 3(FAIR)
19.5	21.0	7	3	8	4	5	5	4	5	23	10	-2	49	Class 3(FAIR)
21.0	22.5	7	8	8	4	5	5	4	5	23	10	-2	54	Class 3(FAIR)
22.5	24.0	7	8	8	4	5	5	4	5	23	10	-2	54	Class 3(FAIR)
24.0	25.5	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)
25.5	26.0	7	13	15	4	5	5	4	5	23	10	-2	66	Class 2(GOOD)

Tunnel: 7		BH03											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	1	1	5	7	-2	18	Class 5 (VERY POOR)
3.0	4.5	0	3	5	1	1	1	1	1	5	7	-2	18	Class 5 (VERY POOR)
4.5	6.0	0	3	5	1	1	1	1	1	5	7	-2	18	Class 5 (VERY POOR)
6.0	7.5	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
7.5	9.0	4	3	5	1	1	1	1	1	5	7	-2	22	Class 4 (POOR)
9.0	10.5	4	3	5	1	1	1	1	1	5	7	-2	22	Class 4 (POOR)
10.5	12.0	4	3	8	2	4	3	2	3	14	7	-2	34	Class 4 (POOR)
12.0	13.5	4	3	8	2	4	3	2	3	14	7	-2	34	Class 4 (POOR)
13.5	15.0	4	8	10	2	4	3	2	3	14	7	-2	41	Class 3(FAIR)
15.0	16.5	4	8	10	2	4	3	2	3	14	7	-2	41	Class 3(FAIR)
16.5	18.0	4	8	10	2	4	3	2	3	14	7	-2	41	Class 3(FAIR)
18.0	19.5	4	8	20	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
19.5	21.0	7	3	15	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)
21.0	22.5	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)
22.5	24.0	7	8	15	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)

Tunnel: 7			BH: 4										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	1	1	5	4	-2	15	Class 5 (VERY POOR)
3.0	4.5	0	3	5	1	1	1	1	1	5	4	-2	15	Class 5 (VERY POOR)
4.5	6.0	4	3	5	1	1	1	1	1	5	4	-2	19	Class 5 (VERY POOR)
6.0	7.5	4	3	5	1	1	1	1	1	5	4	-2	19	Class 5 (VERY POOR)
7.5	9.0	4	8	5	1	1	1	1	1	5	4	-2	24	Class 4 (POOR)
9.0	10.5	4	8	15	2	4	5	4	5	20	7	-2	52	Class 3 (FAIR)
10.5	12.0	4	13	15	2	4	5	4	5	20	10	-2	60	Class 3 (FAIR)
12.0	13.5	4	13	10	5	4	5	5	4	23	10	-2	58	Class 3 (FAIR)
13.5	15.0	4	20	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
15.0	16.5	4	17	15	6	6	6	6	6	30	15	-2	79	Class 2 (GOOD)
16.5	18.0	4	13	15	6	6	6	6	6	30	15	-2	75	Class 2 (GOOD)
18.0	19.5	4	20	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
19.5	21.0	7	20	15	6	6	6	6	6	30	15	-2	85	Class 1 (VERY GOOD)
21.0	22.5	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
22.5	24.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
24.0	25.5	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
25.5	27.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
27.0	28.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)

Tunnel: 7			BH: 5											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)	
1.5	3.0	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)	
3.0	4.5	2	3	5	0	0	0	0	1	1	7	-2	16	Class 5 (VERY POOR)	
4.5	6.0	4	3	5	0	0	0	0	1	1	7	-2	18	Class 5 (VERY POOR)	
6.0	7.5	4	3	5	0	0	0	0	1	1	7	-2	18	Class 5 (VERY POOR)	
7.5	9.0	4	8	5	0	0	0	0	1	1	7	-2	23	Class 4 (POOR)	
9.0	10.5	4	3	5	4	4	3	2	3	16	7	-2	33	Class 4 (POOR)	
10.5	12.0	4	8	5	4	4	3	2	3	16	7	-2	38	Class 4 (POOR)	
12.0	13.5	4	3	5	4	4	3	2	3	16	7	-2	33	Class 4 (POOR)	
13.5	15.0	4	8	5	4	4	3	2	3	16	7	-2	38	Class 4 (POOR)	
15.0	16.5	4	3	5	4	4	3	2	3	16	10	-2	36	Class 4 (POOR)	
16.5	18.0	4	3	5	4	4	3	2	3	16	10	-2	36	Class 4 (POOR)	
18.0	19.5	7	3	5	2	4	5	2	3	16	10	-2	39	Class 4 (POOR)	
19.5	21.0	7	8	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
21.0	22.5	7	8	5	2	4	5	2	3	16	10	-2	44	Class 3(FAIR)	
22.5	24.0	7	3	5	4	4	3	2	3	16	10	-2	39	Class 4 (POOR)	
24.0	25.5	7	8	5	4	4	3	2	3	16	10	-2	44	Class 3(FAIR)	
25.5	27.0	7	8	10	4	4	3	2	3	16	10	-2	49	Class 3(FAIR)	
27.0	28.5	7	13	10	6	4	3	2	5	20	10	-2	58	Class 3(FAIR)	
28.5	30.0	7	13	10	6	4	3	2	5	20	10	-2	58	Class 3(FAIR)	
30.0	31.5	7	3	10	4	5	5	4	5	23	10	-2	51	Class 3(FAIR)	
31.5	33.0	7	8	10	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)	
33.0	34.5	7	8	10	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)	
34.5	36.0	7	8	10	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)	
36.0	37.0	7	8	10	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)	

Tunnel:7		BH-06											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	17	8	4	4	5	4	5	22	15	-2	62	Class 2(GOOD)
1.5	3.0	2	17	15	4	5	5	4	5	23	15	-2	70	Class 2(GOOD)
3.0	4.5	2	20	20	6	6	6	6	6	30	15	-2	85	Class 1 (VERY GOOD)
4.5	6.0	4	17	15	4	5	5	4	5	23	15	-2	72	Class 2(GOOD)
6.0	7.5	4	20	15	4	5	5	4	5	23	15	-2	75	Class 2(GOOD)
7.5	9.0	4	17	15	4	5	5	4	5	23	15	-2	72	Class 2(GOOD)
9.0	10.5	4	20	10	4	5	5	4	5	23	15	-2	70	Class 2(GOOD)
10.5	12.0	4	17	10	4	5	5	4	5	23	15	-2	67	Class 2(GOOD)
12.0	13.5	4	17	10	4	5	5	4	5	23	10	-2	62	Class 2(GOOD)
13.5	15.0	4	17	8	4	5	5	4	5	23	10	-2	60	Class 3(FAIR)
15.0	16.5	4	20	8	4	4	5	4	5	22	10	-2	62	Class 2(GOOD)
16.5	18.0	4	17	10	4	4	5	4	5	22	10	-2	61	Class 2(GOOD)
18.0	19.5	4	17	10	4	5	5	4	5	23	10	-2	62	Class 2(GOOD)
19.5	21.0	7	13	15	4	5	5	4	5	23	10	-2	66	Class 2(GOOD)
21.0	22.5	7	13	10	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)
22.5	24.0	7	13	10	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)
24.0	25.5	7	17	10	4	5	5	4	5	23	10	-2	65	Class 2(GOOD)
25.5	27.0	7	20	15	4	5	5	4	5	23	10	-2	73	Class 2(GOOD)
27.0	28.5	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
28.5	30.0	7	17	10	4	5	5	4	5	23	10	-2	65	Class 2(GOOD)
30.0	31.5	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
31.5	33.0	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
33.0	34.5	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
34.5	36.0	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
36.0	37.5	7	20	8	4	5	5	4	5	23	10	-2	66	Class 2(GOOD)
37.5	39.0	7	20	8	4	5	5	4	5	23	10	-2	66	Class 2(GOOD)
39.0	40.5	7	17	10	4	5	5	4	5	23	10	-2	65	Class 2(GOOD)
40.5	42.0	7	17	10	4	5	5	4	5	23	10	-2	65	Class 2(GOOD)
42.0	43.5	7	13	10	4	5	5	4	5	23	10	-2	61	Class 2(GOOD)
43.5	45.0	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
45.0	46.5	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)
46.5	47.0	7	20	10	4	5	5	4	5	23	10	-2	68	Class 2(GOOD)

Tunnel: 7			BH: 7										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	8	10	1	4	3	2	3	13	7	-2	38	Class 4 (POOR)
1.5	3.0	2	8	10	2	4	5	4	5	20	7	-2	45	Class 3(FAIR)
3.0	4.5	2	13	10	4	4	5	4	5	22	7	-2	52	Class 3(FAIR)
4.5	6.0	4	13	15	4	4	5	4	5	22	10	-2	62	Class 2(GOOD)
6.0	7.5	4	13	15	4	4	5	4	5	22	10	-2	62	Class 2(GOOD)
7.5	9.0	4	17	15	4	4	5	4	5	22	15	-2	71	Class 2(GOOD)
9.0	10.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
10.5	12.0	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
12.0	13.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
13.5	15.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
15.0	16.5	4	20	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
16.5	18.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
18.0	19.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
19.5	21.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
21.0	22.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
22.5	24.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
24.0	25.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
25.5	27.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
27.0	28.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
28.5	30.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
30.0	31.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
31.5	33.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
34.5	36.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
36.0	37.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 7		BH: 7											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
37.5	39.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
39.0	40.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
40.5	42.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
42.0	43.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
43.5	45.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
45.0	46.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
46.5	48.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
48.0	49.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
49.5	51.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
51.0	52.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel:07		BH-08											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)
1.5	3.0	2	3	5	1	1	1	2	1	6	10	-2	24	Class 4 (POOR)
3.0	4.5	2	3	8	2	4	5	2	5	18	10	-2	39	Class 4 (POOR)
4.5	6.0	4	3	8	4	4	5	2	5	20	10	-2	43	Class 3 (FAIR)
6.0	7.5	4	3	10	4	4	5	2	5	20	10	-2	45	Class 3 (FAIR)
7.5	9.0	4	3	10	4	4	5	2	5	20	10	-2	45	Class 3 (FAIR)
9.0	10.5	4	8	15	4	4	5	2	5	20	10	-2	55	Class 3 (FAIR)
10.5	12.0	4	8	15	4	4	5	2	5	20	10	-2	55	Class 3 (FAIR)

Tunnel:07		BH-08											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
12.0	13.5	4	13	10	4	4	5	2	5	20	10	-2	55	Class 3 (FAIR)
13.5	15.0	4	8	8	4	4	5	2	5	20	10	-2	48	Class 3 (FAIR)
15.0	16.5	4	8	8	4	4	5	2	5	20	10	-2	48	Class 3 (FAIR)
16.5	18.0	4	8	8	4	4	5	2	5	20	10	-2	48	Class 3 (FAIR)
18.0	19.5	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
19.5	21.0	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
21.0	22.5	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3 (FAIR)
22.5	24.0	4	13	10	4	4	5	4	5	22	10	-2	57	Class 3 (FAIR)
24.0	25.5	4	13	8	4	4	5	4	5	22	10	-2	55	Class 3 (FAIR)
25.5	27.0	4	13	10	4	4	5	4	5	22	10	-2	57	Class 3 (FAIR)
27.0	28.5	4	13	8	4	4	5	4	5	22	10	-2	55	Class 3 (FAIR)
28.5	30.0	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
30.0	31.5	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
31.5	33.0	4	13	8	4	4	5	4	5	22	10	-2	55	Class 3 (FAIR)
33.0	34.5	4	8	8	4	4	5			13	10	-2	41	Class 3 (FAIR)
34.5	36.0	4	8	15	5	5	6	6	6	28	10	-2	63	Class 2 (GOOD)
36.0	37.5	4	17	10	4	4	5	4	5	22	10	-2	61	Class 2 (GOOD)
37.5	39.0	4	8	15	4	4	5	4	5	22	10	-2	57	Class 3 (FAIR)
39.0	40.5	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3 (FAIR)
40.5	42.0	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)
42.0	43.0	4	8	8	4	4	5	4	5	22	10	-2	50	Class 3 (FAIR)

Tunnel:7		BH09											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	2	1	3	2	3	11	10	-2	29	Class 4 (POOR)
1.5	3.0	2	3	8	2	1	3	2	3	11	10	-2	32	Class 4 (POOR)
3.0	4.5	2	3	8	2	1	3	2	3	11	10	-2	32	Class 4 (POOR)
4.5	6.0	4	3	8	2	1	5	2	5	15	10	-2	38	Class 4 (POOR)
6.0	7.5	4	3	8	2	1	5	2	5	15	10	-2	38	Class 4 (POOR)
7.5	9.0	4	8	8	2	1	5	2	5	15	10	-2	43	Class 3 (FAIR)
9.0	10.5	4	8	5	4	1	5	2	5	17	10	-2	42	Class 3 (FAIR)

Tunnel:7		BH09											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
10.5	12.0	4	8	10	4	1	5	2	5	17	10	-2	47	Class 3(FAIR)
12.0	13.5	4	13	5	4	6	5	6	5	26	10	-2	56	Class 3(FAIR)
13.5	15.0	7	13	20	6	6	6	6	6	30	10	-2	78	Class 2(GOOD)
15.0	16.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
16.5	18.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
18.0	19.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
19.5	21.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
21.0	22.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
22.5	24.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
24.0	25.5	7	8	20	6	6	6	6	6	30	15	-2	78	Class 2(GOOD)
25.5	27.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
27.0	28.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
30.0	31.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
31.5	33.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
33.0	34.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)

Tunnel: 7			BH: 10										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)
1.5	3.0	2	3	5	1	1	1	2	1	6	10	-2	24	Class 4 (POOR)
3.0	4.5	2	3	8	2	4	5	2	5	18	10	-2	39	Class 4 (POOR)
4.5	6.0	4	3	8	4	4	5	2	5	20	10	-2	43	Class 3 (FAIR)
6.0	7.5	4	8	10	4	4	5	2	5	20	10	-2	50	Class 3 (FAIR)
7.5	9.0	4	13	10	4	4	5	2	5	20	10	-2	55	Class 3 (FAIR)
9.0	10.5	4	8	10	4	4	5	2	5	20	10	-2	50	Class 3 (FAIR)
10.5	12.0	4	13	15	6	5	5	4	5	25	10	-2	65	Class 2 (GOOD)
12.0	13.5	4	8	15	6	5	5	4	5	25	10	-2	60	Class 3 (FAIR)
13.5	15.0	7	13	15	6	5	5	4	5	25	10	-2	68	Class 2 (GOOD)
15.0	16.5	7	13	15	6	5	5	4	5	25	15	-2	73	Class 2 (GOOD)
16.5	18.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
18.0	19.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
19.5	21.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
21.0	22.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
22.5	24.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
24.0	25.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
25.5	27.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
27.0	28.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
28.5	30.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
30.0	31.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
31.5	33.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
33.0	34.5	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
34.5	36.0	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
36.0	37.5	7	17	20	6	6	6	6	6	30	15	-2	87	Class 1 (VERY GOOD)
37.5	39.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)
39.0	40.0	7	20	20	6	6	6	6	6	30	15	-2	90	Class 1 (VERY GOOD)

Tunnel: 7		BH: 11											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)
1.5	3.0	2	3	5	2	1	1	2	3	9	4	-2	21	Class 4 (POOR)
3.0	4.5	2	3	5	2	1	3	2	6	14	4	-2	26	Class 4 (POOR)
4.5	6.0	4	3	8	2	1	3	2	6	14	4	-2	31	Class 4 (POOR)
6.0	7.5	4	3	8	2	4	3	2	6	17	10	-2	40	Class 4 (POOR)
7.5	9.0	4	8	8	4	4	5	6	6	25	10	-2	53	Class 3 (FAIR)
9.0	10.5	4	8	10	4	4	5	6	6	25	15	-2	60	Class 3 (FAIR)
10.5	12.0	4	13	10	6	6	6	6	6	30	15	-2	70	Class 2 (GOOD)
12.0	13.5	4	13	10	6	6	6	6	6	30	15	-2	70	Class 2 (GOOD)
13.5	15.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
15.0	16.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
16.5	18.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
18.0	19.5	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)
19.5	21.0	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
21.0	22.5	7	20	15	6	6	6	6	6	30	15	-2	85	Class 1 (VERY GOOD)
22.5	24.0	7	20	15	6	6	6	6	6	30	15	-2	85	Class 1 (VERY GOOD)
24.0	25.5	7	13	15	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)
25.5	26.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)

Tunnel: 7		BH: 12												RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)	
1.5	3.0	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)	
3.0	4.5	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)	
4.5	6.0	4	3	5	2	1	3	2	3	11	4	-2	25	Class 4 (POOR)	
6.0	7.5	4	3	5	2	1	3	2	3	11	4	-2	25	Class 4 (POOR)	
7.5	9.0	4	8	8	2	4	3	2	6	17	10	-2	45	Class 3(FAIR)	
9.0	10.5	4	13	8	4	4	5	6	6	25	10	-2	58	Class 3(FAIR)	
10.5	12.0	4	13	10	4	4	5	6	6	25	15	-2	65	Class 2(GOOD)	
12.0	13.5	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)	
13.5	15.0	7	13	10	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)	
15.0	16.5	7	20	15	6	6	6	6	6	30	15	-2	85	Class 1 (VERY GOOD)	
16.5	18.0	7	20	15	6	6	6	6	6	30	15	-2	85	Class 1 (VERY GOOD)	
18.0	19.5	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)	
19.5	21.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)	
21.0	22.5	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)	
22.5	24.0	7	17	15	6	6	6	6	6	30	15	-2	82	Class 1 (VERY GOOD)	

7.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-01)

[illegible]

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-02)

Test Section	10.5 m-13.5 m	radius in cm=	3 . 8						Intake (Lit.)							
									1	2	3	Avg.	Q <i>(cm3/sec)</i>	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	2.9 0	7.5 0	11. 20	9. 4	31. 3	0.0000 4303	4. 30	Dilat ion
10.50	13.50	3	300	2.58	4.3	6.88	1	1688	5.90	11.40	24.60	18.0	60.0	0.0000 5174	5. 20	
10.50	13.50	3	300	2.58	4.3	6.88	3	3688	11.60	24.40	36.50	30.5	101.7	0.0000 6390	6. 40	
10.50	13.50	3	300	2.58	4.3	6.88	2	2688	7.20	14.30	21.40	17.9	59.7	0.0000 5145	5. 10	
10.50	13.50	3	300	2.58	4.3	6.88	1	1688	3.10	8.30	12.50	10.4	34.7	0.0000 4760	4. 80	
													Avr .	0.0000 5154	4. 30	

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-03)

Test Section	9.0 m-12.0 m	radius in cm=	3.8			Intake (Lit.)												
						Flow Condition	Dilation											

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-04)

Test Section	13.5 m- 16.5 m	radius in cm=	3.8						Intake (Lit.)								
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition	
	13.50	16.50	3	300	2.6	3.65	6.25	1	1625	1.90	5.30	14.20	9.8	32.7	0.00004660	4.70	Turbulent
	13.50	16.50	3	300	2.6	3.65	6.25	2	2625	4.80	10.10	16.40	13.3	44.3	0.00003915	3.90	
	13.50	16.50	3	300	2.6	3.65	6.25	3	3625	2.80	6.50	15.80	11.2	37.3	0.00002387	2.40	
	13.50	16.50	3	300	2.6	3.65	6.25	2	2625	3.60	9.50	14.30	11.9	39.7	0.00003503	3.50	
	13.50	16.50	3	300	2.6	3.65	6.25	1	1625	1.80	6.40	11.50	9.0	30.0	0.00004279	4.30	
													Avr.	0.00003749	2.40		

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-05)

Test Section	22.5 m-25.5 m	radius in cm=	3 . 8					Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.							
22.50	25.50	3	300	2.56	4.2	6.76	1	1676	3.50	8.30	17.20	12.8	42.7	0.00005901	5.90
22.50	25.50	3	300	2.56	4.2	6.76	2	2676	5.60	13.20	31.50	22.4	74.7	0.00006467	6.50
22.50	25.50	3	300	2.56	4.2	6.76	3	3676	18.30	42.40	26.90	34.7	115.7	0.00007293	7.30
22.50	25.50	3	300	2.56	4.2	6.76	2	2676	6.10	15.30	29.80	22.6	75.3	0.00006525	6.50
22.50	25.50	3	300	2.56	4.2	6.76	1	1676	2.10	7.80	19.10	13.5	45.0	0.00006223	6.20
												Avr .	0.00006482	5.90	

