

Annexure - 5

2.1.1 Boreholes summary

S.NO	BH. NO.	Old Chainage (Actual/Theoretical)	New Chainage	EASTING	NORTHING	GROUND LEVEL	WATER TABLE
1	BH-U1	11387/11400	11384.783	378478.480	2049801.675	550.431	3.00
2	BH-U2	11435/11450	11435.944	378501.957	2049756.142	550.287	3.00
3	BH-U3	11500	11497.511	378512.504	2049695.537	550.312	5.50
4	BH-U4	11550/11544	11542.491	378519.941	2049651.669	550.052	2.50
5	BH-U5	11600	11597.026	378531.883	2049598.476	549.905	2.80
6	BH-U6	11666	11665.262	378548.080	2049532.177	550.422	3.50
7	BH-U7	11705/11700	11705.404	378559.461	2049493.588	550.27	4.50
8	BH-U8	11745/11750	11742.082	378573.228	2049459.084	550.865	3.00
9	BH-U9	11813/11800	11812.424	378600.274	2049393.052	551.265	3.20
10	BH-U11	11900	11896.08	378590.167	2049305.069	552.316	1.30
11	BH-U12	11950	11951.941	378611.311	2049252.557	553.035	6.00
12	BH-U13	12000	12007.2	378648.639	2049204.801	553.436	3.00
13	BH-U14	12050	12054.403	378647.072	2049155.124	553.721	7.50
14	BH-U15	12100	12104.684	378666.345	2049107.303	555.033	2.50
15	BH-U16	12150	12138.566	378674.634	2049069.477	555.722	5.50
16	BH-U17	12200	12190.192	378727.846	2049045.633	555.382	5.00
17	BH-	12235	12226.852	378770.878	2049044.064	555.517	2.50
18	BH-U18	12284/12275	12277.614	378812.992	2049024.409	555.128	4.50
19	BH-U19	12315/12325	12300.421	378828.035	2049004.235	555.371	3.00
20	BH-U20	12375	12338.353	378853.249	2048956.237	554.792	2.50
21	BH-U21	12425	12416.614	378928.775	2048934.704	554.025	2.50
22	BH-U22	12475	12457.504	378968.933	2048926.648	553.810	2.50
23	BH-U23	12525	12507.165	379017.928	2048917.717	553.592	3.50
24	BH-U24	12575	12550.193	379066.110	2048931.901	553.554	4.50
25	BH-U27	12750	12714.555	379224.885	2048889.399	551.432	5.60
26	BH-U28	12800	12762.241	379272.889	2048884.485	551.156	4.50
27	BH-U29	12850	12813.553	379323.548	2048875.391	549.325	4.50
28	BH-U30	12900	12854.523	379371.030	2048895.036	549.412	7.00
29	BH-U31	12950	12907.931	379422.247	2048879.788	548.989	6.50
30	BH-U32	13000	12950.543	379473.014	2048905.508	549.155	4.40
31	BH-U33	13050	12992.107	379512.969	2048894.007	549.055	8.00
32	BH-U34	13100	13003.25	379509.584	2048837.005	542.188	3.50
33	BH-U35	13150		Not Available			3.10
34	BH-U36	13250/13200	13113.246	379596.696	2048735.328	541.850	4.00
35	BH-U39	13375/13395	13268.777	379756.462	2048732.117	549.185	13.50
36	BH-	13475		Not Available			2.80
37	BH-	13525					3.00
38	BH-	13575	13410.512	379798.120	2048590.448	543.478	2.50
39	BH-	13625	13453.994	379804.717	2048552.022	545.779	7.50
40	BH-	13650	13509.359	379855.299	2048527.029	547.465	4.600
41	BH-	13700	13557.872	379840.424	2048478.975	547.949	5.10
42	BH-	13750	13617.497	379840.398	2048436.756	547.692	4.80
43	BH-	13800	13663.037	379841.432	2048395.633	547.586	4.40
44	BH-	13900	13833.964	379750.565	2048311.361	548.551	4.70
45	BH-	13950	13896.509	379711.588	2048294.863	550.822	4.50
46	BH-	14075	14043.004	379615.870	2048214.316	553.639	2.50
47	BH-	14100	14039.541	379667.602	2048156.518	552.451	8.70

Borehole plan of above mentioned Chainage has been appended as a Annexure-

Annexure 1

Borehole Log

Lab Observation Log Sheet

Project: <u>Pune metro</u>		Bore Hole No.: <u>CH No = 10400 m (A)</u>	
Location: <u>Agriculture College</u>		Depth: <u>30.0mtr</u>	
Type of Boring: <u>Rotary</u>		Water Table: <u>5.0mtr</u>	
Dia. Of Boring: <u>100mm ϕ 112</u>		Casing: <u>2.0mtr</u>	
Ground Surface Level:		Date Started: <u>20-7-2017</u>	
Co-Ordinates: Easting		Date Completed: <u>27-7-2017</u>	
Northing			

Sampling		SPT Details				Core Details				Description of Strata	
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD		
From	To						cm	%	cm		%
0.0	1.0	Soil									Brownish Soil Sand with Gravel
1.0	1.50	Rock				1-3	15	30%	Nil	Nil	Brownish Highly weathered Basalt Rock
1.50	3.0	—				5-13	71	47%	10	7%	
3.0	4.50	—				14-23	120	80%	80	53%	Brownish
4.50	6.0	—				24-34	123	82%	72	48%	Slightly weathered Basalt Rock
6.0	7.50	—				35-42	122	81%	96	64%	
7.50	9.0	—				43-55	119	79%	68	45%	
9.0	10.50	—				56-62	121	81%	97	65%	Brownish Grey Slightly weathered Basalt Rock
10.50	12.0	—				63-70	128	85%	120	80%	Greyish Slightly weathered Basalt Rock
12.0	13.50	—				71-75	135	90%	123	82%	Greyish
13.50	15.0	—				76-79	137	91%	133	89%	Fresh
15.0	16.50	—				80-83	142	95%	142	95%	
16.50	18.0	—				84-85	130	87%	130	87%	Basalt
18.0	19.50	—				86-89	135	90%	135	90%	
19.50	21.0	—				90-92	140	93%	140	93%	Rock
21.0	22.50	—				93-95	142	95%	142	95%	
22.50	24.0	—				96-99	145	97%	145	97%	

Prepared By: <u>(Signature)</u>	Checked By: <u>(Signature)</u>	Approved By: <u>(Signature)</u>
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Lab Observation Log Sheet

Project: <u>Pune metro</u>												
Location: <u>Agriculture college</u>												
Type of Boring: <u>Rotary</u>												
Dia. Of Boring: <u>100mm & NX</u>												
Ground Surface Level:												
Co-Ordinates: Easting												
Northing												
Bore Hole No.: <u>CH No → 10500 B.</u>												
Depth: <u>15.0mtr</u>												
Water Table: <u>4.80mtr</u>												
Casing: <u>1.50mtr</u>												
Date Started: <u>8-8-17</u>												
Date Completed: <u>10-8-17</u>												
Sampling		SPT Details				Core Details				Description of Strata		
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.0	1.50	Soil										Brownish Soil Sand with boulders Brownish weathered Rock Brownish Grey Highly weathered Amy. Basalt Rock Brownish Grey moderate weathered Amy. Basalt Brownish Grey. Slightly weathered Amygdaloid Basalt Rock Greyish Fresh Amygdaloid Basalt Rock
1.50	1.60	SPT=1	10 SPT	—	—	R						
1.60	3.0	Rock				1-6	52	37%	Nil	Nil		
3.0	4.50	—				7-19	71	47%	15	10%		
4.50	6.0					20-31	94	63%	52	35%		
6.0	7.50					32-39	118	79%	104	69%		
7.50	9.0					40-45	126	84%	126	84%		
9.0	10.50					46-48	140	93%	140	93%		
10.50	12.0					49-52	141	94%	141	94%		
12.0	13.50					53-55	135	90%	135	90%		
13.50	15.0					56-59	146	93%	140	93%		
Borehole Terminated @ Depth. 15.0mtr												
Prepared By: <u>[Signature]</u>												
Checked By: <u>[Signature]</u>												
Approved By: <u>[Signature]</u>												

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Lab Observation Log Sheet

Project: <u>Pune metro</u>		Bore Hole No.: <u>CH.No = 10600 C.</u>	
Location: <u>Agriculture college</u>		Depth: <u>15.0mtr</u>	
Type of Boring: <u>Rotary</u>		Water Table: <u>4.50mtr</u>	
Dia. Of Boring: <u>100mm & Nt.</u>		Casing: <u>1.80mtr</u>	
Ground Surface Level:		Date Started: <u>16-8-17</u>	
Co-Ordinates: Easting		Date Completed: <u>19-8-17</u>	
Northing			

Sampling		SPT Details				Core Details				Description of Strata		
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.0	1.50	Soil									Brownish Soil Sand with Gercels Brownish weathered rock	
1.50	1.60	SPT-1	10	—	—	R						
1.60	3.0	Rock					1-6	46	32%	Nil	Nil	Gercils Hmllz weather Basalt Rock
3.0	4.50	—					7-10	132	88%	125	83%	
4.50	6.0	—					11-12	134	89%	134	89%	Gercils Slightly Weathered Basalt Rock
6.0	7.50	—					13-21	130	87%	109	73%	
7.50	9.0	—					22-27	128	85%	122	81%	Brownish Gerc Slightly weathered Amy. Basalt Rock
9.0	10.50	—					28-32	135	90%	135	90%	
10.50	12.0	—					33-35	139	93%	139	93%	Brownish Gerc. Fresh Amygdaloidal Basalt Rock
12.0	13.50	—					36-40	144	96%	144	96%	
13.50	15.0	—					41-49	146	97%	146	97%	

Bore hole Terminated @ Depth 15.0mtr

Prepared By:

(Signature)

Checked By:

(Signature)

Approved By:

(Signature)
DY. GM/RTES

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Lab Observation Log Sheet

Project: <u>Pune Metro</u>						Bore Hole No.: <u>CH-NO = 10700M</u>						
Location: <u>Agriculture College</u>						Depth: <u>15.0mtr</u>						
Type of Boring: <u>Rotary</u>						Water Table: <u>1.50mtr</u>						
Dia. Of Boring: <u>100mm Ø NX</u>						Casing: <u>3.0mtr</u>						
Ground Surface Level:						Date Started: <u>29-7-17</u>						
Co-Ordinates: Easting						Date Completed: <u>31-7-17</u>						
Northing												
Sampling		SPT Details				Core Details				Description of Strata		
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.0	1.50	Soil									Black Cotton Soil	
1.50	1.70	SPT=1	24	50	-	R						
1.70	3.0										Brownish Weathered Rock	
3.0	3.10	SPT=2	10/30	-	-	R						
3.10	4.50	Rock					1-5	59	42%	30	20%	Brownish Highly Weathered Amy. Basalt Bru. Grey. Slightly cherty Amy. Basalt Rock
4.50	6.0	-11-					6-10	131	87%	131	87%	
6.0	7.50	-11-					11-15	141	84%	136	91%	Granitic
7.50	9.0	-11-					16-19	135	90%	135	90%	
9.0	10.50	-11-					20-25	137	91%	137	91%	Fresh
10.50	12.0	-11-					26-28	139	93%	139	93%	
12.0	13.50	-11-					29-32	137	91%	137	91%	Basalt Rock
13.50	15.0	-11-					33-35	135	90%	135	90%	
Borehole Terminated @ Depth 15.0mtr												
Prepared By: <u>P. C. F.</u>						Checked By: <u>J. C. R.</u>			Approved By: <u>S. D. R.</u>			

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Lab Observation Log Sheet

Project: <u>Pune metro</u>		Bore Hole No.: <u>CH No = 10850 B</u>	
Location: <u>Agriculture college</u>		Depth: <u>15.0mtr</u>	
Type of Boring: <u>Rotary</u>		Water Table: <u>3.70mtr</u>	
Dia. Of Boring: <u>100mm φ NY</u>		Casing: <u>4.0mtr</u>	
Ground Surface Level:		Date Started: <u>7-8-17</u>	
Co-Ordinates: Easting		Date Completed: <u>10-8-17</u>	
Northing			

Sampling		SPT Details				Core Details				Description of Strata		
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.0	1.50	Soil									Brownish Soil Sand with Gravel.	
1.50	1.95	SPT-1	4	5	5	10						Brownish Sandy Silt Clay
1.95	3.0											
3.0	3.45	SPT-2	3	4	4	8						Brownish weathered Rock
3.45	4.50											
4.50	4.60	SPT-3	10			R					Brownish Grey. Highly weathered Amygdaloidal Basalt Rock	
4.60	6.0	Rock					1-8	51	36%	11		7%
6.0	7.50	—					9-18	62	41%	10	7%	Brownish Grey Slightly weathered Amygdaloidal Basalt Rock
7.50	9.0	—					19-26	127	85	114	76%	
9.0	10.50	—					27-32	125	83%	120	80%	Greenish Slightly worn Amygdaloidal Basalt Rock
10.50	12.0	—					33-39	133	89%	125	83%	
12.0	13.50	—					40-43	129	86%	129	86%	Greenish Fresh Amygdaloidal Basalt Rock
13.50	15.0	—					44-46	149	99%	149	99%	

Borehole terminated @ Depth: 15.0mtr

Prepared By:	Checked By:	Approved By:
<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>

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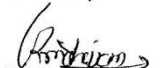
Lab Observation Log Sheet

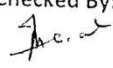
Project: Pune Metro						Bore Hole No.: CH No = 10940 A.						
Location: Agriculture College						Depth: 15.0 mtr						
Type of Boring: Rotary						Water Table: 4.25						
Dia. Of Boring: 100mm & NX						Casing: 4.50 mtr						
Ground Surface Level:						Date Started: 1-8-17						
Co-Ordinates: Easting						Date Completed: 4-8-17						
Northing												
Sampling		SPT Details				Core Details				Description of Strata		
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.0	1.50	Soil									Brownish Soil Sand with Gravel	
1.50	1.95	SPT=1	4	7	8	15						Brownish SHF Clay with Gravel
1.95	3.0											
3.0	3.45	SPT=2	5	8	9	17						Brownish weathered Rock
3.45	4.50											
4.50	4.60	SPT=3	10/50			R					Brownish Grey. Highly weathered Basalt Rock	
4.60	6.0	Rock					1-5	45	32%	13		9%
6.0	7.50	—					6-14	105	70%	74	49%	Brownish Grey. Slightly weathered Amygdales Basalt Rock
7.50	9.0	—					15-20	122	81%	122	81%	
9.0	10.50	—					21-26	132	88%	122	81%	Greyish Fresh Amygdales Basalt Rock
10.50	12.0	—					27-32	135	90%	135	90%	
12.0	13.50	—					33-36	138	92%	138	92%	Greyish Fresh Amygdales Basalt Rock
13.50	15.0	—					37-39	142	95%	142	95%	
Borehole Terminated @ Depth 15.0 mtr												
Prepared By: <i>[Signature]</i>						Checked By: <i>[Signature]</i>			Approved By: <i>[Signature]</i>			

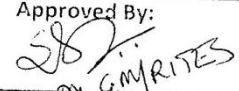
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Lab Observation Log Sheet													
Project: <u>Pune metro</u>				CH No = <u>11025(B)</u>									
Location: <u>Agriculture College</u>				Bore Hole No.: <u>CH No = 11025 B</u>									
Type of Boring: <u>Rotary</u>				Depth: <u>30.0mtr</u>									
Dia. Of Boring: <u>100mm φ 117</u>				Water Table: <u>3.50m</u>									
Ground Surface Level:				Casing: <u>3.50mtr</u>									
Co-Ordinates: Easting				Date Started: <u>22-7-17</u>									
Northing				Date Completed: <u>29-7-17</u>									
Sampling		SPT Details				Core Details				Description of Strata			
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD				
From	To						cm	%	cm		%		
0.0	1.50	Soil										Black Cotton Soil	
1.50	1.95	SPT = 1	3	4	4	8							
1.95	3.0											Brownish weathered Rock	
3.0	3.10	SPT = 2	10/50	R									
3.10	4.50	Rock										Brownish Grey Fresh Basalt Rock	
4.50	6.0	—					1-11	77	55%	NIL	NIL		
6.0	7.50	—					12-24	94	63%	20	13%	Moderately weathered Basalt Rock	
7.50	9.0	—					25-45	118	79%	10	7%		
9.0	10.50	—					46-57	97	65%	45	30%	Greenish Slightly weathered Amygdaloidal Basalt Rock	
10.50	12.0	—					58-71	117	78%	53	35%		
12.0	13.50	—					72-80	140	93%	106	71%	Greenish Fresh Amygdaloidal Basalt Rock	
13.50	15.0	—					81-89	132	88%	108	72%		
15.0	16.50	—					90-100	128	85%	97	65%	Greenish Fresh Amygdaloidal Basalt Rock	
16.50	18.0	—					101-103	134	89%	134	89%		
18.0	19.50	—					104-110	120	80%	120	80%	Greenish Fresh Amygdaloidal Basalt Rock	
19.50	21.0	—					111-118	128	85%	119	79%		
21.0	22.50	—					119-124	135	90%	135	90%	Greenish Fresh Amygdaloidal Basalt Rock	
							125-130	146	97%	146	97%		

Prepared By: 

Checked By: 

Approved By: 
DR. G. M. RITES

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Lab Observation Log Sheet


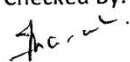
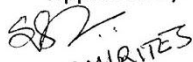
Project: <u>Pune Metro</u>		Location: <u>Agriculture College</u>		Bore Hole No.: <u>CH No = 11100A</u>	
Type of Boring: <u>Rotary</u>		Dia. Of Boring: <u>100mm & 114</u>		Depth: <u>15.0mtr</u>	
Ground Surface Level:		Co-Ordinates: Easting		Water Table: <u>3.50mtr</u>	
Northing		Casing: <u>3.0mtr</u>		Date Started: <u>4-8-17</u>	
		Date Completed: <u>7-8-17</u>			

Sampling		SPT Details				Core Details				Description of Strata	
Depth (mt.)	Type of Sample	15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD		
From	To						cm	%	cm		%
0.0	1.50	Soil									Black Cotton Soil
1.50	1.60	SPT=1	<u>10</u>	—	—	R					Brownish weathered Rock
1.60	3.0	Rock				1-2	27	19%	NIL	NIL	Brownish Grey
3.0	4.50	—				3-5	44	29%	NIL	NIL	Highly weathered
4.50	6.0	—				6-13	37	31%	NIL	NIL	Amygdaloidal Basalt Rock
6.0	7.50	—				14-23	70	47%	NIL	NIL	Brownish Grey, Moderately weathered
7.50	9.0	—				24-33	77	51%	10	7%	Amy. Basalt Rock
9.0	10.50	—				34-46	110	73%	70	47%	Greenish slightly weathered
10.50	12.0	—				47-51	129	86%	129	86%	Amygdaloidal Basalt Rock
12.0	13.50	—				52-55	131	87%	131	87%	
13.50	15.0	—				56-61	131	87%	131	87%	
Borehole terminated @ depth 15.0m											

Prepared By: <u>P. C. F.</u>	Checked By: <u>J. A. R.</u>	Approved By: <u>S. R. J.</u> BY GMRITES
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5, Staff Colony, Sector No 27, PCNTDA, Nigadi, Pune-411044, Tel- 020 27490800

Lab Observation Log Sheet

Project: Pune metro										Bore Hole No.: CH.No = 11300 m											
Location: Agriculture College										Depth: 30mtr											
Type of Boring: Rotary										Water Table: 2.75mtr											
Dia. Of Boring: 100mm & NX										Casing: 1.0mtr											
Ground Surface Level:										Date Started: 12/7/17 to 19/7/17											
Co-Ordinates: Easting										Date Completed: 19/7/17											
Northing																					
Sampling				SPT Details				Core Details				Description of Strata									
Depth (mt.)		Type of Sample		15cm	30cm	45cm	'N' Value	No. of Pieces	CR		RQD										
From	To								cm	%	cm	%									
22.50	24.0	Rock						95-100	140	93%	135	90%	Gneiss Fresh Basalt Rock								
24.0	25.50	—						101-103	137	91%	137	91%									
25.50	27.0	—						104-108	132	88%	132	88%									
27.0	28.50	—						109-116	135	90%	121	81%									
28.50	30.0	—						111-122	136	91%	136	91%									
Borehole Terminated @										Depth: 30.0mtr											
Date 19/7/17																					
Prepared By: 														Checked By: 				Approved By: 			

Project: PURVENGERO											
Location: N. Tanaji Estate, Gated Agri. College, Shivaji Nagar											
Type Of Boring: Rotary											
Dia. Of Boring: 300mm											
Ground Surface Level: 550.531											
Co-Ordinates: Easting 278578.580 Northing 9095980.1675											
Bore Hole No.: 1 CH-11400 USB-1											
Depth: 0.00 to 30.00											
Water Table: 3.00mtr.											
Casing: 3.00mtr.											
Date Started: 18/5/17											
Date Completed: 16/2017											

Sampling		SPT Details				Core Details				Description Of Strata
Depth (mt.)		15cm	30cm	45cm	'N' Value	No. Of Pieces	CR	RQD		
From	To						cm	%		
0.00	2.00								Sandy clay	
2.00	2.50								clay with gravels	
2.50	4.00					1 to 7	24	16	fract. Amygdaloidal Basalt	
4.00	5.50					8 to 20	51	41	fract. Amygd.	
5.50	7.00					21 to 25	88	59%	fract. Amygdaloidal Basalt	
7.00	8.50					27 to 34	117	78	fract. Amygdaloidal Basalt	
8.50	10.00					35 to 40	142	95%	compact Basalt	
10.00	11.50					41 to 43	145	97	compact Basalt	
11.50	13.00					44 to 51	149	99%	compact Basalt	
13.00	14.50					53 to 55	138	92	Amygdaloidal Basalt	
14.50	16.00					58 to 66	136	95	Amygdaloidal Basalt	
16.00	17.50					65 to 71	150	100%	Amygdaloidal Basalt	
17.50	19.00					72 to 77	147	98%	Amygdaloidal Basalt	
19.00	20.50					78 to 84	149	99%	Amygdaloidal Basalt	
20.50	22.00					85 to 88	130	87%	Amygdaloidal Basalt	
22.00	23.50					89 to 93	137	91%	compact Basalt	
23.50	25.00					94 to 97	135	90%	compact Basalt	
25.00	26.50					98 to 100	132	88%	compact Basalt	
26.50	28.00					101 to 106	147	98%	compact Basalt	
28.00	29.50					107 to 113	142	88%	compact Basalt	
29.50	30.00					114	46	32%	compact Basalt	

Prepared By: Chamika	Checked By: [Signature]	Approved By: [Signature]
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Lab Observation Log Sheet

Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT

Location : INFRONT OF BHARATI APT.

Type Of Boring : ROTARY DRILLING

Dia. Of Boring : 100 MM.

Ground Surface Level : 530.287

Co-Ordinates : Easting 578501.917
Northing 2049756.152

Bore Hole No. : U 2

(CHAINAGE : 11450)

Depth : 30.00 M.

Water Table : 3.00 M.

Casing : 6.00 M.

Date Started : 04.05.2017

Date Completed : 17.05.2017

Sampling		SPT Details					Core Details				Description Of Strata	
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To							cm	%	cm		%
0.00	2.00	OS 1										SANDY CLAY
3.00	3.60	SPT 1	7	8	8	16						BROWNISH CLAY
4.50	4.90	SPT 2	12	31	10	4						SANDY CLAY WITH GRAVELS
					52							
5.50	7.00	ROCK					1 to 14	81	54%	25	17%	FRACTURED COMPACT BASALT
7.00	8.50	ROCK					15 to 24	114	76%	81	56%	COMPACT BASALT
8.50	10.00	ROCK					25 to 28	114	76%	114	76%	COMPACT BASALT
10.00	11.50	ROCK					29 to 35	133	89%	128	85%	AMYGDALOIDAL BASALT
11.50	13.00	ROCK					36 to 46	148	99%	109	73%	AMYGDALOIDAL BASALT
13.00	14.50	ROCK					47 to 54	150	100%	137	91%	AMYGDALOIDAL BASALT
14.50	16.00	ROCK					55 to 61	139	93%	131	87%	AMYGDALOIDAL BASALT
16.00	17.50	ROCK					62 to 68	145	97%	130	87%	AMYGDALOIDAL BASALT
17.50	19.00	ROCK					69 to 74	145	97%	145	97%	COMPACT BASALT
19.00	20.50	ROCK					75 to 80	144	96%	144	96%	COMPACT BASALT
20.50	22.00	ROCK					81 to 88	145	96%	145	96%	COMPACT BASALT
22.00	23.50	ROCK					89 to 95	146	97%	128	85%	COMPACT BASALT
23.50	25.00	ROCK					96 to 101	132	88%	123	82%	COMPACT BASALT
25.00	26.50	ROCK					102 to 107	143	95%	130	80%	COMPACT BASALT
26.50	28.00	ROCK					108 to 111	141	94%	141	94%	COMPACT BASALT
28.00	29.50	ROCK					112 to 113	129	85%	129	86%	COMPACT BASALT
29.50	30.00	ROCK					114 to 115	45	98%	49	98%	COMPACT BASALT

Prepared By :

Checked By :

Approved By :

Pratibha

Pratibha

Pratibha

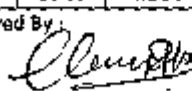
Pratibha (Geologist)

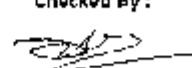
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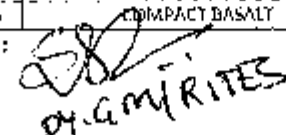
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UGC-02 - Corrigendum III - Annexure 5
Revised GFR

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : <u>CHURKUR APP. SHIVAJINAGAR</u>						Bore Hole No. : <u>U 3</u> (CHAINAGE : <u>11500</u>)						
Type Of Boring : <u>ROTARY DRILLING</u>						Depth : <u>30.00 M.</u>						
Dia. Of Boring : <u>100 MM.</u>						Water Table : <u>5.50 M.</u>						
Ground Surface Level : <u>350.312</u>						Casing : <u>5.00 M.</u>						
Co-Ordinates : Easting : <u>378572.503</u>						Date Started : <u>15.06.2017</u>						
Northing : <u>2059645.437</u>						Date Completed : <u>02.07.2017</u>						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR			RQD	
From	To							cm	%		cm	%
0.00	2.00	DS 1										SANDY CLAY WITH GRAVELS
2.00	3.50	ROCK					1 to 6	16	11%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT
3.50	5.00	ROCK					7 to 13	23	15%	10	7%	FRACTURED AMYGDALOIDAL BASALT
5.00	6.50	ROCK					14 to 18	71	14%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT
6.50	8.00	ROCK					19 to 25	41	22%	12	8%	FRACTURED AMYGDALOIDAL BASALT
8.00	9.50	ROCK					26 to 31	87	58%	87	58%	AMYGDALOIDAL BASALT
9.50	11.00	ROCK					32 to 38	95	53%	87	58%	AMYGDALOIDAL BASALT
11.00	12.50	ROCK					39 to 46	144	96%	135	90%	COMPACT BASALT
12.50	14.00	ROCK					47 to 49	110	73%	110	73%	COMPACT BASALT
14.00	15.50	ROCK					50 to 57	130	87%	97	65%	COMPACT BASALT
15.50	17.00	ROCK					58 to 63	124	83%	124	83%	COMPACT BASALT
17.00	18.50	ROCK					64 to 72	135	90%	120	80%	COMPACT BASALT
18.50	20.00	ROCK					73 to 80	136	91%	123	87%	COMPACT BASALT
20.00	21.50	ROCK					81 to 87	138	92%	133	89%	COMPACT BASALT
21.50	23.00	ROCK					88 to 95	146	97%	140	93%	AMYGDALOIDAL BASALT
23.00	24.50	ROCK					96 to 103	134	89%	125	83%	AMYGDALOIDAL BASALT
24.50	26.00	ROCK					104 to 108	137	91%	137	91%	COMPACT BASALT
26.00	27.50	ROCK					109 to 113	142	95%	142	95%	COMPACT BASALT
27.50	29.00	ROCK					114 to 120	147	98%	140	93%	COMPACT BASALT
29.00	30.00	ROCK					121 to 125	96	96%	96	96%	COMPACT BASALT

Prepared By: 

Checked By: 

Approved By: 
D. G. MIRITES

Lab Observation Log Sheet											
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT											
Location : NEAR OCEAN ENTERPRISES						Bore Hole No. : U 4 (CHAINAGE : 11550)					
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.					
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.					
Ground Surface Level : 550.052						Casing : 4.50 M.					
Co-Ordinates : Easting 378079.951						Date Started : 02.05.2017					
Northing 2039637.669						Date Completed : 17.05.2017					
Sampling		SPT Details				Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To						cm	%	cm		%
0.00	2.00	DS 1									SANDY CLAY
2.00	2.50	DWR									DISINTEGRATED WEATHERED ROCK
2.50	3.00	ROCK				1 to 5	30	72%	30	100%	FRACTURED COMPACT BASALT
3.00	3.50	ROCK				6 to 13	31	52%	NIL	NIL	FRACTURED COMPACT BASALT
3.50	5.00	ROCK				14 to 18	74	49%	70	47%	FRACTURED AMYGDALOIDAL BASALT
5.00	6.50	ROCK				19 to 21	150	100%	150	100%	AMYGDALOIDAL BASALT
6.50	8.00	ROCK				22 to 28	150	100%	150	100%	COMPACT BASALT
8.00	9.50	ROCK				29 to 31	145	97%	141	97%	COMPACT BASALT
9.50	11.00	ROCK				32 to 35	150	100%	150	100%	COMPACT BASALT
11.00	12.50	ROCK				36 to 40	149	99%	142	95%	COMPACT BASALT
12.50	14.00	ROCK				41 to 44	150	100%	150	100%	COMPACT BASALT
14.00	15.50	ROCK				45 to 50	150	100%	142	94%	COMPACT BASALT
15.50	17.00	ROCK				51 to 59	139	42%	127	85%	COMPACT BASALT
17.00	18.50	ROCK				60 to 68	140	93%	132	88%	AMYGDALOIDAL BASALT
18.50	20.00	ROCK				69 to 80	136	91%	105	70%	COMPACT BASALT
20.00	21.50	ROCK				81 to 87	146	97%	140	93%	AMYGDALOIDAL BASALT
21.50	23.00	ROCK				88 to 92	145	96%	145	90%	AMYGDALOIDAL BASALT
23.00	24.50	ROCK				93 to 98	142	94%	142	94%	COMPACT BASALT
24.50	26.00	ROCK				99 to 104	147	98%	147	98%	COMPACT BASALT
26.00	27.50	ROCK				105 to 110	137	91%	128	85%	COMPACT BASALT
27.50	29.00	ROCK				111 to 116	141	94%	141	94%	COMPACT BASALT
29.00	30.00	ROCK				117 to 120	94	94%	94	94%	COMPACT BASALT

Prepared By :

Rakesh

Checked By :

Rakesh

Approved By :

S82

Rakesh (Geologist)

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Lab Observation Log Sheet												
Project: <u>PUNE Metro Rail Project</u>						Bore Hole No.: <u>05</u>						
Location: <u>SIROHI Hospital (opposite of)</u>						Depth: <u>0.00 - 30.00</u>						
Type Of Boring: <u>Rotary</u>						Water Table: <u>2.80 cm</u>						
Dia. Of Boring:						Casing: <u>3.50 m</u>						
Ground Surface Level: <u>539.905</u>						Date Started: <u>19/5/17</u>						
Co-Ordinates: Easting <u>378531.883</u>						Date Completed: <u>25/5/17</u>						
Northing <u>2049598.520</u>												
Sampling			SPT Details				Core Details				Description Of Strata	
Depth (mt.)		Type Of Sample	15cm	30cm	45cm	'N' Value	No. Of Pieces	CR		RQD		
From	To							cm	%	cm		%
0.00	2.00	DS(1)										Sandy gravelly
2.00	2.50	Sand										Sandy clay gravelly
2.50	4.00	Rock					1208	28	19	Nil	Nil	
4.00	5.50	Rock					97020	84	56	42	28	Amygdalesoidal Basalt
5.50	7.00	Rock					217030	125	83	99	66	Amygdalesoidal Basalt
7.00	8.50	Rock					817037	136	91	128	85	—|—
8.50	10.00	Rock					387024	130	87	122	81%	—|—
10.00	11.50	Rock					457054	137	91	132	88	—|—
11.50	13.00	Rock					557060	140	93	140	93	Amygdalesoidal Basalt
13.00	14.50	Rock					617070	138	92	130	85	—|—
14.50	16.00	Rock					717077	143	95	143	95	—|—
16.00	17.50	Rock					787083	148	98	148	98	—|—
17.50	19.00	Rock					847088	146	97	139	92	—|—
19.00	20.50	Rock					897092	134	89	134	89	—|—
20.50	22.00	Rock					937099	150	100	150	100	—|—
22.00	23.50	Rock					10070105	126	84%	119	79%	—|—
23.50	25.00	Rock					10670115	147	98	147	98	—|—
25.00	26.50	Rock					11970124	135	90	137	85	—|—
26.50	28.00	Rock					12570129	188	92	180	87	compact Basalt
28.00	29.50	Rock					13070135	145	97	145	97%	compact Basalt
29.50	30.00	Rock					13670137	50	100	50	100	compact Basalt

Prepared By:

Checked By:

Approved By:

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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : <i>In front of Nisargan Building</i>							Bore Hole No. : U 6 (CH. 11666)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 3.50 M.					
Ground Surface Level : 550.422							Casing : 6.00 M.					
Co-Ordinates : Easting : 378548.080							Date Started : 06.06.2017					
Northing : 2049532.177							Date Completed : 13.06.2017					
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	DS 1									SANDY CLAY	
3.00	3.40	SPT 1	22	39	10	R					SANDY CLAY WITH GRAVELS	
					52							
4.50	4.58	SPT 2	8	-	-	R					DISINTEGRATED WEATHERED ROCK	
			52									
4.50	5.50	ROCK				1 to 4	21	21%	12	12%	FRACTURED COMPACT BASALT	
5.50	6.50	ROCK				5 to 11	52	52%	45	30%	FRACTURED COMPACT BASALT	
6.50	8.00	ROCK				12 to 18	102	68%	79	53%	COMPACT BASALT	
8.00	9.50	ROCK				19 to 22	125	83%	119	79%	COMPACT BASALT	
9.50	10.50	ROCK				23 to 27	94	94%	84	84%	AMYGDALOIDAL BASALT	
10.50	12.00	ROCK				28 to 33	133	89%	127	85%	AMYGDALOIDAL BASALT	
12.00	13.50	ROCK				34 to 44	135	90%	112	75%	AMYGDALOIDAL BASALT	
13.50	15.00	ROCK				45 to 53	141	94%	141	94%	AMYGDALOIDAL BASALT	
15.00	16.50	ROCK				54 to 63	130	91%	121	81%	AMYGDALOIDAL BASALT	
16.50	18.00	ROCK				64 to 70	136	91%	131	87%	AMYGDALOIDAL BASALT	
18.00	19.50	ROCK				71 to 81	147	98%	127	85%	AMYGDALOIDAL BASALT	
19.50	21.00	ROCK				82 to 88	146	97%	146	97%	COMPACT BASALT	
21.00	22.50	ROCK				89 to 94	138	92%	129	86%	COMPACT BASALT	
22.50	24.00	ROCK				95 to 99	133	89%	133	89%	COMPACT BASALT	
24.00	25.50	ROCK				100 to 103	137	91%	137	91%	COMPACT BASALT	
25.50	27.00	ROCK				104 to 113	142	95%	139	93%	COMPACT BASALT	
27.00	28.50	ROCK				114 to 122	138	92%	127	85%	COMPACT BASALT	
28.50	30.00	ROCK				123 to 132	149	99%	138	92%	COMPACT BASALT	

Prepared By : *[Signature]*

Checked By : *[Signature]*

Approved By : *[Signature]*

Pradyot Chavan


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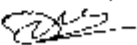
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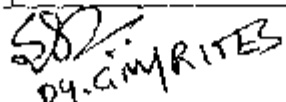
Geologist

Geologist

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : SHIVAJINAGAR ST stand inside (car shed)						Bore Hole No. : U 7 (CH. 11700)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 4.50 M.						
Ground Surface Level : 5.50 + 270						Casing : 7.00 M.						
Co-Ordinates : Easting : 378.559.561						Date Started : 21.06.2017						
Northing : 2059593.388						Date Completed : 02.07.2017						
Sampling		SPT Details					Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
3.00	3.50	SPT 1	14	17	27	44					SANDY CLAY WITH GRAVELS	
3.50	4.50	ROCK				1 to 2	6	6%	NIL	NIL	FRACTURED COMPACT BASALT	
4.50	6.00	ROCK				3 to 8	19	13%	NIL	NIL	FRACTURED COMPACT BASALT	
6.00	7.50	ROCK				9 to 14	48	32%	25	17%	FRACTURED COMPACT BASALT	
7.50	9.00	ROCK				15 to 23	97	65%	84	56%	COMPACT BASALT	
9.00	10.50	ROCK				24 to 27	19	13%	NIL	NIL	FRACTURED COMPACT BASALT	
10.50	12.00	ROCK				28 to 32	119	79%	96	64%	COMPACT BASALT	
12.00	13.50	ROCK				33 to 35	136	91%	130	91%	COMPACT BASALT	
13.50	15.00	ROCK				36 to 39	129	86%	129	86%	AMYGDALOIDAL BASALT	
15.00	16.50	ROCK				40 to 47	119	79%	111	74%	AMYGDALOIDAL BASALT	
16.50	18.00	ROCK				48 to 54	130	87%	125	83%	AMYGDALOIDAL BASALT	
18.00	19.50	ROCK				55 to 62	126	84%	118	79%	COMPACT BASALT	
19.50	21.00	ROCK				63 to 65	132	88%	132	88%	COMPACT BASALT	
21.00	22.50	ROCK				67 to 73	132	88%	132	88%	COMPACT BASALT	
22.50	24.00	ROCK				74 to 79	113	75%	107	71%	AMYGDALOIDAL BASALT	
24.00	25.50	ROCK				80 to 85	135	90%	135	90%	AMYGDALOIDAL BASALT	
25.50	27.00	ROCK				86 to 93	139	93%	130	87%	AMYGDALOIDAL BASALT	
27.00	28.50	ROCK				94 to 100	141	94%	141	94%	COMPACT BASALT	
28.50	30.00	ROCK				101 to 108	144	96%	144	96%	COMPACT BASALT	

Prepared By : 

Checked By : 

Approved By : 
Dy. CIVIL RITES

Monarch Surveyors & Engineering Consultant Pvt. Ltd.

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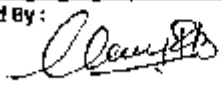
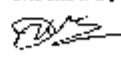
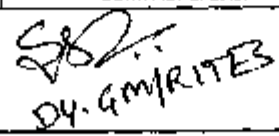
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : <i>Opp of PDCC Bank & Shivaji Nagar ST stand inside</i>						Bore Hole No. : U 8 (CH. 11750)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 3.00 M.						
Ground Surface Level : 530.865						Casing : 7.50 M.						
Co-Ordinates : Easting : 378573.228						Date Started : 21.06.2017						
Northing : 2059554.085						Date Completed : 27.06.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.00	DS 2									SANDY CLAY	
3.00	4.50	DWR									DISINTEGRATED WEATHERED ROCK	
4.50	6.00	ROCK				1 to 8	44	29%	13	9%	FRACTURED COMPACT BASALT	
6.00	7.50	ROCK				9 to 12	91	61%	82	55%	COMPACT BASALT	
7.50	9.00	ROCK				13 to 19	133	89%	115	77%	AMYGDALOIDAL BASALT	
9.00	10.50	ROCK				20 to 26	122	81%	116	77%	AMYGDALOIDAL BASALT	
10.50	12.00	ROCK				27 to 33	125	83%	117	78%	AMYGDALOIDAL BASALT	
12.00	13.50	ROCK				34 to 40	138	92%	134	89%	AMYGDALOIDAL BASALT	
13.50	15.00	ROCK				41 to 43	105	70%	105	70%	AMYGDALOIDAL BASALT	
15.00	16.50	ROCK				44 to 47	139	93%	139	93%	AMYGDALOIDAL BASALT	
16.50	18.00	ROCK				48 to 55	141	94%	126	84%	COMPACT BASALT	
18.00	19.50	ROCK				56 to 59	122	81%	122	81%	AMYGDALOIDAL BASALT	
19.50	21.00	ROCK				60 to 65	143	95%	143	95%	AMYGDALOIDAL BASALT	
21.00	22.50	ROCK				66 to 70	134	89%	132	88%	AMYGDALOIDAL BASALT	
22.50	24.00	ROCK				71 to 74	145	97%	145	97%	AMYGDALOIDAL BASALT	
24.00	25.50	ROCK				75 to 76	146	97%	146	97%	COMPACT BASALT	
25.50	27.00	ROCK				77 to 80	137	91%	137	91%	COMPACT BASALT	
27.00	28.50	ROCK				81 to 88	150	100%	142	95%	AMYGDALOIDAL BASALT	
28.50	30.00	ROCK				89 to 98	148	99%	148	99%	AMYGDALOIDAL BASALT	

Prepared By : *[Signature]*

Checked By : *[Signature]*

Approved By : *[Signature]*

Pravin Chavan
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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : Shivajinagar ST Stand inside							Bore Hole No. : U 9 [CHAINAGE : 11800]					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 3.20 M.					
Ground Surface Level : 551.265							Casing : 3.00 M.					
Co-Ordinates : Easting : 378600.275							Date Started : 03.07.2017					
Northing : 2049393.052							Date Completed : 13.07.2017					
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	DSL									SANDY CLAY WITH GRAVELS	
3.00	4.50	DWR									DISINTEGRATED WEATHERED ROCK	
4.50	6.00	ROCK				1 to 3	12	8%	NIL	NIL	FRACTURED COMPACT BASALT	
6.00	7.50	ROCK				4 to 7	42	28%	39	26%	FRACTURED COMPACT BASALT	
7.50	9.00	ROCK				8 to 16	65	43%	27	18%	FRACTURED COMPACT BASALT	
9.00	10.50	ROCK				17 to 19	105	70%	105	70%	COMPACT BASALT	
10.50	12.00	ROCK				20 to 26	113	75%	104	69%	COMPACT BASALT	
12.00	13.50	ROCK				27 to 31	114	76%	106	71%	COMPACT BASALT	
13.50	15.00	ROCK				32 to 37	123	82%	110	73%	COMPACT BASALT	
15.00	16.50	ROCK				38 to 42	150	100%	150	100%	COMPACT BASALT	
16.50	18.00	ROCK				43 to 51	123	82%	108	72%	AMYGDALOIDAL BASALT	
18.00	19.50	ROCK				52 to 60	135	90%	110	73%	AMYGDALOIDAL BASALT	
19.50	21.00	ROCK				61 to 67	133	89%	133	89%	COMPACT BASALT	
21.00	22.50	ROCK				68 to 72	127	85%	127	85%	COMPACT BASALT	
22.50	24.00	ROCK				73 to 77	143	95%	139	96%	COMPACT BASALT	
24.00	25.50	ROCK				78 to 81	127	85%	127	85%	COMPACT BASALT	
25.50	27.00	ROCK				82 to 86	128	85%	120	80%	COMPACT BASALT	
27.00	28.50	ROCK				87 to 91	127	85%	119	79%	AMYGDALOIDAL BASALT	
28.50	30.00	ROCK				92 to 98	124	83%	112	75%	COMPACT BASALT	
Prepared By :		Checked By :				Approved By :						
						 DY. GEYRITES						

Lab Observation Log Sheet														
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT														
Location : ALL INDIA RADIO GATE						Bore Hole No. : U 11 (CHAINAGE : 11900)								
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.								
Dia. Of Boring : 100 MM.						Water Table : 1.30 M.								
Ground Surface Level : 532.3/6						Casing : 6.50 M.								
Co-Ordinates : Easting 378540.167						Date Started : 06.05.2017								
Northing 2048305.069						Date Completed : 18.05.2017								
Sampling		SPT Details				Core Details				Description Of Strata				
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR					RQD	
From	To							cm	%				cm	%
0.00	2.00	DS 1										SANDY CLAY		
3.00	3.08	SPT 1	8	--	--	3						DISINTEGRATED WEATHERED ROCK		
			32											
3.00	4.50	ROCK					1 to 4	37	25%	13	9%	FRACTURED COMPACT BASALT		
4.50	6.00	ROCK					5 to 8	50	33%	41	27%	FRACTURED COMPACT BASALT		
6.00	7.50	ROCK					9 to 17	79	53%	51	34%	FRACTURED AMYGDALOIDAL BASALT		
7.50	9.00	ROCK					18 to 22	130	87%	121	81%	AMYGDALOIDAL BASALT		
9.00	10.50	ROCK					23 to 28	116	77%	116	77%	AMYGDALOIDAL BASALT		
10.50	12.00	ROCK					29 to 33	122	81%	122	81%	AMYGDALOIDAL BASALT		
12.00	13.50	ROCK					34 to 40	112	75%	103	69%	COMPACT BASALT		
13.50	15.00	ROCK					41 to 45	128	85%	128	85%	COMPACT BASALT		
15.00	16.50	ROCK					46 to 54	132	88%	102	68%	AMYGDALOIDAL BASALT		
16.50	18.00	ROCK					55 to 62	130	87%	123	82%	AMYGDALOIDAL BASALT		
18.00	19.50	ROCK					63 to 67	138	92%	138	92%	AMYGDALOIDAL BASALT		
19.50	21.00	ROCK					68 to 72	130	87%	130	87%	AMYGDALOIDAL BASALT		
21.00	22.50	ROCK					73 to 79	130	87%	123	82%	AMYGDALOIDAL BASALT		
22.50	24.00	ROCK					80 to 84	126	84%	126	84%	AMYGDALOIDAL BASALT		
24.00	25.50	ROCK					85 to 91	133	89%	133	89%	AMYGDALOIDAL BASALT		
25.50	27.00	ROCK					92 to 98	127	85%	109	73%	AMYGDALOIDAL BASALT		
27.00	28.50	ROCK					99 to 102	136	91%	136	91%	COMPACT BASALT		
28.50	30.00	ROCK					103 to 106	145	97%	145	97%	COMPACT BASALT		

Prepared By :

Checked By :

Approved By :

Rutresh (Geologist)

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Lab Observation Log Sheet

Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT

Location :

Type Of Boring : ROTARY DRILLING

Dia. Of Boring : 100 MM.

Ground Surface Level : 553.035

Co-Ordinates : Easting : 878611.311

Northing : 2049252.557

Bore Hole No. : U 12

(CHAINAGE : 11950)

Depth : 30.00 M.

Water Table : 6.00 M.

Casing : 3.00 M.

Date Started : 06.05.2017

Date Completed : 18.05.2017

Sampling			SPT Details				Core Details					Description Of Strata
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To							cm	%	cm	%	
0.00	2.03	DS 1										GRAVELS
3.00	4.50	ROCK					1 to 2	22	15%	15	10%	FRACTURED AMYGDALO DAL BASALT
4.50	6.00	ROCK					3 to 11	53	35%	NIL	NIL	FRACTURED AMYGDALOIDA . BASALT
6.00	7.50	ROCK					12 to 17	57	25%	10	7%	FRACTURED AMYGDALQIDAL BASALT
7.50	9.00	ROCK					18 to 26	61	43%	17	11%	FRACTURED AMYGDALOICAL BASALT
9.00	10.50	ROCK					27 to 34	107	68%	89	59%	AMYGDALOICAL BASALT
10.50	12.00	ROCK					35 to 39	113	75%	105	70%	AMYGDALOICAL BASALT
12.00	13.50	ROCK					40 to 46	129	86%	129	86%	AMYGDALOICAL BASALT
13.50	15.00	ROCK					47 to 53	106	71%	106	71%	AMYGDALOICAL BASALT
15.00	16.50	ROCK					54 to 61	120	80%	11	74%	AMYGDALOICAL BASALT
16.50	18.00	ROCK					62 to 68	126	84%	126	84%	COMPACT BASALT
18.00	19.50	ROCK					69 to 74	125	83%	125	83%	AMYGDALOICAL BASALT
19.50	21.00	ROCK					75 to 83	123	82%	92	61%	AMYGDALOICAL BASALT
21.00	22.50	ROCK					84 to 90	142	95%	142	95%	COMPACT BASALT
22.50	24.00	ROCK					91 to 95	127	85%	127	85%	COMPACT BASALT
24.00	25.50	ROCK					96 to 101	134	89%	134	89%	COMPACT BASALT
25.50	27.00	ROCK					102 to 107	112	75%	112	75%	AMYGDALOICAL BASALT
27.00	28.50	ROCK					108 to 115	149	99%	149	99%	AMYGDALOICAL BASALT
28.50	30.00	ROCK					116 to 121	146	97%	146	97%	AMYGDALOICAL BASALT

Prepared By :

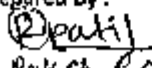
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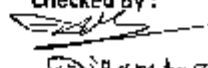
Approved By :


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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : SHIVAJINAGAR POLICE STATION							Bore Hole No. : U 13 CH-12000					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 3.00 M.					
Ground Surface Level : 553.536							Casing : 6.50 M.					
Co-Ordinates : Easting 378648.639							Date Started : 07.05.2017					
Northing 2049205.801							Date Completed : 19.05.2017					
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	DS 1									SANDY GRAVELS	
2.00	3.00	DWR									DISINTEGRATED WEATHERED ROCK	
3.00	4.50	ROCK				1 to 11	135	90%	97	65%	COMPACT BASALT	
4.50	6.00	ROCK				12 to 16	143	98%	148	98%	COMPACT BASALT	
6.00	7.50	ROCK				17 to 20	145	97%	135	60%	COMPACT BASALT	
7.50	9.00	ROCK				21 to 24	150	100%	142	94%	COMPACT BASALT	
9.00	10.50	ROCK				25 to 27	147	98%	147	98%	COMPACT BASALT	
10.50	12.00	ROCK				28 to 38	147	98%	118	79%	AMYGDALOIDAL BASALT	
12.00	13.50	ROCK				39 to 49	141	94%	107	71%	AMYGDALOIDAL BASALT	
13.50	15.00	ROCK				50 to 55	150	100%	143	95%	COMPACT BASALT	
15.00	16.50	ROCK				55 to 60	142	94%	142	94%	COMPACT BASALT	
16.50	18.00	ROCK				61 to 66	148	98%	148	98%	COMPACT BASALT	
18.00	19.50	ROCK				67 to 71	144	96%	144	96%	COMPACT BASALT	
19.50	21.00	ROCK				72 to 77	147	98%	147	98%	COMPACT BASALT	
21.00	22.50	ROCK				78 to 83	121	80%	117	78%	COMPACT BASALT	
22.50	24.00	ROCK				84 to 88	137	91%	137	91%	AMYGDALOIDAL BASALT	
24.00	25.50	ROCK				89 to 93	132	88%	132	88%	AMYGDALOIDAL BASALT	
25.50	27.00	ROCK				94 to 98	148	98%	148	98%	AMYGDALOIDAL BASALT	
27.00	28.50	ROCK				99 to 106	141	94%	139	93%	AMYGDALOIDAL BASALT	
28.50	30.00	ROCK				107 to 111	131	87%	131	87%	COMPACT BASALT	

Prepared By :

Rakesh P. Geologist


Checked By :

Digambar


Approved By :

D. G. RAMESH

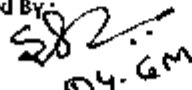
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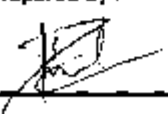
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :						Bore Hole No. : U 14 (CH. 12050)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 7.50 M.						
Ground Surface Level : 553.724						Casing : 8.00 M.						
Co-Ordinates : Easting : 378637.072						Date Started : 04.08.2017						
Northing : 2059155.124						Date Completed : 14.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR					RQD
From	To							cm	%	cm	%	
0.00	0.50	DS 1										SANDY GRAVELS
0.50	2.00	DWR										DISINTEGRATED WEATHERED ROCK
2.00	3.50	DWR										DISINTEGRATED WEATHERED ROCK
3.50	5.00	DWR										DISINTEGRATED WEATHERED ROCK
5.00	6.50	ROCK					1 to 5	36	24%	24	16%	FRACTURED COMPACT BASALT
6.50	8.00	ROCK					6 to 16	50	33%	10	7%	FRACTURED COMPACT BASALT
8.00	9.50	ROCK					17 to 27	84	56%	54	36%	FRACTURED COMPACT BASALT
9.50	11.00	ROCK					28 to 33	74	49%	62	41%	FRACTURED AMYGDALOIDAL BASALT
11.00	12.50	ROCK					34 to 39	99	66%	86	57%	AMYGDALOIDAL BASALT
12.50	14.00	ROCK					40 to 46	117	78%	107	73%	AMYGDALOIDAL BASALT
14.00	15.50	ROCK					47 to 52	112	75%	112	75%	AMYGDALOIDAL BASALT
15.50	17.00	ROCK					53 to 60	106	71%	90	66%	AMYGDALOIDAL BASALT
17.00	18.50	ROCK					61 to 67	119	79%	97	65%	AMYGDALOIDAL BASALT
18.50	20.00	ROCK					68 to 70	121	81%	121	81%	AMYGDALOIDAL BASALT
20.00	21.50	ROCK					71 to 79	120	80%	104	69%	COMPACT BASALT
21.50	23.00	ROCK					80 to 87	121	81%	111	74%	COMPACT BASALT
23.00	24.50	ROCK					88 to 93	123	82%	115	77%	COMPACT BASALT
24.50	26.00	ROCK					94 to 97	134	89%	126	81%	COMPACT BASALT
26.00	27.50	ROCK					98 to 103	143	95%	133	93%	COMPACT BASALT
27.50	29.00	ROCK					104 to 109	148	99%	148	99%	AMYGDALOIDAL BASALT
29.00	30.00	ROCK					110 to 114	86	86%	81	81%	AMYGDALOIDAL BASALT

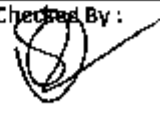
Prepared By : 

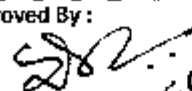
Checked By : 



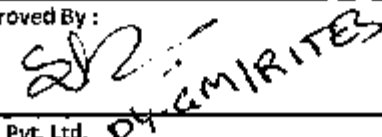
Approved By : 
Dy. GM/RITES

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :						Bore Hole No. : U 15 (CH. 12100)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.						
Ground Surface Level : 555.023						Casing : 2.00 M.						
Co-Ordinates : Easting : 378666.336						Date Started : 29.07.2017						
Northing : 2059107.303						Date Completed : 04.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		ROD			
From	To						cm	%	cm		%	
0.00	2.00	DS 1									SILTY CLAY	
2.00	3.50	DWR									DISINTEGRATED WEATHERED ROCK	
3.50	5.00	DWR									DISINTEGRATED WEATHERED ROCK	
5.00	6.50	ROCK				1 to 2	32	21%	32	21%	FRACTURED COMPACT BASALT	
6.50	8.00	DWR									DISINTEGRATED WEATHERED ROCK	
8.00	9.50	ROCK				3 to 7	80	53%	80	53%	COMPACT BASALT	
9.50	11.00	ROCK				8 to 15	105	61%	80	53%	COMPACT BASALT	
11.00	12.50	ROCK				16 to 24	86	57%	77	51%	COMPACT BASALT	
12.50	14.00	ROCK				25 to 34	95	63%	75	50%	AMYGDALOIDAL BASALT	
14.00	15.50	ROCK				35 to 39	82	53%	82	55%	COMPACT BASALT	
15.50	17.00	ROCK				40 to 44	119	70%	119	79%	COMPACT BASALT	
17.00	18.50	ROCK				45 to 52	110	73%	104	69%	AMYGDALOIDAL BASALT	
18.50	20.00	ROCK				53 to 55	117	78%	117	78%	AMYGDALOIDAL BASALT	
20.00	21.50	ROCK				56 to 58	131	87%	131	87%	COMPACT BASALT	
21.50	23.00	ROCK				59 to 62	130	87%	130	87%	COMPACT BASALT	
23.00	24.50	ROCK				63 to 67	121	81%	121	81%	COMPACT BASALT	
24.50	26.00	ROCK				68 to 71	124	83%	124	83%	COMPACT BASALT	
26.00	27.50	ROCK				72 to 80	134	89%	131	87%	AMYGDALOIDAL BASALT	
27.50	29.00	ROCK				81 to 87	123	82%	123	82%	AMYGDALOIDAL BASALT	
29.00	30.00	ROCK				88 to 93	88	88%	75	75%	COMPACT BASALT	

Prepared By : 

Checked By : 

Approved By :  **DR. G.M. RITES**

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : COEP HOSTEL						Bore Hole No. : U 16 (CH. 12150)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 5.50 M.						
Ground Surface Level : 535.722						Casing : 5.00 M.						
Co-Ordinates : Easting : 878674.684						Date Started : 05.08.2017						
Northing : 2049069.572						Date Completed : 11.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	0.50	DS 1									SANDY GRAVELS	
0.50	2.00	DWR									DISINTEGRATED WEATHERED ROCK	
2.00	3.50	ROCK				1 to 8	41	27%	NIL	NIL	FRACTURED COMPACT BASALT	
3.50	5.00	ROCK				9 to 14	78	52%	63	42%	FRACTURED COMPACT BASALT	
5.00	6.50	ROCK				15 to 25	86	57%	41	27%	FRACTURED AMYGDALOIDAL BASALT	
6.50	8.00	ROCK				26 to 32	78	52%	51	34%	FRACTURED AMYGDALOIDAL BASALT	
8.00	9.50	ROCK				33 to 38	132	88%	123	82%	AMYGDALOIDAL BASALT	
9.50	11.00	ROCK				39 to 42	117	78%	117	78%	AMYGDALOIDAL BASALT	
11.00	12.50	ROCK				43 to 51	130	87%	121	81%	AMYGDALOIDAL BASALT	
12.50	14.00	ROCK				52 to 55	117	78%	117	78%	COMPACT BASALT	
14.00	15.50	ROCK				56 to 62	131	87%	126	84%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				63 to 68	118	79%	105	70%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				69 to 72	124	81%	124	83%	AMYGDALOIDAL BASALT	
18.50	20.00	ROCK				73 to 76	133	89%	133	89%	COMPACT BASALT	
20.00	21.50	ROCK				77 to 84	140	93%	133	89%	COMPACT BASALT	
21.50	23.00	ROCK				85 to 89	136	91%	136	91%	COMPACT BASALT	
23.00	24.50	ROCK				90 to 95	137	91%	137	91%	COMPACT BASALT	
24.50	26.00	ROCK				96 to 104	127	85%	113	75%	AMYGDALOIDAL BASALT	
26.00	27.50	ROCK				105 to 112	134	85%	134	89%	AMYGDALOIDAL BASALT	
27.50	29.00	ROCK				113 to 121	149	99%	149	99%	AMYGDALOIDAL BASALT	
29.00	30.00	ROCK				122 to 125	97	91%	97	97%	COMPACT BASALT	
Prepared By :		Checked By :				Approved By :						
												

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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : COEP HOSTEL Type Of Boring : ROTARY DRILLING Dia. Of Boring : 100 MM. Ground Surface Level : 555.382 Co-Ordinates : Easting : 378727.857 Northing : 2019045.633						Bore Hole No. : U 17 {CH. 12200} Depth : 30.00 M. Water Table : 5.00 M. Casing : 6.50 M. Date Started : 04.08.2017 Date Completed : 11.08.2017						
Sampling		SPT Details				Core Details						Description Of Strata
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To							cm	%	cm	%	
0.00	0.50	DS 1										SANDY GRAVELS
0.50	1.50	DWR										DISINTEGRATED WEATHERED ROCK
1.50	3.00	DWR										DISINTEGRATED WEATHERED ROCK
3.00	4.50	ROCK					1 to 10	64	43%	27	18%	FRACTURED COMPACT BASALT
4.50	6.00	ROCK					11 to 14	102	68%	96	64%	COMPACT BASALT
6.00	7.50	ROCK					15 to 20	82	55%	73	49%	AMYGDALOIDAL BASALT
7.50	9.00	ROCK					21 to 22	128	85%	128	85%	AMYGDALOIDAL BASALT
9.00	10.50	ROCK					23 to 27	120	80%	114	76%	AMYGDALOIDAL BASALT
10.50	12.00	ROCK					28 to 34	113	75%	93	62%	COMPACT BASALT
12.00	13.50	ROCK					35 to 37	131	87%	131	87%	COMPACT BASALT
13.50	15.00	ROCK					38 to 42	124	83%	124	83%	AMYGDALOIDAL BASALT
15.00	16.50	ROCK					43 to 48	112	75%	100	67%	AMYGDALOIDAL BASALT
16.50	18.00	ROCK					49 to 56	115	74%	100	67%	AMYGDALOIDAL BASALT
18.00	19.50	ROCK					57 to 62	113	74%	113	74%	AMYGDALOIDAL BASALT
19.50	21.00	ROCK					63 to 70	118	79%	114	76%	COMPACT BASALT
21.00	22.50	ROCK					71 to 76	134	89%	134	89%	COMPACT BASALT
22.50	24.00	ROCK					77 to 78	123	82%	123	82%	COMPACT BASALT
24.00	25.50	ROCK					79 to 84	133	89%	133	89%	COMPACT BASALT
25.50	27.00	ROCK					85 to 93	123	88%	115	77%	AMYGDALOIDAL BASALT
27.00	28.50	ROCK					94 to 98	148	99%	148	99%	COMPACT BASALT
28.50	30.00	ROCK					99 to 102	148	99%	148	99%	COMPACT BASALT


Prepared By :


Checked By :

Approved By :

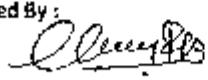
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :						Bore Hole No. : U (CHAINAGE : 12235)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.						
Ground Surface Level : 553.577						Casing : 3.00 M.						
Co-Ordinates : Easting : 378770.878						Date Started : 05.08.2017						
Northing : 2059055.064						Date Completed : 17.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	0.50	DS 1									SANDY CLAY	
0.50	1.50	DWR									DISINTEGRATED WEATHERED ROCK	
1.50	3.00	DWR									DISINTEGRATED WEATHERED ROCK	
3.00	4.50	DWR									DISINTEGRATED WEATHERED ROCK	
4.50	6.00	ROCK				1 to 9	38	25%	11	7%	FRACTURED COMPACT BASALT	
6.00	7.50	ROCK				10 to 12	91	61%	91	61%	COMPACT BASALT	
7.50	9.00	ROCK				13 to 14	110	73%	110	73%	COMPACT BASALT	
9.00	10.50	ROCK				15 to 16	124	83%	124	83%	COMPACT BASALT	
10.50	12.00	ROCK				17 to 20	104	69%	95	66%	AMYGDALOIDAL BASALT	
12.00	13.50	ROCK				21 to 22	117	78%	117	78%	AMYGDALOIDAL BASALT	
13.50	15.00	ROCK				23 to 27	121	81%	113	75%	AMYGDALOIDAL BASALT	
15.00	16.50	ROCK				28 to 32	132	88%	115	77%	AMYGDALOIDAL BASALT	
16.50	18.00	ROCK				33 to 36	123	82%	123	82%	AMYGDALOIDAL BASALT	
18.00	19.50	ROCK				37 to 41	136	91%	129	86%	AMYGDALOIDAL BASALT	
19.50	21.00	ROCK				42 to 48	126	84%	111	74%	COMPACT BASALT	
21.00	22.50	ROCK				49 to 55	133	89%	125	83%	COMPACT BASALT	
22.50	24.00	ROCK				56 to 60	125	83%	125	83%	COMPACT BASALT	
24.00	25.50	ROCK				61 to 62	132	88%	132	88%	COMPACT BASALT	
25.50	27.00	ROCK				63 to 69	133	89%	120	80%	COMPACT BASALT	
27.00	28.50	ROCK				70 to 77	146	97%	142	95%	COMPACT BASALT	
28.50	30.00	ROCK				78 to 85	148	99%	142	95%	AMYGDALOIDAL BASALT	


Prepared By : 

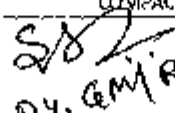
Checked By : 

Approved By : 
DR. G. M. RITES

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : COEP Hostel gate - JM Road							Bore Hole No. : U 18 (CH. 12275)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 4.50 M.					
Ground Surface Level : 555.128							Casing : 2.50 M.					
Co-Ordinates : Easting : 5788/2-99							Date Started : 07.07.2017					
Northing : 2059074.509							Date Completed : 17.07.2017					
Sampling		SPT Details					Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	OS 1									SANDY GRAVELS	
2.00	3.50	ROCK				1 to 3	14	9%	NIL	NIL	DISINTEGRATED WEATHERED ROCK	
3.50	5.00	ROCK				4 to 11	56	37%	14	9%	FRACTURED AMYGDALOIDAL BASALT	
5.00	6.50	ROCK				12 to 20	59	39%	34	23%	FRACTURED AMYGDALOIDAL BASALT	
6.50	8.00	ROCK				21 to 31	80	53%	26	17%	FRACTURED AMYGDALOIDAL BASALT	
8.00	9.50	ROCK				32 to 39	131	87%	113	75%	AMYGDALOIDAL BASALT	
9.50	11.00	ROCK				40 to 48	104	60%	65	43%	AMYGDALOIDAL BASALT	
11.00	12.50	ROCK				49 to 58	126	84%	107	71%	AMYGDALOIDAL BASALT	
12.50	14.00	ROCK				59 to 63	119	79%	117	75%	AMYGDALOIDAL BASALT	
14.00	15.50	ROCK				64 to 67	115	77%	115	77%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				68 to 74	125	83%	123	82%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				75 to 76	132	88%	132	88%	COMPACT BASALT	
18.50	20.00	ROCK				77 to 78	140	93%	140	93%	COMPACT BASALT	
20.00	21.50	ROCK				79 to 83	122	81%	121	81%	COMPACT BASALT	
21.50	23.00	ROCK				84 to 88	123	82%	123	82%	AMYGDALOIDAL BASALT	
23.00	24.50	ROCK				89 to 97	129	86%	112	75%	AMYGDALOIDAL BASALT	
24.50	26.00	ROCK				98 to 106	134	89%	116	77%	AMYGDALOIDAL BASALT	
26.00	27.50	ROCK				107 to 111	130	87%	130	87%	COMPACT BASALT	
27.50	29.00	ROCK				112 to 116	140	97%	140	97%	COMPACT BASALT	
29.00	30.00	ROCK				117 to 119	92	92%	92	92%	COMPACT BASALT	

Prepared By : 

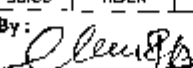
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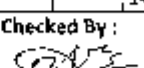
Approved By : 
DY. GEN. MGR


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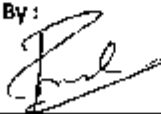
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : COEP Road behind Gate - 3, M.R.B.						Bore Hole No. SU-19 (CHAINAGE : 12325)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 3.00 M.						
Ground Surface Level : 555.371						Casing : 2.50 M.						
Co-Ordinates : Easting : 878828.035						Date Started : 07.07.2017						
Northing : 7059004.235						Date Completed : 13.07.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.50	ROCK				1 to 8	48	32%	10	7%	FRACTURED COMPACT BASALT	
3.50	5.00	ROCK				9 to 13	89	59%	77	51%	COMPACT BASALT	
5.00	5.50	ROCK				14 to 26	113	75%	88	59%	AMYGDALOIDAL BASALT	
6.50	8.00	ROCK				27 to 37	104	69%	82	55%	AMYGDALOIDAL BASALT	
8.00	9.50	ROCK				38 to 42	125	83%	125	83%	AMYGDALOIDAL BASALT	
9.50	11.00	ROCK				43 to 54	144	96%	96	64%	COMPACT BASALT	
11.00	12.50	ROCK				55 to 60	132	88%	123	82%	COMPACT BASALT	
12.50	14.00	ROCK				61 to 72	124	83%	91	61%	COMPACT BASALT	
14.00	15.50	ROCK				73 to 80	121	81%	85	57%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				87 to 98	126	84%	81	54%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				99 to 109	137	84%	81	54%	COMPACT BASALT	
18.50	20.00	ROCK				110 to 112	119	79%	119	79%	COMPACT BASALT	
20.00	21.50	ROCK				113 to 116	139	93%	139	93%	COMPACT BASALT	
21.50	23.00	ROCK				117 to 119	132	88%	132	88%	COMPACT BASALT	
23.00	24.50	ROCK				120 to 127	139	93%	131	87%	AMYGDALOIDAL BASALT	
24.50	26.00	ROCK				128 to 136	146	84%	112	75%	AMYGDALOIDAL BASALT	
26.00	27.50	ROCK				137 to 142	133	89%	133	89%	AMYGDALOIDAL BASALT	
27.50	29.00	ROCK				143 to 146	124	83%	124	83%	COMPACT BASALT	
29.00	30.00	ROCK				147 to 148	90	90%	90	90%	COMPACT BASALT	

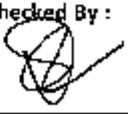
Prepared By : 


Checked By : 

Approved By : 
Dy. GM/RTES

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : COEP PLAYGROUND						Bore Hole No. : U 20 (CH. 12375)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.						
Ground Surface Level : 554.792						Casing : 3.00 M.						
Co-Ordinates : Easting : 378853.249						Date Started : 05.08.2017						
Northing : 2048956.237						Date Completed : 09.08.2017						
Sampling		SPT Details				Core Details					Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR	%	RQD	%		
From	To						cm	%	cm	%		
0.00	2.00	DS 1									FILLING MATERIAL	
2.00	3.50	DWR									DISINTEGRATED WEATHERED ROCK	
3.50	5.00	ROCK				1 to 7	116	77%	88	59%	AMYGDALOIDAL BASALT	
5.00	6.50	ROCK				8 to 15	114	76%	80	53%	AMYGDALOIDAL BASALT	
6.50	8.00	ROCK				16 to 27	135	90%	88	59%	COMPACT BASALT	
8.00	9.50	ROCK				28 to 34	141	91%	128	85%	COMPACT BASALT	
9.50	11.00	ROCK				35 to 43	147	98%	176	84%	AMYGDALOIDAL BASALT	
11.00	12.50	ROCK				44 to 52	125	83%	103	67%	AMYGDALOIDAL BASALT	
12.50	14.00	ROCK				53 to 60	137	89%	112	75%	AMYGDALOIDAL BASALT	
14.00	15.50	ROCK				61 to 68	144	96%	136	91%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				69 to 80	134	89%	112	75%	COMPACT BASALT	
17.00	18.50	ROCK				81 to 89	149	99%	131	87%	COMPACT BASALT	
18.50	20.00	ROCK				90 to 95	144	96%	144	96%	COMPACT BASALT	
20.00	21.50	ROCK				96 to 103	128	85%	128	85%	COMPACT BASALT	
21.50	23.00	ROCK				104 to 109	133	89%	133	88%	COMPACT BASALT	
23.00	24.50	ROCK				110 to 115	129	86%	124	83%	COMPACT BASALT	
24.50	26.00	ROCK				116 to 122	143	95%	137	91%	AMYGDALOIDAL BASALT	
26.00	27.50	ROCK				123 to 129	143	95%	143	95%	AMYGDALOIDAL BASALT	
27.50	29.00	ROCK				130 to 136	150	100%	150	100%	AMYGDALOIDAL BASALT	
29.00	30.00	ROCK				137 to 138	88	88%	88	88%	AMYGDALOIDAL BASALT	

Prepared By : 

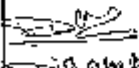
Checked By : 


Approved By : 
 P.Y. G.M./RITES


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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :						Bore Hole No. : U Z1 (CHAINAGE : 12425)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.						
Ground Surface Level : 555.025						Casing : 3.50 M.						
Co-Ordinates : Easting : 378928.775						Date Started : 28.07.2017						
Northing : 2058935.205						Date Completed : 04.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.50	ROCK				1 to 8	69	46%	38	25%	FRACTURED COMPACT BASALT	
3.50	5.00	ROCK				9 to 21	88	59%	40	27%	FRACTURED COMPACT BASALT	
5.00	6.50	ROCK				22 to 33	138	92%	107	71%	COMPACT BASALT	
6.50	8.00	ROCK				34 to 40	120	80%	96	64%	COMPACT BASALT	
8.00	9.50	ROCK				41 to 44	120	80%	120	80%	COMPACT BASALT	
9.50	11.00	ROCK				45 to 49	134	89%	134	89%	COMPACT BASALT	
11.00	12.50	ROCK				50 to 54	124	83%	120	80%	COMPACT BASALT	
12.50	14.00	ROCK				55 to 56	126	84%	126	84%	COMPACT BASALT	
14.00	15.50	ROCK				57 to 60	129	86%	129	86%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				61 to 64	130	87%	130	87%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				65 to 72	133	89%	108	72%	COMPACT BASALT	
18.50	20.00	ROCK				73 to 74	125	83%	125	83%	COMPACT BASALT	
20.00	21.50	ROCK				75 to 78	139	93%	139	93%	COMPACT BASALT	
21.50	23.00	ROCK				79 to 84	141	94%	141	94%	COMPACT BASALT	
23.00	24.50	ROCK				85 to 88	118	79%	118	79%	AMYGDALOIDAL BASALT	
24.50	26.00	ROCK				89 to 93	150	100%	150	100%	AMYGDALOIDAL BASALT	
26.00	27.50	ROCK				94 to 99	139	93%	132	88%	AMYGDALOIDAL BASALT	
27.50	29.00	ROCK				100 to 105	138	92%	127	85%	AMYGDALOIDAL BASALT	
29.00	30.00	ROCK				106	96	96%	96	96%	AMYGDALOIDAL BASALT	

Prepared By : 
Engineer Chaudhari


Checked By : 


Approved By : 
Dy. GM/ITES

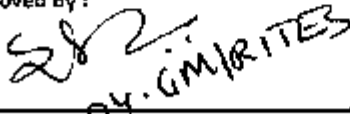
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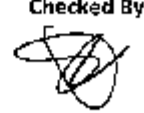
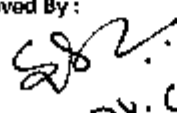
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Lab Observation Log Sheet														
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT														
Location :						Bore Hole No. : U 22 (CHAINAGE : 12475)								
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.								
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.								
Ground Surface Level : 553.810						Casing : 2.00 M.								
Co-Ordinates : Easting : 378968.933						Date Started : 04.08.2017								
Northing : 2048926.648						Date Completed : 08.08.2017								
Sampling		SPT Details				Core Details				Description Of Strata				
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR					RQD	
From	To							cm	%				cm	%
0.00	2.00	D5 1										SANDY CLAY		
2.00	3.50	DWR										DISINTEGRATED WEATHERED ROCK		
3.50	5.00	ROCK					1 to 4	74	49%	69	46%	FRACTURED COMPACT BASALT		
5.00	6.50	ROCK					5 to 7	123	82%	123	82%	COMPACT BASALT		
6.50	8.00	ROCK					8 to 10	109	73%	102	68%	COMPACT BASALT		
8.00	9.50	ROCK					11 to 13	128	85%	128	85%	COMPACT BASALT		
9.50	11.00	ROCK					14 to 17	126	84%	126	84%	COMPACT BASALT		
11.00	12.50	ROCK					18 to 20	113	75%	113	75%	AMYGDALOIDAL BASALT		
12.50	14.00	ROCK					21 to 24	125	86%	121	81%	COMPACT BASALT		
14.00	15.50	ROCK					25 to 28	124	83%	117	78%	COMPACT BASALT		
15.50	17.00	ROCK					29 to 32	122	81%	118	79%	COMPACT BASALT		
17.00	18.50	ROCK					33 to 37	125	83%	113	75%	COMPACT BASALT		
18.50	20.00	ROCK					38 to 41	119	79%	115	77%	COMPACT BASALT		
20.00	21.50	ROCK					42 to 44	136	91%	136	91%	COMPACT BASALT		
21.50	23.00	ROCK					45 to 47	125	83%	125	83%	AMYGDALOIDAL BASALT		
23.00	24.50	ROCK					48 to 52	133	89%	133	89%	AMYGDALOIDAL BASALT		
24.50	26.00	ROCK					53 to 56	84	56%	78	51%	AMYGDALOIDAL BASALT		
26.00	27.50	ROCK					57 to 61	141	94%	141	94%	AMYGDALOIDAL BASALT		
27.50	29.00	ROCK					62 to 66	136	91%	128	85%	AMYGDALOIDAL BASALT		
29.00	30.00	ROCK					67 to 68	94	94%	94	94%	AMYGDALOIDAL BASALT		

Prepared By : 

Checked By : 


Approved By : 
BY: GM/RITES


Lab Observation Log Sheet															
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT															
Location : COEP PLAYGROUND Type Of Boring : ROTARY DRILLING Dia. Of Boring : 100 MM. Ground Surface Level : 553.592 Co-Ordinates : Easting : 379017.929 Northing : 2068917.717						Bore Hole No. : U 23 (CH. 12525) Depth : 30.00 M. Water Table : 9.50 M. Casing : 4.00 M. Date Started : 05.08.2017 Date Completed : 09.08.2017									
Sampling		SPT Details				Core Details				Description Of Strata					
Depth (mt.)		Type Of Sample		15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR					RQD	
From	To								cm				%	cm	%
0.00	0.50	DS 1											SANDY CLAY		
0.50	2.00	DWR											DISINTEGRATED WEATHERED ROCK		
2.00	3.50	ROCK						1 to 11	80	53%	44	29%	FRACTURED COMPACT BASALT		
3.50	5.00	ROCK						12 to 18	92	61%	71	47%	FRACTURED AMYGDALOIDAL BASALT		
5.00	6.50	ROCK						19 to 21	109	73%	109	73%	AMYGDALOIDAL BASALT		
6.50	8.00	ROCK						22 to 28	142	95%	142	95%	COMPACT BASALT		
8.00	9.50	ROCK						29 to 35	128	85%	116	77%	COMPACT BASALT		
9.50	11.00	ROCK						36 to 41	134	89%	125	83%	COMPACT BASALT		
11.00	12.50	ROCK						42 to 45	138	92%	134	83%	COMPACT BASALT		
12.50	14.00	ROCK						46 to 52	124	83%	124	83%	AMYGDALOIDAL BASALT		
14.00	15.50	ROCK						53 to 56	144	96%	144	96%	AMYGDALOIDAL BASALT		
15.50	17.00	ROCK						57 to 61	120	86%	123	86%	AMYGDALOIDAL BASALT		
17.00	18.50	ROCK						62 to 70	135	90%	123	82%	AMYGDALOIDAL BASALT		
18.50	20.00	ROCK						71 to 77	127	85%	120	80%	AMYGDALOIDAL BASALT		
20.00	21.50	ROCK						78 to 85	132	88%	116	77%	AMYGDALOIDAL BASALT		
21.50	23.00	ROCK						86 to 93	144	96%	144	96%	AMYGDALOIDAL BASALT		
23.00	24.50	ROCK						94 to 100	137	91%	121	81%	AMYGDALOIDAL BASALT		
24.50	26.00	ROCK						101 to 106	132	88%	132	88%	COMPACT BASALT		
26.00	27.50	ROCK						107 to 111	149	99%	149	99%	COMPACT BASALT		
27.50	29.00	ROCK						112 to 119	142	95%	134	89%	COMPACT BASALT		
29.00	30.00	ROCK						120 to 123	91	91%	86	86%	COMPACT BASALT		
Prepared By : 			Checked By : 			Approved By :  BY: GMR/ITES									

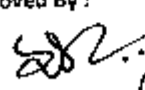
Monarch Surveyors & Engineering Consultant Pvt. Ltd.