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-06)

Test Section		36.0 m-39.0 m	radius in cm=		3.8				Intake (Lit.)							
																Flow Condition
			</													

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-07)

Test Section	37.5 m-40.5 m	radius in cm=	3.8				Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.					Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
							1	2	3	Avg.					
37.50	40.50	3	300	2.51	2.95	5.46	1	1546	0.50	1.50	2.60	2.1	7.0	0.00001049	1.00
37.50	40.50	3	300	2.51	2.95	5.46	2	2546	1.30	2.50	4.50	3.5	11.7	0.00001062	1.10
37.50	40.50	3	300	2.51	2.95	5.46	3	3546	1.50	3.60	5.30	4.5	15.0	0.00000980	1.00
37.50	40.50	3	300	2.51	2.95	5.46	2	2546	1.10	2.90	4.20	3.6	12.0	0.00001092	1.10
37.50	40.50	3	300	2.51	2.95	5.46	1	1546	0.80	1.80	2.50	2.2	7.3	0.00001099	1.10
												Avr.	0.00001057	1.10	

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-8)

Test Section	28.5 m-31.5 m	radius in cm=	3.8				Intake (Lit.)									
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
28.50	31.50	3	300	2.56	3.1	5.66	1	1566	3.30	9.50	13.60	11.6	38.7	0.00005723	5.70	Turbulent
28.50	31.50	3	300	2.56	3.1	5.66	2	2566	5.80	12.10	15.20	13.7	45.7	0.00004125	4.10	
28.50	31.50	3	300	2.56	3.1	5.66	3	3566	2.10	7.40	16.20	11.8	39.3	0.00002557	2.60	
28.50	31.50	3	300	2.56	3.1	5.66	2	2566	3.80	9.10	11.60	10.4	34.7	0.00003131	3.10	
28.50	31.50	3	300	2.56	3.1	5.66	1	1566	4.30	10.80	14.30	12.6	42.0	0.00006217	6.20	
													Avr .	0.00004351	2.60	

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-09)

Test Section	19.5 m-22.5 m	radius in cm=	3 . 8						Intake (Lit.)				Flow Condition			
									1	2	3	Avg.	Q <i>(cm3/sec)</i>	K cm/sec	Lugeon	
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.	3.	9.9	8.5	9.	30.	0.0000	4.	Turbulent
							1	15	3.	9.9	8.5	9.	30.	0.0000	4.	
							2	25	2.	7.6	12.	10	33.	0.0000	3.	
							3	35	1.	5.1	13.	9.	31.	0.0000	2.	
							2	25	4.	8.6	16.	12	42.	0.0000	3.	
19.50	22.50	3	30	2.48	2.7	5.18	1	1518	3.90	9.90	8.50	9.2	30.7	0.00004683	4.70	
19.50	22.50	3	30	2.48	2.7	5.18	2	2518	2.50	7.60	12.60	10.1	33.7	0.00003099	3.10	
19.50	22.50	3	30	2.48	2.7	5.18	3	3518	1.60	5.10	13.90	9.5	31.7	0.00002086	2.10	
19.50	22.50	3	30	2.48	2.7	5.18	2	2518	4.30	8.60	16.50	12.6	42.0	0.00003866	3.90	
19.50	22.50	3	30	2.48	2.7	5.18	1	1518	5.60	10.30	9.50	9.9	33.0	0.00005039	5.00	
													Avr .	0.00003755	2.10	



PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-10)

Test Section	24.0 m-27.0 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water H=(Hg+Hp) cm.	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
24.00	27.00	3	300	2.53	1.35	3.88	1	1388	1.10	3.90	10.60	7.3	24.3	0.00004064	4.10	Turbulent
24.00	27.00	3	300	2.53	1.35	3.88	2	2388	1.60	5.60	11.80	8.7	29.0	0.00002815	2.80	
24.00	27.00	3	300	2.53	1.35	3.88	3	3388	2.10	4.20	12.10	8.2	27.3	0.00001870	1.90	
24.00	27.00	3	300	2.53	1.35	3.88	2	2388	1.90	6.30	13.50	9.9	33.0	0.00003203	3.20	
24.00	27.00	3	300	2.53	1.35	3.88	1	1388	2.60	4.80	9.50	7.2	24.0	0.00004008	4.00	
													Avr .	0.00003192	1.90	

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-11)

Test Section	10.5 m-13.5 m	radius in cm=	3.8					Intake (Lit.)								

PERMEABILITY TEST RESULT OF TUNNEL-07 (BH-12)

Test Section	7.5 m-10.5 m	radius in cm=	3.8					Intake (Lit.)							
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Flow Condition	Lugeon	K cm/sec	Q (cm ³ /sec) Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water H=(Hg+Hp) cm.	Hp (Pressure at monometer) kg/cm ²	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.	L=Test Section in m.	Lower Part of Test Section (m)	Upper Part of Test Section (m)
Turbulent	4.60	0.00004577	34.0	10.90	9.40	3.80	17.22	1	7.22	4.7	2.52	30.0	3	10.50	7.50
	3.50	0.00003463	40.7	12.70	7.60	2.60	27.22	2	7.22	4.7	2.52	30.0	3	10.50	7.50
	2.80	0.00002844	45.7	13.20	6.10	2.10	37.22	3	7.22	4.7	2.52	30.0	3	10.50	7.50
	3.10	0.00003066	36.0	10.80	5.90	1.90	27.22	2	7.22	4.7	2.52	30.0	3	10.50	7.50
	5.10	0.00005070	37.7	11.30	10.70	4.80	17.22	1	7.22	4.7	2.52	30.0	3	10.50	7.50
	2.80	0.00003804	Avr .												

Lugen test result

7.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.7	BH-1	At 0.5 m depth	6.25	15.68	0.022
2			At 1.5 m depth	6.31	17.69	0.025
3		BH-2	At 0.5 m depth	6.35	21.03	0.026
4			At 1.5 m depth	6.47	25.36	0.031
5			At 3.0 m depth	6.58	24.23	0.034
6		BH-3	At 0.5 m depth	6.69	30.08	0.038

7			At 1.5 m depth	6.25	32.14	0.025
8			At 3.0 m depth	6.34	38.11	0.021
9		BH-4	At 0.5 m depth	6.11	37.69	0.032
10			At 1.5 m depth	6.06	36.78	0.035
11		BH-5	At 0.5 m depth	6.23	35.64	0.038
12		BH-8	At 0.5 m depth	6.54	26.47	0.024
13		BH-9	At 0.5 m depth	6.18	29.58	0.025
14		BH-10	At 0.7 m depth	6.23	30.01	0.026
15		BH-11	At 0.4 m depth	6.47	35.24	0.023
16		BH-12	At 0.75 m depth	6.48	32.65	0.031

7.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.7	BH-1				
2						
3		BH-2	4.5	6.7	51.2	32.56
4			7.5	6.9	53.7	33.48
5		BH-3	12	6.75	42.85	33.54
6			15	6.96	34.56	42.25
7		BH-4	4	7.01	51.58	42.22
8			7.5	7.06	56.55	53.58
9		BH-5	4.5	6.97	33.29	26.5

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
10		BH-6	9	6.92	30.25	22.58
11			4.5	6.62	34.60	26.50
12			10.5	6.72	41.22	28.96
13		BH-7	4.5	6.61	28.63	33.65
14			12	6.63	33.6	42.25
15		BH-8	6	6.87	25.57	18.33
16			15	6.66	28.74	17.56
17		BH-9	3	6.63	46.96	33.2
18			9	6.66	45.5	32.21
19		BH-10	3	6.68	48.52	35.55
20			7.5	6.69	42.21	30.29
21		BH-11	4.5	7.06	41.85	32.33
22			13.5	7.0	36.55	45.55
23		BH-12	7.5	6.99	28.55	36.55
24			13.5	6.89	35.55	41.56

7.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
SL.No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Specific gravity	Void ratio	Free swelling	Un-Confined	Compression	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in % (0.0075mm)	Liquid	Plastic	Plasticity	Shrinkage												
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-01)																								
1	At 0.5 m	DS	23.98	7.40	9.44	25.10	20.78	13.30	29	17	12	---	---	---	---	---	---	2.69	---	12	---	---	---	SC

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl. No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Specific gravity	Void ratio	Free swelling	Un-Confined	Compression	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in %	Clay in %	Liquid	Plastic	Plasticity	Shrinkage												
2	From 0.5 m to	SPT	0.00	1.96	52.66	42.69	2.69	---	---	---	---	---	---	---	---	---	2.66	---	---	---	---	N>100	NOTE*	
NOTE* From 0.5 m to 1.5 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-02)																								
1	At 0.5 m	DS	2.59	1.22	26.69	27.89	29.11	12.50	31	20	11	---	---	---	---	---	2.68	---	15	---	---	---	SC	
2	At 1.5 m	SPT	0.00	2.29	43.23	41.56	12.92	4.57	---	---	---	---	---	---	---	---	2.65	---	---	---	---	N>100	NOTE*	
3	At 3.0 m	SPT	0.05	1.78	53.45	40.15	4.57	---	---	---	---	---	---	---	---	---	2.66	---	---	---	---	N>100	NOTE*	
NOTE* From 0.5 m to 3.0 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-03)																								
1	At 0.5 m	DS	18.52	8.40	8.44	19.10	31.94	13.60	29	17	12	---	---	---	---	---	2.69	---	10	---	---	---	SC	
2	At 1.5 m	UDS	5.59	1.22	10.89	39.64	27.86	14.80	31	19	12	10	13.12	1.807	1.598	0.25	9	2.70	0.69	18	0.48	---	SC	
3	At 3.0 m	SPT	1.23	1.88	45.56	42.19	9.14	---	---	---	---	---	---	---	---	---	2.65	---	---	---	---	N>100	NOTE*	
NOTE* From 1.5 m to 3.0 m depth, a highly weathered rock material stratum exists from which core samples couldn't be collected only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-04)																								
2	At 1.5 m	UDS	5.59	2.54	10.89	39.64	26.54	14.80	31	19	12	10	12.18	1.792	1.598	0.28	9	2.70	0.69	18	0.51	---	SC	

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																									
Sl.No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Specific gravity	Void ratio	Free swelling	Un-Confined	Compression	Field S.P.T.	Group of soil.	
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in % (0.0075mm)	Liquid	Plastic	Plasticity	Shrinkage													
1	At 0.5 m	DS	2.62	1.28	27.78	24.45	30.07	13.80	29	18	11	----	----	----	----	----	----	2.69	----	12	----	----	----	SC	
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-05)																									
1	At 0.5 m	DS	18.99	3.46	7.06	31.32	26.67	12.50	29	18	11	----	----	----	----	----	----	----	----	13	----	----	----	SC	
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-08)																									
1	At 0.5 m	DS	0.37	0.07	19.06	39.96	27.64	12.90	28	18	10	----	----	----	----	----	----	----	----	12	----	----	----	SC	
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-09)																									
1	At 0.7 m	DS	17.23	3.49	7.14	31.33	27.41	13.40	28	18	10	----	----	----	----	----	----	----	----	15	----	----	----	SC	
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-10)																									
1	At 0.4 m	DS	15.55	3.52	7.89	31.56	26.98	14.50	29	18	11	----	----	----	----	----	----	2.69	----	12	----	----	----	SC	
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-11)																									
1	At 0.75	DS	13.23	3.69	7.77	32.98	28.63	13.70	29	18	11	----	----	----	----	----	----	2.69	----	12	----	----	----	SC	
LABORATORY TEST RESULT OF TUNNEL No. 07 (BH-12)																									

8. T8

8.1 Annexures

8.1.1 ANNEXURE- A (BORELOG)

8.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

8.1.2.1 Specific Gravity

Depth (m)		Specific Gravity				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	2.76	2.76	2.76	2.75	2.76
1.5	3	2.76	2.77	2.77	2.76	2.77
3	4.5	2.77	2.78	2.78	2.77	2.77
4.5	6	2.77	2.77	2.78	2.77	2.78
6	7.5	2.77	2.80	2.78	2.78	2.79
7.5	9	2.78	2.81	2.79	2.78	2.79
9	10.5	2.78	2.81	2.80	2.78	2.79
10.5	12	2.79	2.82	2.80	2.79	2.80
12	13.5	2.79	2.82	2.80	2.79	2.80
13.5	15	2.79	2.82	2.81	2.79	2.81
15	16.5	2.80	2.83	2.81	2.80	2.80
16.5	18	2.81	2.83	2.81	2.80	2.81
18	19.5		2.82	2.81	2.80	2.81
19.5	21		2.82	2.81	2.81	2.81
21	22.5		2.82	2.82	2.81	2.82
22.5	24		2.81	2.82	2.82	2.82
24	25.5		2.81	2.82		2.82
25.5	27		2.82	2.82		2.82
27	28.5		2.82	2.82		2.82
28.5	30		2.83	2.82		2.83
30	31.5		2.83	2.82		
31.5	33		2.83	2.82		
33	34.5			2.82		
34.5	36			2.83		
36	37.5			2.83		
37.5	39			2.83		

8.1.2.2 Dry Density

Depth (m)		Dry Density (gm/cc)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	2.73	2.70	2.70	2.72	2.70
1.5	3	2.74	2.72	2.72	2.73	2.71
3	4.5	2.73	2.74	2.74	2.74	2.72
4.5	6	2.74	2.76	2.76	2.74	2.73
6	7.5	2.74	2.77	2.77	2.75	2.76
7.5	9	2.74	2.77	2.77	2.75	2.76

Depth (m)		Dry Density (gm/cc)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
9	10.5	2.75	2.78	2.78	2.76	2.76
10.5	12	2.75	2.77	2.77	2.76	2.77
12	13.5	2.76	2.77	2.77	2.76	2.77
13.5	15	2.76	2.77	2.78	2.76	2.78
15	16.5	2.77	2.78	2.78	2.77	2.78
16.5	18	2.78	2.78	2.78	2.78	2.78
18	19.5		2.78	2.78	2.78	2.79
19.5	21		2.78	2.78	2.79	2.79
21	22.5		2.77	2.78	2.79	2.79
22.5	24		2.78	2.78	2.80	2.79
24	25.5		2.78	2.78		2.79
25.5	27		2.78	2.78		2.79
27	28.5		2.78	2.78		2.79
28.5	30		2.78	2.78		2.80
30	31.5		2.79	2.77		
31.5	33		2.79	2.78		
33	34.5			2.78		
34.5	36			2.78		
36	37.5			2.79		
37.5	39			2.79		

8.1.2.3 Water absorption Test

Depth (m)		Water Absorption				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	0.44	0.55	0.55	0.55	0.50
1.5	3	0.44	0.53	0.51	0.43	0.48
3	4.5	0.42	0.42	0.42	0.40	0.42
4.5	6	0.41	0.35	0.35	0.35	0.40
6	7.5	0.39	0.32	0.32	0.33	0.35
7.5	9	0.38	0.31	0.31	0.30	0.33
9	10.5	0.37	0.30	0.30	0.28	0.31
10.5	12	0.35	0.30	0.38	0.28	0.29
12	13.5	0.25	0.28	0.35	0.26	0.25
13.5	15	0.23	0.26	0.31	0.26	0.25
15	16.5	0.21	0.24	0.28	0.25	0.23
16.5	18	0.18	0.21	0.25	0.20	0.21
18	19.5		0.18	0.23	0.18	0.19
19.5	21		0.18	0.21	0.15	0.18
21	22.5		0.17	0.19	0.14	0.17
22.5	24		0.18	0.17	0.12	0.17
24	25.5		0.18	0.17		0.17
25.5	27		0.16	0.17		0.16

Depth (m)		Water Absorption				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
27	28.5		0.16	0.16		0.16
28.5	30		0.16	0.16		0.15
30	31.5		0.15	0.16		
31.5	33		0.15	0.15		
33	34.5			0.15		
34.5	36			0.15		
36	37.5			0.15		
37.5	39			0.15		

8.1.2.4 Porosity

Depth (m)		Porosity (%)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	1.09	2.17	2.17	1.09	2.17
1.5	3	0.72	1.81	1.81	1.09	2.17
3	4.5	1.44	1.44	1.44	1.08	1.81
4.5	6	1.08	0.36	0.72	1.08	1.80
6	7.5	1.08	1.07	0.36	1.08	1.08
7.5	9	1.44	1.42	0.72	1.08	1.08
9	10.5	1.08	1.07	0.71	0.72	1.08
10.5	12	1.43	1.77	1.07	1.08	1.07
12	13.5	1.08	1.77	1.07	1.08	1.07
13.5	15	1.08	1.77	1.07	1.08	1.07
15	16.5	1.07	1.77	1.07	1.07	0.71
16.5	18	1.07	1.77	1.07	0.71	1.07
18	19.5		1.42	1.07	0.71	0.71
19.5	21		1.42	1.14	0.71	0.71
21	22.5		1.77	1.42	0.71	1.06
22.5	24		1.07	1.42	0.71	1.06
24	25.5		1.07	1.42		1.06
25.5	27		1.42	1.42		1.06
27	28.5		1.42	1.42		1.06
28.5	30		1.77	1.42		1.06
30	31.5		1.41	1.77		
31.5	33		1.41	1.42		
33	34.5			1.42		
34.5	36			1.77		
36	37.5			1.41		
37.5	39			1.41		

8.1.2.5 Hardness

Depth (m)		Hardness (Mohr Scale)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	6.00	----	-----	6.00	6.00
1.5	3	6.00	----	-----	6.00	6.00
3	4.5	6.00	----	-----	7.00	6.00
4.5	6	6.00	7.00	7.00	7.00	7.00
6	7.5	6.00	7.00	7.00	7.00	7.00
7.5	9	7.00	7.00	7.00	8.00	7.00
9	10.5	7.00	7.00	7.00	8.00	7.00
10.5	12	7.00	7.00	7.00	7.00	8.00
12	13.5	7.00	7.00	7.00	7.00	8.00
13.5	15	7.00	7.00	7.00	7.00	8.00
15	16.5	8.00	7.00	7.00	8.00	8.00
16.5	18	8.00	7.00	7.00	8.00	8.00
18	19.5		7.00	7.00	8.00	8.00
19.5	21		7.00	7.00	8.00	8.00
21	22.5		7.00	7.00	8.00	8.00
22.5	24		7.00	7.00	8.00	8.00
24	25.5		7.00	7.00		8.00
25.5	27		7.00	7.00		8.00
27	28.5		8.00	7.00		8.00
28.5	30		8.00	7.00		8.00
30	31.5		8.00	8.00		
31.5	33		8.00	8.00		
33	34.5			8.00		
34.5	36			8.00		
36	37.5			8.00		
37.5	39			8.00		

8.1.2.6 Compression Test

Depth (m)		Unconfined Compression Strength (N/mm ²)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	-----	----	-----	-----	-----
1.5	3	-----	----	-----	-----	-----
3	4.5	-----	----	-----	-----	-----
4.5	6	-----	18.46	18.18	-----	-----
6	7.5	-----	20.87	19.89	-----	-----
7.5	9	18.53	22.73	21.53	-----	-----
9	10.5	22.69	24.21	23.08	-----	-----
10.5	12	24.52	25.57	25.53	-----	-----
12	13.5	26.46	26.97	26.58	-----	-----
13.5	15	29.72	32.57	27.67	34.35	-----

Depth (m)		Unconfined Compression Strength (N/mm ²)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
15	16.5	33.18	34.58	28.68	35.09	38.27
16.5	18	44.49	36.28	29.18	35.94	45.62
18	19.5		37.72	30.93	37.19	47.67
19.5	21		40.82	33.11	49.03	51.82
21	22.5		42.52	34.12	58.76	53.96
22.5	24		45.32	35.90	65.14	56.06
24	25.5		47.41	37.15		57.85
25.5	27		49.90	38.12		58.81
27	28.5		53.13	40.68		59.72
28.5	30		55.66	42.47		60.07
30	31.5		57.93	44.37		
31.5	33		60.90	46.20		
33	34.5			48.38		
34.5	36			52.73		
36	37.5			53.82		
37.5	39			55.49		