3, Rujeta, 67, Panmala, Sinhgad Road, Pune, Maharashtra India - 411030, PH: +91, 020-24330432, 24330246, 24330071

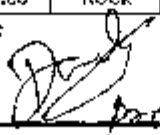
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :						Bore Hole No. : U 24 (CHAINAGE : 12575)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 4.50 M.						
Ground Surface Level : 553.553						Casing : 4.00 M.						
Co-Ordinates : Easting : 379066.110						Date Started : 03.08.2017						
Northing : 2048931.901						Date Completed : 07.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.50	DWR									DISINTEGRATED WEATHERED ROCK	
3.50	5.00	ROCK				1 to 5	58	39%	50	33%	FRACTURED AMYGDALOIDAL BASALT	
5.00	6.50	ROCK				6 to 9	124	83%	124	83%	COMPACT BASALT	
6.50	8.00	ROCK				10 to 11	116	77%	116	77%	COMPACT BASALT	
8.00	9.50	ROCK				12 to 13	118	79%	118	79%	COMPACT BASALT	
9.50	11.00	ROCK				14 to 15	124	83%	124	83%	COMPACT BASALT	
11.00	12.50	ROCK				16 to 18	129	86%	129	86%	COMPACT BASALT	
12.50	14.00	ROCK				19 to 23	125	85%	116	77%	AMYGDALOIDAL BASALT	
14.00	15.50	ROCK				24 to 27	144	96%	144	96%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				28 to 33	117	78%	117	78%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				34 to 39	127	85%	127	85%	AMYGDALOIDAL BASALT	
18.50	20.00	ROCK				40 to 44	122	81%	116	77%	AMYGDALOIDAL BASALT	
20.00	21.50	ROCK				45 to 48	130	87%	130	87%	COMPACT BASALT	
21.50	23.00	ROCK				49 to 52	139	93%	139	93%	COMPACT BASALT	
23.00	24.50	ROCK				53 to 58	126	84%	117	78%	COMPACT BASALT	
24.50	26.00	ROCK				59 to 61	116	77%	108	72%	COMPACT BASALT	
26.00	27.50	ROCK				62 to 70	132	88%	120	80%	COMPACT BASALT	
27.50	29.00	ROCK				71 to 74	144	96%	144	96%	COMPACT BASALT	
29.00	30.00	ROCK				75 to 78	69	69%	69	69%	COMPACT BASALT	

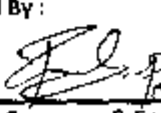
Prepared By : 

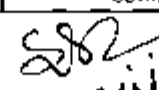
Checked By : 

Approved By : 
R. L. RITES

Lab Observation Log Sheet											
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT											
Location : <u>Civil Court Gate</u>						Bore Hole No. : <u>U 28/0-27</u> (CH. 12750)					
Type Of Boring : <u>ROTARY DRILLING</u>						Depth : <u>30.00 M.</u>					
Dia. Of Boring : <u>100 MM.</u>						Water Table : <u>5.60 M.</u>					
Ground Surface Level : <u>351.32</u>						Casing : <u>6.50 M.</u>					
Co-Ordinates : Easting : <u>379225.885</u>						Date Started : <u>20.06.2017</u>					
Northing : <u>2048889.399</u>						Date Completed : <u>05.07.2017</u>					
Sampling		SPT Details				Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To						cm	%	cm		%
0.00	1.50	DS 1									FILLING MATERIAL
1.50	3.00										FILLING MATERIAL
3.00	4.50	ROCK				1 to 7	99	66%	60	47%	FRACTURED AMYGDALOIDAL BASALT
4.50	6.00	ROCK				8 to 17	103	69%	79	53%	AMYGDALOIDAL BASALT
6.00	7.50	ROCK				18 to 22	127	85%	118	79%	AMYGDALOIDAL BASALT
7.50	9.00	ROCK				23 to 28	139	93%	127	85%	AMYGDALOIDAL BASALT
9.00	10.50	ROCK				29 to 31	140	93%	140	93%	AMYGDALOIDAL BASALT
10.50	12.00	ROCK				32 to 34	146	97%	146	97%	AMYGDALOIDAL BASALT
12.00	13.50	ROCK				35 to 38	121	81%	121	81%	AMYGDALOIDAL BASALT
13.50	15.00	ROCK				39 to 44	138	92%	130	87%	AMYGDALOIDAL BASALT
15.00	16.50	ROCK				45 to 47	150	100%	150	100%	COMPACT BASALT
16.50	18.00	ROCK				48 to 50	145	97%	145	97%	COMPACT BASALT
18.00	19.50	ROCK				51 to 56	147	98%	147	98%	AMYGDALOIDAL BASALT
19.50	21.00	ROCK				57 to 61	139	93%	139	93%	AMYGDALOIDAL BASALT
21.00	22.50	ROCK				62 to 67	123	82%	123	82%	AMYGDALOIDAL BASALT
22.50	24.00	ROCK				68 to 73	141	94%	141	94%	AMYGDALOIDAL BASALT
24.00	25.50	ROCK				74 to 79	147	98%	147	98%	AMYGDALOIDAL BASALT
25.50	27.00	ROCK				80 to 85	130	87%	130	87%	COMPACT BASALT
27.00	28.50	ROCK				86 to 89	137	91%	137	91%	COMPACT BASALT
28.50	30.00	ROCK				90 to 94	136	91%	136	91%	COMPACT BASALT

Prepared By : 

Checked By : 

Approved By : 

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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : <i>Boad grain Godown</i>							Bore Hole No. : U 28/10-28 (CH. 12800)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 4.50 M.					
Ground Surface Level : 551.156							Casing : 5.50 M.					
Co-Ordinates : Easting : 379272.889							Date Started : 08.06.2017					
Northing : 2048884.485							Date Completed : 21.06.2017					
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	ES 1									SANDY CLAY	
2.00	3.50	ROCK				1 to 4	47	31%	37	25%	FRACTURED AMYGDALOIDAL BASALT	
3.50	5.00	ROCK				5 to 10	37	25%	11	7%	FRACTURED AMYGDALOIDAL BASALT	
5.00	6.50	ROCK				11 to 16	35	23%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT	
6.50	8.00	ROCK				17 to 21	52	35%	31	21%	FRACTURED AMYGDALOIDAL BASALT	
8.00	9.50	ROCK				22 to 28	57	38%	32	21%	FRACTURED AMYGDALOIDAL BASALT	
9.50	11.00	ROCK				29 to 33	131	87%	122	81%	AMYGDALOIDAL BASALT	
11.00	12.50	ROCK				34 to 38	116	77%	107	71%	AMYGDALOIDAL BASALT	
12.50	14.00	ROCK				39 to 41	135	90%	135	90%	COMPACT BASALT	
14.00	15.50	ROCK				42 to 44	130	87%	130	87%	COMPACT BASALT	
15.50	17.00	ROCK				45 to 47	132	88%	132	88%	COMPACT BASALT	
17.00	18.50	ROCK				48 to 51	123	82%	123	82%	COMPACT BASALT	
18.50	20.00	ROCK				52 to 59	144	96%	144	96%	AMYGDALOIDAL BASALT	
20.00	21.50	ROCK				60 to 66	141	94%	130	87%	AMYGDALOIDAL BASALT	
21.50	23.00	ROCK				67 to 72	124	83%	124	83%	AMYGDALOIDAL BASALT	
23.00	24.50	ROCK				73 to 75	130	87%	130	87%	AMYGDALOIDAL BASALT	
24.50	26.00	ROCK				76 to 79	134	89%	125	83%	COMPACT BASALT	
26.00	27.50	ROCK				80 to 83	143	95%	143	95%	COMPACT BASALT	
27.50	29.00	ROCK				84 to 90	141	94%	141	94%	AMYGDALOIDAL BASALT	
29.00	30.00	ROCK				91 to 93	77	77%	77	77%	AMYGDALOIDAL BASALT	

Prepared By : *[Signature]*

Checked By : *[Signature]*

Approved By : *[Signature]*

Monarch Surveyors & Engineering Consultant Pvt. Ltd.
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Project: Food Grain Godown
 Location: Godown
 Type Of Boring: Rotary
 Dia. Of Boring: 250 mm
 Ground Surface Level: 539.325
 Co-Ordinates: Easting 379323.538
 Northing 2048875.391
 Bore Hole No.: U-29 CH:12850
 Depth: 30.00 m.
 Water Table: 4.50 m.
 Casing: 250 m.
 Date Started: 15/06/2017
 Date Completed: 16/06/2017

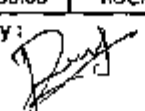
Sampling		Type Of Sample	SPT Details			Core Details				Description Of Strata		
Depth (mt.)			15cm	30cm	45cm	'N' Value	No. Of Pieces	CR			RQD	
From	To							cm	%	cm	%	
0.00	2.00	DS-①										Sandy soil with gravel
2.00	3.00	Rock					1405	56	56%	44	44%	fract. Ang. Basalt.
3.00	4.50	Rock					64015	88	57%	24	16%	fract. Ang. Basalt.
4.50	6.00	Rock					164025	116	71%	97	55%	Amygdaloidal Basalt.
6.00	7.50	Rock					264023	132	88	132	88%	—————
7.50	9.00	Rock					344035	150	100%	150	100%	Compact Basalt.
9.00	10.50	Rock					364038	149	99	149	99%	—————
10.50	12.00	Rock					394043	141	94	125	83%	Ang. Basalt.
12.00	13.50	Rock					494055	146	97	128	85%	Amygdaloidal Basalt.
13.50	15.00	Rock					564061	149	99	149	99	Amygdaloidal Basalt.
15.00	16.50	Rock					624065	150	100	150	100	Compact Basalt.
16.50	18.00	Rock					664070	138	92	138	92	—————
18.00	19.50	Rock					714074	119	79	119	79	—————
19.50	21.00	Rock					954078	139	92	139	93	Amygdaloidal Basalt.
21.00	22.50	Rock					994084	138	92	129	88	—————
22.50	24.00	Rock					854089	134	89	134	89	Compact Basalt.
24.00	25.50	Rock					904095	145	97	145	97	—————
25.50	27.00	Rock					9640101	143	95	143	95	—————
27.00	28.50	Rock					10240105	150	100	150	100	—————
28.50	30.00	Rock					10640110	146	97	146	97	—————

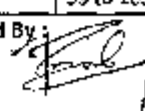
Prepared By: ChamunChecked By: ChamunApproved By: Chamun

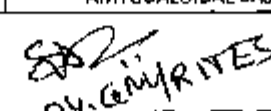
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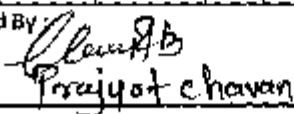
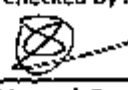
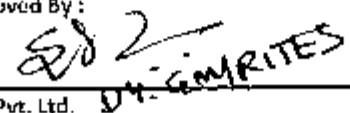
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : GODOWN Food Grain GODOWN						Bore Hole No. : U 30 (CH. 12900)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 7.00 M.						
Ground Surface Level : 549.325						Casing : 3.00 M.						
Co-Ordinates : Easting : 379323.548						Date Started : 12.06.2017						
Northing : 2048875.391						Date Completed : 28.06.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR	%	RQD			
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.00	DWR									DISINTEGRATED WEATHERED ROCK	
3.00	4.50	ROCK				1 to 2	11	7%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT	
4.50	6.00	ROCK				3 to 6	54	36%	46	81%	FRACTURED AMYGDALOIDAL BASALT	
6.00	7.50	ROCK				7 to 16	88	59%	54	36%	FRACTURED AMYGDALOIDAL BASALT	
7.50	9.00	ROCK				17 to 31	100	67%	39	26%	FRACTURED AMYGDALOIDAL BASALT	
9.00	10.50	ROCK				32 to 35	126	84%	126	84%	AMYGDALOIDAL BASALT	
10.50	12.00	ROCK				36 to 43	100	67%	71	47%	FRACTURED AMYGDALOIDAL BASALT	
12.00	13.50	ROCK				44 to 46	119	79%	114	76%	AMYGDALOIDAL BASALT	
13.50	15.00	ROCK				47 to 51	111	74%	68	45%	AMYGDALOIDAL BASALT	
15.00	16.50	ROCK				52 to 55	109	73%	100	67%	AMYGDALOIDAL BASALT	
16.50	18.00	ROCK				56 to 57	144	96%	144	96%	AMYGDALOIDAL BASALT	
18.00	19.50	ROCK				58 to 60	138	92%	138	92%	AMYGDALOIDAL BASALT	
19.50	21.00	ROCK				61 to 66	143	95%	136	91%	AMYGDALOIDAL BASALT	
21.00	22.50	ROCK				67 to 73	135	90%	126	84%	AMYGDALOIDAL BASALT	
22.50	24.00	ROCK				74 to 77	118	79%	118	79%	AMYGDALOIDAL BASALT	
24.00	25.50	ROCK				78 to 84	141	94%	132	88%	AMYGDALOIDAL BASALT	
25.50	27.00	ROCK				85 to 91	129	86%	122	81%	AMYGDALOIDAL BASALT	
27.00	28.50	ROCK				92 to 98	124	83%	115	77%	AMYGDALOIDAL BASALT	
28.50	30.00	ROCK				99 to 103	148	99%	148	99%	AMYGDALOIDAL BASALT	

Prepared By : 

Checked By : 

Approved By : 

Pradyot Chavan Monarch Surveyors & Engineering Consultant Pvt. Ltd.
3, Rujeta, 67/ Panmala, Sinhgad Road, Pune, Maharashtra India - 411030, PH: +91, 020-24330432, 24330246, 24330071

Lab Observation Log Sheet														
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT														
Location : FOOD GRAIN GODOWN Type Of Boring : ROTARY DRILLING Dia. Of Boring : 100 MM. Ground Surface Level : 548.989 Co-Ordinates : Easting : 379422.247 Northing : 2048879.788							Bore Hole No. : U 31 (CH. 12950) Depth : 30.00 M. Water Table : 6.00 M. Casing : 3.00 M. Date Started : 01.07.2017 Date Completed : 08.07.2017							
Sampling		SPT Details				Core Details				Description Of Strata				
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR	%				RQD	%
From	To							cm					cm	
0.00	2.00	DS 1										SANDY CLAY WITH GRAVELS		
2.00	3.50	DWR					1 to 11	50	33%	12	8%	FRACTURED AMYGDALOIDAL BASALT		
3.50	5.00	ROCK					12 to 19	98	65%	80	53%	AMYGDALOIDAL BASALT		
5.00	6.50	ROCK					20 to 31	131	87%	103	69%	AMYGDALOIDAL BASALT		
6.50	8.00	ROCK					32 to 41	77	51%	49	33%	FRACTURED AMYGDALOIDAL BASALT		
8.00	9.50	ROCK					42 to 46	115	77%	115	77%	AMYGDALOIDAL BASALT		
9.50	11.00	ROCK					47 to 52	138	92%	129	86%	COMPACT BASALT		
11.00	12.50	ROCK					53 to 62	126	84%	97	65%	COMPACT BASALT		
12.50	14.00	ROCK					63 to 67	142	95%	142	95%	AMYGDALOIDAL BASALT		
14.00	15.50	ROCK					68 to 73	141	94%	112	75%	AMYGDALOIDAL BASALT		
15.50	17.00	ROCK					74 to 83	120	80%	105	70%	AMYGDALOIDAL BASALT		
17.00	18.50	ROCK					84 to 87	140	93%	132	88%	AMYGDALOIDAL BASALT		
18.50	20.00	ROCK					88 to 92	145	97%	141	94%	COMPACT BASALT		
20.00	21.50	ROCK					93 to 101	146	97%	134	89%	COMPACT BASALT		
21.50	23.00	ROCK					102 to 107	131	87%	131	87%	AMYGDALOIDAL BASALT		
23.00	24.50	ROCK					108 to 112	145	97%	145	97%	AMYGDALOIDAL BASALT		
24.50	26.00	ROCK					113 to 117	147	98%	147	98%	COMPACT BASALT		
26.00	27.50	ROCK					118 to 121	150	100%	150	100%	COMPACT BASALT		
27.50	29.00	ROCK					122 to 125	150	100%	150	100%	COMPACT BASALT		
29.00	30.00	ROCK					126 to 128	99	99%	99	99%	AMYGDALOIDAL BASALT		
Prepared By : 			Checked By : 				Approved By : 							

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Project : <u>REVISOR RAIL PROJECT</u>											
Location : <u>Plot 6, Green Godown</u>						Bore Hole No. : <u>13000 U-32</u>					
Type Of Boring : <u>Rocky</u>						Depth : <u>0.00 to 30.00</u>					
Dia. Of Boring : <u>100mm</u>						Water Table : <u>4.40 M</u>					
Ground Surface Level : <u>549.155</u>						Casing : <u>3.00 M</u>					
Co-Ordinates : Easting <u>379473.014</u>						Date Started : <u>11/6/17</u>					
Northing <u>2048905.508</u>						Date Completed : <u>6/6/17</u>					
Sampling		SPT Details				Core Details				Description Of Strata	
Depth (mt.)		15cm	30cm	45cm	'N' Value	No. Of Pieces	CR		RQD		
From	To						cm	%	cm		%
0.00	2.00										Finey mud-stone
2.00	3.00					1 to 3	10	10	--	Nil	Fine Amygdaloidal Basalt
3.00	4.00					4 to 8	34	34	--	Nil	
4.00	5.00					8 to 11	14	14	--	Nil	
5.00	6.00					12 to 19	79	79	50	33	
6.00	7.50					20 to 34	87	88	13	49	
7.50	9.00					35 to 44	144	96	124	83	
9.00	10.50					45 to 51	137	91	133	89	COMPACT Basalt
10.50	12.00					52 to 56	907	71	107	71	
12.00	13.50					57 to 60	124	83	124	83	
13.50	15.00					61 to 65	140	93	140	93	Amygdaloidal Basalt
15.00	16.50					66 to 69	134	89	134	89	
16.50	18.00					70 to 75	148	99	145	97	
18.00	19.50					76 to 81	135	90	126	84	
19.50	21.00					82 to 89	141	94	135	90	
21.00	22.50					90 to 93	143	95	143	95	
22.50	24.00					94 to 97	125	83	125	83	
24.00	25.50					98 to 103	138	92	138	92	COMPACT Basalt
25.50	27.00					104 to 108	136	91	128	85	
27.00	28.50					109 to 112	134	89	131	87	
28.50	30.00					113 to 122	120	80	103	69	
Prepared By : <u>Chungh</u>		Checked By : <u>MS</u>				Approved By : <u>MS</u>					

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Lab Observation Log Sheet											
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT											
Location : Food Grain Godown Near CGO						Bore Hole No. : U-24 33 (CH. 13050)					
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.					
Dia. Of Boring : 100 MM.						Water Table : 8.00 M.					
Ground Surface Level : 549.055 ✓						Casing : 3.50 M.					
Co-Ordinates : Easting : 379512.969 ✓						Date Started : 06.06.2017					
Northing : 2048894.007 ✓						Date Completed : 19.06.2017					
Sampling		SPT Details				Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To						cm	%	cm	%	
0.00	2.00	DS 1									SANDY CLAY WITH GRAVELS
2.00	3.00	DWR									GRAVELS
3.00	4.50	ROCK				1 to 11	95	69%	71	47%	FRACTURED COMPACT BASALT
4.50	6.00	ROCK				12 to 14	110	73%	110	73%	AMYGDALOIDAL BASALT
6.00	7.50	ROCK				15 to 21	117	78%	104	69%	AMYGDALOIDAL BASALT
7.50	9.00	ROCK				22 to 27	108	72%	105	70%	AMYGDALOIDAL BASALT
9.00	10.50	ROCK				28 to 32	142	95%	133	89%	AMYGDALOIDAL BASALT
10.50	12.00	ROCK				33 to 39	138	92%	124	83%	AMYGDALOIDAL BASALT
12.00	13.50	ROCK				40 to 42	130	87%	125	83%	COMPACT BASALT
13.50	15.00	ROCK				43 to 45	126	84%	126	84%	COMPACT BASALT
15.00	16.50	ROCK				46 to 59	134	89%	91	61%	AMYGDALOIDAL BASALT
16.50	18.00	ROCK				60 to 72	150	100%	99	66%	AMYGDALOIDAL BASALT
18.00	19.50	ROCK				73 to 77	137	91%	137	91%	AMYGDALOIDAL BASALT
19.50	21.00	ROCK				78 to 90	140	93%	90	60%	AMYGDALOIDAL BASALT
21.00	22.50	ROCK				91 to 97	123	82%	110	73%	AMYGDALOIDAL BASALT
22.50	24.00	ROCK				98 to 102	148	99%	148	89%	COMPACT BASALT
24.00	25.50	ROCK				103 to 107	143	95%	134	89%	COMPACT BASALT
25.50	27.00	ROCK				108 to 113	142	95%	142	95%	AMYGDALOIDAL BASALT
27.00	28.50	ROCK				114 to 124	140	93%	115	77%	AMYGDALOIDAL BASALT
28.50	30.00	ROCK				125 to 134	145	95%	122	81%	AMYGDALOIDAL BASALT

Prepared By :

Checked By :

Approved By :

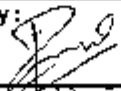
Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : <u>Mutha River</u>							Bore Hole No. : <u>U 34</u> (CH. 13100) ✓					
Type Of Boring : <u>ROTARY DRILLING</u>							Depth : <u>30.00 M.</u>					
Dia. Of Boring : <u>100 MM.</u>							Water Table : <u>3.50 M.</u>					
Ground Surface Level : <u>542.188</u>							Casing : <u>3.00 M.</u>					
Co-Ordinates : Easting : <u>379509.584</u>							Date Started : <u>29.05.2017</u>					
Northing : <u>2048837.005</u>							Date Completed : <u>10.06.2017</u>					
Sampling		SPT Details					Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	0.50	DS 1									SANDY CLAY WITH GRAVELS	
1.50	1.90	SPT 1	31	42	10 52	R					SILTY SAND	
3.00	3.10	SPT 2	10 52	--	--	R					DISINTEGRATED WEATHERED ROCK	
3.00	4.50	DWR									DISINTEGRATED WEATHERED ROCK	
4.50	6.00	ROCK				1 to 2	45	30%	45	30%	FRACTURED AMYGDALOIDAL BASALT	
6.00	7.50	ROCK				3 to 6	68	45%	54	36%	FRACTURED AMYGDALOIDAL BASALT	
7.50	9.00	ROCK				7 to 11	80	53%	65	43%	FRACTURED AMYGDALOIDAL BASALT	
9.00	10.50	ROCK				12 to 15	108	72%	108	72%	AMYGDALOIDAL BASALT	
10.50	12.00	ROCK				16 to 20	96	64%	88	59%	COMPACT BASALT	
12.00	13.50	ROCK				21 to 27	80	53%	68	45%	COMPACT BASALT	
13.50	15.00	ROCK				28 to 35	104	69%	84	56%	COMPACT BASALT	
15.00	16.50	ROCK				36 to 47	135	90%	104	69%	COMPACT BASALT	
16.50	18.00	ROCK				48 to 59	122	81%	82	55%	COMPACT BASALT	
18.00	19.50	ROCK				60 to 70	138	92%	115	77%	COMPACT BASALT	
19.50	21.00	ROCK				71 to 81	76	51%	40	27%	FRACTURED AMYGDALOIDAL BASALT	
21.00	22.50	ROCK				82 to 88	116	77%	110	73%	AMYGDALOIDAL BASALT	
22.50	24.00	ROCK				89 to 94	108	72%	108	72%	AMYGDALOIDAL BASALT	
24.00	25.50	ROCK				95 to 101	110	73%	104	69%	AMYGDALOIDAL BASALT	
25.50	27.00	ROCK				102 to 108	127	85%	119	79%	COMPACT BASALT	
27.00	28.50	ROCK				109 to 114	126	84%	117	78%	COMPACT BASALT	
28.50	30.00	ROCK				115 to 122	130	87%	130	87%	COMPACT BASALT	


Prepared By : Poojot Chavan

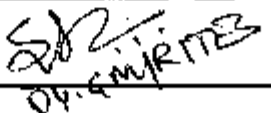
Checked By : Poojot Chavan

Approved By : S.D. P. RAMESH

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : CENTRE MARINE BOREHOLE (Mutha River) Bore Hole No. : U 365 (CH. 13150)												
Type Of Boring : ROTARY DRILLING Depth : 30.00 M.												
Dia. Of Boring : 100 MM. Water Table : 3.10 M.												
Ground Surface Level : Casing : 3.00 M.												
Co-Ordinates : Easting Date Started : 02.06.2017												
Northing Date Completed : 09.06.2017												
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	0.50	DS 1									CLAY WITH GRAVELS	
0.50	1.50	ROCK				1	14	14%	14	14%	FRACTURED AMYGDALOIDAL BASALT	
1.50	3.00	ROCK				2 to 3	30	20%	21	14%	FRACTURED AMYGDALOIDAL BASALT	
3.00	4.50	ROCK				4 to 8	65	43%	44	29%	FRACTURED AMYGDALOIDAL BASALT	
4.50	6.00	ROCK				9 to 11	131	87%	124	29%	FRACTURED AMYGDALOIDAL BASALT	
6.00	7.50	ROCK				12 to 16	105	70%	99	66%	AMYGDALOIDAL BASALT	
7.50	9.00	ROCK				17 to 24	137	91%	132	88%	AMYGDALOIDAL BASALT	
9.00	10.50	ROCK				25 to 33	141	94%	135	90%	AMYGDALOIDAL BASALT	
10.50	12.00	ROCK				34 to 39	145	97%	143	93%	COMPACT BASALT	
12.00	13.50	ROCK				40 to 46	150	100%	142	95%	COMPACT BASALT	
13.50	15.00	ROCK				47 to 56	134	89%	113	75%	COMPACT BASALT	
15.00	16.50	ROCK				57 to 66	150	100%	131	87%	COMPACT BASALT	
16.50	18.00	ROCK				67 to 71	138	92%	138	92%	COMPACT BASALT	
18.00	19.50	ROCK				72 to 78	140	93%	133	89%	COMPACT BASALT	
19.50	21.00	ROCK				79 to 86	143	95%	137	91%	AMYGDALOIDAL BASALT	
21.00	22.50	ROCK				87 to 94	141	94%	134	89%	AMYGDALOIDAL BASALT	
22.50	24.00	ROCK				95 to 104	150	100%	134	89%	AMYGDALOIDAL BASALT	
24.00	25.50	ROCK				105 to 113	143	95%	143	95%	AMYGDALOIDAL BASALT	
25.50	27.00	ROCK				114 to 118	137	91%	137	91%	COMPACT BASALT	
27.00	28.50	ROCK				119 to 124	145	97%	143	95%	COMPACT BASALT	
28.50	30.00	ROCK				125 to 131	147	98%	147	98%	COMPACT BASALT	

Prepared By : 

Checked By : 

Approved By : 

Lab Observation Log Sheet

Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT .

Location: Mutha River (Tandur to Huzur)

Bore Hole No. : U 36

(CH. 13200)

Type Of Boring : ROTARY DRILLING

Depth : 16.00 M.

Dia. Of Boring : 100 MM.

Water Table : 4.00 M.

Ground Surface Level : 551.850

Casing : 6.00 M.

Co-Ordinates: Easting 279500, 690

Date Started : 13.06.2017

Northing 2058 235.328

Date Completed : 17.06.2017

[illegible]

Prepared By :

Checked By :

Approved By :

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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :							Bore Hole No. : U 39 (CHAINAGE : 13395)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 13.50 M.					
Ground Surface Level : 549.185							Casing : 10.50 M.					
Co-Ordinates : Easting : 379756.462							Date Started : 21.07.2017					
Northing : 2048732.117							Date Completed : 28.07.2017					
Sampling		SPT Details					Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
3.00	3.60	SPT 1	7	9	12	21					SANDY CLAY	
4.50	5.10	SPT 2	10	11	13	24					SANDY CLAY	
6.00	6.60	SPT 3	13	25	18	33					SANDY CLAY	
7.50	8.05	SPT 4	10	23	33	56					SANDY CLAY WITH GRAVELS	
9.00	9.50	SPT 5	26	23	41	64					SANDY CLAY WITH GRAVELS	
10.50	10.55	SPT 6	5	—	—	R					DISINTEGRATED WEATHERED ROCK	
10.50	12.00	ROCK					1 to 10	110	73%	69	46%	FRAGMENTED AMYGDALOIDAL BASALT
12.00	13.50	ROCK					11 to 17	135	90%	135	90%	AMYGDALOIDAL BASALT
14.00	15.00	ROCK					18 to 35	145	97%	145	97%	AMYGDALOIDAL BASALT
15.50	16.50	ROCK					36 to 42	137	91%	132	88%	AMYGDALOIDAL BASALT
17.00	18.00	ROCK					43 to 47	139	93%	139	93%	AMYGDALOIDAL BASALT
18.50	19.50	ROCK					48 to 53	149	99%	149	99%	AMYGDALOIDAL BASALT
19.50	21.00	ROCK					54 to 57	117	78%	117	78%	AMYGDALOIDAL BASALT
21.00	22.00	ROCK					58 to 60	95	95%	89	89%	AMYGDALOIDAL BASALT
22.00	23.50	ROCK					61 to 62	143	95%	143	95%	AMYGDALOIDAL BASALT
23.50	25.00	ROCK					63 to 67	133	89%	124	83%	AMYGDALOIDAL BASALT
25.00	26.50	ROCK					68 to 72	146	97%	146	97%	AMYGDALOIDAL BASALT
26.50	28.00	ROCK					73 to 74	141	94%	141	94%	AMYGDALOIDAL BASALT
28.00	29.50	ROCK					75 to 78	149	99%	143	95%	AMYGDALOIDAL BASALT
29.50	30.00	ROCK					79 to 80	48	96%	48	96%	AMYGDALOIDAL BASALT
Prepared By :		Checked By :					Approved By :					

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Lab Observation Log Sheet

Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT

Location :

Type Of Boring : ROTARY DRILLING

Dia. Of Boring : 100 MM.

Ground Surface Level : 543.478

Co-Ordinates : Easting : 379798.120

Northing : 2048590.448

Bore Hole No. :

[CH. 13575]

Depth : 30.00 M.

Water Table : 2.50 M.

Casing : 5.00 M.

Date Started : 14.08.2017

Date Completed : 27.08.2017

Sampling			SPT Details				Core Details				Description Of Strata	
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To							cm	%	cm		%
0.00	2.00	DS 1										FILLING MATERIAL
2.00	3.50	DWR										DISINTEGRATED WFATHERED ROCK
3.50	5.00	DWR										DISINTEGRATED WEATHERED ROCK
5.00	6.50	ROCK					1 to 4	21	14%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT
6.50	8.00	ROCK					5 to 7	87	58%	87	58%	AMYGDALOIDAL BASALT
8.00	9.50	ROCK					8 to 9	119	79%	119	79%	AMYGDALOIDAL BASALT
9.50	11.00	ROCK					10 to 11	116	77%	116	77%	AMYGDALOIDAL BASALT
11.00	12.50	ROCK					12 to 13	104	69%	104	69%	AMYGDALOIDAL BASALT
12.50	14.00	ROCK					14 to 15	99	66%	99	66%	AMYGDALOIDAL BASALT
14.00	15.50	ROCK					16 to 18	113	75%	113	75%	AMYGDALOIDAL BASALT
15.50	17.00	ROCK					19 to 22	132	88%	132	88%	COMPACT BASALT
17.00	18.50	ROCK					23 to 26	132	88%	132	88%	COMPACT BASALT
18.50	20.00	ROCK					27 to 29	149	99%	149	99%	COMPACT BASALT
20.00	21.50	ROCK					30 to 34	142	95%	142	95%	COMPACT BASALT
21.50	23.00	ROCK					35 to 36	143	95%	143	95%	COMPACT BASALT
23.00	24.50	ROCK					37 to 42	131	87%	131	87%	COMPACT BASALT
24.50	26.00	ROCK					43 to 47	142	95%	142	95%	AMYGDALOIDAL BASALT
26.00	27.50	ROCK					48 to 52	128	85%	128	85%	AMYGDALOIDAL BASALT
27.50	29.00	ROCK					53 to 57	130	87%	130	87%	AMYGDALOIDAL BASALT
29.00	30.00	ROCK					58 to 60	88	88%	88	88%	AMYGDALOIDAL BASALT

Prepared By :	
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Checked By :

Approved By :

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Lab Observation Log Sheet													
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT													
Location : <u>Bhim Nagar gate.</u>							Bore Hole No. : <u>CH-18650</u>						
Type Of Boring : <u>ROTARY DRILLING</u>							Depth : <u>30.00 m</u>						
Dia. Of Boring : <u>100 mm</u>							Water Table : <u>07.50 m</u>						
Ground Surface Level : <u>537.565</u>							Casing : <u>9.00 m</u>						
Co-Ordinates : Easting : <u>379855.299</u>							Date Started : <u> </u>						
Northing : <u>2048527.029</u>							Date Completed : <u> </u>						
Sampling		SPT Details				Core Details				Description Of Strata			
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		ROD				
From	To						cm	%	cm		%		
0.00	2.00	DS-1									Filling material.		
2.00	2.10	SPT-1	10								Sandy clay with gravels		
			52										
2.50	3.60	SPT-2	10								Sandy clay with gravels.		
			52										
5.00	5.10	SPT-3	10								Sandy clay with gravels.		
			52										
6.50	6.60	SPT-4	10								Sandy gravels.		
			52										
6.50	8.00	Rock				1405	38	26%	26	18%	Fractured compact Basalt.		
8.00	9.50	Rock				64011	64	42%	55	37%	Fractured compact Basalt.		
9.50	11.00	Rock				124019	91	61%	91	61%	Compact Basalt.		
11.00	12.50	Rock				184021	110	73%	110	73%	Compact Basalt.		
12.50	14.00	Rock				224025	120	80	120	80	Amygdaloidal Basalt.		
14.00	15.50	Rock				264028	118	79%	118	79%	Amygdaloidal Basalt.		
16.50	17.00	Rock				294032	125	83	125	83	Amygdaloidal Basalt.		
17.00	18.50	Rock				334038	125	83%	125	83%	Amygdaloidal Basalt.		
18.50	20.00	Rock				394043	128	85%	128	85%	Amygdaloidal Basalt.		
20.00	21.50	Rock				444050	125	83	125	83%	Amygdaloidal Basalt.		
21.50	23.00	Rock				514058	128	85%	128	85%	Compact Basalt.		
23.00	24.50	Rock				574060	130	87%	130	87%	Compact Basalt.		
24.50	26.00	Rock				614064	134	89%	134	89%	Compact Basalt.		
26.00	27.50	Rock				654069	137	91%	137	91%	Compact Basalt.		
27.50	29.00	Rock				694072	135	90%	135	90%	Compact Basalt.		
29.00	30.00	Rock				734077	99	99%	99	99%	compact Basalt.		

Prepared By :

Oluy813


Checked By :


Approved By :

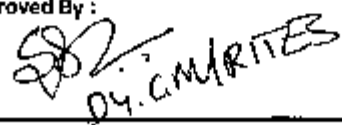
Monarch Surveyors & Engineering Consultant Pvt. Ltd.

3, Rujeta, 67, Panmala, Sinhgad Road, Pune, Maharashtra India - 411030, PH: +91, 020-24330432, 24330246, 24330071

Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :							Bore Hole No. : (CH. 13700)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 5.10 M.					
Ground Surface Level : 537.939							Casing : 2.50 M.					
Co-Ordinates : Easting : 879850.523							Date Started : 29.07.2017					
Northing : 2058578.925							Date Completed : 16.08.2017					
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.50	ROCK				1 to 5	27	18%	NIL	NIL	FRACTURED COMPACT BASALT	
3.50	5.00	ROCK				6 to 10	33	22%	22	15%	FRACTURED COMPACT BASALT	
5.00	6.50	ROCK				11 to 16	37	25%	NIL	NIL	FRACTURED COMPACT BASALT	
6.50	8.00	ROCK				17 to 20	82	55%	82	55%	COMPACT BASALT	
8.00	9.50	ROCK				21 to 26	103	69%	103	69%	COMPACT BASALT	
9.50	11.00	ROCK				27 to 31	112	75%	103	69%	COMPACT BASALT	
11.00	12.50	ROCK				32 to 34	106	71%	106	71%	COMPACT BASALT	
12.50	14.00	ROCK				35 to 38	114	76%	114	76%	COMPACT BASALT	
14.00	15.50	ROCK				39 to 45	121	81%	121	81%	COMPACT BASALT	
15.50	17.00	ROCK				46 to 50	128	85%	128	85%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				51 to 56	131	87%	129	86%	AMYGDALOIDAL BASALT	
18.50	20.00	ROCK				57 to 60	123	82%	123	82%	AMYGDALOIDAL BASALT	
20.00	21.50	ROCK				61 to 67	131	87%	131	87%	AMYGDALOIDAL BASALT	
21.50	23.00	ROCK				68 to 70	138	92%	138	92%	COMPACT BASALT	
23.00	24.50	ROCK				71 to 74	127	85%	127	85%	COMPACT BASALT	
24.50	26.00	ROCK				75 to 77	134	89%	134	89%	COMPACT BASALT	
26.00	27.50	ROCK				78 to 79	127	85%	127	85%	COMPACT BASALT	
27.50	29.00	ROCK				80 to 83	140	93%	140	93%	COMPACT BASALT	
29.00	30.00	ROCK				84 to 86	97	97%	97	97%	COMPACT BASALT	

Prepared By : 

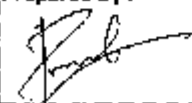
Checked By : 


Approved By : 
Dy. CHAIRMAN

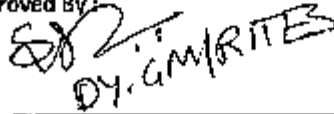
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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : KAMLA NEHARU HOSPITAL							Bore Hole No. : (CH. 13750)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 4.80 M.					
Ground Surface Level : 547.692							Casing : 2.50 M.					
Co-Ordinates : Easting : 379830.398							Date Started : 14.08.2017					
Northing : 2858436.756							Date Completed : 18.08.2017					
Sampling		SPT Details					Core Details				Description Of Strata	
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR	%	RQD	%		
From	To						cm	%	cm	%		
0.00	2.00	DS 1									SANDY CLAY	
2.00	3.50	DWR									DISINTEGRATED WEATHERED ROCK	
3.50	5.00	ROCK				1 to 5	23	19%	NIL	NIL	FRACTURED COMPACT BASALT	
5.00	6.50	ROCK				6 to 13	35	23%	NIL	NIL	FRACTURED COMPACT BASALT	
6.50	8.00	ROCK				14 to 17	63	42%	55	37%	FRACTURED COMPACT BASALT	
8.00	9.50	ROCK				18 to 20	83	55%	83	55%	COMPACT BASALT	
9.50	11.00	ROCK				21 to 27	98	65%	90	60%	COMPACT BASALT	
11.00	12.50	ROCK				28 to 32	87	58%	77	51%	COMPACT BASALT	
12.50	14.00	ROCK				33 to 36	121	81%	121	81%	COMPACT BASALT	
14.00	15.50	ROCK				37 to 41	119	79%	114	76%	COMPACT BASALT	
15.50	17.00	ROCK				42 to 45	125	83%	125	83%	COMPACT BASALT	
17.00	18.50	ROCK				46 to 50	130	87%	130	87%	COMPACT BASALT	
18.50	20.00	ROCK				51 to 56	140	93%	140	93%	AMYGDALOIDAL BASALT	
20.00	21.50	ROCK				57 to 62	133	89%	133	89%	AMYGDALOIDAL BASALT	
21.50	23.00	ROCK				63 to 70	148	99%	148	99%	AMYGDALOIDAL BASALT	
23.00	24.50	ROCK				71 to 75	147	98%	147	98%	COMPACT BASALT	
24.50	26.00	ROCK				76 to 79	142	95%	142	95%	COMPACT BASALT	
26.00	27.50	ROCK				80 to 84	149	99%	149	99%	COMPACT BASALT	
27.50	29.00	ROCK				85 to 89	149	99%	149	99%	COMPACT BASALT	
29.00	30.00	ROCK				90 to 94	100	100%	100	100%	AMYGDALOIDAL BASALT	

Prepared By : 


Checked By : 


Approved By : 
DY. GM/RITES


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Lab Observation Log Sheet														
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT														
Location : KAMLA NEHARU HOSPITAL CORNER						Bore Hole No. : (CH. 13800)								
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.								
Dia. Of Boring : 100 MM.						Water Table : 4.40 M.								
Ground Surface Level : 547.586						Casing : 3.00 M.								
Co-Ordinates : Easting : 379841.432						Date Started : 18.08.2017								
Northing : 2048395.633						Date Completed : 24.08.2017								
Sampling		SPT Details				Core Details				Description Of Strata				
Depth (mt.)		Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR					RQD	
From	To							cm	%				cm	%
0.00	2.00	DS 1										SANDY CLAY		
2.00	3.50	DWR										DISINTEGRATED WEATHERED ROCK		
3.50	5.00	ROCK					1 to 7	32	21%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT		
5.00	6.50	ROCK					8 to 11	34	23%	24	16%	FRACTURED AMYGDALOIDAL BASALT		
6.50	8.00	ROCK					12 to 13	97	63%	97	65%	AMYGDALOIDAL BASALT		
8.00	9.50	ROCK					14 to 19	122	81%	114	76%	AMYGDALOIDAL BASALT		
9.50	11.00	ROCK					20 to 25	125	83%	125	83%	AMYGDALOIDAL BASALT		
11.00	12.50	ROCK					26 to 30	129	86%	122	81%	AMYGDALOIDAL BASALT		
12.50	14.00	ROCK					31 to 35	121	81%	121	81%	AMYGDALOIDAL BASALT		
14.00	15.50	ROCK					36 to 42	144	96%	137	91%	AMYGDALOIDAL BASALT		
15.50	17.00	ROCK					43 to 47	135	90%	135	90%	AMYGDALOIDAL BASALT		
17.00	18.50	ROCK					48 to 53	129	86%	129	86%	AMYGDALOIDAL BASALT		
18.50	20.00	ROCK					54 to 58	127	85%	127	85%	AMYGDALOIDAL BASALT		
20.00	21.50	ROCK					59 to 64	137	91%	137	91%	COMPACT BASALT		
21.50	23.00	ROCK					65 to 67	139	93%	139	93%	COMPACT BASALT		
23.00	24.50	ROCK					68 to 75	138	92%	138	92%	COMPACT BASALT		
24.50	26.00	ROCK					76 to 79	131	87%	123	82%	COMPACT BASALT		
26.00	27.50	ROCK					80 to 82	143	95%	143	95%	COMPACT BASALT		
27.50	29.00	ROCK					83 to 85	137	91%	137	91%	COMPACT BASALT		
29.00	30.00	ROCK					86 to 89	99	99%	99	99%	COMPACT BASALT		

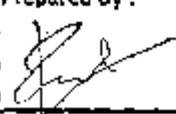
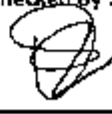
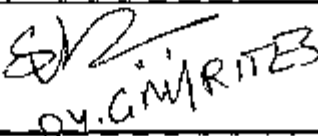
Prepared By : 

Checked By : 

Approved By : 

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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : NEAR BALAJI TREADERS, KASABA PETH							Bore Hole No. : (CH. 13900)					
Type Of Boring : ROTARY DRILLING							Depth : 30.00 M.					
Dia. Of Boring : 100 MM.							Water Table : 4.70 M.					
Ground Surface Level : 538.557							Casing : 2.00 M.					
Co-Ordinates : Easting : 329780.566							Date Started : 14.08.2017					
Northing : 705831.361							Date Completed : 21.08.2017					
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	OS 1									FILLING MATERIAL	
2.00	3.50	ROCK				1 to 4	30	20%	10	7%	FRACTURED COMPACT BASALT	
3.50	5.00	ROCK				5 to 6	11	7%	NIL	NIL	FRACTURED COMPACT BASALT	
5.00	6.50	ROCK				7 to 19	66	44%	22	15%	FRACTURED COMPACT BASALT	
6.50	8.00	ROCK				20 to 26	118	79%	110	73%	COMPACT BASALT	
8.00	9.50	ROCK				27 to 29	125	83%	125	83%	COMPACT BASALT	
9.50	11.00	ROCK				30 to 40	127	85%	100	67%	COMPACT BASALT	
11.00	12.50	ROCK				41 to 52	122	81%	76	51%	AMYGDALOIDAL BASALT	
12.50	14.00	ROCK				53 to 59	132	88%	192	88%	AMYGDALOIDAL BASALT	
14.00	15.50	ROCK				60 to 66	137	91%	130	87%	AMYGDALOIDAL BASALT	
15.50	17.00	ROCK				67 to 71	148	99%	146	97%	AMYGDALOIDAL BASALT	
17.00	18.50	ROCK				72 to 77	148	99%	145	97%	COMPACT BASALT	
18.50	20.00	ROCK				78 to 83	149	99%	149	99%	COMPACT BASALT	
20.00	21.50	ROCK				84 to 92	149	99%	139	93%	AMYGDALOIDAL BASALT	
21.50	23.00	ROCK				93 to 98	148	99%	148	99%	AMYGDALOIDAL BASALT	
23.00	24.50	ROCK				99 to 106	148	99%	140	93%	AMYGDALOIDAL BASALT	
24.50	26.00	ROCK				107 to 110	148	99%	148	99%	COMPACT BASALT	
26.00	27.50	ROCK				111 to 116	149	99%	149	99%	COMPACT BASALT	
27.50	29.00	ROCK				117 to 121	149	99%	149	99%	COMPACT BASALT	
29.00	30.00	ROCK				122 to 128	99	99%	99	99%	COMPACT BASALT	
Prepared By :		Checked By :				Approved By :						
												

Monarch Surveyors & Engineering Consultant Pvt. Ltd.