8.1.2.7 Point Load Test

Depth (m)		Point Load Strength (N/mm ²)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	-----	-----	-----	-----	-----
1.5	3	-----	-----	-----	-----	-----
3	4.5	-----	-----	-----	-----	-----
4.5	6	-----	0.93	0.89	-----	-----
6	7.5	-----	1.04	0.93	-----	-----
7.5	9	0.89	1.15	1.04	-----	-----
9	10.5	1.05	1.21	1.14	-----	-----
10.5	12	1.21	1.28	1.18	-----	-----
12	13.5	1.29	1.35	1.23	1.52	-----
13.5	15	1.43	1.63	1.34	1.65	-----
15	16.5	1.56	1.74	1.37	1.72	1.98
16.5	18	2.14	1.83	1.42	1.81	2.26
18	19.5		1.89	1.46	1.93	2.39
19.5	21		2.02	1.54	2.25	2.54
21	22.5		2.16	1.57	2.69	2.73
22.5	24		2.28	1.65	2.98	2.82
24	25.5		2.34	1.71		2.95
25.5	27		2.46	1.75		3.04
27	28.5		2.69	1.86		3.14
28.5	30		2.76	1.97		3.26

Depth (m)		Point Load Strength (N/mm ²)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
30	31.5		2.88	2.08		
31.5	33		3.08	2.16		
33	34.5			2.34		
34.5	36			2.51		
36	37.5			2.66		
37.5	39			2.78		

8.1.2.8 Brazilian Test

Depth (m)		Tensile Strength (N/mm ²)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	----	----	----	-----	-----
1.5	3	----	----	----	-----	-----
3	4.5	----	----	----	-----	-----
4.5	6	-----	1.89	2.05	-----	-----
6	7.5	-----	2.18	2.13	-----	-----
7.5	9	1.92	2.34	2.23	-----	-----
9	10.5	2.31	2.48	2.45	-----	-----
10.5	12	2.48	2.56	2.66	-----	-----
12	13.5	2.67	2.66	2.82	3.42	-----
13.5	15	2.95	3.24	2.94	3.56	-----
15	16.5	3.35	3.41	3.21	3.99	4.26
16.5	18	4.48	3.59	3.45	4.21	4.74
18	19.5		3.74	3.56	4.62	4.92
19.5	21		3.96	3.66	6.12	5.36
21	22.5		4.21	3.78	6.98	5.63
22.5	24		4.47	3.89	7.45	5.82
24	25.5		4.68	3.96		5.93
25.5	27		5.89	4.21		6.12
27	28.5		5.21	4.36		6.38
28.5	30		5.46	4.45		6.76
30	31.5		5.89	4.63		
31.5	33		6.12	4.85		
33	34.5			5.39		
34.5	36			5.56		
36	37.5			5.82		
37.5	39			6.45		

8.1.2.9 Modulus of elasticity test

Depth (m)		Modulus of Elasticity (GPa)				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	----	----	----	-----	----
1.5	3	----	----	----	-----	----
3	4.5	----	----	----	-----	----
4.5	6	----	----	----	-----	----
6	7.5	----	31.10	----	-----	----
7.5	9	----	32.40	----	-----	----
9	10.5	----	32.90	----	-----	----
10.5	12	----	33.50	33.10	-----	----
12	13.5	----	33.80	33.60	-----	----
13.5	15	33.60	36.30	34.20	-----	----
15	16.5	36.40	36.70	34.80	-----	40.20
16.5	18	45.10	37.50	35.00	37.30	43.30
18	19.5		38.10	35.20	38.50	44.60
19.5	21		39.40	35.80	44.60	45.30
21	22.5		41.80	36.20	48.50	47.20
22.5	24		43.20	37.30	53.10	47.80
24	25.5		43.60	37.10		48.30
25.5	27		44.40	38.30		48.60
27	28.5		46.30	40.60		50.30
28.5	30		47.50	41.70		51.40
30	31.5		48.30	42.50		
31.5	33		50.40	43.80		
33	34.5			44.70		
34.5	36			45.60		
36	37.5			47.10		
37.5	39			47.90		

8.1.2.10 Abrasion test

Depth (m)		Abrasion				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
0.5	1.5	----	----	----	-----	----
1.5	3	----	----	----	-----	----
3	4.5	----	----	----	-----	----
4.5	6	----	1.24	1.23	-----	----
6	7.5	----	1.31	1.30	-----	1.45
7.5	9	1.23	1.36	1.35	-----	1.52
9	10.5	1.36	1.42	1.42	-----	1.61
10.5	12	1.42	1.48	1.46	-----	1.69
12	13.5	1.48	1.51	1.52	1.66	1.75
13.5	15	1.57	1.64	1.55	1.73	1.79

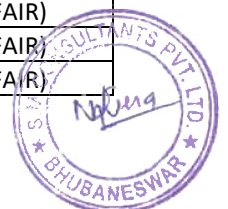
Depth (m)		Abrasion				
Top	Bottom	BH01	BH02	BH03	BH04	BH05
15	16.5	1.63	1.69	1.59	1.78	1.83
16.5	18	2.01	1.78	1.63	1.79	2.05
18	19.5		1.83	1.66	1.82	2.09
19.5	21		1.91	1.71	2.14	2.24
21	22.5		1.94	1.77	2.43	2.31
22.5	24		2.05	1.79	2.66	2.39
24	25.5		2.12	1.81		2.43
25.5	27		2.18	1.85		2.48
27	28.5		2.27	1.92		2.53
28.5	30		2.36	1.93		2.57
30	31.5		2.42	1.96		
31.5	33		2.51	2.03		
33	34.5			2.15		
34.5	36			2.24		
36	37.5			2.31		
37.5	39			2.36		

8.1.3 ANNEXURE- C (RMR LOGS)

Tunnel:08		BH-01											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)

1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
7.5	9.0	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)
9.0	10.5	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
10.5	12.0	2	3	8	1	1	1	2	1	6	7	-2	24	Class 4 (POOR)
12.0	13.5	4	3	10	2	4	3	2	3	14	7	-2	36	Class 4 (POOR)
13.5	15.0	4	3	10	2	4	3	2	3	14	7	-2	36	Class 4 (POOR)
15.0	16.5	4	3	10	2	4	3	2	5	16	7	-2	38	Class 4 (POOR)
16.5	18.0	4	3	10	2	4	3	2	5	16	7	-2	38	Class 4 (POOR)

Tunnel: 8		BH: 2											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	2	3	5	0	0	0	0	0	0	5	-2	13	Class 5 (VERY POOR)
6.0	7.5	2	3	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
7.5	9.0	2	3	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
9.0	10.5	2	8	5	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
10.5	12.0	4	8	5	1	1	3	2	3	10	7	-2	32	Class 4 (POOR)
12.0	13.5	4	8	10	4	4	5	4	4	21	7	-2	48	Class 3 (FAIR)
13.5	15.0	4	8	10	4	4	5	4	4	21	7	-2	48	Class 3 (FAIR)
15.0	16.5	4	8	10	4	4	5	4	4	21	7	-2	48	Class 3 (FAIR)
16.5	18.0	4	8	10	4	4	5	4	4	21	7	-2	48	Class 3 (FAIR)
18.0	19.5	4	13	10	4	4	5	4	4	21	10	-2	56	Class 3 (FAIR)
19.5	21.0	4	8	10	4	4	5	4	4	21	10	-2	51	Class 3 (FAIR)
21.0	22.5	4	13	10	4	4	5	4	4	21	10	-2	56	Class 3 (FAIR)
22.5	24.0	4	8	10	4	4	5	4	4	21	10	-2	51	Class 3 (FAIR)
24.0	25.5	4	13	10	4	4	5	4	4	21	10	-2	56	Class 3 (FAIR)
25.5	27.0	4	13	10	4	4	5	4	4	21	10	-2	56	Class 3 (FAIR)
27.0	28.5	7	8	10	4	4	5	4	4	21	10	-2	54	Class 3 (FAIR)
28.5	30.0	7	8	10	4	4	5	4	4	21	10	-2	54	Class 3 (FAIR)
30.0	31.5	7	8	10	4	4	5	4	4	21	10	-2	54	Class 3 (FAIR)
31.5	33.0	7	8	10	4	4	5	4	4	21	10	-2	54	Class 3 (FAIR)



Tunnel:8			BH03											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities <small>(combined)</small>	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	0	0	0	0	0	0	10	-2	16	Class 5 (VERY POOR)	
1.5	3.0	0	3	5	1	1	3	2	3	10	10	-2	26	Class 4 (POOR)	
3.0	4.5	0	3	5	1	1	3	2	3	10	10	-2	26	Class 4 (POOR)	
4.5	6.0	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)	
6.0	7.5	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)	
7.5	9.0	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)	
9.0	10.5	2	3	5	1	1	5	4	5	16	10	-2	34	Class 4 (POOR)	
10.5	12.0	4	3	8	2	4	5	4	5	20	10	-2	43	Class 3(FAIR)	
12.0	13.5	4	3	10	2	4	5	4	5	20	10	-2	45	Class 3(FAIR)	
13.5	15.0	4	3	8	2	4	5	4	5	20	10	-2	43	Class 3(FAIR)	
15.0	16.5	4	3	8	2	4	5	4	5	20	10	-2	43	Class 3(FAIR)	
16.5	18.0	4	3	8	2	4	5	4	5	20	10	-2	43	Class 3(FAIR)	
18.0	19.5	4	3	8	2	4	5	4	5	20	10	-2	43	Class 3(FAIR)	
19.5	21.0	4	8	10	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)	
21.0	22.5	4	3	15	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)	
22.5	24.0	4	3	15	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)	
24.0	25.5	4	3	15	4	4	5	4	5	22	10	-2	52	Class 3(FAIR)	
25.5	27.0	4	8	15	4	4	5	4	5	22	10	-2	57	Class 3(FAIR)	
27.0	28.5	4	8	15	4	4	5	4	5	22	10	-2	57	Class 3(FAIR)	
28.5	30.0	4	8	15	4	4	5	4	5	22	10	-2	57	Class 3(FAIR)	
30.0	31.5	4	3	5	4	4	5	4	5	22	10	-2	42	Class 3(FAIR)	
31.5	33.0	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)	
33.0	34.5	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)	
34.5	36.0	7	3	15	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)	
36.0	37.5	7	8	10	4	4	5	4	5	22	10	-2	55	Class 3(FAIR)	
37.5	39.0	7	8	15	4	4	5	4	5	22	10	-2	60	Class 3(FAIR)	

Tunnel:08		BH-04											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	3	2	1	6	4	-2	16	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	3	2	1	6	5	-2	17	Class 5 (VERY POOR)
6.0	7.5	0	3	5	1	1	3	2	1	8	5	-2	19	Class 5 (VERY POOR)
7.5	9.0	0	3	5	1	1	3	2	1	8	5	-2	19	Class 5 (VERY POOR)
9.0	10.5	0	3	5	1	1	3	2	3	10	5	-2	21	Class 4 (POOR)
10.5	12.0	0	3	5	1	1	3	2	3	10	5	-2	21	Class 4 (POOR)
12.0	13.5	0	3	5	1	1	3	2	3	10	5	-2	21	Class 4 (POOR)
13.5	15.0	4	3	8	4	4	5	2	3	18	5	-2	36	Class 4 (POOR)
15.0	16.5	4	3	8	4	4	5	2	3	18	7	-2	38	Class 4 (POOR)
16.5	18.0	4	3	8	4	4	5	2	3	18	7	-2	38	Class 4 (POOR)
18.0	19.5	4	8	15	4	5	6	4	5	24	10	-2	59	Class 3 (FAIR)
19.5	21.0	4	8	15	4	5	6	4	5	24	10	-2	59	Class 3 (FAIR)
21.0	22.5	7	8	15	4	4	6	4	5	23	10	-2	61	Class 2 (GOOD)
22.5	24.0	7	8	10	2	4	6	4	5	21	10	-2	54	Class 3 (FAIR)

Tunnel:08		BH-05											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)

Tunnel:08		BH-05											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
6.0	7.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
9.0	10.5	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
10.5	12.0	0	3	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
12.0	13.5	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
13.5	15.0	0	3	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
15.0	16.5	4	8	8	2	1	3	2	3	11	4	-2	33	Class 4 (POOR)
16.5	18.0	4	8	8	2	1	3	2	3	11	4	-2	33	Class 4 (POOR)
18.0	19.5	4	8	8	2	1	3	2	3	11	4	-2	33	Class 4 (POOR)
19.5	21.0	7	8	8	2	1	3	2	3	11	4	-2	36	Class 4 (POOR)
21.0	22.5	7	8	8	2	1	3	2	3	11	4	-2	36	Class 4 (POOR)
22.5	24.0	7	13	8	2	1	3	2	3	11	4	-2	41	Class 3 (FAIR)
24.0	25.5	7	13	10	6	4	5	4	6	25	15	-2	68	Class 2 (GOOD)
25.5	27.0	7	13	10	6	4	5	4	6	25	16	-2	69	Class 2 (GOOD)
27.0	28.5	7	13	8	2	1	3	2	3	11	4	-2	41	Class 3 (FAIR)
28.5	30.0	7	13	8	2	1	3	2	3	11	4	-2	41	Class 3 (FAIR)

8.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-08 (BH-01)

Test Section	3.0 m-6.0 m	radius in cm=	3 . 8						Intake (Lit.)							
									1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water		1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
3.00	6.00	3	2.52	6.2	7.02	1	17.02		5.50	9.10	19.50	14.3	47.7	0.00006491	6.50	Was hout
3.00	6.00	3	2.52	6.2	7.02	2	27.02		12.30	22.80	29.10	26.0	86.7	0.00007435	7.40	
3.00	6.00	3	2.52	6.2	7.02	3	37.02		17.30	29.90	46.50	38.2	127.4	0.00007973	8.00	
3.00	6.00	3	2.52	6.2	7.02	2	27.02		11.60	23.50	38.80	31.2	104.0	0.00008921	8.90	
3.00	6.00	3	2.52	6.2	7.02	1	17.02		9.50	18.60	26.80	22.7	75.7	0.00010305	10.30	
													Avr .	0.00008225	10.30	

PERMEABILITY TEST RESULT OF TUNNEL-08 (BH-02)

Test Section	16.5 m-19.5 m	radius in cm=	3 . 8			Intake (Lit.)	
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Flow Condition													
Lugeon	4.00	Turbulent											
K cm/sec	0.0000 4048												
Q (cm ³ /sec)	38.3												
Avg.	11.5												
3 (15 min)	15.30												
2 (10 min)	7.70												
1 (5 min)	2.90												
Differential Head of Water H=(Hg+Hp) cm.	21.95												
Hp (Pressure at monometer) kg/cm ²	1												
Hg in m.	11.95	2	31.95	5.20	11.30	17.30	47.7	0.0000 3458	3.50				
GWL of hole m	9.4	3	41.95	3.80	8.10	20.20	47.3	0.0000 2615	2.60				
Hight Of water Swivel from GL	2.55	2	31.95	4.50	10.60	16.30	45.0	0.0000 3265	3.30				
L=Test Section in cm.	300	3	300	300	300	300	300	0.0000 3731	3.70				
L=Test Section in m.	3	3	3	3	3	3	3	0.0000 3423	2.60				
Lower Part of Test Section (m)	19.50	3	19.50	3	19.50	3	19.50	0.0000 3423	2.60				
Upper Part of Test Section (m)	16.50	3	16.50	3	16.50	3	16.50	0.0000 3423	2.60				
								Avr .	2.60				

PERMEABILITY TEST RESULT OF TUNNEL-08 (BH-03)

Test Section	24.0 m- 27.0 m	radius in cm=	3 . 8			Intake (Lit.)	
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Flow Condition														Dila tion	
Lugeon	5.	70													
K cm/sec	0.0000	5712	6.	20											
Q (cm3/sec)	48.7		7.	00											
Avg.	14	.6	119.	4											
3 (15 min)	18.	80	32.	20	41.	60	35	.8	76.3	0.0000	5947	5.	20		
2 (10 min)	10.	30	15.	30	29.	90	22	.9	44.3	0.0000	5203	5.	20		
1 (5 min)	4.1	0	6.6	0	14.	30	5.7	0	19	3.9	0	17.	10		
Differential Head of Water H=(Hg+Hp)	19	75	29	75	39	75	29	75	19	75					
Hp (Pressure at monometer) kg/cm2	1		2		3		2		1						
Hg in m.	9.7	5	9.7	5	9.7	5	9.7	5	9.7	5					
GWL of hole m	7.	3	7.	3	7.	3	7.	3	7.	3					
Hight Of water Swivel from GL	2.4	5	2.4	5	2.4	5	2.4	5	2.4	5					
L=Test Section in cm.	30	0	30	0	30	0	30	0	30	0					
L=Test Section in m.	3		3		3		3		3						
Lower Part of Test Section (m)	27.0	0	27.0	0	27.0	0	27.0	0	27.0	0					
Upper Part of Test Section (m)	24.00		24.00		24.00		24.00		24.00						
										Avr.	0.0000	6000	5.	20	

PERMEABILITY TEST RESULT OF TUNNEL-08 (BH-04)

Test Section	9.0 m-12.0 m	radius in cm=	3 . 8			Intake (Lit.)	
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Flow Condition												Was hout	
Lugeon	K cm/sec												
Q (cm ³ /sec)		62.7	103.0	143.4	120.4	88.4	Avr.	0.0000	8396	9.90			
Avg.		18.8	30.9	43.0	36.1	26.5							
3 (15 min)		25.10	36.10	48.20	44.20	30.40							
2 (10 min)		12.50	25.60	37.70	27.90	22.50							
1 (5 min)		5.80	13.30	18.60	12.40	10.30							
Differential Head of Water H=(Hg+Hp)		20.67	30.67	40.67	30.67	20.67							
Hp (Pressure at monometer) kg/cm ²		1	2	3	2	1							
Hg in m.		10.67	10.67	10.67	10.67	10.67							
GWL of hole m		8.1	8.1	8.1	8.1	8.1							
Hight Of water Swivel from GL		2.57	2.57	2.57	2.57	2.57							
L=Test Section in cm.		300	300	300	300	300							
L=Test Section in m.		3	3	3	3	3							
Lower Part of Test Section (m)		12.00	12.00	12.00	12.00	12.00							
Upper Part of Test Section (m)		9.00	9.00	9.00	9.00	9.00							

PERMEABILITY TEST RESULT OF TUNNEL-08 (BH-05)

Test Section	6.0 m-9.0 m		radius in cm=		3.8				Intake (Lit.)												
	Upper Part of Test Section (m)		Lower Part of Test Section (m)		L=Test Section in m.	Hight Of water Swivel from GL		GWL of hole m		Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp) cm.		1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
	6.00	9.00	3	300	2.45	5.7	8.15	1	1815	2.90	6.30	14.50	10.4	34.7	0.00004427	4.40	Turbulent				
	6.00	9.00	3	300	2.45	5.7	8.15	2	2815	4.20	11.80	29.10	20.5	68.3	0.00005627	5.60					
	6.00	9.00	3	300	2.45	5.7	8.15	3	3815	12.60	25.50	37.10	31.3	104.4	0.00006339	6.30					
	6.00	9.00	3	300	2.45	5.7	8.15	2	2815	4.90	10.20	27.50	18.9	63.0	0.00005187	5.20					
	6.00	9.00	3	300	2.45	5.7	8.15	1	1815	2.20	5.90	16.10	11.0	36.7	0.00004683	4.70					
																		Avr .	0.00005253	4.40	

Lugen test result

8.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.8	BH-1	At 0.5 m depth	6.11	18.65	0.022
2		BH-2	At 0.5 m depth	6.32	22.34	0.028
3		BH-3	At 0.5 m depth	6.58	25.37	0.034
4		BH-4	At 0.5 m depth	6.47	24.69	0.029
5		BH-5	At 0.5 m depth	6.29	32.11	0.036

8.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.8	BH-1	7.5	6.54	26.55	16.2
2			12	6.61	24.56	16.54
3		BH-2	10.5	6.76	33.68	28.56
4			13.5	6.85	36.22	41.25
5		BH-3	9	6.98	28.96	41.25
6			15	6.92	27.54	38.54
7		BH-4	9	7.03	26.66	31.44
8			19.5	7.01	35.55	44.56
9		BH-5	6	6.99	36.85	32.1
10			13.5	6.85	30.52	35.55

8.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
SL. No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of shearing	Un-Confined	Compression	Specific gravity	Void ratio	Free swelling	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in %	Liquid	Plastic	Plasticity												
LABORATORY TEST RESULT OF TUNNEL NO.8 (BH-1)																							
1	At 0.5 m	D.S	1.27	4.51	28.52	25.62	25.98	14.10	27	17	10	----	----	----	----	----	----	----	2.69	----	10	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.8 (BH-2)																							
1	At 0.5 m	D.S	1.60	17.54	19.78	19.85	25.83	15.40	28	17	11	----	----	----	----	----	----	----	2.68	----	10	----	SC

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
Sl.No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of shearing	Un-Confined	Compression	Specific gravity	Void ratio	Free swelling	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in %	Liquid	Plastic	Plasticity												
LABORATORY TEST RESULT OF TUNNEL NO.8 (BH-3)																							
1	At 0.5 m	D.S	3.41	7.65	29.51	16.37	28.76	14.30	27	17	10	---	---	---	---	---	---	---	---	---	12	---	SC
LABORATORY TEST RESULT OF TUNNEL NO.8 (BH-4)																							
1	At 0.5 m	D.S	1.48	3.67	25.46	28.46	27.33	13.60	27	17	10	---	---	---	---	---	---	---	2.69	---	12	---	SC
LABORATORY TEST RESULT OF TUNNEL NO.8(BH-5)																							
1	At 0.5 m	D.S	2.18	6.49	19.55	27.31	29.67	14.80	29	18	11	---	---	---	---	---	---	---	2.69	---	12	---	SC

9. T9

9.1 Annexures

9.1.1 ANNEXURE- A (BORELOG)

9.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

9.1.2.1 Specific Gravity

Depth (m)		Specific Gravity			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	2.77	2.77	2.77	2.77
1.5	3	2.78	2.78	2.78	2.78
3	4.5	2.78	2.78	2.79	2.78
4.5	6	2.80	2.78	2.80	2.78
6	7.5	2.80	2.79	2.80	2.79
7.5	9	2.81	2.79	2.80	2.80
9	10.5	2.81	2.80	2.80	2.80
10.5	12	2.81	2.80	2.81	2.80
12	13.5	2.81	2.80	2.80	2.81
13.5	15	2.81	2.81	2.81	2.81
15	16.5	2.82	2.81	2.80	2.82
16.5	18	2.83	2.81	2.81	2.82
18	19.5	2.84	2.81	2.81	2.83
19.5	21	2.84	2.82	2.82	2.83
21	22.5		2.83	2.82	2.84
22.5	24		2.83	2.83	
24	25.5		2.84	2.83	
25.5	27		2.84	2.83	
27	28.5		2.84	2.83	
28.5	30		2.84		

9.1.2.2 Dry Density

Depth (m)		Density (gm/cc)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	2.72	2.72	2.74	2.72
1.5	3	2.73	2.72	2.75	2.74
3	4.5	2.74	2.74	2.77	2.76
4.5	6	2.75	2.75	2.78	2.75
6	7.5	2.75	2.75	2.78	2.77
7.5	9	2.76	2.76	2.78	2.78
9	10.5	2.77	2.77	2.78	2.78
10.5	12	2.77	2.77	2.79	2.79
12	13.5	2.77	2.77	2.79	2.79
13.5	15	2.76	2.76	2.78	2.79
15	16.5	2.77	2.77	2.79	2.81
16.5	18	2.77	2.77	2.79	2.81
18	19.5	2.78	2.77	2.79	2.80

Depth (m)		Density (gm/cc)			
Top	Bottom	BH01	BH02	BH03	BH04
19.5	21	2.79	2.77	2.81	2.80
21	22.5		2.78	2.81	2.80
22.5	24		2.78	2.80	
24	25.5		2.78	2.80	
25.5	27		2.78	2.80	
27	28.5		2.79	2.80	
28.5	30		2.79		

9.1.2.3 Water absorption Test

Depth (m)		Water Absorption (%)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	0.55	0.55	0.45	0.55
1.5	3	0.40	0.55	0.40	0.49
3	4.5	0.38	0.49	0.30	0.45
4.5	6	0.30	0.45	0.25	0.41
6	7.5	0.29	0.41	0.24	0.24
7.5	9	0.28	0.38	0.23	0.22
9	10.5	0.26	0.38	0.22	0.20
10.5	12	0.25	0.40	0.20	0.18
12	13.5	0.20	0.30	0.19	0.16
13.5	15	0.19	0.29	0.19	0.15
15	16.5	0.18	0.29	0.18	0.14
16.5	18	0.15	0.25	0.17	0.14
18	19.5	0.12	0.25	0.16	0.12
19.5	21	0.10	0.20	0.14	0.10
21	22.5		0.22	0.14	0.10
22.5	24		0.15	0.10	
24	25.5		0.13	0.10	
25.5	27		0.12	0.10	
27	28.5		0.12	0.10	
28.5	30		0.12		

9.1.2.4 Porosity

Depth (m)		Porosity (%)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	1.81	1.81	1.08	1.81
1.5	3	1.80	2.16	1.08	1.44
3	4.5	1.44	1.44	0.72	0.72
4.5	6	1.79	1.08	0.71	1.08
6	7.5	1.79	1.43	0.71	0.72
7.5	9	1.78	1.08	0.71	0.71
9	10.5	1.42	1.07	0.71	0.71

Depth (m)		Porosity (%)			
Top	Bottom	BH01	BH02	BH03	BH04
10.5	12	1.42	1.07	0.71	0.36
12	13.5	1.42	1.07	0.36	0.71
13.5	15	1.78	1.78	1.07	0.71
15	16.5	1.77	1.42	0.36	0.35
16.5	18	2.12	1.42	0.71	0.35
18	19.5	2.11	1.42	0.71	1.06
19.5	21	1.76	1.77	0.35	1.06
21	22.5		1.77	0.35	1.41
22.5	24		1.77	1.06	
24	25.5		2.11	1.06	
25.5	27		2.11	1.06	
27	28.5		1.76	1.06	
28.5	30		1.76		

9.1.2.5 Hardness

Depth (m)		Hardness (Mohr's Scale)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	6.00	6.00	6.00	6.00
1.5	3	6.00	6.00	6.00	7.00
3	4.5	7.00	7.00	7.00	7.00
4.5	6	7.00	7.00	8.00	7.00
6	7.5	7.00	7.00	8.00	8.00
7.5	9	7.00	7.00	8.00	8.00
9	10.5	8.00	7.00	8.00	8.00
10.5	12	8.00	7.00	8.00	8.00
12	13.5	8.00	7.00	8.00	8.00
13.5	15	8.00	7.00	8.00	8.00
15	16.5	8.00	8.00	8.00	8.00
16.5	18	8.00	8.00	8.00	8.00
18	19.5	8.00	8.00	8.00	8.00
19.5	21	8.00	8.00	8.00	8.00
21	22.5		8.00	8.00	8.00
22.5	24		8.00	8.00	
24	25.5		8.00	8.00	
25.5	27		8.00	8.00	
27	28.5		8.00	8.00	
28.5	30		8.00		

9.1.2.6 Compression Test

Depth (m)		Unconfined Compression Strength (N/mm ²)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----

Depth (m)		Unconfined Compression Strength (N/mm ²)			
Top	Bottom	BH01	BH02	BH03	BH04
1.5	3	----	----	----	----
3	4.5	----	11.35	----	9.91
4.5	6	----	11.70	----	13.68
6	7.5	----	20.52	----	15.35
7.5	9	----	23.39	44.76	21.04
9	10.5	29.22	30.39	46.94	24.54
10.5	12	35.05	31.12	48.69	29.86
12	13.5	40.45	31.90	49.15	30.95
13.5	15	41.26	35.05	50.59	35.28
15	16.5	42.82	37.40	56.57	44.18
16.5	18	50.59	44.53	60.46	48.37
18	19.5	61.38	46.10	64.42	56.97
19.5	21	70.38	48.11	66.37	62.34
21	22.5		48.98	66.13	66.45
22.5	24		50.56	75.18	
24	25.5		52.48	76.66	
25.5	27		59.29	76.93	
27	28.5		60.47	77.84	
28.5	30		66.49		

9.1.2.7 Point Load Test

Depth (m)		Point Load Strength (N/mm ²)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----
1.5	3	----	----	----	----
3	4.5	----	----	----	0.51
4.5	6	----	0.56	1.56	0.70
6	7.5	----	0.98	1.78	0.74
7.5	9	1.23	1.12	2.24	1.04
9	10.5	----	1.46	2.35	1.22
10.5	12	1.81	1.50	2.46	1.45
12	13.5	1.99	1.56	2.57	1.56
13.5	15	2.08	1.69	2.61	1.73
15	16.5	2.14	1.78	2.79	2.18
16.5	18	2.62	2.12	2.92	2.39
18	19.5	3.06	2.18	3.16	2.82
19.5	21	3.41	2.32	3.37	3.11
21	22.5		2.37	3.42	3.56
22.5	24		2.43	3.68	
24	25.5		2.54	3.96	
25.5	27		2.84	4.08	
27	28.5		2.93	4.29	
28.5	30		3.18		

9.1.2.8 Brazilian Test

Depth (m)		Tensile Strength (N/mm ²)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----
1.5	3	----	----	----	----
3	4.5	----	1.21	----	1.06
4.5	6	1.95	1.32	3.92	1.45
6	7.5	2.10	2.28	4.20	1.62
7.5	9	----	2.46	4.78	2.32
9	10.5	2.98	3.32	4.84	2.69
10.5	12	3.78	3.46	4.89	3.24
12	13.5	4.49	3.61	4.92	3.56
13.5	15	4.75	3.87	5.34	3.82
15	16.5	4.96	4.12	5.87	4.62
16.5	18	5.65	4.57	6.02	5.18
18	19.5	6.69	4.84	6.42	5.96
19.5	21	7.64	5.13	6.60	6.74
21	22.5		5.37	6.58	7.85
22.5	24		5.79	7.40	
24	25.5		6.08	7.98	
25.5	27		6.56	8.56	
27	28.5		6.89	9.02	
28.5	30		7.34		

9.1.2.9 Modulus of elasticity test

Depth (m)		Modulus of Elasticity (GPa)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----
1.5	3	----	----	----	----
3	4.5	----	----	----	----
4.5	6	----	----	----	----
6	7.5	----	----	----	26.20
7.5	9	----	----	----	30.40
9	10.5	----	----	----	32.60
10.5	12	----	----	----	33.50
12	13.5	----	35.80	----	35.40
13.5	15	----	37.20	----	37.20
15	16.5	----	38.50	----	42.80
16.5	18	46.40	43.60	----	44.70
18	19.5	50.60	44.20	53.70	48.30
19.5	21	55.30	45.20	54.10	51.20
21	22.5		45.60	53.90	55.80
22.5	24		46.20	56.20	

Depth (m)		Modulus of Elasticity (GPa)			
Top	Bottom	BH01	BH02	BH03	BH04
24	25.5		46.90	56.80	
25.5	27		49.30	57.80	
27	28.5		50.60	58.20	
28.5	30		53.70		

9.1.2.10 Abrasion test

Depth (m)		Abrasion value			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----
1.5	3	----	----	----	----
3	4.5	----	1.03	----	0.98
4.5	6	1.20	1.12	0.00	1.05
6	7.5	1.26	1.32	0.00	1.14
7.5	9	1.39	1.35	2.01	1.32
9	10.5	1.58	1.58	2.12	1.38
10.5	12	1.76	1.64	2.16	1.57
12	13.5	1.91	1.66	2.19	1.60
13.5	15	1.94	1.76	2.21	1.76
15	16.5	1.96	1.82	2.36	2.02
16.5	18	2.22	2.02	2.51	2.16
18	19.5	2.53	2.09	2.64	2.43
19.5	21	2.75	2.16	2.68	2.56
21	22.5		2.18	2.65	2.77
22.5	24		2.23	2.84	
24	25.5		2.26	2.89	
25.5	27		2.48	2.98	
27	28.5		2.54	3.02	
28.5	30		2.66		

9.1.3 ANNEXURE- C (RMR LOGS)

Tunnel:9		BH01											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	7	-2	13	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	7	-2	13	Class 5 (VERY POOR)
3.0	4.5	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
4.5	6.0	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
6.0	7.5	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
7.5	9.0	0	3	5	0	0	0	0	1	1	7	-2	14	Class 5 (VERY POOR)
9.0	10.5	4	3	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
10.5	12.0	4	3	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
12.0	13.5	4	3	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
13.5	15.0	4	3	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
15.0	16.5	4	3	8	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
16.5	18.0	7	3	10	4	4	5	4	4	21	7	-2	46	Class 3 (FAIR)
18.0	19.5	7	3	10	4	4	5	4	4	21	7	-2	46	Class 3 (FAIR)
19.5	21.0	7	8	10	4	4	5	4	4	21	7	-2	51	Class 3 (FAIR)

Tunnel: 9		BH: 2											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)

Tunnel: 9		BH: 2												RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
4.5	6.0	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)	
6.0	7.5	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)	
7.5	9.0	2	3	5	0	0	0	0	0	0	4	-2	12	Class 5 (VERY POOR)	
9.0	10.5	4	3	5	0	0	0	0	0	0	4	-2	14	Class 5 (VERY POOR)	
10.5	12.0	4	3	5	0	0	0	0	0	0	4	-2	14	Class 5 (VERY POOR)	
12.0	13.5	4	3	8	1	4	3	2	3	13	7	-2	33	Class 4 (POOR)	
13.5	15.0	4	3	8	2	4	3	2	3	14	7	-2	34	Class 4 (POOR)	
15.0	16.5	4	3	8	2	4	3	2	3	14	7	-2	34	Class 4 (POOR)	
16.5	18.0	4	3	8	1	4	3	2	5	15	7	-2	35	Class 4 (POOR)	
18.0	19.5	4	8	8	2	4	3	2	6	17	7	-2	42	Class 3(FAIR)	
19.5	21.0	4	8	8	2	4	3	2	6	17	7	-2	42	Class 3(FAIR)	
21.0	22.5	4	8	10	4	4	3	2	3	16	10	-2	46	Class 3(FAIR)	
22.5	24.0	7	8	10	4	4	3	2	3	16	10	-2	49	Class 3(FAIR)	
24.0	25.5	7	8	10	4	4	3	4	3	18	10	-2	51	Class 3(FAIR)	
25.5	27.0	7	8	10	4	4	1	1	1	11	10	-2	44	Class 3(FAIR)	
27.0	28.5	7	8	10	4	4	1	2	1	12	10	-2	45	Class 3(FAIR)	
28.5	30.0	7	8	10	4	4	1	2	1	12	10	-2	45	Class 3(FAIR)	

Tunnel-9			BH03											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	0	3	5	2	1	5	2	5	15	7	-2	28	Class 4 (POOR)	
1.5	3.0	0	3	5	2	1	5	2	5	15	7	-2	28	Class 4 (POOR)	
3.0	4.5	0	3	5	2	1	5	2	5	15	7	-2	28	Class 4 (POOR)	
4.5	6.0	0	3	5	2	1	5	2	5	15	7	-2	28	Class 4 (POOR)	
6.0	7.5	0	3	5	2	1	5	2	5	15	7	-2	28	Class 4 (POOR)	
7.5	9.0	4	3	5	2	1	5	2	5	15	7	-2	32	Class 4 (POOR)	
9.0	10.5	4	3	5	4	4	5	2	5	20	7	-2	37	Class 4 (POOR)	
10.5	12.0	4	3	5	4	4	5	2	5	20	7	-2	37	Class 4 (POOR)	
12.0	13.5	4	3	5	4	4	5	2	5	20	7	-2	37	Class 4 (POOR)	

Tunnel-9		BH03											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
13.5	15.0	7	3	5	4	4	5	2	5	20	7	-2	40	Class 4 (POOR)
15.0	16.5	7	3	5	4	4	5	2	5	20	7	-2	40	Class 4 (POOR)
16.5	18.0	7	3	5	4	4	5	2	5	20	7	-2	40	Class 4 (POOR)
18.0	19.5	7	3	8	4	4	5	2	5	20	7	-2	43	Class 3 (FAIR)
19.5	21.0	7	3	8	4	4	5	2	5	20	7	-2	43	Class 3 (FAIR)
21.0	22.5	7	3	8	4	4	6	2	5	21	7	-2	44	Class 3 (FAIR)
22.5	24.0	7	3	8	4	4	6	2	6	22	10	-2	48	Class 3 (FAIR)
24.0	25.5	7	8	10	4	4	6	2	6	22	10	-2	55	Class 3 (FAIR)
25.5	27.0	7	3	10	4	4	6	2	6	22	10	-2	50	Class 3 (FAIR)
27.0	28.0	7	8	10	4	4	6	2	6	22	10	-2	55	Class 3 (FAIR)

Tunnel: 9		BH: 4											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infiling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	1	1	1	5	7	-2	18	Class 5 (VERY POOR)
1.5	3.0	0	3	5	1	1	1	1	1	5	7	-2	18	Class 5 (VERY POOR)
3.0	4.5	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
4.5	6.0	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
6.0	7.5	2	3	5	1	1	1	1	1	5	7	-2	20	Class 5 (VERY POOR)
7.5	9.0	2	3	5	4	4	5	2	3	18	10	-2	36	Class 4 (POOR)
9.0	10.5	2	8	8	4	4	5	2	5	20	10	-2	46	Class 3 (FAIR)
10.5	12.0	4	8	8	6	5	6	2	5	24	10	-2	52	Class 3 (FAIR)
12.0	13.5	4	8	8	4	4	5	2	3	18	10	-2	46	Class 3 (FAIR)
13.5	15.0	4	8	8	4	4	5	2	5	20	10	-2	48	Class 3 (FAIR)
15.0	16.5	4	13	8	6	5	6	2	5	24	10	-2	57	Class 3 (FAIR)
16.5	18.0	4	13	10	6	5	6	2	6	25	10	-2	60	Class 3 (FAIR)
18.0	19.5	7	13	10	6	5	6	2	6	25	10	-2	63	Class 2 (GOOD)
19.5	21.0	7	13	10	6	5	6	2	6	25	10	-2	63	Class 2 (GOOD)

Tunnel: 9		BH: 4											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
21.0	22.0	7	13	10	6	5	6	2	6	25	10	-2	63	Class 2(GOOD)

9.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-09 (BH-01)

Test Section	6.0 m-9.0 m	radius in cm=	3 . 8						Intake (Lit.)							
											</					

PERMEABILITY TEST RESULT OF TUNNEL-09 (BH-02)

Test Section	15.0 m-18.0 m	radius in cm=	3 . 8				Intake (Lit.)								
							1	2	3	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition	
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer) kg/cm2	Differential Head of Water							
15.00	18.00	3	300	2.51	9 . 3	11.81	1	2181	3.90	10.20	23.60	16 . 9	56.3	0.00005987	6.00
15.00	18.00	3	300	2.51	9 . 3	11.81	2	3181	8.90	21.50	34.80	28 . 2	94.0	0.00006849	6.80
15.00	18.00	3	300	2.51	9 . 3	11.81	3	4181	14.20	29.10	48.90	39 . 0	130.0	0.00007207	7.20
15.00	18.00	3	300	2.51	9 . 3	11.81	2	3181	8.10	17.40	36.10	26 . 8	89.4	0.00006509	6.50
15.00	18.00	3	300	2.51	9 . 3	11.81	1	2181	4.00	8.10	24.50	16 . 3	54.3	0.00005774	5.80
												Avr .	0.00006465	5.80	

PERMEABILITY TEST RESULT OF TUNNEL-09 (BH-01)

Test Section	13.5 m-16.5 m		radius in cm=		3 · 8			Intake (Lit.)							
								1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water							
13.50	16.50	3	300	2.52	6.7	9.22	1	19.22	10.20	19.50	20.80	20.2	67.3	0.00008120	8.10
13.50	16.50	3	300	2.52	6.7	9.22	2	29.22	9.40	22.10	45.20	33.7	11.24	0.00008911	8.90
13.50	16.50	3	300	2.52	6.7	9.22	3	39.22	15.10	32.40	65.80	49.1	16.37	0.00009673	9.70
13.50	16.50	3	300	2.52	6.7	9.22	2	29.22	12.80	28.70	50.60	39.7	13.24	0.00010497	10.50
13.50	16.50	3	300	2.52	6.7	9.22	1	19.22	9.90	22.30	35.60	29.0	96.7	0.00011658	11.70
												Avr.	0.00009772	11.70	



PERMEABILITY TEST RESULT OF TUNNEL-09 (BH-02)