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Lab Observation Log Sheet

Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT

Location :

Bore Hole No. :

(CH. 13950)

Type Of Boring : ROTARY DRILLING

Depth : 30.00 M.

Dia. Of Boring : 100 MM.

Water Table : 4.50 M.

Ground Surface Level : 530.822

Casing : 4.00 M.

Co-Ordinates : Easting : 379711.588

Date Started : 14.08.2017

Northing : 2048295.862

Date Completed : 24.08.2017

Sampling		SPT Details					Core Details				Description Of Strata
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD		
From	To						cm	%	cm	%	
0.00	2.00	DS 1									SANDY CLAY
3.50	4.10	SPT 1	11	15	24	39					SANDY CLAY
5.00	5.10	SPT 2	10	--	--	R					DISINTEGRATED WEATHERED ROCK
			52								
6.50	6.60	SPT 3	10	--	--	R					DISINTEGRATED WEATHERED ROCK
			52								
6.50	8.00	DWR									DISINTEGRATED WEATHERED ROCK
8.00	9.50	ROCK				1 to 9	113	75%	88	59%	COMPACT BASALT
9.50	11.00	ROCK				10 to 17	128	85%	106	71%	COMPACT BASALT
11.00	12.50	ROCK				18 to 20	127	85%	127	85%	AMYGDALOIDAL BASALT
12.50	14.00	ROCK				21 to 23	128	85%	128	85%	AMYGDALOIDAL BASALT
14.00	15.50	ROCK				24 to 28	132	88%	132	88%	AMYGDALOIDAL BASALT
15.50	17.00	ROCK				29 to 31	133	89%	133	89%	AMYGDALOIDAL BASALT
17.00	18.50	ROCK				32 to 35	133	89%	133	89%	COMPACT BASALT
18.50	20.00	ROCK				36 to 38	137	91%	137	91%	COMPACT BASALT
20.00	21.50	ROCK				39 to 42	140	93%	134	89%	COMPACT BASALT
21.50	23.00	ROCK				43 to 45	139	93%	132	88%	COMPACT BASALT
23.00	24.50	ROCK				46 to 50	144	96%	144	96%	AMYGDALOIDAL BASALT
24.50	26.00	ROCK				51 to 56	144	96%	144	96%	AMYGDALOIDAL BASALT
26.00	27.50	ROCK				57 to 61	145	97%	145	97%	AMYGDALOIDAL BASALT
27.50	29.00	ROCK				62 to 67	144	96%	144	96%	AMYGDALOIDAL BASALT
29.00	30.00	ROCK				68 to 71	99	99%	99	99%	AMYGDALOIDAL BASALT

Prepared By :

Checked By :

Approved By :


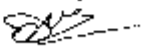
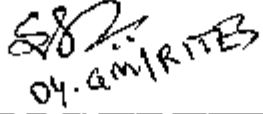
Pradyot Chavan

[Signature]

[Signature]
PT. AMIRITES

Monarch Surveyors & Engineering Consultant Pvt. Ltd.


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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location : <u>Surva Shiksha Abhiyan, Kalyani</u>						Bore Hole No. : (CHAINAGE : 14075)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 2.50 M.						
Ground Surface Level : <u>553.639</u>						Casing : 10.00 M.						
Co-Ordinates : Easting : <u>379615.870</u>						Date Started : 01.07.2017						
Northing : <u>2058214.316</u>						Date Completed : 06.07.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm		%	
0.00	2.00	DS 1									SANDY CLAY	
3.00	3.50	SPT 1	7	8	8	16					SANDY CLAY	
4.50	5.10	SPT 2	7	8	8	16					SANDY CLAY	
5.00	6.60	SPT 3	8	9	9	18					SANDY CLAY	
7.00	7.50	DWR									DISINTEGRATED WEATHERED ROCK	
7.50	9.00	DWR									DISINTEGRATED WEATHERED ROCK	
9.00	10.50	ROCK					1 to 8	46	31%	14	9%	FRACTURED COMPACT BASALT
10.50	12.00	ROCK					9 to 11	107	71%	107	71%	COMPACT BASALT
12.00	13.50	ROCK					12 to 16	122	81%	112	75%	COMPACT BASALT
13.50	15.00	ROCK					17 to 21	115	77%	115	77%	AMYGDALOIDAL BASALT
15.00	16.50	ROCK					22 to 23	133	89%	133	89%	AMYGDALOIDAL BASALT
16.50	18.00	ROCK					24 to 32	116	77%	87	58%	AMYGDALOIDAL BASALT
18.00	19.50	ROCK					33 to 37	136	91%	136	91%	AMYGDALOIDAL BASALT
19.50	21.00	ROCK					38 to 39	129	86%	129	86%	AMYGDALOIDAL BASALT
21.00	22.50	ROCK					40 to 46	135	90%	135	90%	AMYGDALOIDAL BASALT
22.50	24.00	ROCK					47 to 54	130	87%	117	78%	AMYGDALOIDAL BASALT
24.00	25.50	ROCK					55 to 59	144	96%	144	96%	AMYGDALOIDAL BASALT
25.50	27.00	ROCK					60 to 68	137	91%	136	77%	AMYGDALOIDAL BASALT
27.00	28.50	ROCK					69 to 79	145	97%	139	93%	AMYGDALOIDAL BASALT
28.50	30.00	ROCK					80 to 90	140	93%	131	87%	AMYGDALOIDAL BASALT
Prepared By :		Checked By :				Approved By :						
						 DY. GM/RITES						

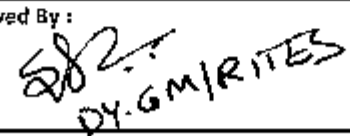
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Lab Observation Log Sheet												
Project : GEOTECHNICAL INVESTIGATION ALONG BOTH THE CORRIDORS FOR PUNE METRO PROJECT												
Location :						Bore Hole No. : (CHAINAGE : 14100)						
Type Of Boring : ROTARY DRILLING						Depth : 30.00 M.						
Dia. Of Boring : 100 MM.						Water Table : 8.70 M.						
Ground Surface Level : 552.351						Casing : 7.00 M.						
Co-Ordinates : Easting : 379667.602						Date Started : 17.08.2017						
Northing : 7038156.578						Date Completed : 22.08.2017						
Sampling		SPT Details				Core Details				Description Of Strata		
Depth (mt.)	Type Of Sample	15 cm	30 cm	45 cm	'N' Value	No. Of Pieces	CR		RQD			
From	To						cm	%	cm	%		
0.00	2.00	OS 1									FILLING MATERIAL	
2.00	3.50	ROCK				1 to 3	13	9%	N/L	NIL	FRACTURED AMYGDALOIDAL BASALT	
3.50	5.00	ROCK				4 to 12	38	25%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT	
5.00	6.50	ROCK				13 to 17	26	17%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT	
6.50	8.00	ROCK				18 to 25	90	60%	49	33%	FRACTURED AMYGDALOIDAL BASALT	
8.00	9.50	ROCK				26 to 34	57	38%	31	21%	FRACTURED AMYGDALOIDAL BASALT	
9.50	11.00	ROCK				35 to 42	43	29%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT	
11.00	12.50	ROCK				43 to 47	28	19%	NIL	NIL	FRACTURED AMYGDALOIDAL BASALT	
12.50	14.00	ROCK				48 to 56	83	55%	67	45%	AMYGDALOIDAL BASALT	
14.00	15.50	ROCK				57 to 67	109	73%	97	65%	COMPACT BASALT	
15.50	17.00	ROCK				68 to 72	128	85%	128	85%	COMPACT BASALT	
17.00	18.50	ROCK				73 to 78	131	87%	131	87%	COMPACT BASALT	
18.50	20.00	ROCK				79 to 84	138	92%	134	89%	AMYGDALOIDAL BASALT	
20.00	21.50	ROCK				85 to 93	136	91%	122	81%	AMYGDALOIDAL BASALT	
21.50	23.00	ROCK				94 to 99	127	85%	127	85%	AMYGDALOIDAL BASALT	
23.00	24.50	ROCK				100 to 106	124	83%	124	83%	AMYGDALOIDAL BASALT	
24.50	25.00	ROCK				107 to 110	129	86%	129	86%	AMYGDALOIDAL BASALT	
26.00	27.50	ROCK				111 to 119	149	99%	143	95%	AMYGDALOIDAL BASALT	
27.50	29.00	ROCK				120 to 126	140	93%	140	93%	AMYGDALOIDAL BASALT	
29.00	30.00	ROCK				127 to 130	90	90%	90	90%	AMYGDALOIDAL BASALT	

Prepared By : 
Prajot Chavan

Checked By : 

Approved By : 
DY. GM/RITES

Monarch Surveyors & Engineering Consultant Pvt. Ltd.

3, Rujeta, 67, Panmala, Sinhgad Road, Pune, Maharashtra India - 411030, PH: +91, 020-24330432, 24330246, 24330071

Annexure-2

Lab Test Results

On Rock



NABL Accredited Lab

TEST REPORT

Test Order/ Report No: BVIPL: ROCK: 25941C/191/8/2017
Date of Receipt: 02-08-2017

Date: 08-08-2017
Page 1 of 3

Creations Engineers Pvt. Ltd.
5, Staff Colony, Sector 27, PCNT,
Nigdi, Pune-411044.

TEST REPORT ON ROCK

Source of sample	:	Sample supplied by the customer.
Number of sample tested	:	28(Twenty Eight)
Customer's Reference	:	CEPL/Pune Metro /2017-18/212, dtd.28.07.2017
Project*	:	Agriculture College Metro Depot
Lab Reference number	:	2017-AUG-240126
Condition of Sample	:	Satisfactory
Period of Test	:	02/08/2017 to 07/08/2017
Technical Reference	:	IS 9143: 1979-RA 2011, IS 13030:1991 –RA 2016.

TEST RESULTS:

As per Attached Annexure.

The test marked with an # is not accredited by NABL.

Note:

1. The results relate only to the items tested.
2. Report shall not be reproduced except in full, without the written approval of the lab.
3. Any correction invalidates this report.

For **Bureau Veritas (India) Pvt Ltd**
Construction Services Laboratory



Dinesh Burde

Manager - Lab
Authorised Signatory

SOIL/W620

UGC-02 - Corrigendum III - Annexure 5
Revised GFR



ANNEXURE

Test Order/Report No.BVIPL:ROCK: 25941C/191/8/2017

DATE: 08.08.17

Lab Reference Number : 2017/AUG/240126

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Sr.No.	Chainage in m	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	10400A	3.00-4.50	17	5.43	11.13	2.05	----	Soaked	23.16	42.58	187.44	2.40	5.40	2.25	2.56	----
2	10400A	7.50-9.00	43	5.44	11.27	2.07	----	Soaked	23.26	49.48	216.96	2.46	4.73	1.92	2.59	----
3	10400A	12.00-13.50	73	5.45	11.24	2.06	----	Soaked	23.33	68.30	298.55	2.53	3.86	1.53	2.63	----
4	10400A	16.50-18.00	84	5.45	11.08	2.03	----	Soaked	23.32	85.36	373.32	2.63	2.38	0.91	2.67	----
5	10400A	21.00-22.50	94	5.44	11.18	2.06	----	Soaked	23.25	219.54	962.86	2.81	0.58	0.21	2.74	----
6	10400A	25.50-27.00	102	5.43	11.01	2.03	----	Soaked	23.13	88.16	388.65	2.54	2.87	1.13	2.62	----
7	10600A	3.00-4.50	10	5.79	11.16	1.93	0.99	Soaked	26.34	154.58	592.47	2.60	2.88	1.11	2.65	----
8	10600A	6.00-7.50	24	5.44	11.46	2.11	----	Soaked	23.26	58.08	254.64	2.42	4.65	1.92	2.58	----
9	10600A	13.50-15.00	40	5.46	11.18	2.05	----	Soaked	23.40	59.82	260.66	2.47	3.50	1.42	2.54	VEINS OBSERVED
10	10600A	18.00-19.50	52	5.46	11.29	2.07	----	Soaked	23.38	211.74	923.56	2.82	0.64	0.23	2.79	----
11	10600A	22.50-24.00	70	5.46	11.39	2.08	----	Soaked	23.45	185.88	808.14	2.78	0.86	0.31	2.73	----
12	10600A	27.00-28.50	80	5.47	11.13	2.03	----	Soaked	23.52	109.54	475.00	2.60	2.18	0.84	2.66	----
13	11300	1.50-3.00	17	5.45	11.26	2.07	----	Soaked	23.32	162.18	709.03	2.78	0.90	0.32	2.73	----
14	11300	7.50-3.00	38	5.44	11.26	2.07	----	Soaked	23.24	28.52	125.15	2.41	6.13	2.54	2.57	VEINS OBSERVED
15	11300	12.00-13.50	63	5.34	11.26	2.11	----	Soaked	22.39	144.30	657.12	2.65	1.79	0.68	2.70	----
16	11300	18.00-19.50	83	5.43	11.33	2.09	----	Soaked	23.12	85.26	375.98	2.59	4.14	1.60	2.62	VEINS OBSERVED
17	11300	22.50-24.00	97	5.40	11.36	2.10	----	Soaked	22.94	166.14	738.45	2.77	1.04	0.38	2.78	----
18	11300	27.00-28.50	109	5.41	11.28	2.09	----	Soaked	22.96	72.04	319.92	2.47	4.34	1.75	2.58	----

Prepared By



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ANNEXURE

Test Order/Report No.BVIPL:ROCK: 25941C/191/8/2017

DATE: 08.08.17

Lab Reference Number : 2017/AUG/240126

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Sr.No.	Chainage in m	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
19	11025B	4.50-6.00	15	5.40	8.04	1.49	0.92	Soaked	22.94	70.38	287.87	2.65	2.54	0.96	2.72	VEINS OBSERVED
20	11025B	7.50-9.00	53	5.44	8.51	1.56	0.93	Soaked	23.27	143.30	584.03	2.67	1.94	0.73	2.70	----
21	11025B	10.50-12.00	79	5.44	11.31	2.08	----	Soaked	23.24	159.82	701.11	2.70	1.64	0.61	2.73	----
22	11025B	16.50-18.00	106	5.42	11.25	2.08	----	Soaked	23.04	36.40	161.10	2.43	9.37	3.86	2.58	----
23	11025B	22.50-24.00	136	5.44	11.25	2.07	----	Soaked	23.23	98.12	430.63	2.67	2.50	0.94	2.70	----
24	11025B	27.00-28.50	151	5.43	11.04	2.03	----	Soaked	23.17	38.78	170.68	2.62	4.08	1.56	2.65	----
25	11700	3.00-4.50	05	5.47	11.14	2.04	----	Soaked	23.46	48.64	211.41	2.42	6.57	2.71	2.55	----
26	11700	6.00-7.50	15	5.47	11.35	2.08	----	Soaked	23.50	99.82	433.11	2.46	4.96	2.01	2.56	----
27	11700	9.00-10.50	23	5.48	11.28	2.06	----	Soaked	23.57	85.06	367.95	2.53	3.50	1.38	2.61	----
28	11700	13.50-15.00	34	5.47	11.31	2.07	----	Soaked	23.51	68.04	295.09	2.45	5.39	2.20	2.55	----

Prepared By

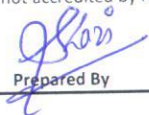
Checked By




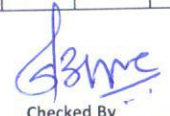
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Revised GFR

<div style="text-align: center;">  ANNEXURE </div>																	
Test Order/Report No.BVIPL:ROCK: 25941C/2231/5/2017															DATE: 30.05.2017		
Lab Reference Number : 2017/MAY/233226															Page 2/3		
Sr. No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	11450	BH - U2	5.50-7.00	10	5.43	8.60	1.58	0.94	Soaked	23.16	39.54	163.64	2.59	5.74	2.21	2.64	VEINS OBSERVED
2		BH - U2	7.00-8.50	21	5.43	11.55	2.13	----	Soaked	23.14	142.46	627.76	2.60	2.08	0.80	2.67	----
3		BH - U2	11.50-13.00	38	5.45	11.50	2.11	----	Soaked	23.30	71.00	310.77	2.53	2.77	1.09	2.60	----
4		BH - U2	16.00-17.50	65	5.43	11.34	2.09	----	Soaked	23.20	56.80	249.68	2.51	5.00	1.99	2.58	----
5		BH - U2	26.50-28.00	108	5.35	11.48	2.15	----	Soaked	22.44	177.12	804.82	2.74	0.79	0.29	2.75	----
6		BH - U2	29.50-30.00	114	5.36	11.37	2.12	----	Soaked	22.54	94.48	427.36	2.65	2.92	1.11	2.69	----
7	11550	BH - U4	3.50-5.00	16	5.46	8.22	1.51	0.92	Soaked	23.41	98.82	395.99	2.43	4.78	1.97	2.56	----
8		BH - U4	11.50-13.00	29	5.46	8.26	1.51	0.92	Soaked	23.41	133.16	533.63	2.65	2.55	0.96	2.70	----
9		BH - U4	15.50-17.00	56	5.44	11.43	2.10	----	Soaked	23.27	65.28	286.10	2.46	5.18	2.11	2.57	----
10		BH - U4	18.50-20.00	72	5.42	11.32	2.09	----	Soaked	23.10	94.02	415.02	2.56	4.21	1.65	2.59	----
11		BH - U4	23.00-24.50	96	5.45	11.20	2.06	----	Soaked	23.31	91.50	400.25	2.61	4.65	1.78	2.64	----
12		BH - U4	27.50-29.00	111	5.43	11.43	2.10	----	Soaked	23.19	157.18	691.27	2.67	1.61	0.60	2.72	----
13	11900	BH - U11	6.00-7.50	17	5.40	11.31	2.09	----	Soaked	22.92	66.94	297.75	2.51	4.35	1.73	2.59	----
14		BH - U11	9.00-10.50	26	5.46	11.58	2.12	----	Soaked	23.39	83.14	362.41	2.50	4.02	1.60	2.57	----
15		BH - U11	15.00-16.50	48	5.41	11.31	2.09	----	Soaked	22.97	109.96	488.20	2.53	3.31	1.31	2.60	----
16		BH - U11	18.00-19.50	64	5.40	11.40	2.11	----	Soaked	22.93	106.46	473.33	2.54	3.87	1.52	2.59	----
17		BH - U11	24.00-25.50	85	5.40	11.28	2.09	----	Soaked	22.89	64.30	286.45	2.42	3.15	1.30	2.58	----
18		BH - U11	27.00-28.50	101	5.40	11.35	2.10	----	Soaked	22.91	99.66	443.59	2.59	3.37	1.30	2.63	----


The test marked with an # are not accredited by NABL.


Prepared By

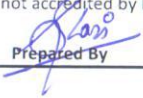




Checked By

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Revised GFR

 ANNEXURE																	
Test Order/Report No.BVIPL:ROCK: 25941C/2231/5/2017															DATE: 30.05.2017		
Lab Reference Number : 2017/MAY/233226															Page 3/3		
Sr.No.	Location	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
19	12000	BH - U13	3.00-4.50	11	5.39	11.65	2.16	----	Soaked	22.81	68.04	304.12	2.54	3.79	1.49	2.60	----
20		BH - U13	7.50-9.00	21	5.39	11.09	2.06	----	Soaked	22.84	119.30	532.62	2.68	1.26	0.47	2.71	----
21		BH - U13	12.00-13.50	47	5.41	11.33	2.09	----	Soaked	23.01	91.30	404.68	2.62	2.81	1.07	2.68	----
22		BH - U13	16.50-18.00	66	5.40	11.45	2.12	----	Soaked	22.88	214.84	957.32	2.69	1.23	0.46	2.73	----
23		BH - U13	21.00-22.50	80	5.36	11.40	2.12	----	Soaked	22.60	101.50	457.86	2.60	3.61	1.39	2.65	----
24		BH - U13	28.50-30.00	108	5.37	11.56	2.15	----	Soaked	22.67	128.02	575.81	2.63	2.75	1.05	2.66	----

The test marked with an # are not accredited by NABL.

Prepared By: 

Checked By: 



UGC-02 - Corrigendum III - Annexure 5

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ANNEXURE

Test Order/Report No.BVIPL:ROCK: 25941C/116/6/2017

DATE: 10.06.2017

Lab Reference Number : 2017/JUNE/234197

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Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	11600	BH - U5	4.00-5.50	09	5.40	8.57	1.59	0.94	Soaked	22.91	---	---	2.48	---	---	2.65	Veins Observed, Disintegrated in Water When soaked
2		BH - U5	7.00-8.50	33	5.46	11.34	2.08	----	Soaked	23.43	83.82	364.87	2.43	4.09	1.68	2.61	----
3		BH - U5	10.00-11.50	54	5.47	11.50	2.10	----	Soaked	23.47	65.48	284.48	2.45	5.22	2.13	2.61	----
4		BH - U5	13.00-14.50	67	5.47	11.40	2.09	----	Soaked	23.47	68.00	295.50	2.34	7.87	3.36	2.58	----
5		BH - U5	23.50-25.00	106	5.42	11.67	2.15	----	Soaked	23.05	57.68	255.19	2.46	8.60	3.50	2.63	----
6		BH - U5	26.50-28.00	126	5.39	8.80	1.63	0.95	Soaked	22.84	73.42	311.43	2.46	10.00	4.07	2.60	----
7	16380	---	5.00-6.50	05	5.44	11.30	2.08	----	Soaked	23.27	62.52	273.93	2.47	3.97	1.60	2.62	----
8		---	8.00-9.50	15	5.48	11.21	2.05	----	Soaked	23.59	108.06	467.13	2.67	2.58	0.97	2.73	Veins Observed
9		---	12.50-14.00	42	5.47	11.11	2.03	----	Soaked	23.53	40.74	176.56	2.41	5.73	2.38	2.59	----
10		---	18.50-20.00	63	5.43	8.37	1.54	0.93	Soaked	23.16	60.12	246.15	2.39	3.90	1.63	2.58	----
11		---	21.50-23.00	69	5.42	11.28	2.08	----	Soaked	23.06	85.98	380.19	2.35	6.39	2.72	2.57	----
12		---	26.00-27.50	84	5.43	11.36	2.09	----	Soaked	23.16	47.60	209.59	2.32	10.58	4.56	2.58	----
13	16450	---	6.00-7.50	04	5.49	11.56	2.11	----	Soaked	23.65	72.60	313.02	2.41	4.85	2.01	2.59	----
14		---	10.50-12.00	22	5.48	11.35	2.07	----	Soaked	23.59	138.96	600.63	2.62	2.57	0.98	2.69	----
15		---	13.50-15.00	56	5.39	11.55	2.14	----	Soaked	22.82	79.96	357.36	2.59	2.90	1.12	2.65	----
16		---	19.50-21.00	78	5.38	11.60	2.16	----	Soaked	22.75	79.54	356.47	2.40	6.36	2.65	2.58	----
17		---	22.50-24.00	93	5.38	11.42	2.12	----	Soaked	22.73	60.60	271.91	2.37	4.96	2.10	2.56	----
18		---	27.00-28.50	111	5.38	8.88	1.65	0.95	Soaked	22.73	40.14	171.06	2.33	6.12	2.62	2.55	----

Prepared By

Checked By



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ANNEXURE

Test Order/Report No.BVIPL:ROCK: 25941C/580/6/2017

DATE: 13.06.2017

Lab Reference Number : 2017/JUNE/234657

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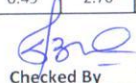
Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	16625	---	10.00-11.50	03	5.39	11.19	2.08	----	Soaked	22.78	163.72	732.88	2.82	1.57	0.56	2.76	VEINS OBSERVED
2		---	14.50-16.00	34	5.39	11.65	2.16	----	Soaked	22.79	102.88	460.39	2.55	3.01	1.18	2.63	----
3		---	19.00-20.50	53	5.38	11.24	2.09	----	Soaked	22.71	183.74	825.00	2.64	2.15	0.81	2.67	----
4		---	22.00-23.50	63	5.39	10.78	2.00	----	Soaked	22.85	104.18	464.83	2.37	3.16	1.33	2.58	----
5		---	25.00-26.50	80	5.37	11.29	2.10	----	Soaked	22.68	72.38	325.49	2.43	6.01	2.47	2.60	----
6		---	28.00-29.50	88	5.39	11.46	2.13	----	Soaked	22.79	99.02	443.15	2.59	4.01	1.55	2.66	----
7	11400	BH - U1	7.00-8.50	32	5.37	10.01	1.86	0.98	Soaked	22.65	97.52	430.28	2.35	2.20	0.94	2.57	----
8		BH - U1	8.50-10.00	37	5.45	9.10	1.67	0.95	Soaked	23.34	128.38	532.78	2.55	5.03	1.97	2.60	----
9		BH - U1	14.50-16.00	57	5.40	11.17	2.07	----	Soaked	22.91	71.08	316.36	2.46	3.30	1.34	2.60	----
10		BH - U1	19.00-20.50	79	5.45	11.41	2.09	----	Soaked	23.32	69.18	302.54	2.51	5.86	2.34	2.59	----
11		BH - U1	23.50-25.00	97	5.43	11.23	2.07	----	Soaked	23.13	121.10	533.97	2.71	1.07	0.40	2.71	----
12		BH - U1	28.00-29.50	110	5.44	11.26	2.07	----	Soaked	23.23	171.26	751.90	2.81	0.60	0.21	2.76	----
13	12850	BH - U30	4.50-6.00	18	5.44	11.01	2.02	----	Soaked	23.24	78.78	345.64	2.39	5.02	2.10	2.57	----
14		BH - U30	6.00-7.50	33	5.45	11.01	2.02	----	Soaked	23.33	104.58	457.02	2.54	5.88	2.31	2.62	----
15		BH - U30	10.50-12.00	41	5.45	8.22	1.51	0.91	Soaked	23.35	36.74	146.01	2.09	15.07	7.21	2.56	----
16		BH - U30	16.50-18.00	69	5.45	11.35	2.08	----	Soaked	23.33	103.06	450.43	2.59	3.43	1.32	2.66	----
17		BH - U30	22.50-24.00	87	5.45	11.06	2.03	----	Soaked	23.31	78.44	343.18	2.50	2.97	1.19	2.60	----
18		BH - U30	27.00-28.50	103	5.45	11.01	2.02	----	Soaked	23.33	105.98	463.22	2.49	5.05	2.03	2.59	----

Prepared By

Checked By




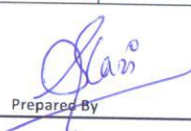
UGC-02 - Corrigendum III - Annexure 5
Revised GFR


<div> BUREAU OF VERIFICATION & CALIBRATION INDIA</div> <div>ANNEXURE</div>																	
Test Order/Report No.BVIPL:ROCK: 25941C/580/6/2017															DATE: 13.06.2017		
Lab Reference Number : 2017/JUNE/234657															Page 3 of 3		
Sr.No.	Location	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
19	13000	BH - U33	5.00-6.00	17	5.45	11.56	2.12	----	Soaked	23.29	81.30	355.94	2.54	4.59	1.81	2.61	----
20		BH - U33	7.50-9.00	44	5.44	11.49	2.11	----	Soaked	23.23	111.82	490.81	2.51	2.33	0.93	2.57	----
21		BH - U33	10.50-12.00	53	5.44	8.45	1.55	0.93	Soaked	23.23	125.12	510.87	2.69	1.58	0.59	2.71	----
22		BH - U33	16.50-18.00	74	5.39	11.32	2.10	----	Soaked	22.80	107.38	480.20	2.37	5.08	2.14	2.57	----
23		BH - U33	21.00-22.50	93	5.44	11.23	2.07	----	Soaked	23.21	94.50	415.20	2.46	3.98	1.62	2.62	----
24		BH - U33	28.50-30.00	114	5.38	11.53	2.14	----	Soaked	22.74	154.48	692.85	2.69	1.31	0.49	2.70	----
<div><div> Prepared By</div><div> Checked By</div></div>																	

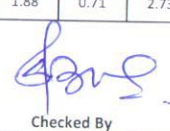


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<div style="text-align: center;">  ANNEXURE </div>																	
Test Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017															DATE: 26.07.2017		
Lab Reference Number : 2017-JUL-238476															Page 2/8		
Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (kg/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	11500	U3	6.50-8.00	23	5.46	8.49	1.55	0.93	Soaked	23.42	54.86	222.14	2.48	2.40	0.97	2.60	....
2		U3	9.50-11.00	33	5.46	11.10	2.03	----	Soaked	23.43	85.70	373.05	2.50	1.75	0.70	2.61	....
3		U3	12.50-14.00	49	5.44	11.03	2.03	----	Soaked	23.26	85.68	375.66	2.55	3.70	1.45	2.62	....
4		U3	18.50-20.00	78	5.43	11.41	2.10	----	Soaked	23.19	152.10	668.68	2.62	1.61	0.61	2.69	....
5		U3	23.00-24.50	97	5.44	11.25	2.07	----	Soaked	23.23	58.04	254.76	2.49	3.44	1.38	2.59	....
6		U3	27.50-29.00	114	5.43	11.18	2.06	----	Soaked	23.20	100.62	442.30	2.56	3.08	1.20	2.64	....
7	11650	U6	5.50-6.50	10	5.45	11.18	2.05	----	Soaked	23.35	46.56	203.31	2.53	4.48	1.77	2.65	....
8		U6	10.50-12.00	33	5.46	8.19	1.50	0.92	Soaked	23.38	52.66	211.34	2.53	4.84	1.92	2.62	....
9		U6	18.00-19.50	72	5.35	11.11	2.08	----	Soaked	22.44	52.90	240.40	2.52	3.88	1.54	2.60	....
10		U6	22.50-24.00	96	5.43	11.43	2.10	----	Soaked	23.19	49.00	215.43	2.62	3.12	1.19	2.68	....
11		U6	28.50-30.00	129	5.42	11.17	2.06	----	Soaked	23.04	68.82	304.57	2.62	2.35	0.90	2.66	....
12	11700	U7	7.50-9.00	15	5.46	11.29	2.07	----	Soaked	23.39	90.76	395.63	2.54	3.42	1.35	2.62	....
13		U7	10.50-12.00	32	5.44	11.42	2.10	----	Soaked	23.22	140.14	615.50	2.69	2.52	0.94	2.74	....
14		U7	13.50-15.00	37	5.44	11.27	2.07	----	Soaked	23.21	164.28	721.70	2.68	0.53	0.20	2.72	....
15		U7	18.00-19.50	57	5.35	11.16	2.09	----	Soaked	22.48	121.30	550.25	2.64	2.31	0.88	2.69	....
16		U7	21.00-22.50	70	5.32	11.26	2.12	----	Soaked	22.25	112.50	515.49	2.62	3.52	1.34	2.65	....
17		U7	25.50-27.00	91	5.35	11.33	2.12	----	Soaked	22.47	56.98	258.56	2.49	2.84	1.14	2.57	....
18	11750	U8	6.00-7.50	10	5.44	8.39	1.54	0.93	Soaked	23.20	180.92	739.43	2.75	0.96	0.35	2.78	....
19		U8	9.00-10.50	21	5.41	10.87	2.01	----	Soaked	23.00	55.56	246.36	2.41	2.40	1.00	2.59	....
20		U8	12.00-13.50	34	5.40	11.25	2.08	----	Soaked	22.92	46.20	205.52	2.39	6.92	2.90	2.57
21		U8	16.50-18.00	50	5.41	11.41	2.11	----	Soaked	22.96	142.94	634.78	2.65	1.88	0.71	2.73


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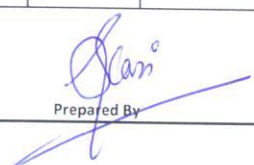
UGC-02 - Corrigendum III - Annexure 5
Revised GFR


ANNEXURE																	
Test: Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017															DATE: 26.07.2017		
Lab Reference Number : 2017-JUL-238476															Page 3/8		
Sr No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (lg/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
22	11750	U8	22.50-24.00	72	5.37	8.01	1.49	0.92	Soaked	22.66	42.38	175.48	2.54	3.37	1.33	2.60	----
23		U8	27.00-28.50	81	5.42	11.27	2.08	----	Soaked	23.08	78.60	347.30	2.59	5.15	1.99	2.64	----
24	12750	U28	3.00-4.50	07	5.49	11.72	2.14	----	Soaked	23.65	87.36	376.66	2.58	3.56	1.38	2.62	----
25		U28	7.50-9.00	27	5.42	11.25	2.08	----	Soaked	23.07	122.90	543.34	2.59	1.24	0.48	2.63	----
26		U28	13.50-15.00	44	5.43	11.32	2.08	----	Soaked	23.14	111.22	490.19	2.62	3.82	1.45	2.70	----
27		U28	18.00-19.50	54	5.42	11.06	2.04	----	Soaked	23.05	44.68	197.67	2.44	5.72	2.34	2.57	----
28		U28	22.50-24.00	70	5.42	11.39	2.10	----	Soaked	23.06	95.54	422.54	2.47	3.18	1.29	2.59	----
29		U28	27.00-28.50	86	5.41	11.39	2.10	----	Soaked	23.03	171.84	761.01	2.73	1.36	0.50	2.79	----
30		U29	2.00-3.50	04	5.42	11.46	2.11	----	Soaked	23.09	42.08	185.83	2.42	5.81	2.40	2.57	----
31	12800	U29	9.50-11.00	31	5.43	11.34	2.09	----	Soaked	23.12	77.42	341.49	2.44	4.47	1.83	2.60	----
32		U29	12.50-14.00	39	5.45	11.45	2.10	----	Soaked	23.30	129.32	565.86	2.61	0.75	0.29	2.68	----
33		U29	18.50-20.00	53	5.44	8.54	1.57	0.93	Soaked	23.26	50.54	206.09	2.47	3.99	1.62	2.59	----
34		U29	21.50-23.00	72	5.42	11.32	2.09	----	Soaked	23.04	117.82	521.46	2.53	3.39	1.34	2.60	----
35		U29	27.50-29.00	86	5.44	11.27	2.07	----	Soaked	23.21	89.06	391.22	2.47	6.85	2.77	2.58	----
36	12900	U31	4.50-6.00	04	5.39	8.36	1.55	0.93	Soaked	22.81	46.86	194.80	2.40	6.09	2.54	2.57	----
37		U31	9.00-10.50	33	5.46	11.39	2.08	----	Soaked	23.45	115.00	499.98	2.63	2.00	0.76	2.70	----
38		U31	10.50-12.00	43	5.46	11.38	2.08	----	Soaked	23.43	50.26	218.74	2.39	4.53	1.90	2.56	----
39		U31	15.00-16.50	53	5.45	8.40	1.54	0.93	Soaked	23.31	104.80	426.36	2.60	2.75	1.06	2.71	----
40		U31	21.00-22.50	70	5.43	11.28	2.08	----	Soaked	23.12	56.86	250.81	2.40	6.78	2.83	2.58	----
41		U31	27.00-28.50	96	5.44	11.27	2.07	----	Soaked	23.20	79.46	349.25	2.42	3.54	1.46	2.59	----
42	12950	U32	3.50-5.00	13	5.40	11.32	2.10	----	Soaked	22.88	52.32	233.15	2.57	4.04	1.57	2.63	----
43		U32	8.00-9.50	42	5.43	11.49	2.12	----	Soaked	23.14	60.54	266.79	2.41	3.77	1.56	2.58	----
<div>Prepared By </div> <div>Checked By </div>																	