Test Section	7.5 m-10.5 m	radius in cm=	3.8													
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
7.50	10.50	3	300	2.49	4.8	7.29	1	1729	3.90	5.60	18.70	12.2	40.7	0.00005452	5.50	Dilat ion
7.50	10.50	3	300	2.49	4.8	7.29	2	2729	8.90	12.90	30.40	21.7	72.3	0.00006144	6.10	
7.50	10.50	3	300	2.49	4.8	7.29	3	3729	14.20	21.60	45.80	33.7	112.4	0.00006982	7.00	
7.50	10.50	3	300	2.49	4.8	7.29	2	2729	8.10	16.30	30.70	23.5	78.3	0.00006653	6.70	
7.50	10.50	3	300	2.49	4.8	7.29	1	1729	4.00	6.70	21.60	14.2	47.3	0.00006345	6.30	
													Avr .	0.00006315	5.50	

Lugen test result

9.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.9	BH-1	At 0.5 m depth	6.35	20.02	0.025
2		BH-2	At 0.5 m depth	6.48	21.35	0.021
3		BH-3	At 0.5 m depth	6.57	28.69	0.029
4		BH-4	At 0.5 m depth	6.62	30.21	0.034

9.1.6 ANNEXURE- F(WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.9	BH-1	6	6.77	26.66	38.52
2			9	6.71	31.55	41.25
3		BH-2	10.5	6.79	26.55	34.55
4			15	6.85	31.2	42.55
5		BH-3	7.5	6.98	38.96	21.22
6			12	6.94	41.25	38.96
7		BH-4	6	6.92	26.22	35.54
8			10.5	6.9	24.56	31.22

9.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																						
Sl. No	Samples	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compression test (kg/cm ²)	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil
Type of sample collection		Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %												
LABORATORY TEST RESULT OF TUNNEL NO.09 (BH-1)																						

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	1	SL.No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Un-Confined Compression test (kg/cm ²)	Compression Index (Cc)	Specific gravity	Void ratio	Free swelling Index In %	Field S.P.T. Value (N)	Group of soil.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Fine Gravel In %			Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002 mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	1	At 0.5 m	D.S	5.12	5.48	27.52	22.12	26.56	13.20	27	18	9	----	----	----	----	----	----	----	2.69	----	10	----	SC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
LABORATORY TEST RESULT OF TUNNEL NO.09(BH-2)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	1	At 0.5 m	D.S	8.20	8.52	10.12	25.12	33.54	14.50	28	17	11	----	----	----	----	----	----	----	2.68	----	10	----	SC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
		2	At 1.5 m	S.P.T	CORE RECOVERY=12.00%, R.Q.D=0.00% ROCK PIECES,																	10	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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10.1 Annexures

10.1.1 ANNEXURE- A (BORELOG)

10.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

10.1.2.1 Specific Gravity

Depth (m)		Specific Gravity			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	2.76	2.77	2.77	2.77
1.5	3	2.77	2.78	2.77	2.78
3	4.5	2.78	2.78	2.77	2.78
4.5	6	2.78	2.77	2.77	2.78
6	7.5	2.78	2.79	2.78	2.79
7.5	9	2.79	2.80	2.78	2.79
9	10.5	2.81	2.80	2.78	2.80
10.5	12	2.82	2.81	2.79	2.81
12	13.5	2.82	2.80	2.79	2.81
13.5	15	2.84	2.81	2.80	2.81
15	16.5	2.82	2.80	2.79	2.82
16.5	18	2.83	2.80	2.79	2.82
18	19.5	2.82	2.81	2.80	2.82
19.5	21	2.84	2.81	2.80	2.83
21	22.5		2.81	2.81	2.83
22.5	24		2.83	2.81	2.84
24	25.5		2.81	2.82	2.84
25.5	27		2.82	2.82	
27	28.5		2.82	2.82	
28.5	30		2.82	2.82	
30	31.5		2.83		
31.5	33		2.83		

10.1.2.2 Dry Density

Depth (m)		Density (gm/cc)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	2.71	2.74	2.72	2.72
1.5	3	2.72	2.75	2.72	2.74
3	4.5	2.74	2.75	2.73	2.74
4.5	6	2.74	2.75	2.73	2.75
6	7.5	2.75	2.76	2.74	2.75
7.5	9	2.76	2.76	2.74	2.76
9	10.5	2.78	2.78	2.75	2.77
10.5	12	2.78	2.76	2.77	2.78
12	13.5	2.79	2.77	2.77	2.78
13.5	15	2.78	2.78	2.77	2.77
15	16.5	2.78	2.79	2.78	2.77

Depth (m)		Density (gm/cc)			
Top	Bottom	BH01	BH02	BH03	BH04
16.5	18	2.79	2.79	2.78	2.78
18	19.5	2.78	2.78	2.77	2.78
19.5	21	2.79	2.78	2.77	2.78
21	22.5		2.79	2.78	2.78
22.5	24		2.80	2.78	2.79
24	25.5		2.79	2.79	2.79
25.5	27		2.80	2.79	
27	28.5		2.79	2.79	
28.5	30		2.80	2.79	
30	31.5		2.80		
31.5	33		2.80		

10.1.2.3 Water absorption Test

Depth (m)		Water absorption			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	0.53	0.45	0.45	0.54
1.5	3	0.56	0.42	0.44	0.54
3	4.5	0.40	0.40	0.42	0.40
4.5	6	0.40	0.38	0.40	0.40
6	7.5	0.40	0.35	0.38	0.30
7.5	9	0.30	0.25	0.36	0.30
9	10.5	0.16	0.25	0.35	0.25
10.5	12	0.15	0.24	0.25	0.25
12	13.5	0.12	0.22	0.25	0.23
13.5	15	0.09	0.20	0.24	0.21
15	16.5	0.10	0.15	0.23	0.21
16.5	18	0.12	0.15	0.23	0.22
18	19.5	0.10	0.14	1.22	0.20
19.5	21	0.09	0.14	1.21	0.20
21	22.5		0.12	1.20	0.18
22.5	24		0.10	1.18	0.16
24	25.5		0.10	1.16	0.15
25.5	27		0.12	1.15	
27	28.5		0.12	1.14	
28.5	30		0.10	0.12	
30	31.5		0.09		
31.5	33		0.09		

10.1.2.4 Porosity

Depth (m)		Porosity			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	1.81	1.08	1.81	1.81

Depth (m)		Porosity			
Top	Bottom	BH01	BH02	BH03	BH04
1.5	3	1.81	1.08	1.81	1.44
3	4.5	1.44	1.08	1.44	1.44
4.5	6	1.44	0.72	1.44	1.08
6	7.5	1.08	1.08	1.44	1.43
7.5	9	1.08	1.43	1.44	1.08
9	10.5	1.07	0.71	1.08	1.07
10.5	12	1.42	1.78	0.72	1.07
12	13.5	1.06	1.07	0.72	1.07
13.5	15	2.11	1.07	1.07	1.42
15	16.5	1.42	0.36	0.36	1.77
16.5	18	1.41	0.36	0.36	1.42
18	19.5	1.42	1.07	1.07	1.42
19.5	21	1.76	1.07	1.07	1.77
21	22.5		0.71	1.07	1.77
22.5	24		1.06	1.07	1.76
24	25.5		0.71	1.06	1.76
25.5	27		0.71	1.06	
27	28.5		1.06	1.06	
28.5	30		0.71	1.06	
30	31.5		1.06		
31.5	33		1.06		

10.1.2.5 Hardness

Depth (m)		Hardness (Mohr Scale)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	6.00	6.00	6.00	6.00
1.5	3	6.00	6.00	6.00	6.00
3	4.5	6.00	6.00	6.00	6.00
4.5	6	6.00	6.00	7.00	6.00
6	7.5	7.00	7.00	7.00	7.00
7.5	9	7.00	7.00	7.00	7.00
9	10.5	7.00	7.00	7.00	7.00
10.5	12	7.00	7.00	7.00	7.00
12	13.5	8.00	7.00	7.00	7.00
13.5	15	8.00	7.00	8.00	7.00
15	16.5	7.00	7.00	8.00	7.00
16.5	18	7.00	7.00	8.00	8.00
18	19.5	8.00	7.00	7.00	8.00
19.5	21	8.00	8.00	7.00	8.00
21	22.5		7.00	7.00	8.00
22.5	24		7.00	7.00	8.00
24	25.5		8.00	8.00	8.00
25.5	27		7.00	8.00	



Depth (m)		Hardness (Mohr Scale)			
Top	Bottom	BH01	BH02	BH03	BH04
27	28.5		8.00	8.00	
28.5	30		8.00	8.00	
30	31.5		8.00		
31.5	33		8.00		

10.1.2.6 Compression Test

Depth (m)		Unconfined Compression Strength (MPa)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----
1.5	3	----	----	----	----
3	4.5	----	----	----	8.63
4.5	6	----	----	11.46	15.58
6	7.5	----	----	11.77	17.56
7.5	9	----	----	12.59	19.66
9	10.5	----	----	15.23	25.33
10.5	12	45.54	----	26.11	29.18
12	13.5	52.48	----	29.38	31.12
13.5	15	56.84	----	30.39	39.34
15	16.5	61.21	40.10	30.70	45.93
16.5	18	76.62	40.60	30.89	48.11
18	19.5	77.80	46.32	35.05	50.47
19.5	21	78.58	46.82	38.27	52.43
21	22.5		61.21	40.88	54.66
22.5	24		69.98	42.78	61.38
24	25.5		74.31	52.48	70.20
25.5	27		75.18	67.89	
27	28.5		78.37	72.12	
28.5	30		78.63	73.87	
30	31.5		79.55		
31.5	33		79.85		

10.1.2.7 Point Load Test

Depth (m)		Point Load Strength (MPa)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	----	----	----	----
1.5	3	----	----	----	----
3	4.5	----	----	----	0.41
4.5	6	----	----	----	0.75
6	7.5	----	----	----	0.84
7.5	9	----	----	0.61	0.98
9	10.5	----	----	0.74	1.24
10.5	12	2.36	----	1.29	1.45

Depth (m)		Point Load Strength (MPa)			
Top	Bottom	BH01	BH02	BH03	BH04
12	13.5	2.41	-----	1.44	1.52
13.5	15	2.69	1.56	1.49	1.96
15	16.5	2.80	1.87	1.52	2.29
16.5	18	3.50	1.93	1.54	2.34
18	19.5	3.69	2.26	1.67	2.45
19.5	21	3.89	2.35	1.82	2.53
21	22.5		2.94	1.96	2.62
22.5	24		3.34	2.05	2.91
24	25.5		3.53	2.57	3.42
25.5	27		3.69	3.21	
27	28.5		3.84	3.46	
28.5	30		3.92	3.62	
30	31.5		4.16		
31.5	33		4.32		

10.1.2.8 Brazilian Test

Depth (m)		Tensile Strength (MPa)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	-----	-----	-----	-----
1.5	3	-----	-----	-----	-----
3	4.5	-----	-----	-----	0.92
4.5	6	-----	-----	1.24	1.61
6	7.5	-----	-----	1.32	1.84
7.5	9	-----	-----	1.41	2.11
9	10.5	-----	-----	1.71	2.65
10.5	12	5.10	-----	2.84	3.08
12	13.5	5.56	-----	3.13	3.19
13.5	15	5.96	-----	3.38	4.14
15	16.5	6.58	4.26	3.54	4.74
16.5	18	7.62	4.35	3.62	4.93
18	19.5	7.74	4.78	3.82	5.34
19.5	21	8.56	4.85	4.18	5.53
21	22.5		6.74	4.43	5.84
22.5	24		7.36	4.73	6.39
24	25.5		7.94	5.39	7.62
25.5	27		8.23	6.95	
27	28.5		8.64	7.42	
28.5	30		8.82	7.85	
30	31.5		9.24		
31.5	33		9.73		

10.1.2.9 Modulus of elasticity test

Depth (m)		Modulus of Elasticity (GPa)			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	-----	-----	-----	-----
1.5	3	-----	-----	-----	-----
3	4.5	-----	-----	-----	-----
4.5	6	-----	-----	-----	-----
6	7.5	-----	-----	-----	-----
7.5	9	-----	-----	-----	-----
9	10.5	-----	-----	-----	33.20
10.5	12	44.60	-----	-----	34.80
12	13.5	45.80	-----	-----	36.30
13.5	15	49.60	-----	-----	40.40
15	16.5	52.30	41.20	-----	43.60
16.5	18	55.80	41.80	-----	44.80
18	19.5	56.10	45.70	-----	45.70
19.5	21	57.40	46.90	-----	47.30
21	22.5		51.80	41.90	48.20
22.5	24		53.60	-----	51.60
24	25.5		55.30	49.60	55.40
25.5	27		55.90	52.80	
27	28.5		56.70	54.70	
28.5	30		57.10	56.40	
30	31.5		58.20		
31.5	33		59.30		

10.1.2.10 Abrasion test

Depth (m)		Abrasion			
Top	Bottom	BH01	BH02	BH03	BH04
0.5	1.5	-----	-----	-----	-----
1.5	3	-----	-----	-----	-----
3	4.5	-----	-----	-----	0.86
4.5	6	-----	-----	1.04	1.15
6	7.5	-----	-----	1.08	1.18
7.5	9	-----	-----	1.12	1.24
9	10.5	-----	-----	1.15	1.43
10.5	12	2.08	-----	1.47	1.56
12	13.5	2.22	-----	1.58	1.63
13.5	15	2.37	1.67	1.61	1.88
15	16.5	2.53	1.92	1.63	2.12
16.5	18	2.85	1.94	1.64	2.18
18	19.5	2.88	2.06	1.78	2.24
19.5	21	2.92	2.09	1.87	2.32
21	22.5		2.54	1.91	2.37
22.5	24		2.75	1.94	2.53

Depth (m)		Abrasion			
Top	Bottom	BH01	BH02	BH03	BH04
24	25.5		2.82	2.23	2.77
25.5	27		2.85	2.68	
27	28.5		2.89	2.79	
28.5	30		2.92	2.86	
30	31.5		2.96		
31.5	33		3.01		

10.1.3 ANNEXURE- C (RMR LOGS)

Tunnel: 10		BH;1			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	3	0	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	3	0	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
3.0	4.5	3	0	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
4.5	6.0	3	0	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
6.0	7.5	3	0	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)

Tunnel: 10		BH;1			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
7.5	9.0	3	0	5	1	1	1	2	1	6	7	-2	19	Class 5 (VERY POOR)
9.0	10.5	3	0	8	1	1	1	2	1	6	7	-2	22	Class 4 (POOR)
10.5	12.0	3	4	8	2	1	3	2	3	11	10	-2	34	Class 4 (POOR)
12.0	13.5	3	7	10	2	4	3	4	3	16	10	-2	44	Class 3 (FAIR)
13.5	15.0	8	7	15	4	4	5	4	5	22	10	-2	60	Class 3 (FAIR)
15.0	16.5	3	7	15	4	4	5	4	5	22	10	-2	55	Class 3 (FAIR)
16.5	18.0	3	7	15	4	4	5	4	5	22	10	-2	55	Class 3 (FAIR)
18.0	19.5	3	7	20	6	6	6	6	6	30	15	-2	73	Class 2 (GOOD)
19.5	21.0	8	7	20	6	6	6	6	6	30	15	-2	78	Class 2 (GOOD)

Tunnel: 10		BH: 02			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
1.5	3.0	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
3.0	4.5	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
4.5	6.0	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
6.0	7.5	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
7.5	9.0	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
9.0	10.5	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
10.5	12.0	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
12.0	13.5	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)

Tunnel: 10		BH: 02			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
13.5	15.0	3	0	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
15.0	16.5	3	4	8	1	1	3	2	5	12	4	-2	29	Class 4 (POOR)
16.5	18.0	3	4	8	1	1	3	2	5	12	4	-2	29	Class 4 (POOR)
18.0	19.5	3	4	8	2	1	3	2	5	13	7	-2	33	Class 4 (POOR)
19.5	21.0	3	4	8	2	1	3	2	5	13	7	-2	33	Class 4 (POOR)
21.0	22.5	3	7	8	2	1	3	2	5	13	7	-2	36	Class 4 (POOR)
22.5	24.0	8	7	8	2	1	5	2	6	16	7	-2	44	Class 3 (FAIR)
24.0	25.5	3	7	8	2	1	5	2	6	16	10	-2	42	Class 3 (FAIR)
25.5	27.0	3	7	8	2	1	5	2	6	16	10	-2	42	Class 3 (FAIR)
27.0	28.5	3	7	8	2	1	5	2	6	16	10	-2	42	Class 3 (FAIR)
28.5	30.0	3	7	8	2	1	5	2	6	16	10	-2	42	Class 3 (FAIR)
30.0	31.5	3	7	8	2	4	5	2	6	19	10	-2	45	Class 3 (FAIR)
31.5	33.0	8	7	8	2	4	5	2	6	19	10	-2	50	Class 3 (FAIR)

Tunnel: 10		BH: 03			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	3	0	5	0	0	0	0	0	0	4	-2	10	Class 5 (VERY POOR)
1.5	3.0	3	0	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
3.0	4.5	3	0	5	1	1	3	2	3	10	7	-2	23	Class 4 (POOR)
4.5	6.0	3	2	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
6.0	7.5	3	2	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
7.5	9.0	3	2	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
9.0	10.5	3	2	5	1	1	3	2	3	10	7	-2	25	Class 4 (POOR)
10.5	12.0	3	4	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
12.0	13.5	3	4	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
13.5	15.0	3	4	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
15.0	16.5	3	4	5	1	1	3	2	3	10	7	-2	27	Class 4 (POOR)
16.5	18.0	3	4	8	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
18.0	19.5	3	4	8	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
19.5	21.0	3	4	8	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
21.0	22.5	3	4	8	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)

22.5	24.0	3	4	8	1	1	3	2	3	10	7	-2	30	Class 4 (POOR)
24.0	25.5	3	7	15	4	5	5	4	5	23	10	-2	56	Class 3 (FAIR)
25.5	27.0	8	7	15	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)
27.0	28.5	3	7	15	4	5	5	4	5	23	10	-2	56	Class 3 (FAIR)
28.5	30.0	8	7	15	4	5	5	4	5	23	10	-2	61	Class 2 (GOOD)

Tunnel: 10		BH: 04			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
1.5	3.0	0	3	5	0	0	0	0	0	0	0	-2	6	Class 5 (VERY POOR)
3.0	4.5	2	3	5	0	0	0	0	0	0	0	-2	8	Class 5 (VERY POOR)
4.5	6.0	2	3	8	1	1	3	2	5	12	4	-2	27	Class 4 (POOR)
6.0	7.5	2	3	8	1	1	3	2	5	12	4	-2	27	Class 4 (POOR)
7.5	9.0	2	3	8	2	1	3	2	5	13	7	-2	31	Class 4 (POOR)
9.0	10.5	4	3	8	2	1	3	2	5	13	7	-2	33	Class 4 (POOR)
10.5	12.0	4	3	8	2	1	3	2	5	13	7	-2	33	Class 4 (POOR)
12.0	13.5	4	3	8	2	1	5	2	6	16	7	-2	36	Class 4 (POOR)
13.5	15.0	4	3	8	2	1	5	2	6	16	10	-2	39	Class 4 (POOR)
15.0	16.5	4	3	8	1	1	3	2	5	12	4	-2	29	Class 4 (POOR)
16.5	18.0	4	3	8	1	1	3	2	5	12	4	-2	29	Class 4 (POOR)
18.0	19.5	7	8	8	2	1	3	2	5	13	7	-2	41	Class 3 (FAIR)
19.5	21.0	7	8	8	2	1	3	2	5	13	7	-2	41	Class 3 (FAIR)
21.0	22.5	7	8	8	2	1	3	2	5	13	7	-2	41	Class 3 (FAIR)
22.5	24.0	7	8	8	2	1	5	2	6	16	7	-2	44	Class 3 (FAIR)
24.0	25.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

10.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-10 (BH-01)

Test Section	6.0 m-9.0 m	radius in cm=	3.8				Intake (Lit.)									
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water H=(Hg+Hp)	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
6.00	9.00	3	300	2.45	11.6	9.95	1	19.95	6.80	17.80	33.30	25.6	85.4	0.0009914	9.90	Was hout
6.00	9.00	3	300	2.45	11.6	9.95	2	29.95	14.30	29.80	48.40	39.1	130.4	0.00010087	10.10	
6.00	9.00	3	300	2.45	11.6	9.95	3	39.95	13.90	38.90	72.60	55.8	186.0	0.00010792	10.80	
6.00	9.00	3	300	2.45	11.6	9.95	2	29.95	11.70	32.60	55.40	44.0	146.7	0.00011351	11.40	
6.00	9.00	3	300	2.45	11.6	9.95	1	19.95	14.90	25.60	36.80	31.2	104.0	0.00012083	12.10	
													Avr.	0.00010845	12.10	