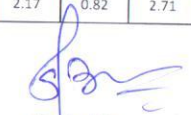


UGC-02 - Corrigendum III - Annexure 5
Revised GFR

<div style="text-align: center;">  ANNEXURE </div>																	
Test Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017																DATE: 26.07.2017	
Lab Reference Number : 2017-JUL-238476																Page 4/8	
Sr No.	Chamage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (kg/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
44	12950	U32	11.00-12.50	52	5.39	11.38	2.11	----	Soaked	22.84	70.28	313.71	2.59	2.80	1.08	2.63	----
45		U32	17.00-18.50	85	5.40	11.21	2.07	----	Soaked	22.94	129.50	575.63	2.65	1.64	0.62	2.71	----
46		U32	21.50-23.00	102	5.44	11.54	2.12	----	Soaked	23.21	66.90	293.95	2.50	3.82	1.53	2.61	----
47		U32	27.50-29.00	124	5.43	11.24	2.07	----	Soaked	23.18	111.58	490.78	2.63	2.18	0.83	2.70	----
48	13050	U34	3.00-4.50	10	5.42	11.39	2.10	----	Soaked	23.07	61.98	273.99	2.56	5.44	2.13	2.62	----
49		U34	7.50-9.00	27	5.38	11.12	2.07	----	Soaked	22.70	83.16	373.58	2.51	2.53	1.01	2.60	----
50		U34	10.50-12.00	33	5.47	11.38	2.08	----	Soaked	23.51	129.12	560.14	2.67	2.55	0.95	2.73	----
51		U34	18.00-19.50	74	5.47	11.39	2.08	----	Soaked	23.52	91.50	396.70	2.60	1.93	0.74	2.68	----
52		U34	21.00-22.50	95	5.42	8.36	1.54	0.93	Soaked	23.05	136.04	559.64	2.61	1.12	0.43	2.72	----
53		U34	27.00-28.50	114	5.42	11.35	2.10	----	Soaked	23.04	73.82	326.66	2.52	3.57	1.42	2.60	----
54	13100	U35	4.50-6.00	02	5.49	11.32	2.06	----	Soaked	23.66	56.04	241.56	2.61	2.14	0.82	2.72	----
55		U35	9.00-10.50	12	5.38	11.33	2.11	----	Soaked	22.72	86.16	386.69	2.68	2.59	0.97	2.77	----
56		U35	12.00-13.50	24	5.40	11.35	2.10	----	Soaked	22.87	34.10	152.05	2.42	6.53	2.70	2.57	----
57		U35	16.50-18.00	56	5.38	11.23	2.09	----	Soaked	22.77	54.86	245.71	2.48	3.56	1.44	2.60	----
58		U35	21.00-22.50	86	5.33	11.11	2.08	----	Soaked	22.33	69.92	319.34	2.51	6.92	2.76	2.62	----
59		U35	25.50-27.00	107	5.39	11.06	2.05	----	Soaked	22.82	63.18	282.37	2.44	4.24	1.73	2.57	----
60	13150	U36	1.50-3.00	03	5.42	11.35	2.09	----	Soaked	23.09	35.94	158.73	2.41	6.23	2.58	2.55	----
61		U36	7.50-9.00	22	5.38	11.34	2.11	----	Soaked	22.71	37.60	168.81	2.47	5.27	2.14	2.58	----
62		U36	10.50-12.00	34	5.41	11.10	2.05	----	Soaked	23.01	49.26	218.33	2.48	5.28	2.13	2.59	----
63		U36	16.50-18.00	70	5.39	11.30	2.10	----	Soaked	22.81	148.10	662.18	2.71	1.95	0.72	2.79	----
64		U36	21.00-22.50	91	5.39	11.29	2.09	----	Soaked	22.82	131.90	589.42	2.66	2.17	0.82	2.71	----


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UGC-02 - Corrigendum III - Annexure 5
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ANNEXURE																	
Test Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017															DATE: 26.07.2017		
Lab Reference Number : 2017-JUL-238476															Page 5/8		
Sr. No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
65	13150	U36	28.50-30.00	129	5.39	11.26	2.09	----	Soaked	22.78	73.22	327.82	2.61	5.43	2.08	2.73	----
66	13200	U37	4.50-6.00	02	5.40	11.19	2.07	----	Soaked	22.93	86.72	385.59	2.54	2.26	0.89	2.61	----
67		U37	9.00-10.50	18	5.43	10.84	2.00	----	Soaked	23.12	87.58	386.29	2.60	3.64	1.40	2.71	----
68		U37	12.00-13.50	30	5.45	11.21	2.06	----	Soaked	23.33	85.30	372.90	2.48	3.69	1.49	2.58	----
69		U37	13.50-15.00	43	5.43	11.17	2.06	----	Soaked	23.12	66.26	292.23	2.44	4.26	1.75	2.56	----
70	14950	---	6.00-7.50	09	5.44	11.08	2.03	----	Soaked	23.27	47.02	206.07	2.41	2.96	1.23	2.59	----
71		---	9.00-10.50	22	5.47	11.02	2.01	----	Soaked	23.52	71.58	310.31	2.50	3.24	1.29	2.62	----
72		---	15.00-16.50	37	5.46	11.17	2.05	----	Soaked	23.41	70.60	307.54	2.59	3.31	1.28	2.63	----
73		---	18.00-19.0	55	5.46	11.18	2.05	----	Soaked	23.41	83.12	362.11	2.63	2.82	1.07	2.70	----
74		---	22.50-24.00	71	5.42	11.24	2.07	----	Soaked	23.10	71.00	313.39	2.62	2.88	1.10	2.68	----
75		---	27.00-28.50	85	5.41	11.04	2.04	----	Soaked	23.00	73.94	327.81	2.54	3.03	1.19	2.61	----
76	15925	---	7.00-8.50	11	5.44	10.86	2.00	----	Soaked	23.22	67.48	296.36	2.52	3.37	1.34	2.59	----
77		---	8.50-10.00	18	5.43	10.85	2.00	----	Soaked	23.17	66.18	291.31	2.61	0.91	0.35	2.66	VEINS OBSERVED
78		---	13.00-14.50	39	5.44	10.92	2.01	----	Soaked	23.25	66.48	291.62	2.45	1.04	0.43	2.59	----
79		---	17.50-19.00	63	5.42	10.88	2.01	----	Soaked	23.11	103.02	454.64	2.60	0.79	0.30	2.69	----
80		---	23.50-25.00	99	5.32	10.87	2.04	----	Soaked	22.25	49.68	227.68	2.52	1.94	0.77	2.62	----
81		---	28.00-29.50	123	5.41	10.20	1.89	0.99	Soaked	22.97	97.98	430.55	2.65	2.87	1.08	2.71	VEINS OBSERVED
82	15975	---	7.00-8.50	18	5.47	11.02	2.02	----	Soaked	23.49	67.28	292.10	2.49	2.29	0.92	2.58	----
83		---	10.00-11.50	30	5.47	11.41	2.09	----	Soaked	23.48	94.76	411.46	2.62	1.42	0.54	2.70	----
84		---	13.00-14.50	44	5.47	11.51	2.10	----	Soaked	23.52	103.28	447.82	2.68	0.87	0.32	2.74	----
85		---	17.50-19.00	60	5.47	11.47	2.10	----	Soaked	23.46	113.20	492.03	2.59	1.98	0.77	2.65	----

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UGC-02 - Corrigendum III - Annexure 5
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ANNEXURE																	
Test Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017															DATE: 26.07.2017		
Lab Reference Number : 2017-JUL-238476															Page 6/8		
Sr No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
86	15975	---	22.00-23.50	77	5.47	11.26	2.06	----	Soaked	23.52	63.88	276.95	2.40	4.91	2.04	2.57	----
87		---	25.00-26.50	88	5.47	11.58	2.12	----	Soaked	23.52	70.86	307.23	2.55	4.55	1.79	2.63	----
88	16025	---	4.50-6.00	10	5.44	11.36	2.09	----	Soaked	23.27	48.08	210.70	2.48	1.55	0.63	2.58	----
89		---	9.00-10.50	28	5.45	11.02	2.02	----	Soaked	23.30	80.08	350.49	2.54	1.52	0.60	2.61	----
90		---	12.00-13.50	54	5.46	11.16	2.05	----	Soaked	23.37	65.26	284.70	2.51	1.17	0.46	2.60	----
91		---	18.00-19.50	73	5.57	11.17	2.01	----	Soaked	24.35	50.92	213.20	2.43	1.45	0.60	2.56	----
92		---	21.00-22.50	88	5.36	11.18	2.08	----	Soaked	22.57	71.30	322.09	2.46	2.61	1.06	2.57	----
93		---	27.00-28.50	113	5.47	11.18	2.05	----	Soaked	23.46	101.10	439.41	2.65	2.75	1.04	2.72	----
94		---	5.00-6.50	05	5.47	11.37	2.08	----	Soaked	23.48	152.58	662.68	2.71	0.43	0.16	2.77	----
95	16075	---	8.00-9.50	21	5.43	11.39	2.10	----	Soaked	23.11	121.34	535.29	2.70	1.89	0.70	2.74	----
96		---	12.50-14.00	45	5.41	11.36	2.10	----	Soaked	22.95	108.20	480.65	2.60	1.98	0.76	2.68	----
97		---	17.00-18.50	57	5.39	11.25	2.09	----	Soaked	22.80	67.68	302.66	2.53	2.84	1.12	2.61	VEINS OBSERVED
98		---	21.50-23.00	76	5.38	11.10	2.07	----	Soaked	22.71	69.50	312.10	2.49	3.78	1.52	2.57	----
99		---	24.50-26.00	87	5.39	11.42	2.12	----	Soaked	22.79	61.16	273.61	2.44	5.03	2.06	2.58	----
100	16125	---	4.50-6.00	15	5.42	11.07	2.04	----	Soaked	23.10	73.64	325.04	2.44	3.18	1.30	2.57	----
101		---	7.50-9.00	27	5.42	8.10	1.49	0.92	Soaked	23.09	43.60	177.15	2.42	5.46	2.26	2.59	----
102		---	10.50-12.00	37	5.46	11.31	2.07	----	Soaked	23.38	90.06	392.87	2.53	2.13	0.84	2.66	----
103		---	16.50-18.00	57	5.41	11.37	2.10	----	Soaked	23.00	125.86	557.97	2.74	2.05	0.75	2.78	----
104		---	21.00-22.50	74	5.42	11.36	2.10	----	Soaked	23.04	102.56	453.92	2.62	2.07	0.79	2.67	----
105		---	25.50-27.00	96	5.47	11.16	2.04	----	Soaked	23.52	48.98	212.34	2.42	5.71	2.36	2.59	----
106	16175	---	9.50-11.00	11	5.26	11.13	2.12	----	Soaked	21.69	71.02	333.82	2.64	4.03	1.53	2.76	----

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ANNEXURE

Test: Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017

Lab Reference Number : 2017-JUL-238476

DATE: 26.07.2017

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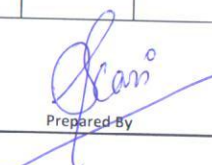
Sr No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
107	16175	---	14.00-15.50	40	5.45	8.24	1.51	0.92	Soaked	23.29	142.20	572.89	2.65	2.43	0.92	2.73	----
108		---	17.00-18.50	53	5.44	11.37	2.09	----	Soaked	23.24	159.52	699.80	2.71	0.77	0.28	2.77	----
109		---	20.00-21.50	66	5.44	11.11	2.04	----	Soaked	23.25	105.50	462.79	2.67	2.07	0.77	2.70	VEINS OBSERVED
110		---	23.00-24.50	74	5.44	10.36	1.91	0.99	Soaked	23.20	125.26	545.04	2.73	1.46	0.54	2.79	----
111		---	27.50-29.00	90	5.44	11.05	2.03	----	Soaked	23.22	54.10	237.54	2.43	4.01	1.65	2.57	----
112	16225	---	13.50-15.00	37	5.40	9.90	1.83	0.98	Soaked	22.90	28.54	124.54	2.53	6.64	2.62	2.62	VEINS OBSERVED
113		---	16.50-18.00	57	5.37	11.55	2.15	----	Soaked	22.66	79.08	355.93	2.62	1.94	0.74	2.67	----
114		---	18.00-19.50	63	5.42	10.92	2.02	----	Soaked	23.03	109.38	484.31	2.61	2.07	0.79	2.65	----
115		---	21.00-22.50	77	5.27	11.34	2.15	----	Soaked	21.83	137.72	643.16	2.72	1.19	0.44	2.77	----
116		---	22.50-24.00	81	5.34	11.23	2.10	----	Soaked	22.40	144.46	657.69	2.66	1.83	0.69	2.72	----
117		---	27.00-28.50	103	5.38	9.84	1.83	0.98	Soaked	22.73	43.62	191.81	2.43	5.66	2.33	2.57	VEINS OBSERVED
118	16275	---	4.50-6.00	05	5.51	8.16	1.48	0.92	Soaked	23.88	33.00	129.63	2.51	7.89	3.14	2.62	----
119		---	10.50-12.00	55	5.52	8.34	1.51	0.92	Soaked	23.94	77.20	302.48	2.44	2.77	1.13	2.61	----
120		---	12.00-13.50	60	5.54	11.16	2.01	----	Soaked	24.12	98.88	418.01	2.59	1.66	0.64	2.65	----
121		---	16.50-18.00	71	5.54	11.30	2.04	----	Soaked	24.07	155.50	658.71	2.72	1.34	0.49	2.77	----
122		---	21.00-22.50	81	5.54	11.37	2.05	----	Soaked	24.09	58.62	248.09	2.40	2.93	1.22	2.58	----
123		---	27.00-28.50	100	5.56	11.63	2.09	----	Soaked	24.27	95.28	400.33	2.64	3.88	1.47	2.75	----
124	16325	---	6.00-7.50	05	5.55	5.82	1.05	0.81	Soaked	24.23	25.54	87.05	2.40	7.18	3.00	2.55	----
125		---	10.50-12.00	24	5.57	11.33	2.04	----	Soaked	24.33	74.72	313.19	2.48	2.30	0.93	2.59	----
126		---	15.00-16.50	37	5.56	11.35	2.04	----	Soaked	24.24	110.04	462.87	2.71	1.76	0.65	2.76	----
127		---	19.50-21.00	50	5.55	11.14	2.01	----	Soaked	24.19	84.38	355.70	2.47	2.86	1.16	2.57	----


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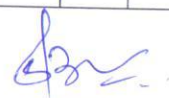
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UGC-02 - Corrigendum III - Annexure 5
Revised GFR


ANNEXURE																	
Test Order/Report No.BVIPL:ROCK: 25941C/1384/7/2017																DATE: 26.07.2017	
Lab Reference Number : 2017-JUL-238476																Page 8/8	
Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
128	16325	---	22.50-24.00	58	5.55	11.20	2.02	----	Soaked	24.20	59.48	250.60	2.41	5.65	2.34	2.55	----
129		---	25.50-27.00	65	5.54	11.31	2.04	----	Soaked	24.13	68.04	287.56	2.48	5.65	2.28	2.58	----
130	16675	---	16.50-18.00	18	5.39	11.12	2.06	----	Soaked	22.84	16.46	73.50	2.50	3.25	1.30	2.63	VEINS OBSERVED
131		---	18.00-19.50	29	5.21	8.98	1.72	0.96	Soaked	21.36	126.62	580.40	2.63	1.64	0.62	2.69	----
132		---	21.00-22.50	37	5.32	11.42	2.14	----	Soaked	22.26	87.68	401.59	2.54	2.00	0.79	2.60	----
133		---	24.00-25.50	46	5.36	11.18	2.09	----	Soaked	22.58	61.14	276.11	2.39	6.21	2.60	2.56	VEINS OBSERVED
134		---	27.00-28.50	54	5.19	11.16	2.15	----	Soaked	21.15	60.28	290.64	2.38	5.76	2.42	2.57	----
135		---	28.50-30.00	63	5.35	11.26	2.10	----	Soaked	22.52	65.26	295.49	2.54	2.67	1.05	2.60	----
136		---	18.00-19.50	12	5.36	11.16	2.08	----	Soaked	22.57	53.58	242.03	2.42	5.73	2.37	2.56	----
137	16725	---	21.00-22.50	20	5.36	11.41	2.13	----	Soaked	22.53	116.08	525.33	2.46	3.38	1.37	2.59	----
138		---	22.50-24.00	29	5.56	11.25	2.02	----	Soaked	24.31	94.98	398.47	2.49	3.49	1.40	2.57	----
139		---	27.00-28.50	38	5.54	11.17	2.01	----	Soaked	24.14	72.34	305.52	2.43	5.54	2.28	2.59	----
140		---	28.50-30.00	44	5.42	11.15	2.06	----	Soaked	23.04	127.68	564.99	2.51	2.69	1.07	2.59	----
141	16760	---	15.00-16.50	20	5.42	8.59	1.59	0.94	Soaked	23.04	51.76	215.34	2.48	3.79	1.53	2.58	----
142		---	18.00-19.50	30	5.43	10.83	2.00	----	Soaked	23.14	38.50	169.67	2.43	5.47	2.25	2.56	----
143		---	19.50-21.00	46	5.39	10.88	2.02	----	Soaked	22.86	46.30	206.57	2.46	4.78	1.95	2.57	----
144		---	24.00-25.50	57	5.46	10.98	2.01	----	Soaked	23.41	92.84	404.45	2.68	0.57	0.21	2.66	VEINS OBSERVED
145		---	25.50-27.00	64	5.49	11.09	2.02	----	Soaked	23.71	86.22	370.80	2.71	1.14	0.42	2.74	VEINS OBSERVED
146		---	27.00-28.50	72	5.49	10.95	2.00	----	Soaked	23.63	61.82	266.75	2.42	2.40	0.99	2.57	----



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NAVI MUMBAI
CTC LAB



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UGC-02 - Corrigendum III - Annexure 5
Revised GFR

 ANNEXURE																	
Test Order/Report No.BVIPL:ROCK: 25941C/1854/7/2017															DATE: 31.07.2017		
Lab Reference Number : 2017-JUL-238955															Page 2/4		
Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	11800	U9	6.00-7.50	05	5.24	10.93	2.09	----	Soaked	21.56	29.70	140.45	2.41	4.04	1.68	2.57	----
2		U9	9.00-10.50	18	5.32	11.27	2.12	----	Soaked	22.27	66.92	306.45	2.46	2.61	1.06	2.59	----
3		U9	13.50-15.00	33	5.33	11.17	2.10	----	Soaked	22.30	36.74	168.00	2.46	3.33	1.35	2.60	----
4		U9	16.50-18.00	48	4.98	10.48	2.11	----	Soaked	19.45	42.16	221.07	2.50	3.77	1.51	2.65	----
5		U9	24.00-25.50	80	5.24	11.11	2.12	----	Soaked	21.53	48.76	230.97	2.65	1.93	0.73	2.70	VEINS OBSERVED
6		U9	28.50-30.00	94	5.30	11.12	2.10	----	Soaked	22.10	91.72	423.16	2.67	1.61	0.60	2.76	----
7	12275	U18	3.50-5.00	09	5.38	8.09	1.50	0.92	Soaked	22.73	93.68	386.66	2.62	2.10	0.80	2.69	----
8		U18	8.00-9.50	33	5.34	11.11	2.08	----	Soaked	22.42	58.94	268.07	2.48	5.16	2.08	2.58	----
9		U18	11.00-12.50	55	5.39	10.95	2.03	----	Soaked	22.82	78.18	349.32	2.42	3.24	1.34	2.54	----
10		U18	15.50-17.00	72	5.38	11.36	2.11	----	Soaked	22.73	97.70	438.38	2.52	2.06	0.82	2.62	----
11		U18	20.00-21.50	79	5.44	11.05	2.03	----	Soaked	23.22	99.64	437.59	2.58	2.61	1.01	2.66	----
12		U18	27.50-29.00	112	5.42	11.19	2.06	----	Soaked	23.09	46.88	207.06	2.48	4.52	1.82	2.57	----
13	12325	U19	3.50-5.00	12	5.57	11.16	2.00	----	Soaked	24.41	143.26	598.47	2.69	2.68	1.00	2.77	----
14		U19	9.50-11.00	47	5.24	11.26	2.15	----	Soaked	21.57	107.92	510.23	2.64	2.86	1.08	2.71	----
15		U19	14.00-15.50	74	5.39	7.91	1.47	0.91	Soaked	22.81	38.06	154.81	2.41	8.86	3.68	2.57	----
16		U19	17.00-18.50	106	5.40	11.11	2.06	----	Soaked	22.94	100.50	446.67	2.58	2.29	0.89	2.65	----
17		U19	23.00-24.50	120	5.46	11.14	2.04	----	Soaked	23.38	118.52	516.95	2.63	2.24	0.85	2.70	----
18		U19	29.00-30.00	147	5.46	11.22	2.06	----	Soaked	23.41	88.48	385.46	2.52	3.24	1.28	2.61	----
19	14050	---	10.50-12.00	09	5.46	7.76	1.42	0.90	Soaked	23.39	36.80	144.42	2.54	3.58	1.41	2.63	----
20		---	12.00-13.50	12	5.44	10.85	2.00	----	Soaked	23.23	87.90	385.85	2.64	1.74	0.66	2.71	----
21		---	16.50-18.00	31	5.43	10.92	2.01	----	Soaked	23.14	93.72	413.04	2.79	0.40	0.14	2.75	VEINS OBSERVED


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Revised GFR

ANNEXURE

Test Order/Report No.BVIPL:ROCK: 25941C/1854/7/2017

DATE: 31.07.2017

Lab Reference Number : 2017-JUL-238955


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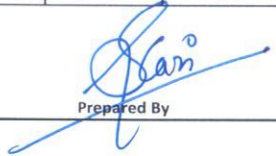
Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
22	14050	---	21.00-22.50	40	5.39	11.13	2.07	----	Soaked	22.81	104.82	468.58	2.58	2.19	0.85	2.62	----
23		---	24.00-25.50	56	5.34	11.06	2.07	----	Soaked	22.43	66.30	301.43	2.58	2.41	0.93	2.60	----
24		---	25.50-27.00	65	5.34	11.03	2.06	----	Soaked	22.42	42.20	191.97	2.55	2.03	0.80	2.61	VEINS OBSERVED
25	14850	---	1.50-3.00	03	5.40	11.00	2.04	----	Soaked	22.88	57.98	258.41	2.56	3.99	1.56	2.60	----
26		---	3.00-4.50	06	5.39	8.02	1.49	0.92	Soaked	22.84	85.36	350.60	2.54	1.85	0.73	2.62	----
27	15500	---	3.50-5.00	02	5.45	11.09	2.04	----	Soaked	23.29	80.66	353.11	2.57	2.21	0.86	2.64	----
28		---	8.00-9.50	14	5.45	10.98	2.01	----	Soaked	23.36	185.16	808.21	2.78	0.90	0.32	2.74	----
29		---	12.50-14.00	29	5.46	11.13	2.04	----	Soaked	23.37	111.96	488.43	2.72	1.81	0.67	2.70	----
30		---	17.00-18.50	39	5.45	10.87	2.00	----	Soaked	23.31	80.72	353.11	2.54	2.35	0.92	2.62	----
31		---	21.50-23.00	57	5.43	11.16	2.05	----	Soaked	23.20	147.36	647.76	2.62	1.36	0.52	2.67	----
32		---	27.50-29.00	79	5.43	11.14	2.05	----	Soaked	23.18	119.88	527.39	2.65	1.92	0.72	2.70	----
33	15550	---	5.00-6.50	12	5.44	8.12	1.49	0.92	Soaked	23.26	50.82	204.93	2.57	4.93	1.92	2.62	----
34		---	8.00-9.50	21	5.39	11.13	2.06	----	Soaked	22.84	125.34	559.69	2.70	1.91	0.71	2.73	----
35		---	12.50-14.00	36	5.44	11.44	2.10	----	Soaked	23.27	56.30	246.71	2.47	5.73	2.32	2.58	----
36		---	18.50-20.00	50	5.44	10.96	2.01	----	Soaked	23.23	80.10	351.61	2.58	2.98	1.15	2.65	----
37		---	21.50-23.00	60	5.42	11.02	2.03	----	Soaked	23.10	185.02	816.81	2.81	0.65	0.23	2.78	----
38		---	27.50-29.00	78	5.44	11.17	2.05	----	Soaked	23.28	78.22	342.62	2.54	3.17	1.25	2.62	----
39	15800	---	2.00-3.50	19	5.41	8.37	1.55	0.93	Soaked	23.02	56.28	231.81	2.52	3.57	1.42	2.61	----
40		---	6.50-8.00	61	5.44	11.16	2.05	----	Soaked	23.20	53.96	237.17	2.46	4.03	1.64	2.58	----
41		---	11.00-12.50	84	5.43	11.12	2.05	----	Soaked	23.17	87.88	386.73	2.48	2.83	1.14	2.59	----
42		---	17.00-18.50	108	5.42	11.14	2.05	----	Soaked	23.08	77.36	341.75	2.55	2.28	0.89	2.64	----


Prepared By

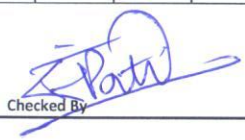
Checked By

UGC-02 - Corrigendum III - Annexure 5
Revised GFR

<div style="text-align: center;">  ANNEXURE </div>																	
Test Order/Report No.BVIPL:ROCK: 25941C/1854/7/2017																DATE: 31.07.2017	
Lab Reference Number : 2017-JUL-238955																Page 4/4	
Sr.No.	Chainage	Bore Hole No.	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
43	15800	---	23.00-24.50	129	5.39	11.03	2.05	----	Soaked	22.83	154.30	689.26	2.62	1.57	0.60	2.68	----
44		---	29.00-30.00	147	5.39	10.95	2.03	----	Soaked	22.85	134.04	598.17	2.60	1.62	0.62	2.64	----
45	15875	---	6.50-8.00	13	5.45	11.28	2.07	----	Soaked	23.30	108.40	474.41	2.48	4.24	1.71	2.59	----
46		---	9.50-11.00	24	5.47	11.13	2.03	----	Soaked	23.52	97.56	422.92	2.60	3.14	1.21	2.66	----
47		---	12.50-14.00	38	5.32	11.28	2.12	----	Soaked	22.26	76.10	348.61	2.47	3.63	1.47	2.57	----
48		---	18.50-20.00	69	5.29	11.19	2.11	----	Soaked	22.01	58.68	271.87	2.49	4.56	1.83	2.59	----
49		---	21.50-23.00	80	5.31	11.14	2.10	----	Soaked	22.12	81.72	376.67	2.51	3.65	1.45	2.60	----
50		---	26.00-27.50	94	5.37	11.15	2.08	----	Soaked	22.63	94.14	424.21	2.57	3.65	1.42	2.59	----
51	17025	---	6.00-7.50	09	5.33	10.98	2.06	----	Soaked	22.30	67.34	307.93	2.59	2.58	1.00	2.62	----
52		---	10.50-12.00	34	5.43	11.03	2.03	----	Soaked	23.14	83.12	366.21	2.48	0.51	0.21	2.56	----
53		---	13.50-15.00	44	5.44	11.14	2.05	----	Soaked	23.27	108.64	476.10	2.56	2.80	1.10	2.60	----
54		---	18.00-19.50	60	5.45	11.21	2.05	----	Soaked	23.36	137.68	600.93	2.66	2.30	0.86	2.70	----
55		---	21.00-22.50	71	5.40	11.33	2.10	----	Soaked	22.91	39.50	175.84	2.48	2.74	1.10	2.59	----
56		---	25.50-27.00	87	5.44	10.93	2.01	----	Soaked	23.23	116.68	512.21	2.70	2.03	0.75	2.77	----
57	17075	---	5.00-6.50	12	5.39	11.16	2.07	----	Soaked	22.79	61.66	275.83	2.59	1.60	0.62	2.64	----
58		---	8.00-9.50	27	5.44	11.24	2.07	----	Soaked	23.26	103.22	452.51	2.63	1.55	0.59	2.68	----
59		---	11.00-12.50	38	5.35	11.27	2.10	----	Soaked	22.51	66.10	299.46	2.49	3.64	1.46	2.57	----
60		---	17.00-18.50	63	5.16	11.05	2.14	----	Soaked	20.88	77.48	378.47	2.54	3.48	1.37	2.66	----
61		---	21.50-23.00	84	5.43	11.27	2.08	----	Soaked	23.11	63.00	277.92	2.67	2.38	0.89	2.71	VEINS OBSERVED
62		---	26.00-27.50	103	5.40	11.24	2.08	----	Soaked	22.93	76.08	338.32	2.49	1.70	0.68	2.56	----


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UGC-02 - Corrigendum III - Annexure 5
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ANNEXURE

Test Order/Report No. BV/PL:ROCK: 25941C/2289/7/2017

Lab Reference Number : 2017/JUL/239397

DATE: 02.08.2017

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Sr.No.	Chainage	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	15450	3.50-5.00	03	5.45	11.21	2.06	----	Soaked	23.31	72.02	315.06	2.59	1.34	0.52	2.63	----
2	15450	8.00-9.50	19	5.46	11.36	2.08	----	Soaked	23.37	125.58	547.88	2.75	1.04	0.38	2.72	VEINS OBSERVED
3	15450	12.50-14.00	32	5.40	11.13	2.06	----	Soaked	22.94	167.56	744.71	2.79	0.81	0.29	2.75	----
4	15450	17.00-18.50	52	5.44	11.27	2.07	----	Soaked	23.23	30.92	135.74	2.46	3.54	1.44	2.57	----
5	15450	21.50-23.00	63	5.45	11.43	2.10	----	Soaked	23.34	105.46	460.72	2.63	2.45	0.93	2.66	----
6	15450	26.00-27.50	75	5.44	11.26	2.07	----	Soaked	23.27	104.98	460.00	2.60	2.78	1.07	2.64	----
7	15600	4.50-6.00	08	5.44	11.29	2.07	----	Soaked	23.27	87.66	384.06	2.63	1.36	0.52	2.67	----
8	15600	9.00-10.50	28	5.44	11.22	2.06	----	Soaked	23.24	55.84	245.04	2.63	3.82	1.45	2.65	----
9	15600	12.00-13.50	36	5.46	11.22	2.05	----	Soaked	23.42	73.40	319.64	2.55	2.51	0.98	2.60	----
10	15600	16.50-18.00	52	5.45	8.39	1.54	0.93	Soaked	23.30	99.52	404.98	2.75	1.22	0.44	2.76	VEINS OBSERVED
11	15600	22.50-24.00	69	5.45	11.23	2.06	----	Soaked	23.35	107.56	469.67	2.58	1.57	0.61	2.61	----
12	15600	27.00-28.50	87	5.46	11.20	2.05	----	Soaked	23.45	93.98	408.72	2.65	2.68	1.01	2.69	----
13	15650	5.00-6.50	26	5.42	11.24	2.07	----	Soaked	23.11	62.02	273.68	2.52	2.16	0.86	2.57	----
14	15650	6.50-8.00	32	5.41	11.25	2.08	----	Soaked	22.95	70.72	314.16	2.55	2.03	0.80	2.61	----
15	15650	11.00-12.50	50	5.42	11.24	2.07	----	Soaked	23.08	82.00	362.25	2.64	2.96	1.12	2.68	----
16	15650	15.50-17.00	66	5.43	11.25	2.07	----	Soaked	23.17	92.68	407.88	2.64	2.04	0.78	2.67	----
17	15650	20.00-21.50	86	5.42	11.34	2.09	----	Soaked	23.10	58.38	257.70	2.46	3.98	1.62	2.56	----
18	15650	26.00-27.50	122	5.44	11.17	2.05	----	Soaked	23.27	90.50	396.55	2.47	3.35	1.35	2.57	----

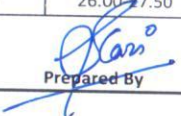
Prepared By

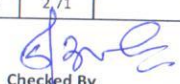
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UGC-02 - Corrigendum III - Annexure 5
Revised GFR

<div style="text-align: center;">  BUREAU VERITAS </div>																
ANNEXURE																
Test Order/Report No.BVIPL:ROCK: 25941C/2289/7/2017														DATE: 02.08.2017		
Lab Reference Number : 2017/JUL/239397														Page 3/3		
Sr.No.	Chainage	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%)	Specific Gravity	Remarks
19	15700	5.00-6.50	19	5.45	8.38	1.54	0.93	Soaked	23.35	68.38	277.77	2.58	2.86	1.11	2.64	----
20	15700	8.00-9.50	34	5.46	11.14	2.04	----	Soaked	23.40	112.44	490.05	2.64	1.22	0.46	2.66	----
21	15700	14.00-15.50	53	5.45	11.12	2.04	----	Soaked	23.35	49.74	217.23	2.45	1.84	0.75	2.58	----
22	15700	18.50-20.00	67	5.46	11.31	2.07	----	Soaked	23.39	137.54	599.55	2.66	1.79	0.67	2.71	----
23	15700	21.50-23.00	73	5.46	11.13	2.04	----	Soaked	23.39	59.04	257.42	2.66	2.13	0.80	2.68	----
24	15700	26.00-27.50	84	5.47	11.36	2.08	----	Soaked	23.47	129.08	560.72	2.61	1.39	0.53	2.65	----
25	15840	5.00-6.50	30	5.37	11.38	2.12	----	Soaked	22.67	139.02	625.33	2.58	1.21	0.47	2.60	----
26	15840	8.00-9.50	40	5.38	11.97	2.23	----	Soaked	22.70	48.02	215.69	2.45	1.98	0.81	2.57	----
27	15840	11.00-12.50	54	5.35	11.38	2.13	----	Soaked	22.50	78.86	357.40	2.61	2.14	0.82	2.64	----
28	15840	15.50-17.00	73	5.39	11.03	2.05	----	Soaked	22.79	31.00	138.73	2.62	1.85	0.71	2.68	VEINS OBSERVED
29	15840	20.00-21.50	85	5.39	11.02	2.04	----	Soaked	22.82	81.00	361.87	2.57	3.69	1.44	2.60	----
30	15840	26.00-27.50	99	5.37	11.21	2.09	----	Soaked	22.69	131.61	591.52	2.68	1.71	0.64	2.71	----


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ANNEXURE																	
Test Order/Report No.BVIPL:ROCK: 25941C/45/8/2017															DATE: 04.08.2017		
Lab Reference Number : 2017/AUG/239974															Page 2/2		
Sr No	Location	Chainage	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	Swargate	15350	3.50-5.00	22	5.48	11.22	2.05	----	Soaked	23.61	61.76	266.75	2.46	2.44	0.99	2.58	----
2			8.00-9.50	36	5.41	11.05	2.04	----	Soaked	22.95	62.56	277.99	2.42	2.26	0.93	2.55	----
3			12.50-14.00	47	5.43	10.91	2.01	----	Soaked	23.16	56.98	250.92	2.41	3.86	1.60	2.57	----
4			18.50-20.00	68	5.43	10.91	2.01	----	Soaked	23.16	69.62	306.54	2.45	2.77	1.13	2.55	----
5			21.50-23.00	84	5.44	11.06	2.03	----	Soaked	23.27	72.02	315.62	2.42	4.18	1.73	2.54	----
6			27.50-29.00	103	5.44	10.99	2.02	----	Soaked	23.26	104.54	458.33	2.62	3.15	1.21	2.68	----
7	Shivaji Chowk	11950	3.00-4.50	02	5.42	8.22	1.52	0.92	Soaked	23.10	62.20	252.64	2.47	2.42	0.98	2.57	----
8			9.00-10.50	30	5.45	11.08	2.03	----	Soaked	23.36	91.20	398.03	2.58	3.36	1.30	2.63	----
9			13.50-15.00	50	5.29	8.33	1.57	0.93	Soaked	22.01	39.72	171.14	2.40	5.03	2.10	2.58	----
10			16.50-18.00	64	5.35	11.05	2.06	----	Soaked	22.48	103.94	471.50	2.60	2.79	1.07	2.64	----
11			21.00-22.50	86	5.29	11.04	2.09	----	Soaked	21.95	122.60	569.66	2.64	2.46	0.93	2.69	----
12			27.00-28.50	109	5.34	10.93	2.05	----	Soaked	22.37	115.56	526.84	2.61	2.74	1.05	2.65	----
13	Juna Bazar	13375	10.50-12.00	06	5.43	10.85	2.00	----	Soaked	23.13	30.06	132.54	2.35	6.97	2.96	2.55	----
14			13.50-15.00	20	5.46	11.23	2.06	----	Soaked	23.40	66.46	289.65	2.58	3.45	1.34	2.64	VEINS OBSERVED
15			18.00-19.50	49	5.46	11.09	2.03	----	Soaked	23.39	91.72	399.84	2.58	2.62	1.01	2.61	----
16			23.50-25.00	63	5.46	11.29	2.07	----	Soaked	23.39	63.84	278.37	2.46	3.53	1.44	2.59	----
17			29.50-30.00	79	5.46	11.14	2.04	----	Soaked	23.43	75.74	329.65	2.45	3.70	1.51	2.55	----






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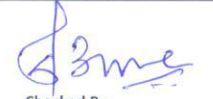
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UGC-02 - Corrigendum III - Annexure 5
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<div> ANNEXURE</div>																
Test Order/Report No.BVIPL:ROCK: 25941C/1009/8/2017														DATE: 21.08.2017		
Lab Reference Number : 2017-AUG-240938														Page 2/4		
Sr.No.	Chainage	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
1	12100	8.00-9.50	3	5.46	11.16	2.04	----	Soaked	23.41	40.76	177.58	2.64	2.52	0.95	2.70	----
2		9.50-11.00	10	5.44	11.26	2.07	----	Soaked	23.25	131.30	575.86	2.68	1.89	0.71	2.71	----
3		14.00-15.50	35	5.36	11.25	2.10	----	Soaked	22.54	121.24	548.58	2.59	2.42	0.93	2.65	----
4		17.00-18.50	53	5.45	11.24	2.06	----	Soaked	23.30	126.46	553.51	2.61	2.18	0.83	2.67	----
5		23.00-24.50	63	5.37	11.26	2.10	----	Soaked	22.69	90.78	408.01	2.63	2.22	0.85	2.68	----
6		29.00-30.00	90	5.41	11.14	2.06	----	Soaked	22.96	131.10	582.20	2.56	4.19	1.64	2.63	----
7	12425	6.50-8.00	35	5.43	11.12	2.05	----	Soaked	23.18	40.98	180.27	2.40	5.17	2.15	2.51	----
8		9.50-11.00	46	5.46	11.16	2.04	----	Soaked	23.45	161.68	702.93	2.84	0.61	0.22	2.75	----
9		14.00-15.50	59	5.58	11.37	2.04	----	Soaked	24.49	194.48	809.63	2.84	0.66	0.23	2.76	----
10		17.00-18.50	71	5.58	11.13	2.00	----	Soaked	24.44	173.52	723.93	2.67	1.82	0.68	2.70	----
11		21.50-23.00	84	5.48	11.11	2.03	----	Soaked	23.55	58.64	253.92	2.47	3.94	1.60	2.56	----
12		26.00-27.50	95	5.46	11.14	2.04	----	Soaked	23.37	88.22	384.86	2.45	4.82	1.97	2.54	----
13	12475	3.50-5.00	4	5.36	8.09	1.51	0.92	Soaked	22.53	97.08	404.15	2.60	1.31	0.50	2.64	----
14		8.00-9.50	12	5.37	11.18	2.08	----	Soaked	22.65	101.36	456.35	2.63	2.25	0.85	2.65	----
15		12.50-14.00	21	5.47	11.28	2.06	----	Soaked	23.47	58.42	253.80	2.47	4.17	1.69	2.57	----
16		17.00-18.50	34	5.47	11.19	2.05	----	Soaked	23.51	119.14	516.81	2.62	2.62	1.00	2.63	----
17		23.00-24.50	48	5.47	11.42	2.09	----	Soaked	23.50	117.12	508.11	2.54	2.68	1.05	2.59	----
18		27.50-29.00	62	5.46	11.18	2.05	----	Soaked	23.41	47.10	205.16	2.45	4.46	1.83	2.56	----
19	12575	6.00-6.50	8	5.58	11.18	2.01	----	Soaked	24.43	233.82	976.15	2.83	0.68	0.24	2.74	----
20		8.00-9.50	12	5.46	11.13	2.04	----	Soaked	23.45	146.48	637.04	2.69	1.61	0.60	2.71	----
21		12.50-14.00	19	5.38	11.26	2.09	----	Soaked	22.72	100.70	451.98	2.46	4.44	1.81	2.54	----
<div><div> Prepared By</div><div> Checked By</div></div>																