PERMEABILITY TEST RESULT OF TUNNEL-10 (BH-02)

Test Section	18.0 m-21.0 m	radius in cm=	3.8						Intake (Lit.)							
											</					

PERMEABILITY TEST RESULT OF TUNNEL-10 (BH-03)

Test Section n	15.0 m- 18.0 m	radius in cm=	3. 8			Intake (Lit.)										
						Flow Condition	Lugeon	K cm/sec	Q <i>(cm³/sec)</i>		Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water	Hp (Pressure at monometer)
15.00	18.00	3	300	2.56	12.4	14.96				1						
15.00	18.00	3	300	2.56	12.4	14.96	2	3496	16.80	31.60	44.70	38.2	127.4	0.00008442	8.40	
15.00	18.00	3	300	2.56	12.4	14.96	3	4496	18.60	40.80	65.40	53.1	177.0	0.00009125	9.10	
15.00	18.00	3	300	2.56	12.4	14.96	2	3496	14.80	34.80	58.90	46.9	156.4	0.00010365	10.40	
15.00	18.00	3	300	2.56	12.4	14.96	1	2496	13.80	28.30	47.60	38.0	126.7	0.00011763	11.80	
													Avr .	0.00009530	11.80	

PERMEABILITY TEST RESULT OF TUNNEL-10 (BH-04)

Test Section	10.5 m-13.5 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition
10.50	13.50	3	300	2.58	13.2	15.78	1	2578	10.30	23.70	19.50	21.6	72.0	0.00006474	6.50	Was hout
10.50	13.50	3	300	2.58	13.2	15.78	2	3578	8.60	20.50	41.90	31.2	104.0	0.00006737	6.70	
10.50	13.50	3	300	2.58	13.2	15.78	3	4578	14.60	28.90	58.70	43.8	146.0	0.00007392	7.40	
10.50	13.50	3	300	2.58	13.2	15.78	2	3578	17.50	35.60	41.10	38.4	128.0	0.00008292	8.30	
10.50	13.50	3	300	2.58	13.2	15.78	1	2578	8.90	18.50	42.60	30.6	102.0	0.00009171	9.20	
													Avr .	0.00007613	9.20	

Lugen test result

10.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.10	BH-1	At 0.5 m depth	6.35	20.15	0.025
2		BH-2	At 0.5 m depth	6.28	22.34	0.029
3		BH-3	At 0.5 m depth	6.14	26.89	0.031
4		BH-4	At 0.5 m depth	6.57	30.02	0.034

10.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

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CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.10	BH-1	12	7.02	32.55	28.66
2			15	7.06	28.85	23.22
3		BH-2	12	7.01	34.56	27.56
4			19.5	7.05	33.36	28.96
5		BH-3	13.5	6.99	41.25	36.56
6			18	6.98	42.27	38.54
7		BH-4	15	6.91	28	23.65
8			18	6.75	31.25	24.56

10.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																							
Sl. No	Samples	Type of sample	Grain size analysis				Hydrome ter analysis		Atterberg, s Limits			Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Un-Confined	Compression	Specific gravity	Void ratio	Free swelling	Field S.P.T.	Group of soil.
			Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in %	Liquid	Plastic	Plasticit												
LABORATORY TEST RESULT OF TUNNEL NO.10 (BH-1)																							
1	At 0.5 m	D.S	5.85	7.58	22.45	21.45	28.47	14.20	27	17	10	----	----	----	----	----	----	----	2.69	----	12	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.10(BH-2)																							
1	At 0.5 m	D.S	10.52	7.55	11.56	27.62	29.55	13.20	28	18	10	----	----	----	----	----	----	----	2.68	----	10	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.10 (BH-3)																							
1	At 0.5 m	D.S	5.98	6.12	27.02	18.96	27.42	14.50	27	17	10	----	----	----	----	----	----	----	2.68	----	12	----	SC
LABORATORY TEST RESULT OF TUNNEL NO.10 (BH-4)																							

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt. X,Pt. XI / Pt. XIII , Pt.XV & Pt. XXXX) AND IS: 1498																								
1	Sl. No	Samples	Type of sample	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Field Moisture	Bulk density in	Dry density in	Cohesion (c)	Angle of	Un-Confined	Compression	Specific gravity	Void ratio	Free swelling	Field S.P.T.	Group of soil.
			D.S	Fine	Coarse	Medium	Fine	Silt in % (0.075mm)	Clay in %	Liquid	Plastic	Plasticity												
At 0.5 m			9.02	5.11	28.12	15.12	27.43	15.20		27	17	10	---	---	---	---	---	---	---	2.68	---	12	---	SC

11. T11

11.1Annexures

11.1.1ANNEXURE- A (BORELOG)

11.1.2 ANNEXURE- B (LABORATORY TESTING RESULTS)

TEST CONDUCTED AS PER IS: 13030-1991, IS: 12608-1989, IS: 9143-1979, IS: 8764-1998, IS: 9221-1979, ASTM D7625-2010

11.1.2.1 Specific Gravity

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
1.5	3	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
3	4.5	2.80	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
4.5	6	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
6	7.5	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
7.5	9	2.80	2.80	2.80	2.80	2.80	2.80	2.82	2.80	2.80	2.80
9	10.5	2.80	2.80	2.80	2.80	2.80	2.80	2.82	2.80	2.80	2.80
10.5	12	2.81	2.80	2.80	2.80	2.80	2.80	2.82	2.80	2.80	2.81
12	13.5	2.81	2.80	2.80	2.80	2.80	2.80	2.82	2.80	2.81	2.81
13.5	15	2.82	2.80	2.80	2.80	2.80	2.80	2.83	2.80	2.81	2.81
15	16.5	2.82	2.80	2.80	2.80	2.80	2.81	2.83	2.80	2.81	2.81
16.5	18	2.83	2.80	2.80	2.80	2.80	2.81	2.83	2.80	2.83	2.81
18	19.5	2.83	2.80	2.80	2.82	2.82	2.81		2.80	2.83	2.83
19.5	21	2.83	2.80	2.80	2.82	2.82	2.81		2.80	2.83	2.83
21	22.5		2.81	2.80	2.82	2.82	2.81		2.80	2.83	2.83
22.5	24		2.81	2.82	2.82	2.82	2.82		2.82	2.84	2.83
24	25.5		2.81	2.82	2.82	2.82	2.82		2.82	2.84	2.83
25.5	27		2.81	2.82	2.83	2.83	2.82		2.82	2.84	
27	28.5		2.81	2.82	2.83	2.83	2.82		2.82		
28.5	30		2.81	2.82	2.83	2.83	2.82		2.82		
30	31.5		2.82	2.82	2.83	2.83	2.82				
31.5	33		2.82	2.82	2.83	2.83	2.82				
33	34.5		2.82	2.82	2.83	2.83	2.83				
34.5	36		2.82	2.82		2.83	2.83				
36	37.5		2.82	2.83			2.83				
37.5	39		2.83	2.83			2.83				
39	40.5		2.83	2.83			2.83				
40.5	42		2.83	2.83							
42	43.5		2.83								

11.1.2.2 Dry Density

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	2.70	2.71	2.70	2.72	2.72	2.72	2.72	2.72	2.70
1.5	3	2.70	2.70	2.71	2.70	2.72	2.72	2.72	2.72	2.72	2.70
3	4.5	2.78	2.71	2.71	2.70	2.72	2.72	2.72	2.72	2.72	2.72
4.5	6	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.76	2.78
6	7.5	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.76	2.78

7.5	9	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.76	2.78
9	10.5	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.76	2.78
10.5	12	2.79	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.76	2.79
12	13.5	2.79	2.78	2.78	2.78	2.78	2.78	2.79	2.78	2.76	2.79
13.5	15	2.79	2.78	2.78	2.78	2.78	2.78	2.79	2.78	2.76	2.79
15	16.5	2.79	2.78	2.78	2.78	2.78	2.78	2.79	2.78	2.76	2.79
16.5	18	2.80	2.78	2.78	2.78	2.78	2.78	2.79	2.78	2.78	2.79
18	19.5	2.80	2.78	2.78	2.78	2.78	2.78		2.78	2.78	2.79
19.5	21	2.80	2.78	2.78	2.78	2.78	2.78		2.78	2.78	2.79
21	22.5		2.79	2.78	2.78	2.78	2.79		2.78	2.78	2.79
22.5	24		2.79	2.78	2.78	2.78	2.79		2.78	2.78	2.79
24	25.5		2.79	2.78	2.79	2.79	2.79		2.78	2.78	2.79
25.5	27		2.79	2.79	2.79	2.79	2.79		2.79	2.78	
27	28.5		2.79	2.79	2.79	2.79	2.79		2.79		
28.5	30		2.79	2.79	2.79	2.79	2.79		2.79		
30	31.5		2.80	2.79	2.79	2.79	2.79				
31.5	33		2.80	2.79	2.79	2.79	2.79				
33	34.5		2.80	2.79	2.79	2.79	2.79				
34.5	36		2.80	2.79		2.79	2.79				
36	37.5		2.80	2.79			2.79				
37.5	39		2.80	2.79			2.79				
39	40.5		2.80	2.79			2.79				
40.5	42		2.80	2.79							
42	43.5		2.80								

11.1.2.3 Water absorption Test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	0.50	0.43	0.48	0.48	0.48	0.47	0.43	0.46	0.45
1.5	3	0.40	0.48	0.42	0.45	0.45	0.47	0.47	0.42	0.44	0.44
3	4.5	0.20	0.43	0.42	0.43	0.43	0.46	0.47	0.42	0.43	0.43
4.5	6	0.19	0.20	0.20	0.20	0.20	0.18	0.20	0.20	0.19	0.20
6	7.5	0.18	0.20	0.20	0.20	0.20	0.17	0.19	0.20	0.19	0.18
7.5	9	0.18	0.20	0.20	0.20	0.20	0.17	0.19	0.20	0.19	0.17
9	10.5	0.17	0.20	0.20	0.20	0.20	0.17	0.19	0.20	0.19	0.17
10.5	12	0.15	0.19	0.20	0.20	0.20	0.17	0.17	0.20	0.19	0.17
12	13.5	0.14	0.19	0.20	0.20	0.20	0.17	0.18	0.20	0.19	0.16
13.5	15	0.13	0.19	0.20	0.20	0.20	0.17	0.17	0.20	0.19	0.15
15	16.5	0.13	0.19	0.19	0.19	0.19	0.17	0.16	0.19	0.18	0.14
16.5	18	0.12	0.18	0.19	0.19	0.19	0.17	0.13	0.19	0.18	0.14
18	19.5	0.11	0.18	0.19	0.19	0.19	0.17		0.19	0.18	0.13
19.5	21	0.10	0.18	0.19	0.19	0.19	0.17		0.19	0.16	0.13
21	22.5		0.18	0.19	0.19	0.19	0.17		0.19	0.15	0.13
22.5	24		0.17	0.19	0.19	0.19	0.15		0.19	0.13	0.13
24	25.5		0.17	0.17	0.17	0.17	0.15		0.17	0.13	0.12

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
25.5	27		0.17	0.17	0.17	0.17	0.15		0.17	0.13	
27	28.5		0.17	0.17	0.17	0.17	0.15		0.17		
28.5	30		0.17	0.17	0.17	0.17	0.15		0.17		
30	31.5		0.17	0.16	0.13	0.13	0.14				
31.5	33		0.16	0.16	0.12	0.12	0.14				
33	34.5		0.15	0.16	0.11	0.11	0.14				
34.5	36		0.15	0.16		0.11	0.14				
36	37.5		0.14	0.13			0.13				
37.5	39		0.13	0.13			0.12				
39	40.5		0.12	0.13			0.11				
40.5	42		0.11	0.12							
42	43.5		0.10								

11.1.2.4 Porosity

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	2.17	1.81	2.17	1.45	1.45	1.45	1.08	1.45	2.17
1.5	3	2.17	2.17	1.81	2.17	1.45	1.45	1.45	1.08	1.45	2.17
3	4.5	0.71	1.81	1.81	2.17	1.45	1.45	1.45	1.08	1.45	1.45
4.5	6	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	1.43	0.71
6	7.5	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	1.43	0.71
7.5	9	0.71	0.71	0.71	0.71	0.71	0.71	1.42	0.71	1.43	0.71
9	10.5	0.71	0.71	0.71	0.71	0.71	0.71	1.42	0.71	1.43	0.71
10.5	12	0.71	0.71	0.71	0.71	0.71	0.71	1.42	0.71	1.43	0.71
12	13.5	0.71	0.71	0.71	0.71	0.71	0.71	1.06	0.71	1.78	0.71
13.5	15	1.06	0.71	0.71	0.71	0.71	0.71	1.41	0.71	1.78	0.71
15	16.5	1.06	0.71	0.71	0.71	0.71	1.07	1.41	0.71	1.78	0.71
16.5	18	1.06	0.71	0.71	0.71	0.71	1.07	1.41	0.71	1.77	0.71
18	19.5	1.06	0.71	0.71	1.42	1.42	1.07		0.71	1.77	1.41
19.5	21	1.06	0.71	0.71	1.42	1.42	1.07		0.71	1.77	1.41
21	22.5		0.71	0.71	1.42	1.42	0.71		0.71	1.77	1.41
22.5	24		0.71	1.42	1.42	1.42	1.06		1.42	2.11	1.41
24	25.5		0.71	1.42	1.06	1.06	1.06		1.42	2.11	1.41
25.5	27		0.71	1.06	1.41	1.41	1.06		1.06	2.11	
27	28.5		0.71	1.06	1.41	1.41	1.06		1.06		
28.5	30		0.71	1.06	1.41	1.41	1.06		1.06		
30	31.5		0.71	1.06	1.41	1.41	1.06				
31.5	33		0.71	1.06	1.41	1.41	1.06				
33	34.5		0.71	1.06	1.41	1.41	1.41				
34.5	36		0.71	1.06		1.41	1.41				
36	37.5		0.71	1.41			1.41				
37.5	39		1.06	1.41			1.41				
39	40.5		1.06	1.41			1.41				
40.5	42		1.06	1.41							

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
42	43.5		1.06								

11.1.2.5 Hardness

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1.5	3	7.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
3	4.5	7.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
4.5	6	7.00	7.00	6.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00
6	7.5	7.00	7.00	6.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00
7.5	9	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
9	10.5	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
10.5	12	7.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	7.00
12	13.5	8.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	8.00
13.5	15	8.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	8.00
15	16.5	8.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	7.00	8.00
16.5	18	8.00	7.00	7.00	7.00	7.00	7.00	8.00	7.00	8.00	8.00
18	19.5	8.00	7.00	7.00	7.00	7.00	7.00		7.00	8.00	8.00
19.5	21	8.00	7.00	7.00	8.00	8.00	7.00		7.00	8.00	8.00
21	22.5		7.00	7.00	8.00	8.00	7.00		7.00	8.00	8.00
22.5	24		7.00	7.00	8.00	8.00	7.00		7.00	8.00	8.00
24	25.5		7.00	7.00	8.00	8.00	8.00		7.00	8.00	8.00
25.5	27		7.00	8.00	8.00	8.00	8.00		8.00	8.00	
27	28.5		7.00	8.00	8.00	8.00	8.00		8.00		
28.5	30		8.00	8.00	8.00	8.00	8.00		8.00		
30	31.5		8.00	8.00	8.00	8.00	8.00				
31.5	33		8.00	8.00	8.00	8.00	8.00				
33	34.5		8.00	8.00	8.00	8.00	8.00				
34.5	36		8.00	8.00		8.00	8.00				
36	37.5		8.00	8.00			8.00				
37.5	39		8.00	8.00			8.00				
39	40.5		8.00	8.00			8.00				
40.5	42		8.00	8.00							
42	43.5		8.00								

11.1.2.6 Compression Test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	7.35	7.98	7.59	----	----	----	----	8.23	7.76
1.5	3	8.47	8.89	8.97	8.75	8.47	----	8.85	9.59	9.12	8.93
3	4.5	35.56	9.35	9.23	9.49	9.46	----	9.54	9.98	9.98	9.32
4.5	6	36.37	39.42	35.20	35.79	35.65	37.54	37.54	35.32	35.67	35.45
6	7.5	----	40.11	37.43	36.12	35.89	----	38.43	37.14	38.67	37.47
7.5	9	37.99	40.80	39.66	36.45	36.13	41.34	41.34	38.96	39.21	39.49

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
9	10.5	----	41.49	41.89	36.78	36.37	43.31	43.31	40.78	44.66	41.51
10.5	12	39.61	42.18	44.12	37.11	36.61	44.58	44.58	42.60	40.29	43.53
12	13.5	40.42	42.87	46.35	37.44	36.85	46.78	46.78	44.42	40.83	45.55
13.5	15	41.23	43.56	48.58	37.77	37.09	48.34	48.34	46.24	41.37	47.57
15	16.5	42.04	44.25	50.81	38.10	37.33	49.90	49.90	48.06	41.91	49.59
16.5	18	42.85	44.94	53.04	38.43	37.57	51.46	51.46	49.88	42.45	51.61
18	19.5	43.66	45.63	55.27	38.76	37.81	51.63		51.70	42.99	53.63
19.5	21	44.47	46.32	57.50	39.09	38.05	52.35		53.52	43.53	55.65
21	22.5		47.01	57.89	39.42	38.29	53.07		55.34	44.07	57.67
22.5	24		47.70	58.28	39.75	38.53	53.79		57.16	44.61	59.69
24	25.5		48.39	58.67	40.08	38.77	54.51		58.98	45.15	61.71
25.5	27		49.08	59.06	40.41	39.01	55.23		60.80	45.69	
27	28.5		49.77	59.45	40.74	39.25	55.95		62.62		
28.5	30		50.46	59.84	41.07	39.49	56.67		64.44		
30	31.5		51.15	60.23	41.40	39.73	57.39				
31.5	33		51.84	60.62	41.73	39.97	58.11				
33	34.5		52.53	61.01	42.06	40.21	58.83				
34.5	36		53.22	61.40		40.45	59.55				
36	37.5		53.91	61.79			60.27				
37.5	39		54.60	62.18			60.99				
39	40.5		55.29	62.57			61.71				
40.5	42		55.98	62.96							
42	43.5		56.67								

11.1.2.7 Point Load Test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	----	----	----	0.39	----	0.37	0.42	----	0.39
1.5	3	----	----	----	----	0.44	0.41	0.44	0.47	0.45	0.44
3	4.5	1.64	----	----	0.48	0.49	0.50	0.48	0.51	0.51	0.46
4.5	6	----	1.93	1.71	1.74	1.73	1.93	----	1.73	1.75	1.71
6	7.5	1.73	----	1.76	1.77	1.76	1.92	1.86	1.82	1.89	1.79
7.5	9	1.79	1.98	1.89	1.82	1.79	2.10	1.98	1.95	1.92	1.89
9	10.5	1.85	2.08	1.93	1.85	1.82	2.19	----	2.04	2.18	1.99
10.5	12	1.88	2.14	2.13	1.86	1.84	2.25	2.16	2.12	1.97	2.06
12	13.5	----	2.17	2.19	1.89	1.85	2.35	2.25	2.23	2.06	2.14
13.5	15	1.92	2.21	2.24	1.92	1.89	2.42	2.37	2.29	2.11	2.29
15	16.5	2.08	2.26	2.44	1.95	1.92	2.49	2.45	2.38	2.15	2.36
16.5	18	2.17	2.31	2.48	1.99	1.94	2.56	2.58	2.49	2.19	2.48
18	19.5	2.21	2.36	2.59	2.02	1.97	2.57		2.53	2.22	2.52
19.5	21	2.36	2.39	2.76	2.08	1.99	2.60		2.64	2.26	2.66
21	22.5		2.43	2.81	2.10	2.02	2.63		2.84	2.31	2.74
22.5	24		2.47	2.88	2.13	2.06	2.67		2.96	2.37	2.88
24	25.5		2.54	2.98	2.15	2.08	2.70		3.02	2.41	3.04

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
25.5	27		2.59	3.06	2.17	2.11	2.73		3.13	2.45	
27	28.5		2.63	3.11	2.21	2.13	2.76		3.21		
28.5	30		2.69	3.09	2.24	2.16	2.80		3.35		
30	31.5		2.72	3.15	2.27	2.18	2.84				
31.5	33		2.75	3.22	2.29	2.19	2.86				
33	34.5		2.82	3.29	2.33	2.21	2.89				
34.5	36		2.84	3.36		2.23	2.93				
36	37.5		2.89	3.42			2.96				
37.5	39		2.91	3.48			2.99				
39	40.5		2.95	3.46			3.03				
40.5	42		2.99	3.49							
42	43.5		3.04								