UGC-02 - Corrigendum III - Annexure 5
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ANNEXURE																
Test Order/Report No.BVIPL:ROCK: 25941C/1009/8/2017														DATE: 21.08.2017		
Lab Reference Number : 2017-AUG-240938														Page 3/4		
Sr.No.	Chainage	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
22	12575	17.00-18.50	35	5.46	11.25	2.06	----	Soaked	23.39	144.72	630.81	2.58	2.53	0.98	2.65	----
23		20.00-21.50	47	5.45	11.15	2.05	----	Soaked	23.34	175.16	765.31	2.66	1.95	0.74	2.68	----
24		27.50-29.00	72	5.47	11.27	2.06	----	Soaked	23.52	93.96	407.41	2.55	4.73	1.85	2.62	----
25	15175	5.00-6.50	24	5.46	11.03	2.02	----	Soaked	23.38	80.54	351.27	2.70	3.33	1.23	2.69	----
26		8.00-9.50	45	5.46	11.34	2.08	----	Soaked	23.38	96.58	421.31	2.64	0.72	0.27	2.67	VEINS OBSERVED
27		11.00-12.50	54	5.46	10.92	2.00	----	Soaked	23.39	65.74	286.62	2.48	2.34	0.94	2.59	----
28		17.00-18.50	76	5.46	11.15	2.04	----	Soaked	23.37	57.70	251.73	2.42	5.29	2.19	2.56	----
29		20.00-21.50	86	5.40	11.11	2.06	----	Soaked	22.92	126.96	564.79	2.59	2.32	0.90	2.62	----
30		27.50-29.00	110	5.47	11.23	2.06	----	Soaked	23.46	112.74	490.04	2.59	4.08	1.58	2.63	----
31	15250	5.00-6.50	9	5.45	11.11	2.04	----	Soaked	23.36	86.82	378.92	2.47	3.44	1.39	2.59	----
32		9.50-11.00	25	5.46	11.38	2.08	----	Soaked	23.41	100.58	438.09	2.69	2.62	0.97	2.67	----
33		12.50-14.00	32	5.46	8.33	1.52	0.92	Soaked	23.45	107.04	428.22	2.66	2.69	1.01	2.65	----
34		15.50-17.00	50	5.43	11.43	2.11	----	Soaked	23.15	107.48	473.39	2.55	4.71	1.85	2.60	----
35		18.50-20.00	66	5.39	8.24	1.53	0.93	Soaked	22.78	97.18	404.54	2.67	3.33	1.25	2.66	----
36		26.00-27.50	97	5.44	11.48	2.11	----	Soaked	23.22	65.26	286.61	2.46	5.02	2.04	2.57	----
37	15300	3.50-5.00	4	5.44	11.13	2.04	----	Soaked	23.26	124.10	544.08	2.71	2.72	1.00	2.68	----
38		9.50-11.00	27	5.30	11.31	2.13	----	Soaked	22.08	56.22	259.67	2.38	5.86	2.46	2.50	----
39		12.50-14.00	40	5.31	11.19	2.11	----	Soaked	22.17	65.32	300.47	2.39	4.31	1.81	2.51	----
40		17.00-18.50	56	5.34	11.26	2.11	----	Soaked	22.39	49.02	223.27	2.36	6.92	2.94	2.49	----
41		21.50-23.00	72	5.33	11.29	2.12	----	Soaked	22.32	76.90	351.38	2.49	4.82	1.94	2.55	----
42		24.50-26.00	81	5.45	11.12	2.04	----	Soaked	23.34	86.82	379.29	2.41	5.16	2.14	2.52	----
43	15400	6.50-8.00	19	5.42	11.37	2.10	----	Soaked	23.07	65.38	288.95	2.54	2.95	1.16	2.61	----
<div>  Prepared By </div> <div>  Checked By </div>																



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<div><div><div><div><div><div></div><div>GOVERNMENT OF INDIA</div></div><div>MINISTRY OF WATER RESOURCES</div><div>INDIAN WATER RESOURCES DEVELOPMENT CORPORATION</div></div></div><div>ANNEXURE</div></div></div>																
Test Order/Report No.BVIPL:ROCK: 25941C/1009/8/2017														DATE: 21.08.2017		
Lab Reference Number : 2017-AUG-240938														Page 4/4		
Sr.No.	Chainage	Depth in m.	Piece No.	Diameter (cm)	Height (cm)	H : D	Correction Factor	Condition of Test	Area	Load in kN	UCS in kg/cm ²	Dry Density (g/cc)	Porosity (%)	Water Absorption (%) #	Specific Gravity	Remarks
44	15400	9.50-11.00	31	5.44	8.12	1.49	0.92	Soaked	23.24	77.62	313.27	2.47	5.23	2.12	2.54	----
45		14.00-15.50	48	5.41	11.29	2.09	----	Soaked	22.95	88.38	392.75	2.58	4.96	1.92	2.62	----
46		17.00-18.50	57	5.41	11.32	2.09	----	Soaked	22.98	139.04	617.08	2.59	2.13	0.82	2.63	----
47		23.00-24.50	78	5.42	8.32	1.54	0.93	Soaked	23.06	191.68	788.14	2.71	1.52	0.56	2.68	----
48		27.50-29.00	98	5.46	11.35	2.08	----	Soaked	23.45	129.60	563.63	2.66	3.96	1.49	2.65	----
49	15750	3.50-5.00	24	5.45	11.08	2.03	----	Soaked	23.30	71.06	310.93	2.46	3.06	1.24	2.54	----
50		8.00-9.50	40	5.45	11.39	2.09	----	Soaked	23.34	52.00	227.23	2.59	4.15	1.60	2.64	VEINS OBSERVED
51		15.50-17.00	62	5.45	11.38	2.09	----	Soaked	23.33	133.52	583.63	2.78	1.83	0.66	2.72	----
52		18.50-20.00	75	5.44	11.29	2.07	----	Soaked	23.28	99.24	434.74	2.55	4.32	1.70	2.62	----
53		21.50-23.00	80	5.43	10.19	1.88	0.99	Soaked	23.12	52.86	230.84	2.42	3.81	1.58	2.53	VEINS OBSERVED
54	15075	27.50-29.00	125	5.44	11.41	2.10	----	Soaked	23.24	41.14	180.48	2.35	10.17	4.32	2.48	----
55		6.50-8.00	13	5.43	10.39	1.92	0.99	Soaked	23.12	40.40	176.41	2.54	4.77	1.88	2.62	VEINS OBSERVED
56		8.00-9.50	22	5.42	11.06	2.04	----	Soaked	23.09	72.38	319.60	2.52	5.50	2.18	2.61	----
57		12.50-14.00	48	5.44	11.17	2.05	----	Soaked	23.23	92.30	405.23	2.64	2.29	0.87	2.65	----
58		15.50-17.00	53	5.44	11.28	2.07	----	Soaked	23.21	111.42	489.60	2.50	2.90	1.16	2.57	----
59	12525	21.50-23.00	68	5.43	11.22	2.07	----	Soaked	23.14	83.48	367.84	2.40	4.46	1.86	2.51	----
60		24.50-26.00	84	5.45	11.33	2.08	----	Soaked	23.29	80.38	351.91	2.49	3.21	1.29	2.56	----
61		6.50-8.00	26	5.46	11.23	2.06	----	Soaked	23.43	118.88	517.42	2.84	0.43	0.15	2.73	----
62		9.50-11.00	39	5.46	10.97	2.01	----	Soaked	23.37	63.28	276.06	2.62	3.36	1.28	2.64	----
63		15.50-17.00	57	5.46	11.19	2.05	----	Soaked	23.42	99.52	433.23	2.39	4.41	1.84	2.52	----
64	12525	20.00-21.50	79	5.44	10.94	2.01	----	Soaked	23.21	56.52	248.33	2.43	4.65	1.91	2.54	----
65		23.00-24.50	100	5.46	11.04	2.02	----	Soaked	23.44	12.10	52.64	2.49	6.09	2.45	2.57	VEINS OBSERVED
66		26.00-27.50	111	5.45	11.14	2.04	----	Soaked	23.32	119.98	524.60	2.62	2.42	0.93	2.64	----
<div><div><div>Sam</div><div>Prepared By</div></div><div><div>B3me</div><div>Checked By</div></div></div>																



Annexure-3

Lab test results on Soil sample

SOIL TEST DATA SHEET

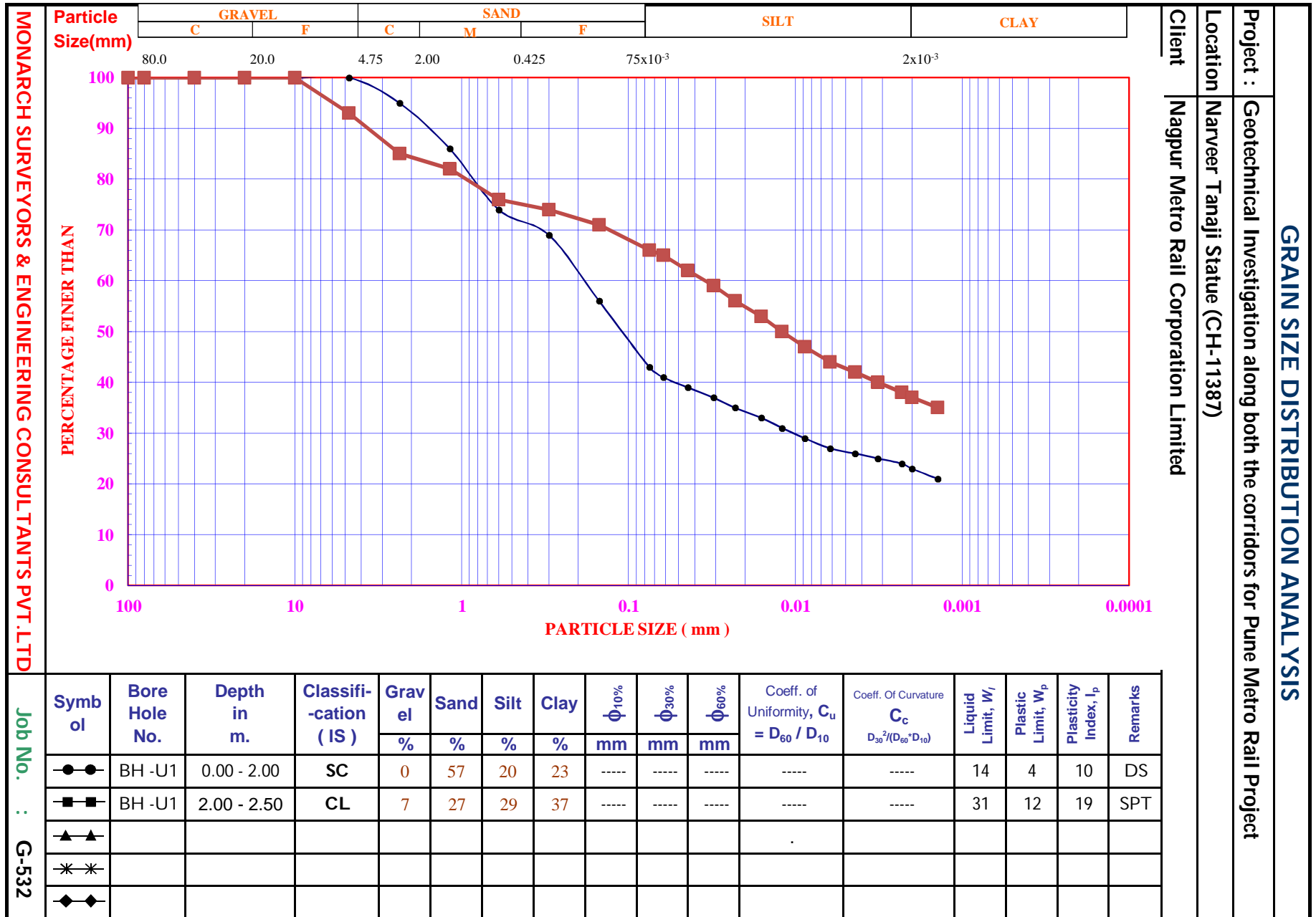
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Narveer Tanaji Statue (CH-11387)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U1	0.00 - 2.00	DS	----	----	----	SC	0	57	20	23	14	4	10	----	----	----	----	----	----	----	----	2.61	----
BH -U1	2.00 - 2.50	SPT	----	----	----	CL	7	27	29	37	31	12	19	6	----	----	----	----	----	----	----	2.57	----
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)							SP : Swelling Pressure or Swelling Potential Test							f : Angle of Internal Friction						
COMP : Compaction Test			Tcu : Triaxial Test (Consolidated Undrained)							SPT : Standard Penetration Test Sample							Cc : Undrained Cohesion						
DS : Direct Shear			Tcd : Triaxial Test (Consolidated Drained)							UDS : Undisturbed Soil Sample							f' : Effective Angle of Internal Friction						
K : Permeability Test			NP : Non Plastic							VL : Laboratory Vane Shear Test							Cc' : Effective Cohesion						
FSI : Free Swell Test			SL : Shrikage Limit Test							UC : Unconfined Compression Test							-----> Combined Silt + Clay						
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																				JOB NO.		G-532	



SOIL TEST DATA SHEET

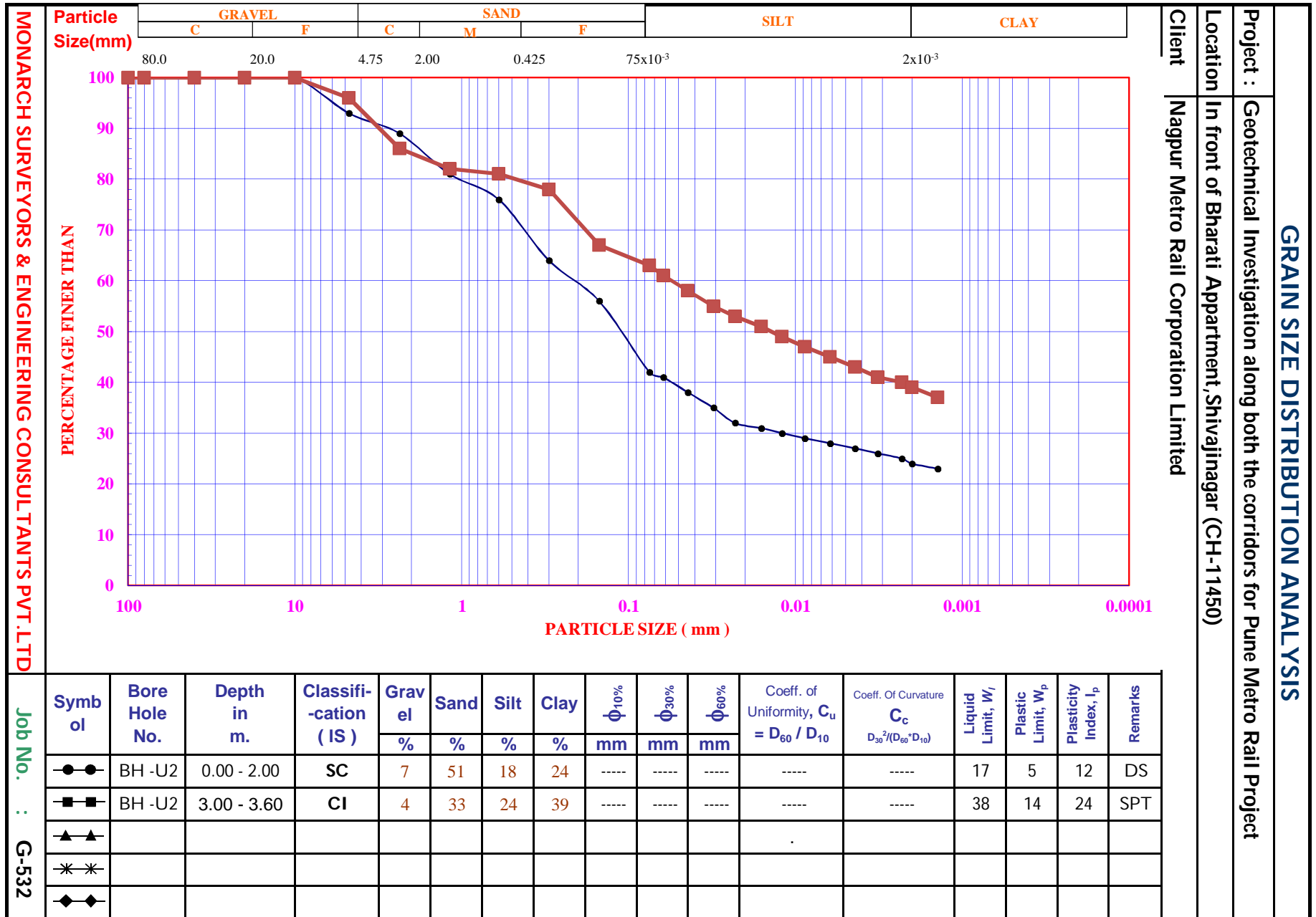
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location In front of Bharati Apartment, Shivajinagar (CH-11450)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U2	0.00 - 2.00	DS	----	----	----	SC	7	51	18	24	17	5	12	----	----	----	----	----	----	----	2.61	----	
BH -U2	3.00 - 3.60	SPT	----	----	----	CI	4	33	24	39	38	14	24	6	----	----	----	----	----	----	2.55	----	
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)				SP : Swelling Pressure or Swelling Potential Test				f : Angle of Internal Friction				COMP : Compaction Test			Cc : Undrained Cohesion					
DS : Direct Shear			Tcu : Triaxial Test (Consolidated Undrained)				SPT : Standard Penetration Test Sample				UDS : Undisturbed Soil Sample				f' : Effective Angle of Internal Friction			K : Permeability Test					
FSI : Free Swell Test			Tcd : Triaxial Test (Consolidated Drained)				VL : Laboratory Vane Shear Test				UC : Unconfined Compression Test				Cc' : Effective Cohesion			----> Combined Silt + Clay					
			NP : Non Plastic																				
			SL : Shrikage Limit Test																				
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																				JOB NO.		G-532	



SOIL TEST DATA SHEET

Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Near Ocean Enterprises, Shivajinagar (CH-11550)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	Depth in m	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm ³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm ²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U4	0.00 - 2.00	DS	-----	-----	-----	SC	3	58	17	22	19	5	14	-----	-----	-----	-----	-----	-----	-----	-----	2.61	-----

CHEM : Chemical Analysis

COMP : Compaction Test

DS : Direct Shear

K : Permeability Test

FSI : Free Swell Test

Tuu : Triaxial Test (Unconsolidated Undrained)

Tcu : Triaxial Test (Consolidated Undrained)

Tcd : Triaxial Test (Consolidated Drained)

NP : Non Plastic

SL : Shrinkage Limit Test

SP : Swelling Pressure or Swelling Potential Test

SPT : Standard Penetration Test Sample

UDS : Undisturbed Soil Sample

VL : Laboratory Vane Shear Test

UC : Unconfined Compression Test

f : Angle of Internal Friction

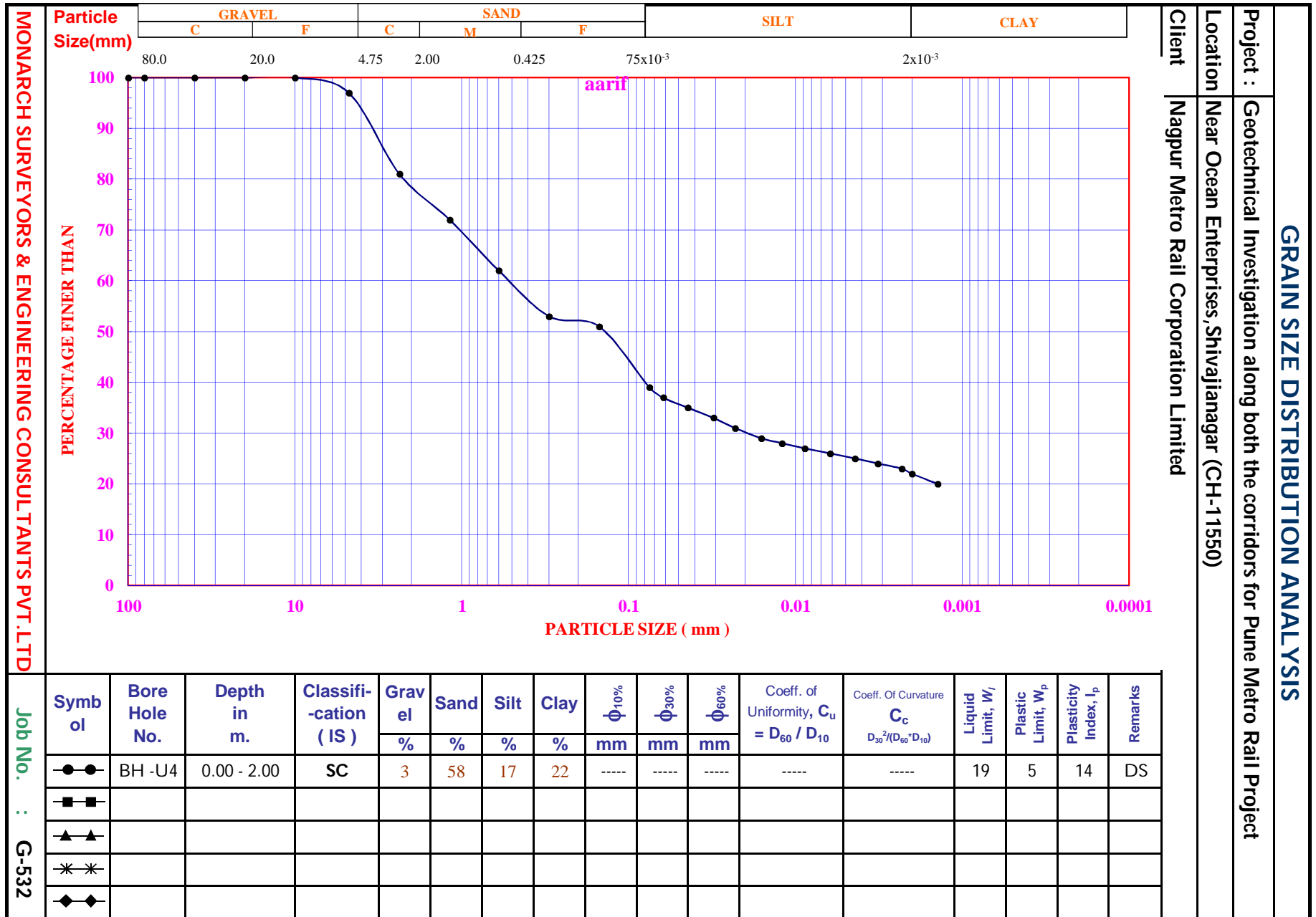
Cc : Undrained Cohesion

f' : Effective Angle of Internal Friction

Cc' : Effective Cohesion

----> Combined Silt + Clay

MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE	JOB NO.	G-532
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SOIL TEST DATA SHEET

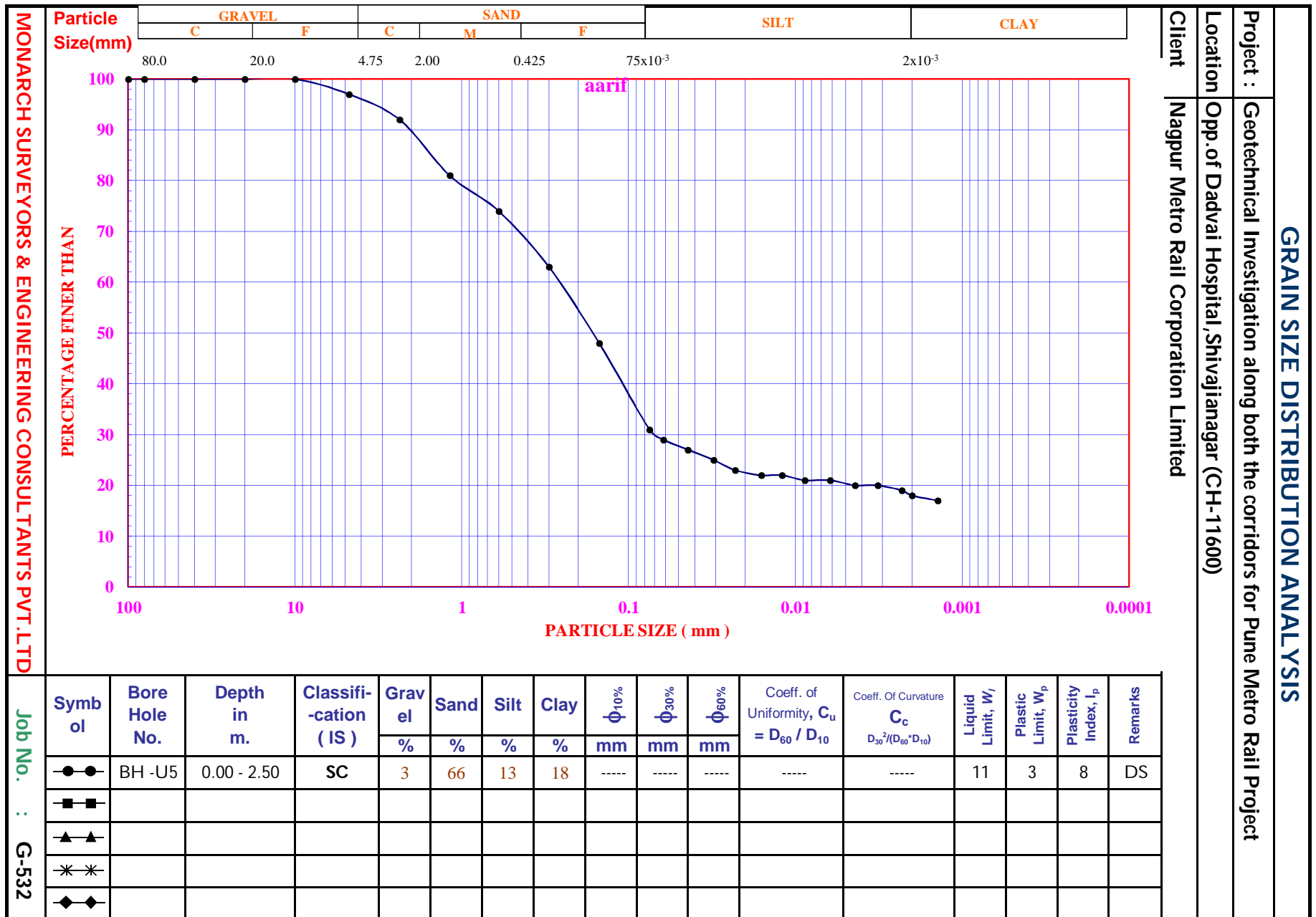
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Opp.of Dadvai Hospital, Shivajianagar (CH-11600)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. Depth in	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U5	0.00 - 2.50	DS	-----	-----	-----	SC	3	66	13	18	11	3	8	-----	-----	-----	-----	-----	-----	-----	2.61	-----	
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)							SP : Swelling Pressure or Swelling Potential Test							f : Angle of Internal Friction						
COMP : Compaction Test			Tcu : Triaxial Test (Consolidated Undrained)							SPT : Standard Penetration Test Sample							Cc : Undrained Cohesion						
DS : Direct Shear			Tcd : Triaxial Test (Consolidated Drained)							UDS : Undisturbed Soil Sample							f' : Effective Angle of Internal Friction						
K : Permeability Test			NP : Non Plastic							VL : Laboratory Vane Shear Test							Cc' : Effective Cohesion						
FSI : Free Swell Test			SL : Shrikage Limit Test							UC : Unconfined Compression Test							-----> Combined Silt + Clay						
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																			JOB NO.		G-532		



SOIL TEST DATA SHEET

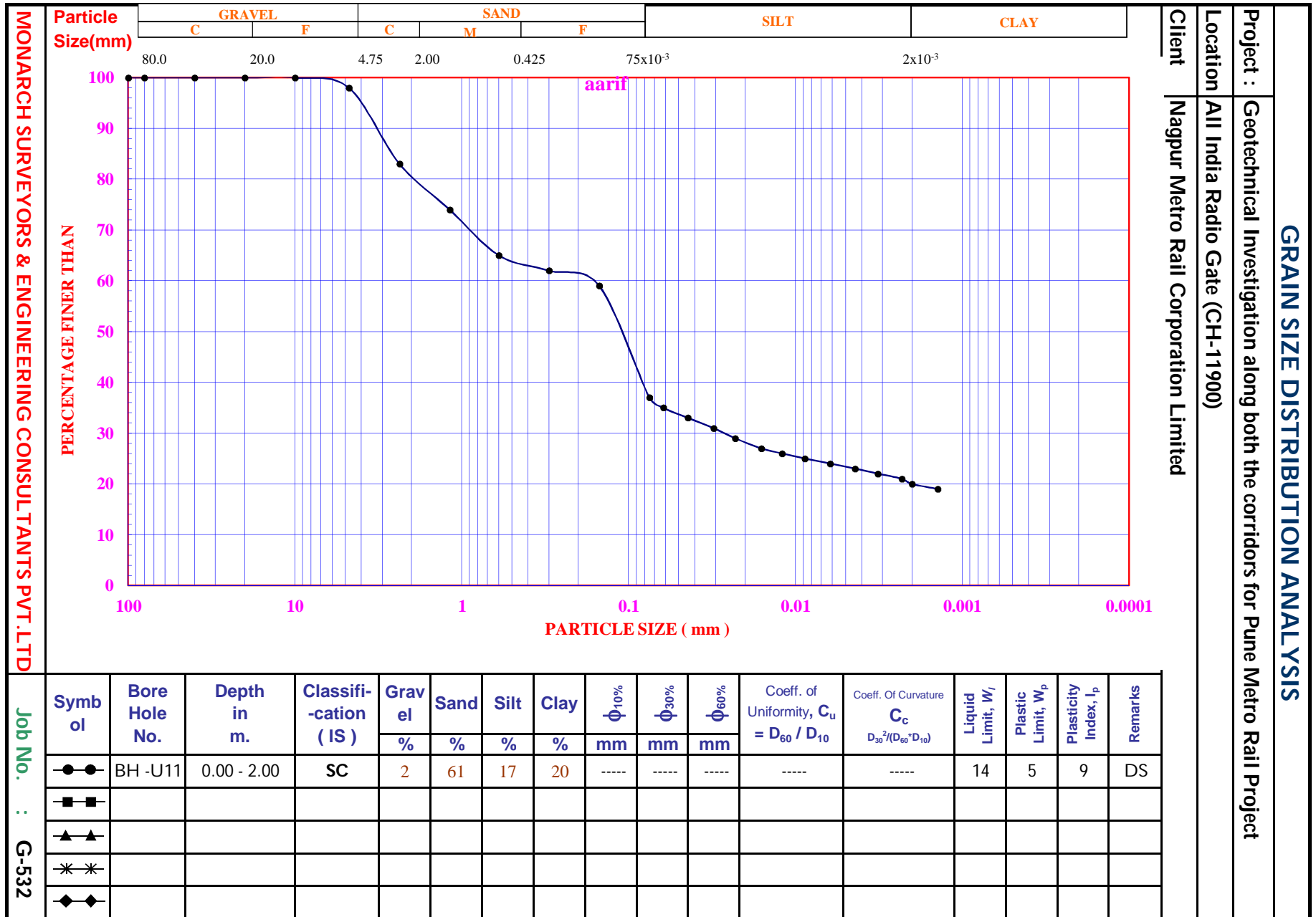
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location All India Radio Gate (CH-11900)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm ³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm ²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U11	0.00 - 2.00	DS	-----	-----	-----	SC	2	61	17	20	14	5	9	-----	-----	-----	-----	-----	-----	-----	-----	2.63	-----
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)				SP : Swelling Pressure or Swelling Potential Test				f : Angle of Internal Friction												
COMP : Compaction Test			Tcu : Triaxial Test (Consolidated Undrained)				SPT : Standard Penetration Test Sample				Cc : Undrained Cohesion												
DS : Direct Shear			Tcd : Triaxial Test (Consolidated Drained)				UDS : Undisturbed Soil Sample				f' : Effective Angle of Internal Friction												
K : Permeability Test			NP : Non Plastic				VL : Laboratory Vane Shear Test				Cc' : Effective Cohesion												
FSI : Free Swell Test			SL : Shrinkage Limit Test				UC : Unconfined Compression Test				-----> Combined Silt + Clay												
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																			JOB NO.		G-532		



SOIL TEST DATA SHEET

Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Shivajinagar Police Station (CH-12000)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm ³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm ²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U13	0.00 - 2.00	DS	----	----	----	SC	3	63	15	19	13	4	9	----	----	----	----	----	----	----	2.64	----	

CHEM : Chemical Analysis

COMP : Compaction Test

DS : Direct Shear

K : Permeability Test

FSI : Free Swell Test

Tuu : Triaxial Test (Unconsolidated Undrained)

Tcu : Triaxial Test (Consolidated Undrained)

Tcd : Triaxial Test (Consolidated Drained)

NP : Non Plastic

SL : Shrinkage Limit Test

SP : Swelling Pressure or Swelling Potential Test

SPT : Standard Penetration Test Sample

UDS : Undisturbed Soil Sample

VL : Laboratory Vane Shear Test

UC : Unconfined Compression Test

f : Angle of Internal Friction

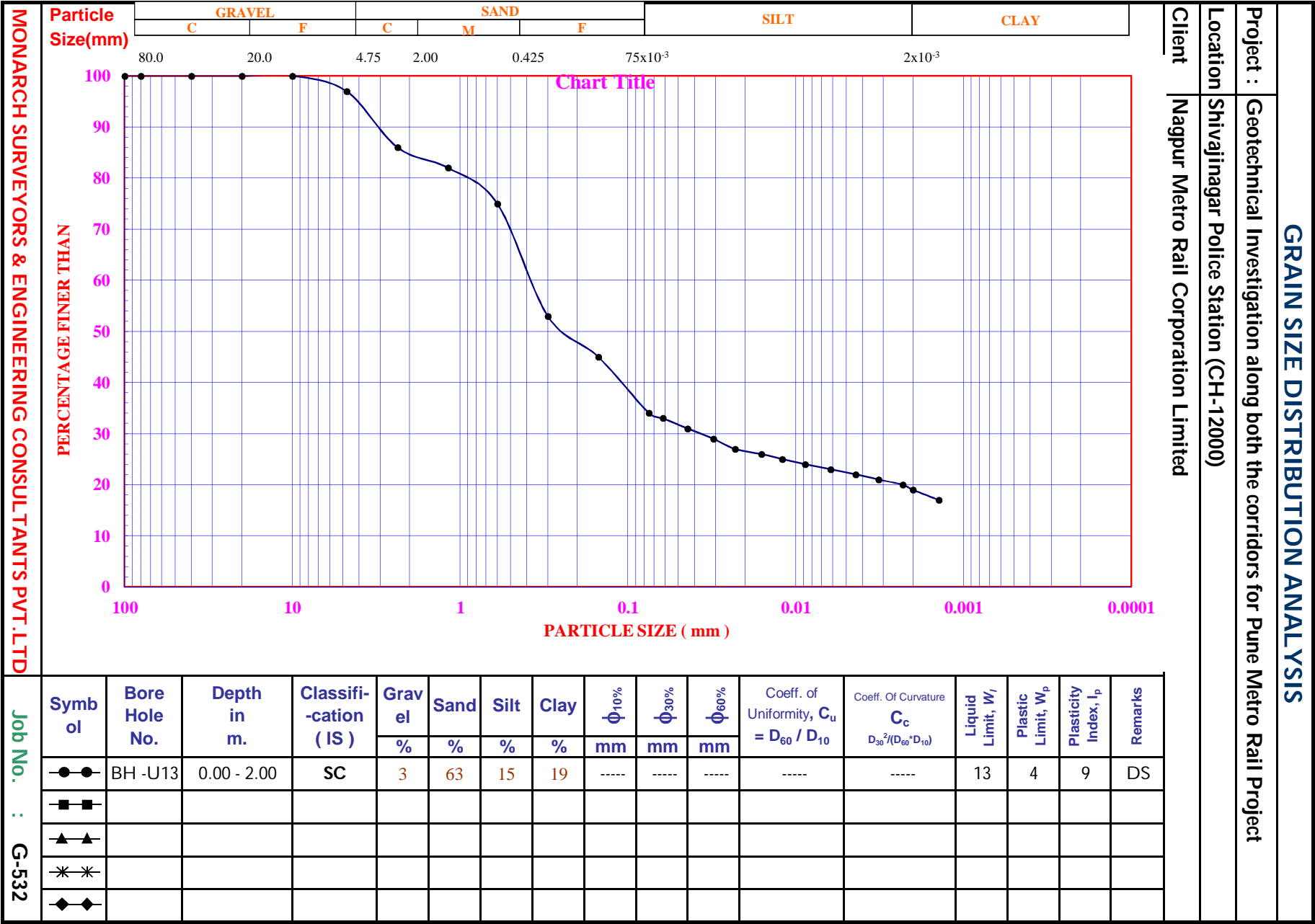
Cc : Undrained Cohesion

f' : Effective Angle of Internal Friction

Cc' : Effective Cohesion

----> Combined Silt + Clay

MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE	JOB NO.	G-532
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SOIL TEST DATA SHEET

Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Food Grain Godown, Shivajinagar (CH-12850)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm ³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm ²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U30	0.00 - 2.00	DS	----	----	----	SC	0	76	11	13	11	4	7	----	----	----	----	----	----	----	----	2.64	----

CHEM : Chemical Analysis

COMP : Compaction Test

DS : Direct Shear

K : Permeability Test

FSI : Free Swell Test

Tuu : Triaxial Test (Unconsolidated Undrained)

Tcu : Triaxial Test (Consolidated Undrained)

Tcd : Triaxial Test (Consolidated Drained)

NP : Non Plastic

SL : Shrinkage Limit Test

SP : Swelling Pressure or Swelling Potential Test

SPT : Standard Penetration Test Sample

UDS : Undisturbed Soil Sample

VL : Laboratory Vane Shear Test

UC : Unconfined Compression Test

f : Angle of Internal Friction

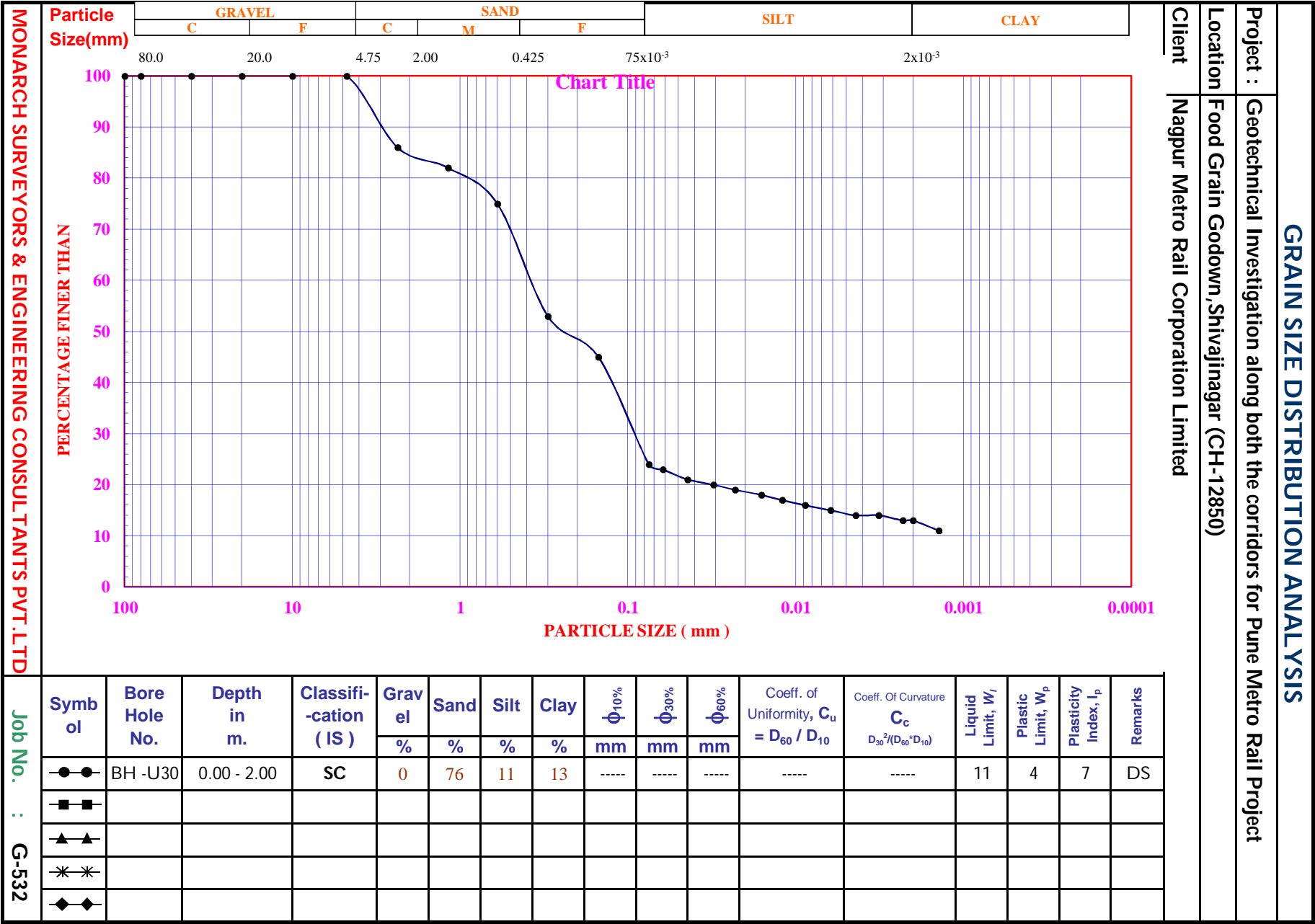
Cc : Undrained Cohesion

f' : Effective Angle of Internal Friction

Cc' : Effective Cohesion

----> Combined Silt + Clay

MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE	JOB NO.	G-532
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GRAIN SIZE DISTRIBUTION ANALYSIS

Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Food Grain Godown, Shivajinagar (CH-12850)

Client Nagpur Metro Rail Corporation Limited

SOIL TEST DATA SHEET

Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Food Grain Godown, Shivajinagar (CH-13000)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm ³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm ²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
BH -U33	0.00 - 2.00	DS	----	----	----	SC	7	64	17	12	9	3	6	----	----	----	----	----	----	----	2.62	----	

CHEM : Chemical Analysis

COMP : Compaction Test

DS : Direct Shear

K : Permeability Test

FSI : Free Swell Test

Tuu : Triaxial Test (Unconsolidated Undrained)

Tcu : Triaxial Test (Consolidated Undrained)

Tcd : Triaxial Test (Consolidated Drained)

NP : Non Plastic

SL : Shrinkage Limit Test

SP : Swelling Pressure or Swelling Potential Test

SPT : Standard Penetration Test Sample

UDS : Undisturbed Soil Sample

VL : Laboratory Vane Shear Test

UC : Unconfined Compression Test

f : Angle of Internal Friction

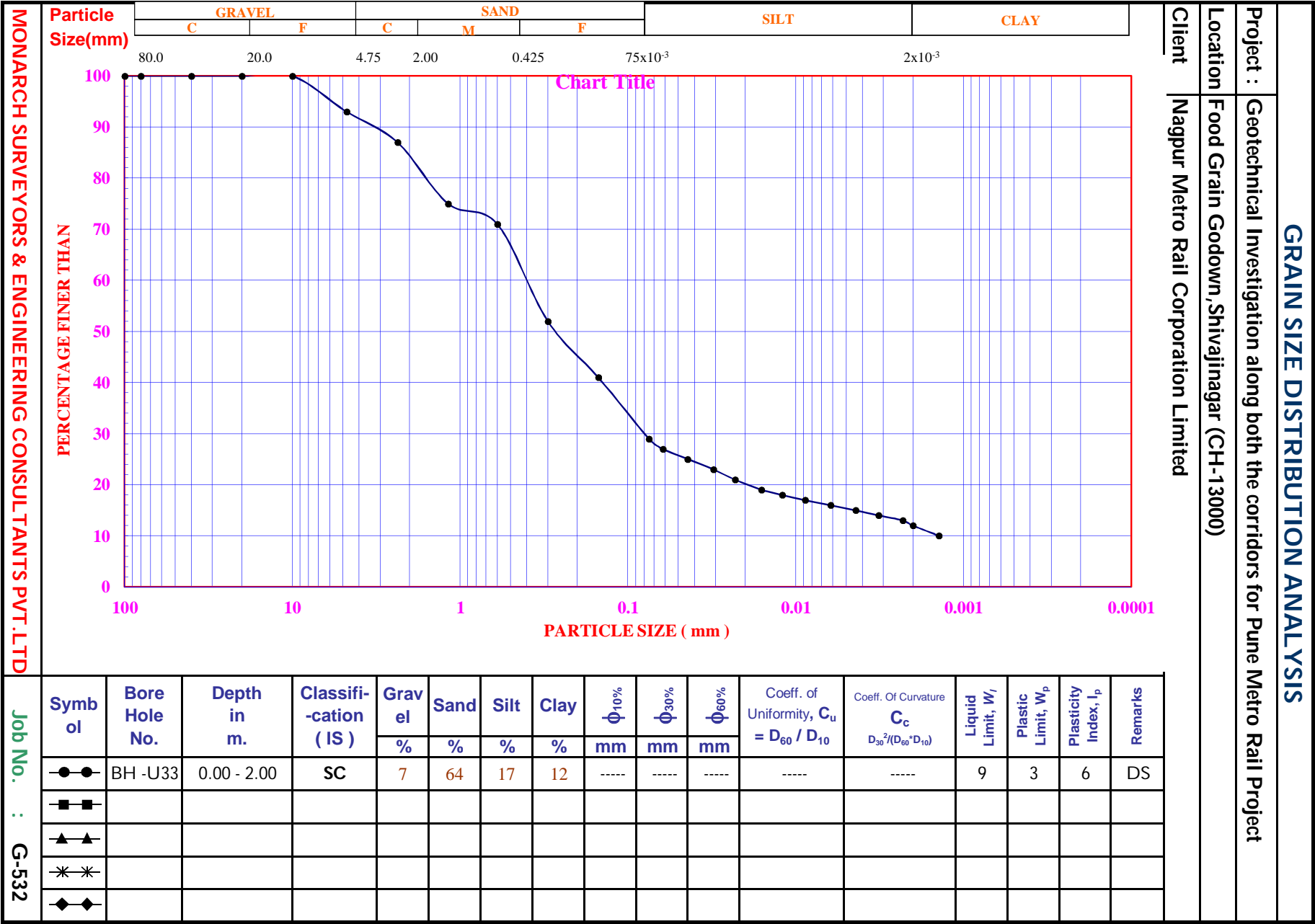
Cc : Undrained Cohesion

f' : Effective Angle of Internal Friction

Cc' : Effective Cohesion

----> Combined Silt + Clay

MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE	JOB NO.	G-532
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SOIL TEST DATA SHEET

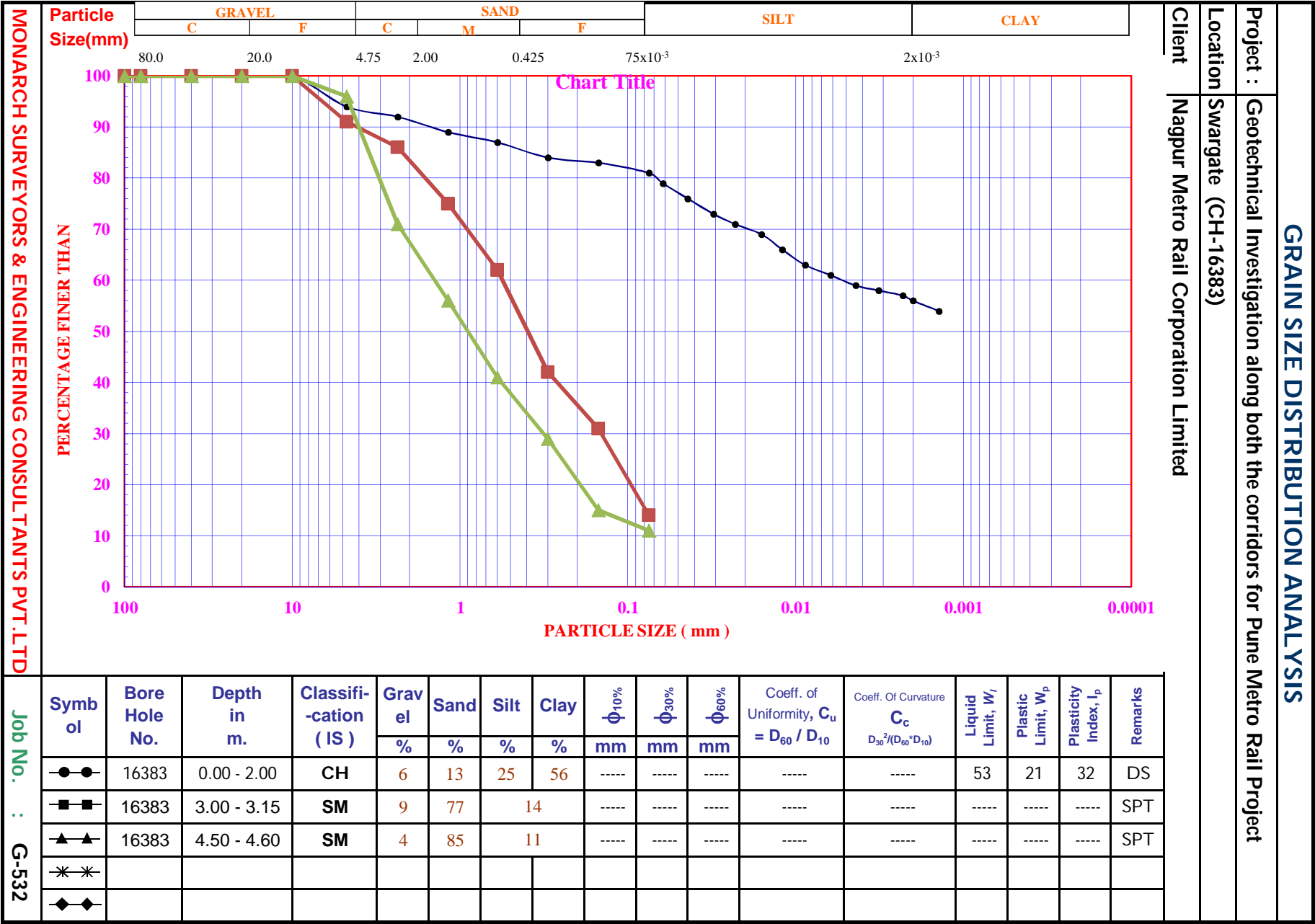
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Swargate (CH-16383)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
16383	0.00 - 2.00	DS	----	----	----	CH	6	13	25	56	53	21	32	----	----	----	----	----	----	----	----	2.54	----
16383	3.00 - 3.15	SPT	----	----	----	SM	9	77	14		----	----	----	----	----	----	----	----	----	----	----	2.68	----
16383	4.50 - 4.60	SPT	----	----	----	SM	4	85	11		----	----	----	----	----	----	----	----	----	----	----	2.69	----
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)							SP : Swelling Pressure or Swelling Potential Test							f : Angle of Internal Friction						
COMP : Compaction Test			Tcu : Triaxial Test (Consolidated Undrained)							SPT : Standard Penetration Test Sample							Cc : Undrained Cohesion						
DS : Direct Shear			Tcd : Triaxial Test (Consolidated Drained)							UDS : Undisturbed Soil Sample							f' : Effective Angle of Internal Friction						
K : Permeability Test			NP : Non Plastic							VL : Laboratory Vane Shear Test							Cc' : Effective Cohesion						
FSI : Free Swell Test			SL : Shrikage Limit Test							UC : Unconfined Compression Test							----> Combined Silt + Clay						
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																				JOB NO.		G-532	



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SOIL TEST DATA SHEET

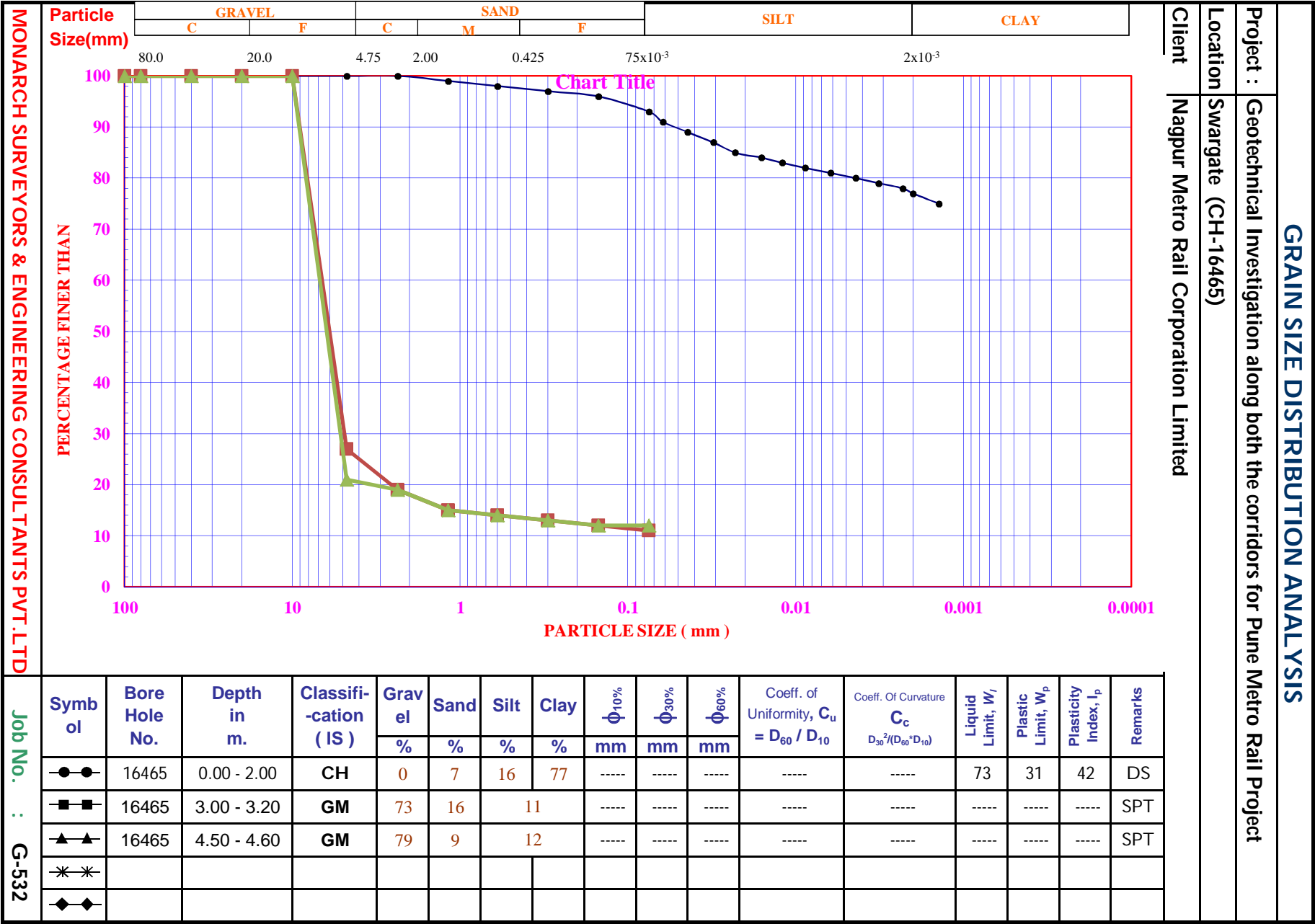
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Swargate (CH-16465)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
16465	0.00 - 2.00	DS	----	----	----	CH	0	7	16	77	73	31	42	----	----	----	----	----	----	----	----	2.54	----
16465	3.00 - 3.20	SPT	----	----	----	GM	73	16	11		----	----	----	----	----	----	----	----	----	----	----	2.73	----
16465	4.50 - 4.60	SPT	----	----	----	GM	79	9	12		----	----	----	----	----	----	----	----	----	----	----	2.74	----
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)							SP : Swelling Pressure or Swelling Potential Test							f : Angle of Internal Friction						
COMP : Compaction Test			Tcu : Triaxial Test (Consolidated Undrained)							SPT : Standard Penetration Test Sample							Cc : Undrained Cohesion						
DS : Direct Shear			Tcd : Triaxial Test (Consolidated Drained)							UDS : Undisturbed Soil Sample							f' : Effective Angle of Internal Friction						
K : Permeability Test			NP : Non Plastic							VL : Laboratory Vane Shear Test							Cc' : Effective Cohesion						
FSI : Free Swell Test			SL : Shrikage Limit Test							UC : Unconfined Compression Test							----> Combined Silt + Clay						
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																				JOB NO.		G-532	



SOIL TEST DATA SHEET

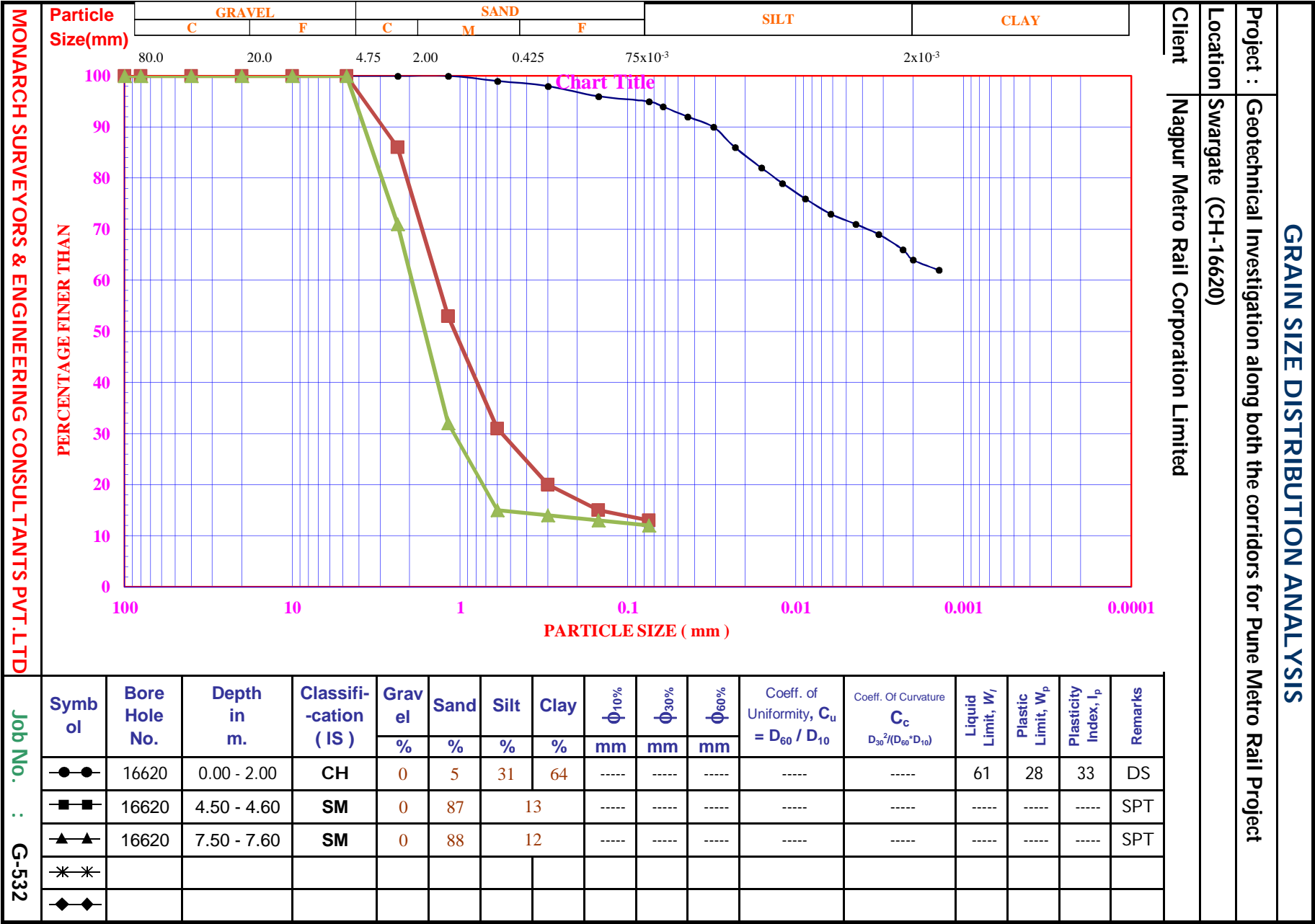
Project : Geotechnical Investigation along both the corridors for Pune Metro Rail Project

Location Swargate (CH-16620)

Client Nagpur Metro Rail Corporation Limited

Date: 29.06.2017

Bore Hole No.	m. in Depth	UD Sample Type / D	Proctor Density Tests		Natural Moisture Content, w %	Soil Classification (I.S)	Mechanical Analysis				Consistency Limits				Direct Shear			Lab.CBR Test Unsoaked		Lab.CBR Test Soaked		Specific Gravity	Remarks
			MDD gm/cm³	OMC %			Gravel %	Sand %	Silt %	Clay %	Liquid %	Plastic %	Plasticity Index, I _p %	Shrinkage Limit %	Type	Cohesion C _u kg/cm²	Degree f	Penetration at 2.5 mm in %	Penetration at 5 mm in %	Penetration at 2.5 mm in %	Penetration at 5 mm in %		
16620	0.00 - 2.00	DS	----	----	----	CH	0	5	31	64	61	28	33	----	----	----	----	----	----	----	----	2.54	----
16620	4.50 - 4.60	SPT	----	----	----	SM	0	87	13		----	----	----	----	----	----	----	----	----	----	----	2.68	----
16620	7.50 - 7.60	SPT	----	----	----	SM	0	88	12		----	----	----	----	----	----	----	----	----	----	----	2.69	----
CHEM : Chemical Analysis			Tuu : Triaxial Test (Unconsolidated Undrained)					SP : Swelling Pressure or Swelling Potential Test					f : Angle of Internal Friction										
COMP : Compaction Test			Tcu : Triaxial Test (Consolidated Undrained)					SPT : Standard Penetration Test Sample					Cc : Undrained Cohesion										
DS : Direct Shear			Tcd : Triaxial Test (Consolidated Drained)					UDS : Undisturbed Soil Sample					f' : Effective Angle of Internal Friction										
K : Permeability Test			NP : Non Plastic					VL : Laboratory Vane Shear Test					Cc' : Effective Cohesion										
FSI : Free Swell Test			SL : Shrikage Limit Test					UC : Unconfined Compression Test					----> Combined Silt + Clay										
MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD,PUNE																				JOB NO.		G-532	



Annexure-4

Permeability test

PACKER PERMEABILITY TEST

Project : **Geotechnical Investigation along both the corridors for Pune Metro Project**
 Elevation : 551.265 Date : 14.07.2017
 Location : **BH U8 (CH.11800)** Test No : **01** Bore Hole : **BH U8**
 Coordinate : Depth of Bore Hole(m) : **30.00**
 Inclination : 90.00 (Deg. With Horizontal) Diameter (mm) : **NX**
 Test Section : **6.00** To **7.50** m Water Table (m) : **3.20**
 Length of Test Section :- 1.50 m H_1 (m) : **0.70**
 Type of Test : **Double Packer Test** H_2 (m) : **3.20**
 Test Location : Test Below Water Table $H(m)=H_1+H_2/10$: **0.39**

Sr. No.	L (m)	P_0 Kg / cm ²	P Kg / cm ²	t (min)	Water Meter reading		Q_t (lit)	Q_0 (lit/min)	Q lit/min/m	Lugeon	k (m/sec)
					Initial	Final					
1	1.50	0.50	0.89	5.00	54.0	67.0	13.00	2.60	1.733	19.476	1.95E-04
2	1.50	1.00	1.39	5.00	67.0	79.0	12.00	2.40	1.600	11.511	1.15E-04
3	1.50	1.50	1.89	5.00	79.0	91.0	12.00	2.40	1.600	8.466	8.47E-05
4	1.50	1.00	1.39	5.00	91.0	104.0	13.00	2.60	1.733	12.470	1.25E-04
5	1.50	0.50	0.89	5.00	104.0	116.0	12.00	2.40	1.600	17.978	1.80E-04

Sample Calculation :-

As per IS - 5529

$$P : P_0 + H_1 + H_2 = 0.890 \text{ Kg/cm}^2$$

$$Q_0 : Q_t / t = 2.600 \text{ lit / min}$$

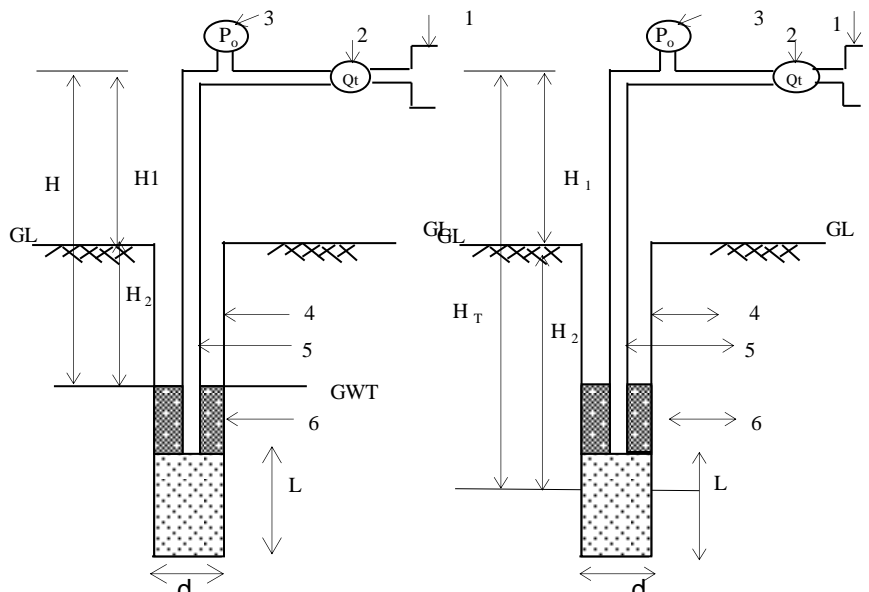
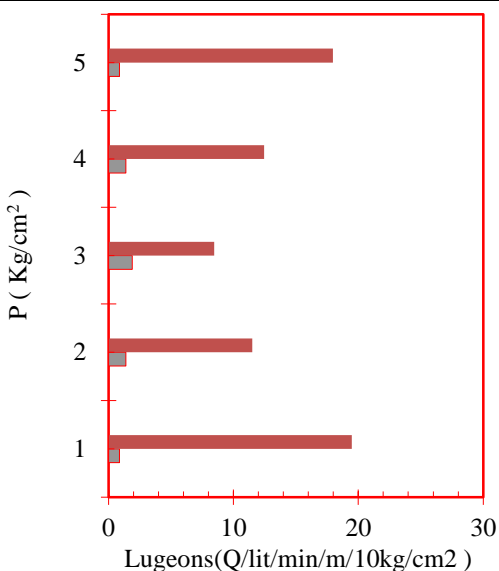
$$Q : Q_0 / L = 1.733 \text{ lit/min/m}$$

$$\text{Lugeon} :- \frac{Q * 1 \text{ Mpa}}{\text{Test Pressure i.e. } P}$$

$$= 19.5 \text{ lit/min/m/10Kg/cm}^2$$

Group : **B**

Classification : Turbulent flow



Saturated Strata

- 1 :- Pump
- 2 :- Flow Meter
- 3 :- Pressure Gauge
- 4 :- Drill Hole
- 5 :- Injection Pipe
- 6 :- Packer

Lugeon :- Lugeon Value in lit/min/m/10Kg/cm²
k :- Permeability in m/sec

Unsaturated Strata

- P_0 :- Gauge Pressure
- H_1 :- Height of Pressure Gauge
- H_2 :- Depth of Ground Water or Mid of Test Section to Ground Surface
- P :- Effective Pressure
- P :- $P_0 + H/10$ or $H = H_1 + H_2$
- t :- Injection Time
- Q_t :- Water Volume During time t
- Q_0 :- Water Volume / mete

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Job No. :

G-532

PACKER PERMEABILITY TEST

Project	Geotechnical Investigation along both the corridors for Pune Metro Project									
Elevation	565.066							Date	15.07.2017	
Location	(CH.15800)	Test No :	02					Bore Hole	0	
Coordinate								Depth of Bore Hole(m)	30.00	
Inclination	90.00 (Deg. With Horizontal)							Diameter (mm)	NX	
Test Section	6.00 To 7.50 m							Water Table (m)	4.70	
Length of Test Section :-	1.50 m							H ₁ (m)	0.70	
Type of Test	Double Packer Test							H ₂ (m)	4.70	
Test Location	Test Below Water Table							H(m)=H ₁ +H ₂ /10	0.54	

Sr. No.	L (m)	P ₀ Kg / cm ²	P Kg / cm ²	t (min)	Water Meter reading		Q _t (lit)	Q ₀ (lit/min)	Q lit/min/m	Lugeon	k (m/sec)
					Initial	Final					
1	1.50	0.50	1.04	5.00	117.0	119.0	2.00	0.40	0.267	2.564	2.56E-05
2	1.50	1.00	1.54	5.00	119.0	122.0	3.00	0.60	0.400	2.597	2.60E-05
3	1.50	1.50	2.04	5.00	122.0	124.0	2.00	0.40	0.267	1.307	1.31E-05
4	1.50	1.00	1.54	5.00	124.0	126.0	2.00	0.40	0.267	1.732	1.73E-05
5	1.50	0.50	1.04	5.00	126.0	129.0	3.00	0.60	0.400	3.846	3.85E-05

Sample Calculation :-

As per IS - 5529

$$P : P_0 + H_1 + H_2 = 1.040 \text{ Kg/cm}^2$$

$$Q_0 : Q_t / t = 0.400 \text{ lit / min}$$

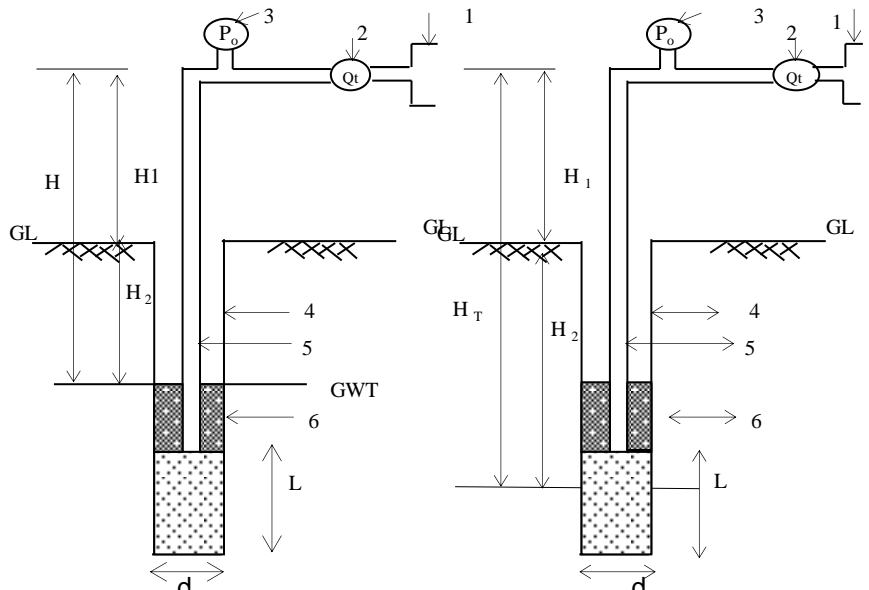
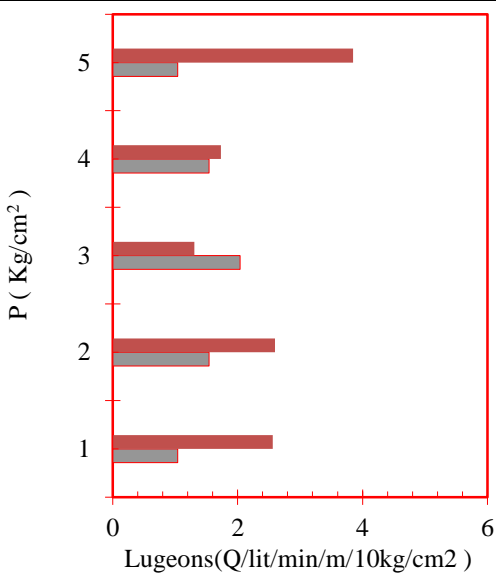
$$Q : Q_0 / L = 0.267 \text{ lit/min/m}$$

$$\text{Lugeon} :- \frac{Q * 1 \text{ Mpa}}{\text{Test Pressure i.e. } P}$$

$$= 2.6 \text{ lit/min/m/10Kg/cm}^2$$

$$\text{Group} : B$$

Classification : Turbulent flow



Saturated Strata

- 1 :- Pump
- 2 :- Flow Meter
- 3 :- Pressure Gauge
- 4 :- Drill Hole
- 5 :- Injection Pipe
- 6 :- Packer

Lugeon :- Lugeon Value in
lit/min/m/10Kg/cm²

k :- Permeability
in m/sec

Unsaturated Strata

- P₀ :- Gauge Pressure
- H₁ :- Height of Pressure Gauge
- H₂ :- Depth of Ground Water
or Mid of Test Section to
Ground Surface
- P :- Effective Pressure
- P :- P₀+H/10 or H = H₁ + H₂
- t :- Injection Time
- Q_t :- Water Volume During time t
- Q₀ :- Water Volume / mete

PACKER PERMEABILITY TEST

Project	Geotechnical Investigation along both the corridors for Pune Metro Project									
Elevation	555.371							Date	15.07.2017	
Location	U19 (CH.12325)			Test No	03			Bore Hole	U19	
Coordinate								Depth of Bore Hole(m)	30.00	
Inclination	90.00 (Deg. With Horizontal)							Diameter (mm)	NX	
Test Section	6.00 To 7.50 m							Water Table (m)	3.00	
Length of Test Section :-	1.50 m							H ₁ (m)	0.70	
Type of Test	Double Packer Test							H ₂ (m)	3.00	
Test Location	Test Below Water Table							H(m)=H ₁ +H ₂ /10	0.37	

Sr. No.	L (m)	P ₀ Kg/cm ²	P Kg/cm ²	t (min)	Water Meter reading		Q _t (lit)	Q ₀ (lit/min)	Q lit/min/m	Lugeon	k (m/sec)
					Initial	Final					
1	1.50	0.50	0.87	5.00	130.0	140.0	10.00	2.00	1.333	15.326	1.53E-04
2	1.50	1.00	1.37	5.00	140.0	151.0	11.00	2.20	1.467	10.706	1.07E-04
3	1.50	1.50	1.87	5.00	151.0	161.0	10.00	2.00	1.333	7.130	7.13E-05
4	1.50	1.00	1.37	5.00	161.0	170.0	9.00	1.80	1.200	8.759	8.76E-05
5	1.50	0.50	0.87	5.00	170.0	180.0	10.00	2.00	1.333	15.326	1.53E-04

Sample Calculation :-

As per IS - 5529

$$P : P_0 + H_1 + H_2 = 0.870 \text{ Kg/cm}^2$$

$$Q_0 : Q_t / t = 2.000 \text{ lit / min}$$

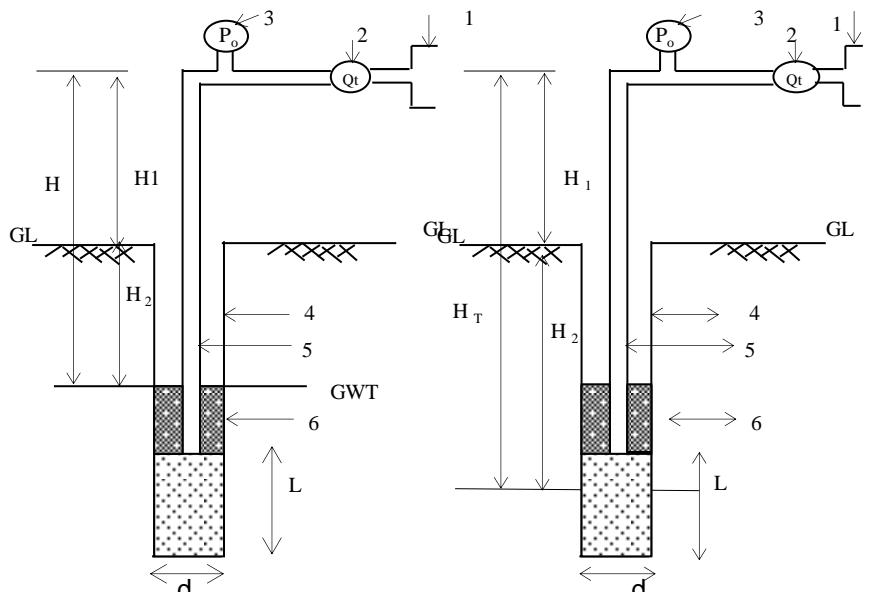
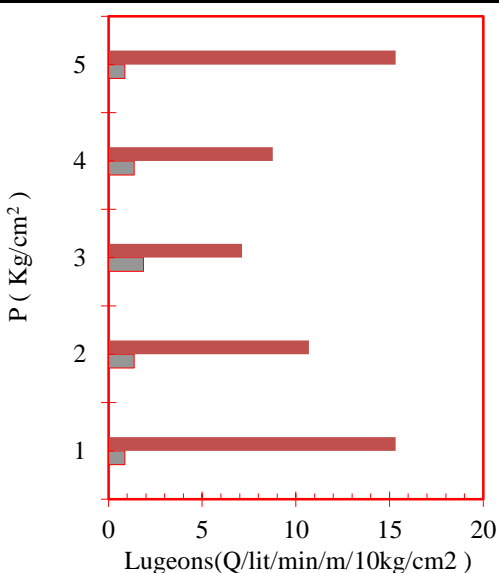
$$Q : Q_0 / L = 1.333 \text{ lit/min/m}$$

$$\text{Lugeon} :- \frac{Q * 1 \text{ Mpa}}{\text{Test Pressure i.e. } P}$$

$$= 15.3 \text{ lit/min/m/10Kg/cm}^2$$

Group : B

Classification : Turbulent flow



Saturated Strata

- 1 :- Pump
- 2 :- Flow Meter
- 3 :- Pressure Gauge
- 4 :- Drill Hole
- 5 :- Injection Pipe
- 6 :- Packer

Lugeon :- Lugeon Value in lit/min/m/10Kg/cm²
k :- Permeability in m/sec

Unsaturated Strata

- P₀ :- Gauge Pressure
- H₁ :- Height of Pressure Gauge
- H₂ :- Depth of Ground Water or Mid of Test Section to Ground Surface
- P :- Effective Pressure
- P :- P₀+H/10 or H = H₁ + H₂
- t :- Injection Time
- Q_t :- Water Volume During time t
- Q₀ :- Water Volume / mete

PACKER PERMEABILITY TEST

Project	Geotechnical Investigation along both the corridors for Pune Metro Project									
Elevation	553.639							Date	17.07.2017	
Location	(CH.14075)	Test No :	04					Bore Hole	0	
Coordinate								Depth of Bore Hole(m)	30.00	
Inclination	90.00 (Deg. With Horizontal)							Diameter (mm)	NX	
Test Section	7.00 To 8.00 m							Water Table (m)	2.50	
Length of Test Section :-	1.00 m							H ₁ (m)	0.70	
Type of Test	Double Packer Test							H ₂ (m)	2.50	
Test Location	Test Below Water Table							H(m)=H ₁ +H ₂ /10	0.32	

Sr. No.	L (m)	P ₀ Kg / cm ²	P Kg / cm ²	t (min)	Water Meter reading		Q _t (lit)	Q ₀ (lit/min)	Q lit/min/m	Lugeon	k (m/sec)
					Initial	Final					
1	1.00	0.50	0.82	5.00	181.0	199.0	18.00	3.60	3.600	43.902	4.39E-04
2	1.00	1.00	1.32	5.00	199.0	240.0	41.00	8.20	8.200	62.121	6.21E-04
3	1.00	1.50	1.82	5.00	240.0	268.0	28.00	5.60	5.600	30.769	3.08E-04
4	1.00	1.00	1.32	5.00	268.0	297.0	29.00	5.80	5.800	43.939	4.39E-04
5	1.00	0.50	0.82	5.00	297.0	326.0	29.00	5.80	5.800	70.732	7.07E-04