11.1.2.8 Brazilian Test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	----	----	----	0.78	----	0.81	----	0.91	0.93
1.5	3	----	----	----	----	0.89	----	0.99	1.02	0.98	0.93
3	4.5	3.69	----	----	0.98	0.98	----	1.05	1.12	1.08	1.16
4.5	6	----	3.99	3.52	3.98	3.65	3.85	3.91	4.02	3.69	3.98
6	7.5	----	----	3.72	4.06	3.72	4.05	3.96	4.31	3.94	4.03
7.5	9	3.92	4.14	4.34	4.08	3.76	4.26	4.36	4.42	4.08	4.17
9	10.5	4.08	4.21	4.56	4.11	3.82	4.41	4.42	4.63	4.56	4.26
10.5	12	4.13	4.29	4.92	4.13	3.85	4.72	4.52	4.85	4.24	4.53
12	13.5	----	4.32	5.21	4.17	3.89	4.76	4.78	4.69	4.31	4.71
13.5	15	4.35	4.39	5.41	4.19	3.92	4.94	5.38	4.82	4.42	4.85
15	16.5	4.42	4.48	5.56	4.23	3.95	5.34	5.62	5.23	4.58	5.09
16.5	18	4.58	4.58	5.78	4.26	3.98	5.54	5.75	5.57	4.72	5.39
18	19.5	4.78	4.62	6.18	4.28	4.02	5.78		5.74	4.69	5.69
19.5	21	4.99	4.66	5.75	4.32	4.06	5.94		6.21	4.72	5.84
21	22.5		4.82	5.97	4.35	4.11	6.21		6.39	4.79	6.48
22.5	24		4.93	6.20	4.46	4.14	6.32		6.51	4.86	6.63
24	25.5		5.06	6.42	4.52	4.18	6.58		6.63	4.93	6.89
25.5	27		5.14	6.64	4.58	4.23	6.73		6.82	5.12	
27	28.5		5.26	6.71	4.63	4.29	6.81		6.93		
28.5	30		5.35	6.85	4.69	4.33	6.85		7.08		
30	31.5		5.46	6.96	4.72	4.38	6.89				
31.5	33		5.58	7.21	4.87	4.45	6.92				
33	34.5		5.72	7.39	5.12	4.66	6.99				
34.5	36		5.79	7.54		4.72	7.06				
36	37.5		5.86	7.58			7.16				
37.5	39		5.96	7.68			7.28				
39	40.5		6.14	7.82			7.58				
40.5	42		6.29	7.89							
42	43.5		6.43								

11.1.2.9 Modulus of elasticity test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	----	----	----	----	----	----	----	----	24.10
1.5	3	----	----	----	----	----	----	25.70	----	25.60	25.30
3	4.5	37.20	----	----	26.70	26.10	----	26.30	25.30	----	25.90
4.5	6	----	40.30	----	36.10	36.20	39.20	----	37.10	36.20	34.80
6	7.5	----	----	----	36.90	36.70	----	39.20	----	38.50	35.70
7.5	9	38.40	40.70	----	37.20	37.10	42.40	41.70	39.40	40.40	40.20
9	10.5	----	41.30	42.60	37.80	37.40	----	----	41.30	----	40.60
10.5	12	40.10	41.80	43.60	38.30	37.90	43.60	43.40	43.50	40.70	41.70
12	13.5	----	42.30	44.50	38.50	38.10	----	44.20	43.70	40.90	42.50
13.5	15	----	42.50	44.90	39.40	38.40	44.20	44.80	44.20	42.30	42.80
15	16.5	41.30	42.80	45.80	40.10	38.60	45.10	45.30	44.60	43.10	43.20
16.5	18	41.80	43.20	46.40	40.70	38.80	46.20	46.20	----	43.80	45.10
18	19.5	42.50	43.40	47.30	41.20	39.30	46.70		----	44.20	46.50
19.5	21	44.20	43.70	47.80	41.80	39.40	46.50		45.80	44.60	47.40
21	22.5		44.10	48.30	42.60	39.10	47.20		46.70	45.70	48.60
22.5	24		44.30	48.90	43.30	39.70	47.70		47.50	46.30	49.30
24	25.5		44.50	49.2	43.70	39.40	48.30		48.20	46.80	50.50
25.5	27		44.70	49.70	44.20	40.60	48.50		50.30	47.30	
27	28.5		45.20	49.50	44.80	40.90	48.90		51.50		
28.5	30		45.80	49.80	45.20	41.40	49.20		53.80		
30	31.5		46.20	50.40	45.80	41.70	----				
31.5	33		46.60	50.70	46.10	----	49.70				
33	34.5		46.90	51.30	46.50	42.80	50.20				
34.5	36		47.30	51.60		43.70	50.70				
36	37.5		47.70	51.10			51.40				
37.5	39		48.30	52.50			51.80				
39	40.5		48.60	52.90			52.10				
40.5	42		48.80	53.50							
42	43.5		49.30								

11.1.2.10 Abrasion test

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
0.5	1.5	---	0.82	0.79	0.88	0.83	----	0.79	0.85	0.81	0.83
1.5	3	0.95	0.91	0.85	0.95	0.88	0.88	0.86	0.92	0.96	0.89
3	4.5	1.75	0.96	0.94	0.99	0.95	0.97	0.97	0.97	0.99	0.94
4.5	6	1.79	1.72	1.75	1.66	1.78	1.79	1.82	1.77	1.76	1.76
6	7.5	1.81	1.78	1.79	1.69	1.79	1.83	1.85	1.82	1.83	1.83
7.5	9	1.84	1.82	1.87	1.72	1.81	1.88	1.93	1.86	1.88	1.88
9	10.5	1.85	1.85	1.92	1.75	1.82	1.93	1.98	1.92	1.98	1.93
10.5	12	1.89	1.89	2.01	1.77	1.84	2.04	2.04	1.96	1.87	1.98

Top	Bottom	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10
12	13.5	1.92	1.93	2.08	1.80	1.80	2.09	2.09	2.01	1.89	2.06
13.5	15	1.95	1.96	2.14	1.86	1.82	2.14	2.16	2.08	1.92	2.12
15	16.5	1.96	2.02	2.20	1.83	1.85	2.17	2.21	2.13	1.94	2.16
16.5	18	1.99	2.05	2.24	1.81	1.84	2.23	2.26	2.18	1.98	2.23
18	19.5	2.02	2.08	2.29	1.84	1.87	2.25		2.23	1.96	2.27
19.5	21	2.08	2.11	2.32	1.88	1.89	2.27		2.27	2.02	2.31
21	22.5		2.14	2.35	1.86	1.92	2.31		2.35	2.05	2.39
22.5	24		2.15	2.38	1.88	1.90	2.34		2.42	2.08	2.46
24	25.5		2.18	2.42	1.90	1.92	2.36		2.47	2.11	2.52
25.5	27		2.20	2.44	1.91	1.94	2.39		2.51	2.14	
27	28.5		2.23	2.47	1.93	1.91	2.41		2.57		
28.5	30		2.27	2.51	1.95	1.94	2.43		2.64		
30	31.5		2.29	2.54	1.96	1.96	2.46				
31.5	33		2.33	2.56	2.00	1.98	2.48				
33	34.5		2.35	2.59	2.06	1.95	2.44				
34.5	36		2.38	2.63		1.99	2.48				
36	37.5		2.41	2.64			2.51				
37.5	39		2.44	2.68			2.55				
39	40.5		2.48	2.71			2.63				
40.5	42		2.46	2.74							
42	43.5		2.51								

11.1.3 ANNEXURE- C (RMR LOGS)

Tunnel-11			BH-1											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5				1	3	0	0	0						0
1.5	3.0	1	3	5	1	1	1	0	1	4	0	-2	11	Class 5 (VERY POOR)	

3.0	4.5	1	3	5	1	1	1	0	1	4	0	-2	11	Class 5 (VERY POOR)
4.5	6.0	2	3	5	2	1	5	4	3	15	10	-2	33	Class 4 (POOR)
6.0	7.5	2	3	5	2	1	5	4	3	15	10	-2	33	Class 4 (POOR)
7.5	9.0	2	3	5	2	1	5	4	5	17	10	-2	35	Class 4 (POOR)
9.0	10.5	2	3	5	2	1	5	4	5	17	10	-2	35	Class 4 (POOR)
10.5	12.0	2	3	5	2	1	5	4	5	17	10	-2	35	Class 4 (POOR)
12.0	13.5	2	3	5	2	1	5	4	5	17	10	-2	35	Class 4 (POOR)
13.5	15.0	2	3	5	2	1	5	4	5	17	10	-2	35	Class 4 (POOR)
15.0	16.5	2	8	5	2	1	5	4	5	17	10	-2	40	Class 4 (POOR)
16.5	18.0	2	8	5	4	4	6	4	6	24	10	-2	47	Class 3 (FAIR)
18.0	19.5	2	3	5	4	4	6	4	6	24	10	-2	42	Class 3 (FAIR)
19.5	20.0	2	8	5	4	4	6	4	6	24	10	-2	47	Class 3 (FAIR)

Tunnel:11		BH: 02			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	2	1	5	2	5	15	4	-2	27	Class 4 (POOR)
1.5	3.0	2	3	5	2	4	5	2	5	18	4	-2	30	Class 4 (POOR)
3.0	4.5	2	3	5	2	4	5	2	5	18	4	-2	30	Class 4 (POOR)
4.5	6.0	4	3	5	2	4	5	2	5	18	4	-2	32	Class 4 (POOR)
6.0	7.5	4	3	5	2	4	5	2	5	18	4	-2	32	Class 4 (POOR)
7.5	9.0	4	3	5	2	4	5	2	5	18	4	-2	32	Class 4 (POOR)
9.0	10.5	4	3	5	4	4	6	2	6	22	4	-2	36	Class 4 (POOR)
10.5	12.0	4	3	10	4	4	6	2	6	22	4	-2	41	Class 3 (FAIR)
12.0	13.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
13.5	15.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
15.0	16.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
16.5	18.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
18.0	19.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
19.5	21.0	4	17	20	6	6	6	6	6	30	15	-2	84	Class 1 (VERY GOOD)
21.0	22.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
22.5	24.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2 (GOOD)
24.0	25.5	4	3	20	6	6	6	6	6	30	15	-2	70	Class 2 (GOOD)
25.5	27.0	4	8	15	4	4	6	4	6	24	15	-2	64	Class 2 (GOOD)
27.0	28.5	4	13	10	4	4	6	4	6	24	15	-2	64	Class 2 (GOOD)
28.5	30.0	7	8	10	4	4	6	4	6	24	15	-2	62	Class 2 (GOOD)
30.0	31.5	7	8	10	4	4	6	4	6	24	15	-2	62	Class 2 (GOOD)
31.5	33.0	7	8	10	4	4	6	4	6	24	15	-2	62	Class 2 (GOOD)
33.0	34.5	7	8	8	4	4	6	4	6	24	10	-2	55	Class 3 (FAIR)
34.5	36.0	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3 (FAIR)

Tunnel:11		BH: 02			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
36.0	37.5	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3(FAIR)
37.5	39.0	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3(FAIR)
39.0	40.5	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3(FAIR)
40.5	42.0	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3(FAIR)
42.0	43.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

Tunnel: 11		BH:03											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	2	1	5	2	5	15	4	-2	27	Class 4 (POOR)
1.5	3.0	2	3	5	2	4	5	2	5	18	4	-2	30	Class 4 (POOR)
3.0	4.5	2	3	5	2	4	5	2	5	18	4	-2	30	Class 4 (POOR)
4.5	6.0	4	3	5	2	4	5	2	5	18	4	-2	32	Class 4 (POOR)
6.0	7.5	4	3	5	2	4	5	2	5	18	4	-2	32	Class 4 (POOR)
7.5	9.0	4	3	5	2	4	5	2	5	18	4	-2	32	Class 4 (POOR)
9.0	10.5	4	3	5	4	4	6	2	6	22	4	-2	36	Class 4 (POOR)
10.5	12.0	4	13	10	4	4	6	2	6	22	4	-2	51	Class 3(FAIR)
12.0	13.5	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
13.5	15.0	4	13	20	6	6	6	6	6	30	15	-2	80	Class 2(GOOD)
15.0	16.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
16.5	18.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
18.0	19.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
19.5	21.0	7	3	20	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
21.0	22.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
22.5	24.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
24.0	25.5	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)
25.5	27.0	7	13	15	4	4	6	4	6	24	15	-2	72	Class 2(GOOD)
27.0	28.5	7	8	10	4	4	6	4	6	24	15	-2	62	Class 2(GOOD)

Tunnel: 11			BH:03										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
28.5	30.0	7	8	10	4	4	6	4	6	24	15	-2	62	Class 2(GOOD)
30.0	31.5	7	3	10	4	4	6	4	6	24	15	-2	57	Class 3(FAIR)
31.5	33.0	7	8	10	4	4	6	4	6	24	15	-2	62	Class 2(GOOD)
33.0	34.5	7	8	8	4	4	6	4	6	24	10	-2	55	Class 3(FAIR)
34.5	36.0	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3(FAIR)
36.0	37.5	7	3	5	4	4	6	4	6	24	10	-2	47	Class 3(FAIR)
37.5	39.0	7	3	5	4	4	6	4	6	24	10	-2	47	Class 3(FAIR)
39.0	40.5	7	8	5	4	4	6	4	6	24	10	-2	52	Class 3(FAIR)
40.5	41.0	7	3	5	4	4	6	4	6	24	10	-2	47	Class 3(FAIR)

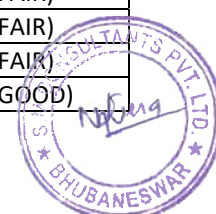
Tunnel: 11		BH: 04			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	5	2	4	5	4	5	20	10	-2	38	Class 4 (POOR)
1.5	3.0	2	3	5	2	4	5	4	5	20	10	-2	38	Class 4 (POOR)
3.0	4.5	2	3	5	4	5	5	4	5	23	10	-2	41	Class 3(FAIR)
4.5	6.0	4	3	5	4	5	5	4	5	23	10	-2	43	Class 3(FAIR)
6.0	7.5	4	3	10	4	5	5	4	5	23	10	-2	48	Class 3(FAIR)
7.5	9.0	4	3	8	4	5	5	4	5	23	10	-2	46	Class 3(FAIR)
9.0	10.5	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
10.5	12.0	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
12.0	13.5	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
13.5	15.0	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
15.0	16.5	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
16.5	18.0	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
18.0	19.5	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
19.5	21.0	4	8	20	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
21.0	22.5	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
22.5	24.0	4	8	15	4	5	5	4	6	24	10	-2	59	Class 3(FAIR)
24.0	25.5	4	3	15	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
25.5	27.0	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
27.0	28.5	4	13	8	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)

Tunnel: 11		BH: 04			TOTAL DEPTH:								RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
28.5	30.0	4	13	8	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)
30.0	31.5	4	13	8	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)
31.5	33.0	4	13	8	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)
33.0	34.5	4	13	8	4	5	5	4	5	23	10	-2	56	Class 3(FAIR)

Tunnel:T-11		BH-5											RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	4	5	4	5	20	10	-2	36	Class 4 (POOR)
1.5	3.0	2	3	5	2	4	5	4	5	20	10	-2	38	Class 4 (POOR)
3.0	4.5	2	3	5	4	5	5	4	5	23	10	-2	41	Class 3(FAIR)
4.5	6.0	4	3	5	4	5	5	4	5	23	10	-2	43	Class 3(FAIR)
6.0	7.5	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
7.5	9.0	4	3	8	4	5	5	4	5	23	10	-2	46	Class 3(FAIR)
9.0	10.5	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
10.5	12.0	4	3	10	4	5	5	4	5	23	10	-2	48	Class 3(FAIR)
12.0	13.5	4	8	10	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
13.5	15.0	4	3	10	4	5	5	4	5	23	10	-2	48	Class 3(FAIR)
15.0	16.5	4	3	10	4	5	5	4	5	23	10	-2	48	Class 3(FAIR)
16.5	18.0	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
18.0	19.5	4	3	15	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
19.5	21.0	4	8	20	6	6	6	6	6	30	10	-2	70	Class 2(GOOD)
21.0	22.5	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
22.5	24.0	4	8	15	4	5	5	4	6	24	10	-2	59	Class 3(FAIR)
24.0	25.5	4	8	15	4	5	5	4	5	23	10	-2	58	Class 3(FAIR)
25.5	27.0	4	3	15	4	5	5	4	5	23	10	-2	53	Class 3(FAIR)
27.0	28.5	4	8	8	4	5	5	4	5	23	10	-2	51	Class 3(FAIR)
28.5	30.0	4	3	8	4	5	5	4	5	23	10	-2	46	Class 3(FAIR)
30.0	31.5	4	3	8	4	5	5	4	5	23	10	-2	46	Class 3(FAIR)
31.5	33.0	4	3	8	4	5	5	4	5	23	10	-2	46	Class 3(FAIR)
33.0	34.5	4	8	8	4	5	5	4	5	23	10	-2	51	Class 3(FAIR)

Tunnel:T-11			BH-5										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
34.5	35.0	4	8	8	4	5	5	4	5	23	10	-2	51	Class 3(FAIR)

Tunnel:11			BH-06										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	2	1	3	2	5	13	4	-2	23	Class 4 (POOR)
1.5	3.0	0	3	5	2	1	3	2	5	13	4	-2	23	Class 4 (POOR)
3.0	4.5	0	3	5	2	1	3	2	5	13	4	-2	23	Class 4 (POOR)
4.5	6.0	4	3	5	2	1	3	2	5	13	4	-2	27	Class 4 (POOR)
6.0	7.5	0	3		2	1	3	2	5	13	4	-2	18	Class 5 (VERY POOR)
7.5	9.0	4	3		2	1	3	2	5	13	4	-2	22	Class 4 (POOR)
9.0	10.5	4	3		2	1	3	2	5	13	4	-2	22	Class 4 (POOR)
10.5	12.0	4	3		2	1	3	2	5	13	4	-2	22	Class 4 (POOR)
12.0	13.5	4	3	5	2	1	3	2	5	13	4	-2	27	Class 4 (POOR)
13.5	15.0	4	3	8	4	5	5	6	6	26	7	-2	46	Class 3(FAIR)
15.0	16.5	4	8	8	4	5	5	6	6	26	10	-2	54	Class 3(FAIR)
16.5	18.0	7	3	10	4	5	6	6	6	27	10	-2	55	Class 3(FAIR)
18.0	19.5	7	8	10	4	5	6	6	6	27	10	-2	60	Class 3(FAIR)
19.5	21.0	7	3	10	4	5	6	6	6	27	10	-2	55	Class 3(FAIR)
21.0	22.5	7	3	10	4	5	6	6	6	27	10	-2	55	Class 3(FAIR)
22.5	24.0	7	8	8	4	5	6	6	6	27	10	-2	58	Class 3(FAIR)
24.0	25.5	7	8	8	4	5	5	4	6	24	10	-2	55	Class 3(FAIR)
25.5	27.0	7	3	8	4	4	5	4	6	23	10	-2	49	Class 3(FAIR)
27.0	28.5	7	3	8	4	4	5	4	6	23	10	-2	49	Class 3(FAIR)
28.5	30.0	7	3	8	4	5	5	6	6	26	10	-2	52	Class 3(FAIR)
30.0	31.5	7	3	5	4	5	6	4	6	25	10	-2	48	Class 3(FAIR)
31.5	33.0	7	8	5	4	5	6	4	6	25	10	-2	53	Class 3(FAIR)
33.0	34.5	7	3	5	4	5	5	4	6	24	10	-2	47	Class 3(FAIR)
34.5	36.0	7	8	8	4	5	6	6	6	27	10	-2	58	Class 3(FAIR)
36.0	37.5	7	8	8	4	5	6	6	6	27	10	-2	58	Class 3(FAIR)
37.5	39.0	7	13	8	4	5	6	6	6	27	10	-2	63	Class 2(GOOD)



Tunnel:11			BH-06										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
39.0	40.0	7	13	8	4	5	6	6	6	27	10	-2	63	Class 2(GOOD)