Sample Calculation :-

As per IS - 5529

$$P : P_0 + H_1 + H_2 = 0.820 \text{ Kg/cm}^2$$

$$Q_0 : Q_t / t = 3.600 \text{ lit / min}$$

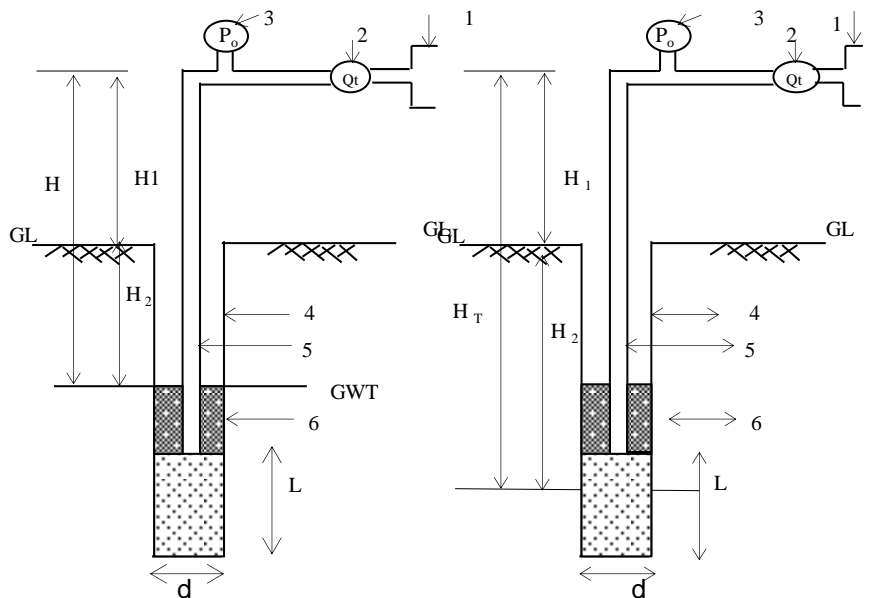
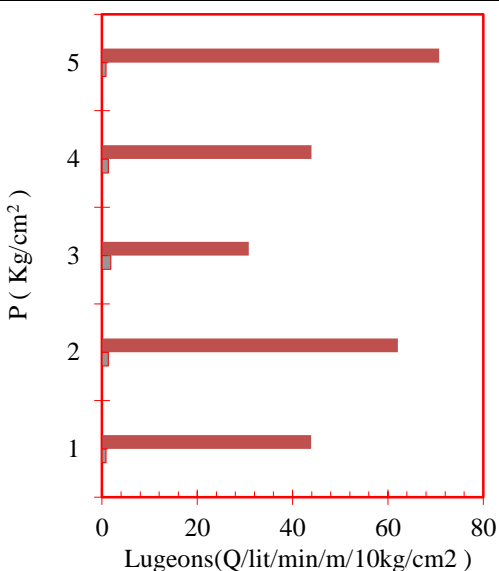
$$Q : Q_0 / L = 3.600 \text{ lit/min/m}$$

$$\text{Lugeon} :- \frac{Q * 1 \text{ Mpa}}{\text{Test Pressure i.e. } P}$$

$$= 43.9 \text{ lit/min/m/10Kg/cm}^2$$

$$\text{Group} : B$$

Classification : Turbulent flow



Saturated Strata

- 1 :- Pump
- 2 :- Flow Meter
- 3 :- Pressure Gauge
- 4 :- Drill Hole
- 5 :- Injection Pipe
- 6 :- Packer

Lugeon :- Lugeon Value in lit/min/m/10Kg/cm²

k :- Permeability in m/sec

Unsaturated Strata

- P₀ :- Gauge Pressure
- H₁ :- Height of Pressure Gauge
- H₂ :- Depth of Ground Water or Mid of Test Section to Ground Surface
- P :- Effective Pressure
- P :- P₀+H/10 or H = H₁ + H₂
- t :- Injection Time
- Q_t :- Water Volume During time t
- Q₀ :- Water Volume / mete

MONARCH SURVEYORS & ENGINEERING CONSULTANTS PVT.LTD

Job No. :

G-532

PACKER PERMEABILITY TEST

Project : **Geotechnical Investigation along both the corridors for Pune Metro Project**
 Elevation : 564.448 Date : 18.07.2017
 Location : (CH.15700) Test No : 05 Bore Hole : 0
 Coordinate : Depth of Bore Hole(m) : 30.00
 Inclination : 90.00 (Deg. With Horizontal) Diameter (mm) : NX
 Test Section : 6.00 To 7.50 m Water Table (m) : 2.50
 Length of Test Section :- 1.50 m H_1 (m) : 0.70
 Type of Test : **Double Packer Test** H_2 (m) : 2.50
 Test Location : Test Below Water Table $H(m)=H_1+H_2/10$: 0.32

Sr. No.	L (m)	P_0 Kg / cm ²	P Kg / cm ²	t (min)	Water Meter reading		Q_t (lit)	Q_0 (lit/min)	Q lit/min/m	Lugeon	k (m/sec)
					Initial	Final					
1	1.50	0.50	0.82	5.00	328.0	333.0	5.00	1.00	0.667	8.130	8.13E-05
2	1.50	1.00	1.32	5.00	333.0	338.0	5.00	1.00	0.667	5.051	5.05E-05
3	1.50	1.50	1.82	5.00	338.0	342.0	4.00	0.80	0.533	2.930	2.93E-05
4	1.50	1.00	1.32	5.00	342.0	347.0	5.00	1.00	0.667	5.051	5.05E-05
5	1.50	0.50	0.82	5.00	347.0	351.0	4.00	0.80	0.533	6.504	6.50E-05

Sample Calculation :-

As per IS - 5529

$$P : P_0 + H_1 + H_2 = 0.820 \text{ Kg/cm}^2$$

$$Q_0 : Q_t / t = 1.000 \text{ lit / min}$$

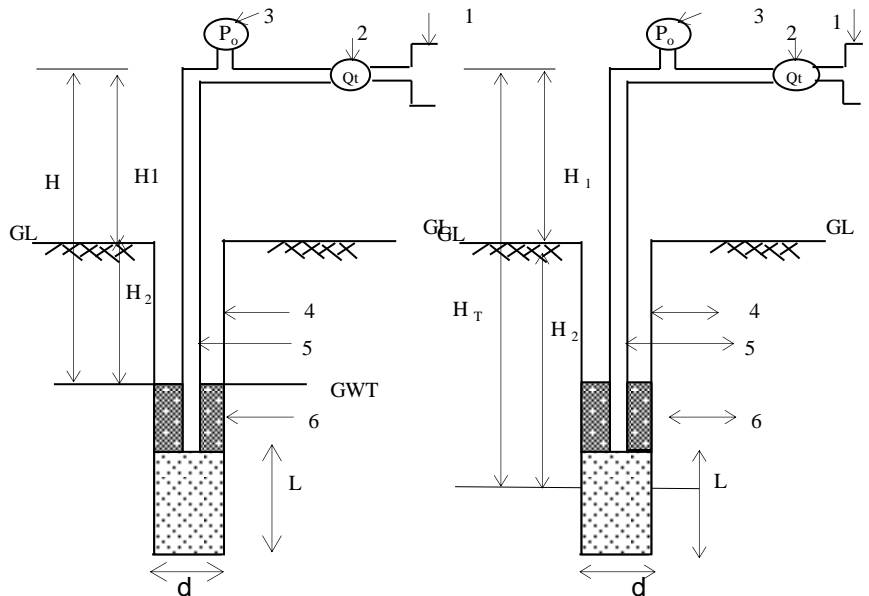
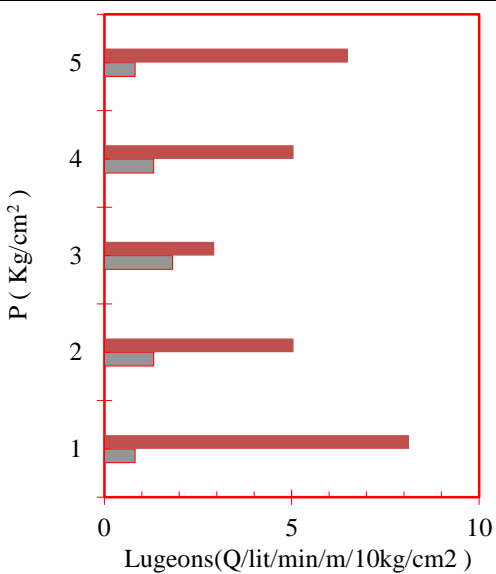
$$Q : Q_0 / L = 0.667 \text{ lit/min/m}$$

$$\text{Lugeon} :- \frac{Q * 1 \text{ Mpa}}{\text{Test Pressure i.e. } P}$$

$$= 8.1 \text{ lit/min/m/10Kg/cm}^2$$

Group : B

Classification : Turbulent flow



Saturated Strata

- 1 :- Pump
- 2 :- Flow Meter
- 3 :- Pressure Gauge
- 4 :- Drill Hole
- 5 :- Injection Pipe
- 6 :- Packer

Lugeon :- Lugeon Value in lit/min/m/10Kg/cm²
 k :- Permeability in m/sec

Unsaturated Strata

- P_0 :- Gauge Pressure
- H_1 :- Height of Pressure Gauge
- H_2 :- Depth of Ground Water or Mid of Test Section to Ground Surface
- P :- Effective Pressure
- P :- $P_0 + H/10$ or $H = H_1 + H_2$
- t :- Injection Time
- Q_t :- Water Volume During time t
- Q_0 :- Water Volume / mete

Annexure-5

Pressure meter Test

**Monarch Surveyors & Engineering Consultants
Pvt Ltd.**

Document no
MSECPL/MMRCL/RT
/620/02

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Report on Pressuremeter test

Rev. No R0

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Annexure I – Summery of Pressuremeter Test Results

Annexure II – Pressuremeter Data Sheet and Graphs

**Monarch Surveyors & Engineering Consultants
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MSECPL/MMRCL/RT
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Report on Pressuremeter test

Rev. No R0

REPORT ON PRESSUREMETER TEST

1.0 Preamble

Conducting the dilatometer/pressuremeter test for geotechnical sub-surface work for Pune Metro Project to determine the deformation modulus, shear modulus and limiting pressure of in-situ rock.

The scope for pressuremeter tests was entrusted to M/s S & R Geotechniques Pvt. Ltd. (SRGeo) by Monarch Surveyors & Engineering Consultants Pvt Ltd.

2.0 Definitions

The following terms and definitions apply in this report.

CLIENT – Monarch Surveyors & Engineering Consultants Pvt Ltd.

Agency for Pressure meter test - M/s S & R Geotechniques Pvt. Ltd. (SRGeo)

EIC – Engineer –in-Charge

3.0 Abbreviations

The following abbreviations may be found in this report

PMT – Pressure meter test / High Pressure Dilatometer

4.0 Objective

The objective of the PMT test is to determine the deformation modulus, shear modulus of rock in-situ.

5.0 Scope of Work

To carry out the PMT in 5 number of boreholes at a depth as instructed by EIC. The aim of the PMT tests is to determine the in-situ deformation modulus of rock using an expanding probe (dilatometer) to exert pressure on the wall of a drill hole. The resulting diametric hole expansion (dilation) is determined from measurements of the volumetric expansion of the probe. Deformability characteristics of the rock mass at the dilatometer location may be calculated from the relation between pressure and dilation.

6.0 Mobilisation

Testing Equipment

High Pressure Dilatometer or Pressuremeter of 20 Mpa (200 kg/cm²) capacity with accessories.

7.0 Measuring

For measurement, proceed to the following procedures:

- 7.1 Arrange beforehand to let the cable and the High-pressure Water feeding tube linked to the Road reducer, and the fix those cable and high-pressure water feeding tube to the sonde.
- 7.2 Connect the Cable to the Probe of this instrument.
- 7.3 Set POWER switch “ON”,
- 7.4 Set POWER switch “ON”, stand-by for 2 minutes as warm-up time.
- 7.5 Connect the high-pressure water feeding tube to the High-pressure hand pump.
- 7.6 Effect Calibration with the Sonde. For its details, refer to “8.0 CALIBRATION”.
- 7.7 Insert the Sonde into the Borehole.
- 7.8 Upon setting the Sonde at the measuring point, load the pressure on the Sonde using the High-pressure hand pump according to the pressure Loading Pattern set planned in advance, so as to load the pressure on the Rubber tube for its getting inflated. Record the relationship, on the occasion, between the pressure (“P MPa”) and the Displacement (“Rn”).
- 7.9 At time shifting the Sonde upon finish with the measurement, observe Displacement volume being displayed on the indicator, confirm the rubber tube shrunk, and only then proceed to the shift intended.
- 7.11 At time of extending the measurements successively in an identical borehole, effect the measurement starting with the deepest point followed by the shallower point. Such a step may serve to prevent the jamming trouble.
- 7.12 At time of Lifting up the Sonde, pull Little the Cable and High-pressure water feeding pump so that they may not slacken, and then proceed to lift it up.
- 7.13 Upon finish with lifting up the Sonde, wash it with water.

8.0 Calibration

8.1 Calibration the Displacement output

For calibration, take the following steps:

8.1.1 Detach the Rubber tube from the Sonde.

8.1.2 Connect the Sonde to the indicator by the Cable, and the POWER switch "ON"

8.1.3 As indicated in Fig. 8.1, cover the Sonde with calibration ring.

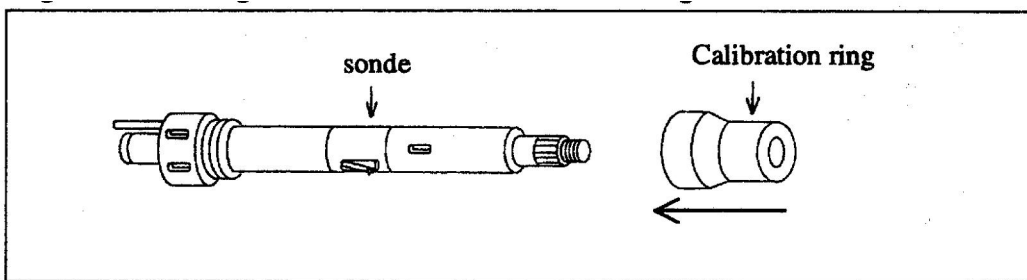


Fig. 8.1 Covering the Sonde with the calibration ring

8.1.4 Arrange the contact the section the calibration ring with its inner diameter getting smaller.

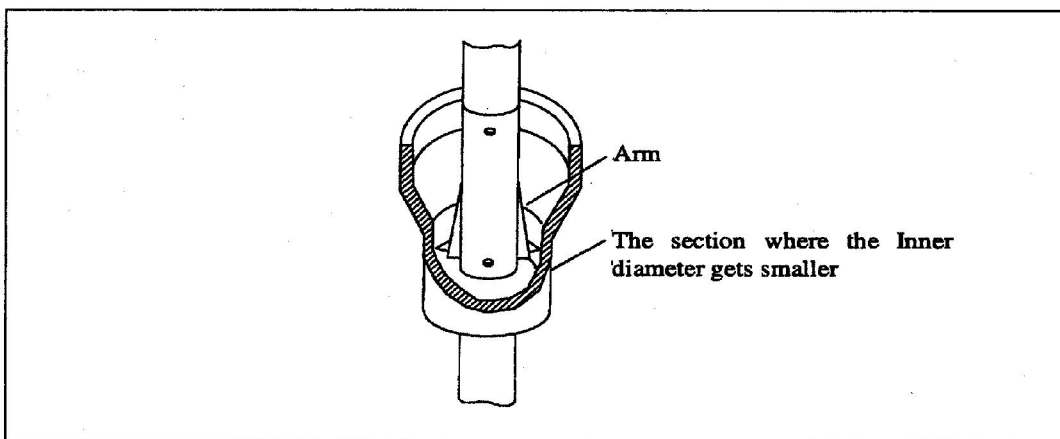


Fig. 3.2 calibration (1) using calibration ring

8.1.5 At this time, adjust R.B. trimmer by turning It through the use of trimmer adjusting rod so that the display value of the radius on the Indicator may indicate “0.00”.

8.1.6 Then, arrange the Arm to contact the section of the calibration ring with it's inner diameter getting Larger.

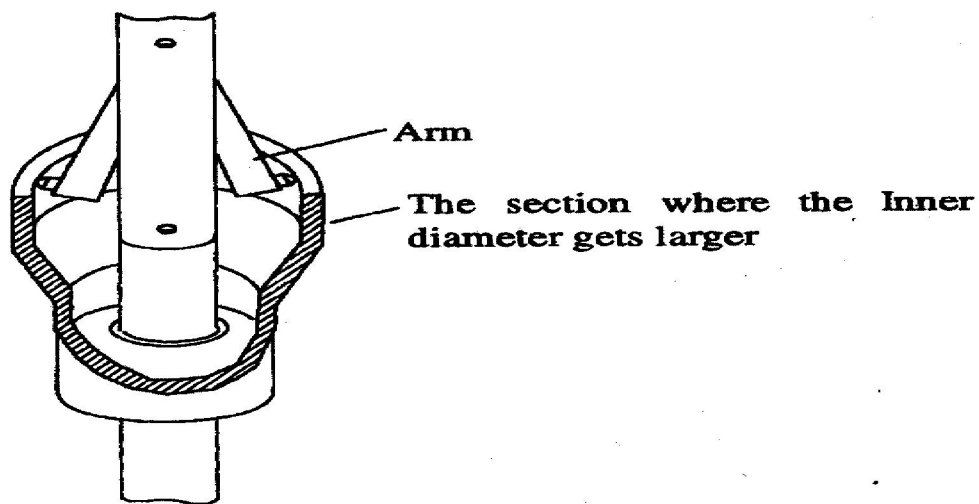


Fig. 3.3 Calibration (2) using the Calibration ring

8.1.7 At this time, adjust R.G. trimmer by turning it through the use of trimmer adjusting rod so that the display value may rod “10.00”.

8.2 Calibration the Pressure output

Connect each of the System constituting unite illustrated in the Figure below.

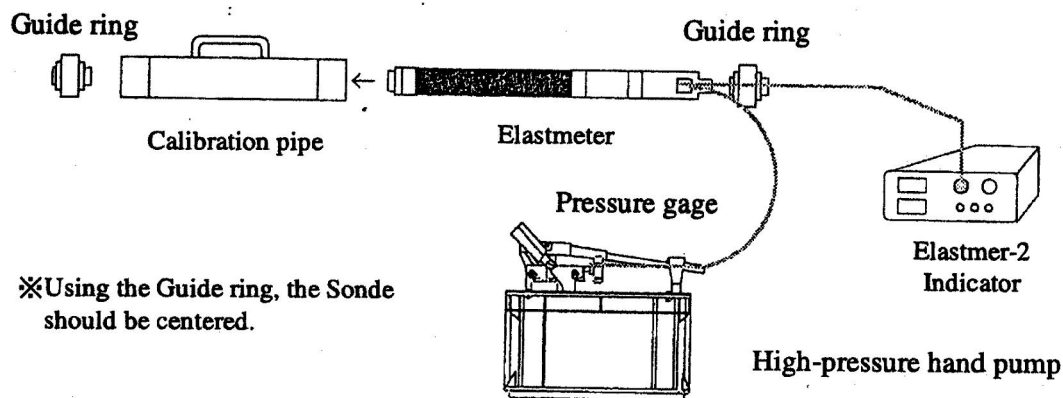


Fig.8.1 Calibrating the Pressure output

8.2.1 Adjust P.B. trimmer b turning it through the use of Trimmer adjusting rod (supplied as one of the typical accessories) so that the Display value of the pressure on the indicator under the statues where no pressure has been loaded, may read "0.00".

8.2.2 Then, Load the pressure approximately 15 MP a by using the High-pressure hand pump, and adjust P.G. trimmer by turning it through the use if trimmer adjusting rod so that the display value on the indicator may be rendered identical to the reference value on the pressure gauge.

8.3 Measuring the Variation with the Thickness of the Rubber tube resulted form the various Pressure loader on the Rubber tube:

The Elastmeter function to let the pressure exerted on the borehole wall via Rubber tube. Because of its Elasticity retained, rubber indicates the variation with its thickness influenced by the pressure varying the Rubber tube thickness. The outer diameter of Elastmeter is 70 mm.

Meantime, since this thickness variation is caused in case of the loaded pressure exceeding 1 MPa, the needed correction is with the data under pressure exceeding 1 MPa. For conducting the correction, take steps described below to measure the variation volume with the thickness of Rubber

8.3.1 As indicate in Fig. 8.1, insert the Elastmeter into the calibration pipe. Meantime, as for the Calibration pipe, use the NX class, the same with diameter 76 mm.

8.3.2 To Get the Rubber tube fitted for its partial use, repeat the pressurization and the depressurization each more than three times in advance.

8.3.3 Effect the depressurization once, then raise the pressure to 1 MPa, read the display value (Rp1) with the Displacement on that occasion, and record it one the Data sheet.

8.3.4 Raise the pressure with every step of 0.5 MPa, and record in order, the display value (Rp) with the Displacement for each time.

8.3.5 Repeat the above step till the pressurization will reach the pressure slated to be attained in the measurement.

9.0 Results

The Modulus of Elasticity, E as well as Shear Modulus, G values for the various depths of boreholes are tabulated in Annexure I. The Modulus of elasticity, E value ranges from $7.33 \times 10^5 \text{ kg/cm}^2$ to $1.05 \times 10^5 \text{ kg/cm}^2$ (Average Value $1.10 \times 10^5 \text{ kg/cm}^2$) and Shear Modulus, G values ranges from $6.80 \times 10^4 \text{ kg/cm}^2$ to $1.24 \times 10^4 \text{ kg/cm}^2$ (Average Value $4.22 \times 10^4 \text{ kg/cm}^2$).

10.0 Conclusions

The report above enumerates the factual data obtained from field records through a geotechnical investigation carried out at this site. The data presented in this report are specific for the boreholes drilled and time at which tests performed and sampling was conducted.

Project:	Pressuremeter Test For Geotechnical Sub- Surface Investigation Work For Pune Metro						
	Client:	Maharashtra Metro Rail Corporation Ltd.					
SUMMARY OF PRESSUREMETER TEST RESULTS							
Sr No	Chainage Number	Depth, m Below FL	Modulus of Elasticity, E		Shear Modulus, G	Limit Pressure, P _l	
			Mpa	kg/cm ²	kg/cm ²	kg/cm ²	
1	Ch. 15700	6.00	10456.06	1.05E+05	4.02E+04	175	
2	Ch.15400	6.00	7327.12	7.33E+04	2.82E+04	200	
3	Ch.11950	7.00	3218.29	3.22E+04	1.24E+04	120	
4	Ch.13375	12.00	17692.74	1.77E+05	6.80E+04	185	
6	Ch.16500	13.00	16114.15	1.61E+05	6.20E+04	200	

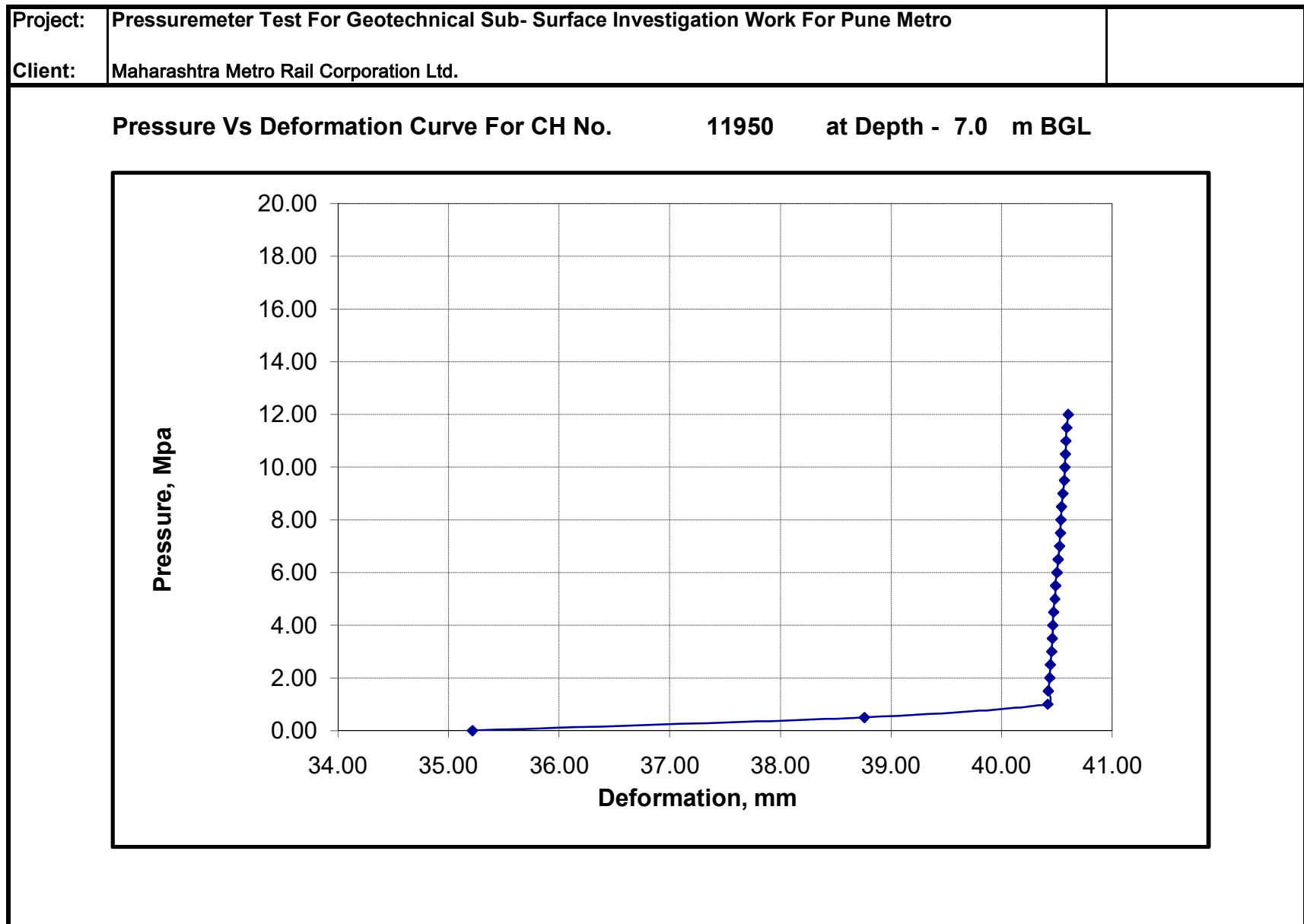
Project:	Pressuremeter Test For Geotechnical Sub- Surface Investigation Work For Pune Metro	
	- Pressuremeter Test	
Client:	Maharashtra Metro Rail Corporation Ltd.	
<p style="text-align: center;">Determination of Modulus of Elasticity and Shear Modulus</p> <p>CH No - 15700 Depth - 6 m Below founding Level</p> $S/\pi = (R_c^2 - (R_{p1} + 23.5)^2)$ <p>where, R_c - Inner Radius of of Calibration Pipe. R_{p1} = Indicated value of the displacement under the pressure at 1 Mpa.</p> $S/\pi = (38^2 - (2.16 + 23.5)^2)$ $= 785.56$ $E = (1 + \mu) * r * K$ <p>Where $K = \Delta P / \Delta R = (17.50 - 0.50) / (37.89 - 37.81) = 212.5$</p> <p>$\mu$ = poisson's ratio = 0.3 (For rock the poisson's ratio ranges from 0.3 to 0.4)</p> <p>r = intermediate radius for the section to calculate K value = 37.85</p> $E = 10456.063 \text{ Mpa}$ $= 104560.6 \text{ kg/cm}^2$ <p>Shear Modulus, $G = E / 2(1 + \mu) = 104560.6 / (2(1 + 0.3))$</p> $= 40215.625 \text{ kg/cm}^2$		

Annexure I

Pressuremeter data sheet and Graphs

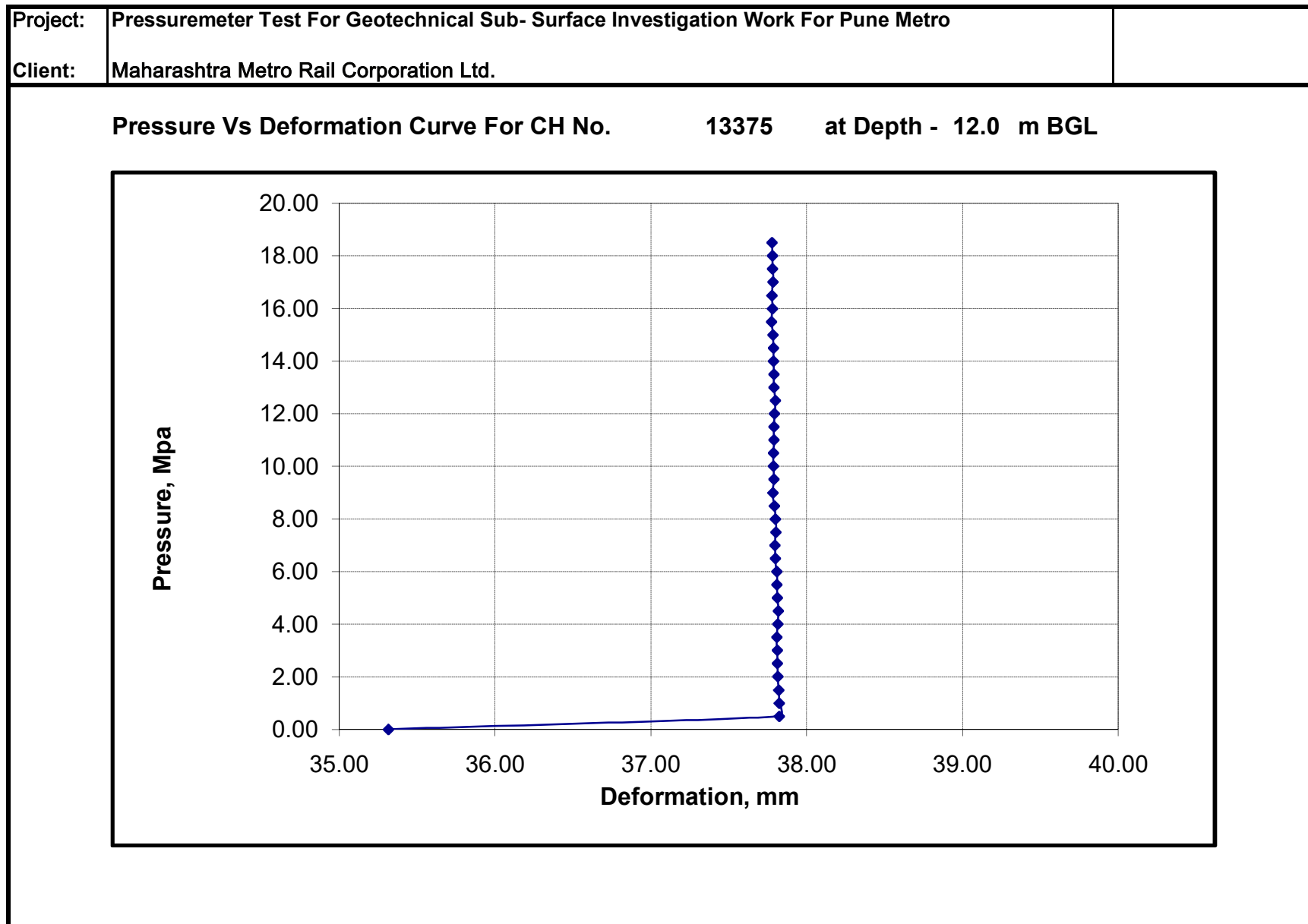
UGC-02 - Corrigendum III - Annexure 5
Revised GFR

Project:	Pressuremeter Test For Geotechnical Sub- Surface Investigation Work For Pune Metro						
Client:	Maharashtra Metro Rail Corporation Ltd.						
PRESSUREMETER DATA SHEET							
CH No	11950					Date	25-7-2017
Depth of test	7.0 m Below EGL						
Sr No	Pressure P (Mpa)	Displacement Display Value Rn (mm)	Inner Radius display value $R_i = R_n + 23.5$	Pressure Variation $P' = P - 1$	Thickness Correction Volume $P_G = P'/k$	Reference Inner radius $R_s = R_i - P_G$	Borehole radius $R = (R_s^2 + (S/3.14))^{1/2}$
1	0.00	-2.20	21.30	-1.00	-0.03	21.33	35.22
2	0.50	3.26	26.76	-0.50	-0.01	26.77	38.76
3	1.00	5.62	29.12	0.00	0.00	29.12	40.42
4	1.50	5.64	29.14	0.50	0.01	29.13	40.42
5	2.00	5.67	29.17	1.00	0.03	29.15	40.44
6	2.50	5.69	29.19	1.50	0.04	29.15	40.44
7	3.00	5.72	29.22	2.00	0.05	29.17	40.45
8	3.50	5.74	29.24	2.50	0.06	29.18	40.46
9	4.00	5.76	29.26	3.00	0.08	29.19	40.46
10	4.50	5.78	29.28	3.50	0.09	29.19	40.47
11	5.00	5.81	29.31	4.00	0.10	29.21	40.48
12	5.50	5.83	29.33	4.50	0.11	29.22	40.49
13	6.00	5.86	29.36	5.00	0.13	29.24	40.50
14	6.50	5.89	29.39	5.50	0.14	29.25	40.51
15	7.00	5.92	29.42	6.00	0.15	29.27	40.53
16	7.50	5.94	29.44	6.50	0.16	29.28	40.53
17	8.00	5.96	29.46	7.00	0.18	29.29	40.54
18	8.50	5.98	29.48	7.50	0.19	29.29	40.54
19	9.00	6.01	29.51	8.00	0.20	29.31	40.55
20	9.50	6.04	29.54	8.50	0.21	29.33	40.57
21	10.00	6.06	29.56	9.00	0.23	29.34	40.57
22	10.50	6.08	29.58	9.50	0.24	29.34	40.58
23	11.00	6.10	29.60	10.00	0.25	29.35	40.58
24	11.50	6.12	29.62	10.50	0.26	29.36	40.59
25	12.00	6.15	29.65	11.00	0.28	29.38	40.60
26	12.50						
27	13.00						
28	13.50						
29	14.00						
30	14.50						
31	15.00						
32	15.50						
33	16.00						
34	16.50						
35	17.00						
36	17.50						
37	18.00						
38	18.50						
39	19.00						
40	19.50						
41	20.00						



UGC-02 - Corrigendum III - Annexure 5
Revised GFR

Project:	Pressuremeter Test For Geotechnical Sub- Surface Investigation Work For Pune Metro						
Client:	Maharashtra Metro Rail Corporation Ltd.						
PRESSUREMETER DATA SHEET							
CH No	13375					Date	25-7-2017
Depth of test	12.0 m Below EGL						
Sr No	Pressure P (Mpa)	Displacement Display Value Rn (mm)	Inner Radius display value Ri = Rn + 23.5	Pressure Variation P' = P - 1	Thickness Correction Volume PG = P'/k	Reference Inner radius Rs = Ri - PG	Borehole radius R = (Rs ² + (S/3.14)) ^{1/2}
1	0.00	-2.04	21.46	-1.00	-0.03	21.49	35.32
2	0.50	1.89	25.39	-0.50	-0.01	25.40	37.83
3	1.00	1.90	25.40	0.00	0.00	25.40	37.82
4	1.50	1.91	25.41	0.50	0.01	25.40	37.82
5	2.00	1.91	25.41	1.00	0.03	25.39	37.81
6	2.50	1.92	25.42	1.50	0.04	25.38	37.81
7	3.00	1.93	25.43	2.00	0.05	25.38	37.81
8	3.50	1.94	25.44	2.50	0.06	25.38	37.81
9	4.00	1.96	25.46	3.00	0.08	25.39	37.81
10	4.50	1.98	25.48	3.50	0.09	25.39	37.82
11	5.00	1.98	25.48	4.00	0.10	25.38	37.81
12	5.50	1.99	25.49	4.50	0.11	25.38	37.81
13	6.00	2.00	25.50	5.00	0.13	25.38	37.81
14	6.50	2.00	25.50	5.50	0.14	25.36	37.80
15	7.00	2.01	25.51	6.00	0.15	25.36	37.80
16	7.50	2.03	25.53	6.50	0.16	25.37	37.80
17	8.00	2.04	25.54	7.00	0.18	25.37	37.80
18	8.50	2.04	25.54	7.50	0.19	25.35	37.79
19	9.00	2.04	25.54	8.00	0.20	25.34	37.78
20	9.50	2.06	25.56	8.50	0.21	25.35	37.79
21	10.00	2.07	25.57	9.00	0.23	25.35	37.79
22	10.50	2.08	25.58	9.50	0.24	25.34	37.79
23	11.00	2.10	25.60	10.00	0.25	25.35	37.79
24	11.50	2.11	25.61	10.50	0.26	25.35	37.79
25	12.00	2.13	25.63	11.00	0.28	25.36	37.79
26	12.50	2.15	25.65	11.50	0.29	25.36	37.80
27	13.00	2.15	25.65	12.00	0.30	25.35	37.79
28	13.50	2.16	25.66	12.50	0.31	25.35	37.79
29	14.00	2.17	25.67	13.00	0.33	25.35	37.79
30	14.50	2.18	25.68	13.50	0.34	25.34	37.79
31	15.00	2.19	25.69	14.00	0.35	25.34	37.78
32	15.50	2.19	25.69	14.50	0.36	25.33	37.78
33	16.00	2.21	25.71	15.00	0.38	25.34	37.78
34	16.50	2.22	25.72	15.50	0.39	25.33	37.78
35	17.00	2.24	25.74	16.00	0.40	25.34	37.78
36	17.50	2.25	25.75	16.50	0.41	25.34	37.78
37	18.00	2.26	25.76	17.00	0.43	25.34	37.78
38	18.50	2.27	25.77	17.50	0.44	25.33	37.78
39	19.00						
40	19.50						
41	20.00						



Project:	Pressuremeter Test For Geotechnical Sub- Surface Investigation Work For Pune Metro			
	- Pressuremeter Test			
Client:	Maharashtra Metro Rail Corporation Ltd.			
Calibration Data Sheet				
Probe No	1	Date		25-Jul-17
Sr No	Pressure P (Mpa)	Displacement Rp (mm)	Pressure Variation P' = P - 1	Thickness Correction Volume R' = Rp - Rp1
1	0.00	-	-	-
2	0.50	-	-	-
3	1.00	2.16	0.00	0.00
4	1.50	2.18	0.50	0.02
5	2.00	2.18	1.00	0.02
6	2.50	2.20	1.50	0.04
7	3.00	2.21	2.00	0.05
8	3.50	2.23	2.50	0.07
9	4.00	2.24	3.00	0.08
10	4.50	2.25	3.50	0.09
11	5.00	2.26	4.00	0.10
12	5.50	2.28	4.50	0.12
13	6.00	2.29	5.00	0.13
14	6.50	2.30	5.50	0.14
15	7.00	2.31	6.00	0.15
16	7.50	2.32	6.50	0.16
17	8.00	2.33	7.00	0.17
18	8.50	2.34	7.50	0.18
19	9.00	2.35	8.00	0.19
20	9.50	2.36	8.50	0.20
21	10.00	2.37	9.00	0.21
22	10.50	2.38	9.50	0.22
23	11.00	2.40	10.00	0.24
24	11.50	2.41	10.50	0.25
25	12.00	2.42	11.00	0.26
26	12.50	2.43	11.50	0.27
27	13.00	2.44	12.00	0.28
28	13.50	2.45	12.50	0.29
29	14.00	2.46	13.00	0.30
30	14.50	2.47	13.50	0.31
31	15.00	2.48	14.00	0.32
32	15.50	2.49	14.50	0.33
33	16.00	2.50	15.00	0.34
34	16.50	2.51	15.50	0.35
35	17.00	2.52	16.00	0.36
36	17.50	2.53	16.50	0.37
37	18.00	2.55	17.00	0.39
38	18.50	2.56	17.50	0.40
39	19.00	2.57	18.00	0.41
40	19.50	2.57	18.50	0.41