Tunnel:11			BH-07										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	0	3	5	4	4	5	2	5	20	7	-2	33	Class 4 (POOR)
1.5	3.0	2	3	8	4	4	5	2	5	20	10	-2	41	Class 3(FAIR)
3.0	4.5	2	8	10	4	4	5	2	6	21	10	-2	49	Class 3(FAIR)
4.5	6.0	4	3	10	4	4	5	2	6	21	10	-2	46	Class 3(FAIR)
6.0	7.5	4	8	10	4	4	5	2	6	21	10	-2	51	Class 3(FAIR)
7.5	9.0	4	3	10	4	4	5	2	6	21	10	-2	46	Class 3(FAIR)
9.0	10.5	4	3	5	1	1	5	2	6	15	7	-2	32	Class 4 (POOR)
10.5	12.0	4	3	10	4	4	5	2	6	21	10	-2	46	Class 3(FAIR)
12.0	13.5	4	8	15	4	4	6	2	6	22	10	-2	57	Class 3(FAIR)
13.5	15.0	4	8	15	4	4	6	2	6	22	15	-2	62	Class 2(GOOD)
15.0	16.5	4	8	15	4	4	6	4	6	24	15	-2	64	Class 2(GOOD)
16.5	18.0	7	8	15	4	4	6	4	6	24	15	-2	67	Class 2(GOOD)

Tunnel:11		BH-08								RMR		
Depth (m)	Strength of	RQD Rating	Spacing of	Conditions of Discontinuities			Conditions of	Ground	Rating	Adjust	Total	Class of Rock

Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gauge) Rating	Weathering Rating					
0.0	1.5	0	3	5	1	1	3	1	5	11	7	-2	24	Class 4 (POOR)
1.5	3.0	2	3	5	1	1	3	1	5	11	7	-2	26	Class 4 (POOR)
3.0	4.5	2	13	8	1	1	5	2	5	14	10	-2	45	Class 3 (FAIR)
4.5	6.0	4	8	8	4	4	5	2	5	20	10	-2	48	Class 3 (FAIR)
6.0	7.5	4	3	5	1	1	5	1	5	13	7	-2	30	Class 4 (POOR)
7.5	9.0	4	3	8	4	4	5	2	5	20	10	-2	43	Class 3 (FAIR)
9.0	10.5	4	3	8	4	4	5	2	6	21	10	-2	44	Class 3 (FAIR)
10.5	12.0	4	3	8	4	4	5	2	6	21	10	-2	44	Class 3 (FAIR)
12.0	13.5	4	8	10	4	4	55	2	6	71	10	-2	101	Class 5 (VERY POOR)
13.5	15.0	4	8	10	4	4	5	2	6	21	10	-2	51	Class 3 (FAIR)
15.0	16.5	4	8	15	4	4	5	4	6	23	10	-2	58	Class 3 (FAIR)
16.5	18.0	4	3	5	4	1	6	2	6	19	10	-2	39	Class 4 (POOR)
18.0	19.5	7	3	5	4	1	6	2	6	19	10	-2	42	Class 3 (FAIR)
19.5	21.0	7	8	8	4	1	6	2	6	19	10	-2	50	Class 3 (FAIR)
21.0	22.5	7	3	5	4	1	5	2	6	18	10	-2	41	Class 3 (FAIR)
22.5	24.0	7	8	8	4	4	5	2	6	21	10	-2	52	Class 3 (FAIR)
24.0	25.5	7	8	8	4	4	5	2	6	21	10	-2	52	Class 3 (FAIR)
25.5	27.0	7	8	10	4	4	6	2	5	21	10	-2	54	Class 3 (FAIR)
27.0	28.5	7	8	10	4	4	6	2	5	21	10	-2	54	Class 3 (FAIR)
28.5	30.0	7	13	10	4	4	6	2	5	21	10	-2	59	Class 3 (FAIR)

Tunnel:11			BH09										RMR		
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities (combined)	Ground Water condition	Rating Adjustment	Total	Class of Rock	
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating						
0.0	1.5	2	3	8	4	4	5	4	5	22	10	-2	43	Class 3(FAIR)	
1.5	3.0	2	3	8	4	4	5	4	5	22	10	-2	43	Class 3(FAIR)	
3.0	4.5	2	3	8	4	4	5	4	5	22	10	-2	38	Class 4 (POOR)	
4.5	6.0	4	8	8	4	4	5	4	5	18	10	-2	46	Class 3(FAIR)	
6.0	7.5	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)	
7.5	9.0	4	3	8	4	4	5	4	5	22	10	-2	45	Class 3(FAIR)	
9.0	10.5	4	3	8	4	4	6	4	6	24	10	-2	47	Class 3(FAIR)	
10.5	12.0	4	3	8	4	4	6	4	0	18	10	-2	41	Class 3(FAIR)	
12.0	13.5	4	3	10	4	4	6	4	6	24	10	-2	49	Class 3(FAIR)	
13.5	15.0	4	3	10	4	4	6	4	6	18	10	-2	43	Class 3(FAIR)	
15.0	16.5	4	3	10	4	4	6	4	6	24	10	-2	49	Class 3(FAIR)	
16.5	18.0	4	3	10	4	4	6	4	6	24	15	-2	54	Class 3(FAIR)	
18.0	19.5	4	3	10	4	4	6	4	6	24	15	-2	54	Class 3(FAIR)	

19.5	21.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
21.0	22.5	4	8	10	4	5	6	6	6	27	15	-2	62	Class 2(GOOD)
22.5	24.0	4	8	15	4	5	6	6	6	27	15	-2	67	Class 2(GOOD)
24.0	25.5	4	13	15	4	5	6	6	6	23	15	-2	68	Class 2(GOOD)
25.5	27.0	4	13	15	4	5	6	6	6	27	15	-2	72	Class 2(GOOD)

Tunnel-11			BH10										RMR	
Depth (m)		Strength of Intact Rock Rating	RQD Rating	Spacing of Discontinuity Rating	Conditions of Discontinuities					Conditions of Discontinuities <small>(combined)</small>	Ground Water condition	Rating Adjustment	Total	Class of Rock
Top	Bottom				Discontinuity length	Separation (aperture) Rating	Roughness Rating	Infilling (Gouge) Rating	Weathering Rating					
0.0	1.5	2	3	10	6	6	6	4	6	28	10	-2	51	Class 3(FAIR)
1.5	3.0	2	8	10	6	6	6	4	6	28	10	-2	56	Class 3(FAIR)
3.0	4.5	2	3	10	6	6	6	6	6	30	15	-2	58	Class 3(FAIR)
4.5	6.0	4	3	10	6	6	6	6	6	30	15	-2	60	Class 3(FAIR)
6.0	7.5	4	8	15	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
7.5	9.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
9.0	10.5	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
10.5	12.0	4	8	20	6	6	6	6	6	30	15	-2	75	Class 2(GOOD)
12.0	13.5	4	8	15	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
13.5	15.0	4	8	15	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
15.0	16.5	4	8	15	6	6	6	6	6	30	15	-2	70	Class 2(GOOD)
16.5	18.0	7	8	10	4	5	6	2	6	23	10	-2	56	Class 3(FAIR)
18.0	19.5	7	8	10	4	5	6	2	6	23	10	-2	56	Class 3(FAIR)
19.5	21.0	7	8	10	4	5	6	2	6	23	15	-2	61	Class 2(GOOD)
21.0	22.5	7	8	15	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
22.5	24.0	7	8	15	6	6	6	6	6	30	15	-2	73	Class 2(GOOD)
24.0	25.0	7	13	20	6	6	6	6	6	30	15	-2	83	Class 1 (VERY GOOD)

11.1.4 Annexure- D (PERMEABILITY TEST RESULT)

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-01)

Test Section	4.5 m-7.5 m		radius in cm=		3.8				Intake (Lit.)							
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
4.50	7.50	3	300	2.59	18.4	8.59	1	1859	6.10	11.80	20.50	16.2	54.0	0.00006733	6.70	Was hout
4.50	7.50	3	300	2.59	18.4	8.59	2	2859	9.90	22.00	35.60	28.8	96.0	0.00007783	7.80	
4.50	7.50	3	300	2.59	18.4	8.59	3	3859	14.90	38.80	45.80	42.3	141.0	0.00008469	8.50	
4.50	7.50	3	300	2.59	18.4	8.59	2	2859	13.20	25.50	41.10	33.3	111.0	0.00008999	9.00	
4.50	7.50	3	300	2.59	18.4	8.59	1	1859	8.50	18.50	27.70	23.1	77.0	0.00009601	9.60	
													Avr .	0.00008317	9.60	

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-02)

Test Section	28.5 m-31.5 m	radius in cm=	3.8				Intake (Lit.)								
							1	2	3	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	Flow Condition	
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	L=Test Section in cm.	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm ²	Differential Head of Water							
28.50	31.50	3	300	2.49	26.7	29.19	1	3919	6.60	15.30	23.00	19.2	64.0	0.0000	3.80
28.50	31.50	3	300	2.49	26.7	29.19	2	4919	8.90	19.50	32.80	26.2	87.4	0.0000	4.10
28.50	31.50	3	300	2.49	26.7	29.19	3	5919	13.50	29.60	45.50	37.6	125.4	0.0000	4.90
28.50	31.50	3	300	2.49	26.7	29.19	2	4919	10.30	25.50	30.30	27.9	93.0	0.0000	4.40
28.50	31.50	3	300	2.49	26.7	29.19	1	3919	7.90	16.90	25.10	21.0	70.0	0.0000	4.10
											Avr.	0.0000	4266	3.80	

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-03)

Test Section	25.5 m-28.5 m		radius in cm=	3.8				Intake (Lit.)								
																Flow Condition
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	
25.50	28.50	3	300	2.55	27.6	30.15	1	4015	5.20	14.60	24.20	19.4	64.7	0.00003733	3.70	Turbulent
25.50	28.50	3	300	2.55	27.6	30.15	2	5015	4.30	12.90	27.50	20.2	67.3	0.00003112	3.10	
25.50	28.50	3	300	2.55	27.6	30.15	3	6015	5.50	14.50	29.80	22.2	74.0	0.00002852	2.90	
25.50	28.50	3	300	2.55	27.6	30.15	2	5015	7.20	13.50	28.60	21.1	70.3	0.00003251	3.30	
25.50	28.50	3	300	2.55	27.6	30.15	1	4015	3.90	9.90	30.30	20.1	67.0	0.00003868	3.90	
													Avr.	0.00003363	2.90	

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-04)

Test Section	19.50 m-22.5 m	radius in cm=	3.8			Intake (Lit.)													
						Flow Condition	Lugeon	K cm/sec	Q (cm ³ /sec)	Avg.	3 (15 min)	2 (10 min)	1 (5 min)	Differential Head of Water	Hp (Pressure at monometer)	Hg in m.	GWL of hole m	Hight Of water Swivel from GL	L=Test Section in cm.
															</				

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-05)

Test Section	19.5 m-22.5 m		radius in cm=		3.8				Intake (Lit.)								
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
	19.50	22.50	3	300	2.58	25.2	23.58	1	3358	8.80	20.50	23.30	21.9	73.0	0.00005039	5.00	Turbulent
	19.50	22.50	3	300	2.58	25.2	23.58	2	4358	7.10	19.30	30.60	25.0	83.4	0.00004432	4.40	
	19.50	22.50	3	300	2.58	25.2	23.58	3	5358	8.30	16.80	25.90	21.4	71.3	0.00003086	3.10	
	19.50	22.50	3	300	2.58	25.2	23.58	2	4358	7.60	15.60	28.80	22.2	74.0	0.00003936	3.90	
	19.50	22.50	3	300	2.58	25.2	23.58	1	3358	4.90	13.30	33.70	23.5	78.3	0.00005407	5.40	
														Avr.	0.00004380	3.10	

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-06)

Test Section	33.0 m- 36.0 m	radius in cm=	3. 8					Intake (Lit.)									
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer) kg/cm2	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
	33.00	36.00	3	300	2.54	23.4	25.94	1	3594	8.80	18.80	37.70	28.3	94.4	0.00006084	6.10	Turbulent
	33.00	36.00	3	300	2.54	23.4	25.94	2	4594	7.10	23.20	42.90	33.1	110.4	0.00005567	5.60	
	33.00	36.00	3	300	2.54	23.4	25.94	3	5594	8.30	25.50	38.90	32.2	107.4	0.00004447	4.40	
	33.00	36.00	3	300	2.54	23.4	25.94	2	4594	7.60	20.80	37.00	28.9	96.4	0.00004860	4.90	
	33.00	36.00	3	300	2.54	23.4	25.94	1	3594	4.90	16.50	36.10	26.3	87.7	0.00005654	5.70	
														Avr.	0.00005322	4.40	

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-07)

Test Section	3.0 m-6.0 m	radius in cm=	3 . 8				Intake (Lit.)										

**PERMEABILITY TEST RESULT OF
F TUNNEL-11 (BH-08)**

Test Section	15.0 m- 18.0 m		radius in cm=		3. 8			Intake (Lit.)								
	Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
15.00	18.00	3	300	2.56	22.6	19.06	1	2906	5.80	12.10	26.20	19.2	64.0	0.0000 5105	5.10	Dila tion
15.00	18.00	3	300	2.56	22.6	19.06	2	3906	8.60	18.60	36.80	27.7	92.4	0.0000 5479	5.50	
15.00	18.00	3	300	2.56	22.6	19.06	3	4906	16.30	36.60	44.90	40.8	136.0	0.0000 6425	6.40	
15.00	18.00	3	300	2.56	22.6	19.06	2	3906	13.10	25.60	34.70	30.2	100.7	0.0000 5974	6.00	
15.00	18.00	3	300	2.56	22.6	19.06	1	2906	5.10	13.60	25.90	19.8	66.0	0.0000 5264	5.30	
													Avr.	0.0000 5649	5.10	

PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-09)

Test Section	12.0 m- 15.0 m	radius in cm=	3. 8		Intake (Lit.)											
					Flow Condition	Dila tion										
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	HP (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm ³ /sec)	K cm/sec	Lugeon	
12.00	15.00	3	300	2.6	24.3	16.1	1	2610	6.20	15.80	23.30	19.6	65.3	0.00005802	5.80	
12.00	15.00	3	300	2.6	24.3	16.1	2	3610	9.60	21.10	35.40	28.3	94.4	0.00006057	6.10	
12.00	15.00	3	300	2.6	24.3	16.1	3	4610	20.20	46.30	38.90	42.6	142.0	0.00007140	7.10	
12.00	15.00	3	300	2.6	24.3	16.1	2	3610	12.70	22.60	30.50	26.6	88.7	0.00005693	5.70	
12.00	15.00	3	300	2.6	24.3	16.1	1	2610	4.40	10.90	26.30	18.6	62.0	0.00005506	5.50	
													Avr .	0.00006040	5.50	



PERMEABILITY TEST RESULT OF TUNNEL-11 (BH-10)

Test Section	10.5 m-13.5 m	radius in cm=	3.8					Intake (Lit.)								
Upper Part of Test Section (m)	Lower Part of Test Section (m)	L=Test Section in m.	L=Test Section in cm.	Hight Of water Swivel from GL	GWL of hole m	Hg in m.	Hp (Pressure at monometer)	Differential Head of Water	1 (5 min)	2 (10 min)	3 (15 min)	Avg.	Q (cm3/sec)	K cm/sec	Lugeon	Flow Condition
13.50	16.50	3	300	2.56	21.3	17.56	1	2756	6.40	14.90	18.40	16.7	55.7	0.00004682	4.70	Turbulent
13.50	16.50	3	300	2.56	21.3	17.56	2	3756	7.70	16.80	24.50	20.7	69.0	0.00004258	4.30	
13.50	16.50	3	300	2.56	21.3	17.56	3	4756	8.60	13.30	29.80	21.6	72.0	0.00003509	3.50	
13.50	16.50	3	300	2.56	21.3	17.56	2	3756	6.20	17.20	27.10	22.2	74.0	0.00004567	4.60	
13.50	16.50	3	300	2.56	21.3	17.56	1	2756	8.60	15.50	22.20	18.9	63.0	0.00005298	5.30	
													Avr.	0.00004463	3.50	

Lugen test result

11.1.5 ANNEXURE- E (SOIL CHEMICAL TEST)

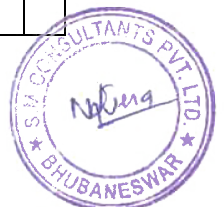
CHEMICAL TEST OF SOIL						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/kg	Sulphate in %
1	Tunnel No.11	BH-1	At 0.5 m depth	6.21	13.56	0.038
2			At 1.5 m depth	6.15	14.29	0.034
3		BH-2	At 0.5 m depth	6.23	14.61	0.035
4		BH-3	At 0.5 m depth	6.57	16.32	0.028
5		BH-4	At 0.5 m depth	6.48	21.24	0.021
6		BH-5	At 0.5 m depth	6.52	25.67	0.022
7		BH-6	At 0.5 m depth	6.43	30.25	0.021
8		BH-7	At 0.5 m depth	6.64	35.18	0.024
9		BH-8	At 0.5 m depth	6.68	20.01	0.026
10		BH-9	At 0.5 m depth	6.25	38.47	0.025
11		BH-10	At 0.5 m depth	6.37	26.9	0.032

11.1.6 ANNEXURE- F (WATER CHEMICAL TEST)

CHEMICAL TEST OF WATER						
Sl. No.	Tunnel Reference	B.H Location	Depth in Mtr.	pH	Chloride in mg/l	Sulphate mg/l
1	Tunnel No.11	BH-1	19	6.96	26.54	45.55
2			20	6.9	28.99	44.21
3		BH-2	27	6.88	35.66	46.55
4			31.5	6.87	26.55	35.54
5		BH-3	28.5	6.72	27.88	32.22
6			31.5	6.56	31.45	34.55
7		BH-4	25.5	6.71	32.55	41.2
8			31.5	6.66	34.56	40
9		BH-5	25.5	6.78	55.56	30.12
10			28.5	6.72	54.12	34.52
11		BH-6	24	6.78	47.56	35.66
12			28.5	6.83	45.22	36.54
13		BH-8	240	7.01	58.84	32.25
14			27	7.02	62.22	30.22
15		BH-9	25.5	7.06	57.36	38.54
16			27	6.98	51.02	35.56
17		BH-10	22.5	6.77	53.54	27.54
18			25	6.75	48.63	25.32

11.1.7 ANNEXURE- G (SOIL TEST)

TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
Sl. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits			Shrinkage Limit In %	Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002mm)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %													
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-01)																								
1	At 0.5 m	DS	22.93	7.40	5.44	15.10	33.03	16.10	30	18	12	----	----	----	----	----	----	2.69	----	12	----	----	----	SC
2	From 0.5 m to 1.5 m	SPT	0.00	0.23	45.68	52.34	1.75	----	----	----	----	----	----	----	----	----	----	2.65	----	----	----	N>100	NOTE*	
NOTE*- From 0.5 m to 1.5 m depth, a highly weathered rock stratum exists from which core samples could not been collected, only washed out samples have been collected.																								
LABORATORY TEST RESULT OF TUNNEL No.11 (BH-02)																								
1	From 0.0 m to 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-03)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-04)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-05)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP



TEST CONDUCTED AS PER IS : 2720 (Pt. II, Pt. III , Pt. IV , Pt. V, Pt.VI,Pt.X, Pt. XI / Pt. XIII, Pt.XV,& Pt. XL) AND IS: 1498																								
SL. No	Samples	Type of sample collection	Grain size analysis				Hydrometer analysis		Atterberg's Limits				Field Moisture Content in %	Bulk density in g/cc	Dry density in g/cc	Cohesion (c) Kgf/cm ²	Angle of shearing	Specific gravity	Void ratio	Free swelling Index In %	Un-Confined Compression	Compression Index (Cc)	Field S.P.T. Value (N)	Group of soil.
			Fine Gravel In %	Coarse Sand In %	Medium Sand In %	Fine Sand in %	Silt in % (0.075mm to 0.002mm)	Clay in % (Less than 0.002)	Liquid Limit In %	Plastic Limit In %	Plasticity Index in %	Shrinkage Limit In %												
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-06)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-07)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-08)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-09)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP
LABORATORY TEST RESULT OF TUNNEL No. 11 (BH-10)																								
1	At 0.5 m	DS	0.00	0.00	13.93	81.49	4.58	19	----	NP	----	----	----	----	----	----	----	2.65	----	0	----	----	----	SP