

GEOTECHNICAL INVESTIGATION REPORT

CLIENT: M/S. S. P. MANDALI'S WELINGKAR INSTITUTE OF
MANAGEMENT

SITE ADDRESS: PLOT NO. 226, SIR BHALCHANDRA ROAD, MATUNGA
(EAST), MUMBAI

ARCHITECT: M/S. MASTER STROKE.

RCC CONSULTANTS: M/S. SUNIL MUTALIK & ASSOCIATES

GLOBAL GEOTECHNICS

A/202, SWATI MANOR, OPP. SHIVAJI MANDIR, N.C. KELKAR MARG, DADAR, MUMBAI - 28

globalgeotechnics@ymail.com

**SITE ADDRESS: PLOT NO. 226, SIR BHALCHANDRA ROAD, MATUNGA
(EAST), MUMBAI**

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GG/19-20/02/SI/307

Date: 10th Feb, 2020

GEOTECHNICAL INVESTIGATION REPORT

SITE: PLOT NO. 226, SIR BHALCHANDRA ROAD, MATUNGA (EAST), MUMBAI

FOR: M/S. S. P. MANDALI'S WELINGKAR INSTITUTE OF MANAGEMENT.

Introduction

M/s. S. P. Mandali's Welingkar Institute of Management Propose to construct a one basement plus ground plus nineteen storied residential hostel building at Plot No. 226, Sir Bhalchandra Road, Matunga (East), Mumbai. M/s. Master Stroke are the architects and M/s. Sunil Mutalik & Associates is the structural consultants for the project.

The soil investigation work comprising of four number of trial boreholes has recently been carried out on site. The sub soil profile revealed by the trial boreholes is described in the following paragraphs followed by discussion on foundation aspects and recommendations.

It may please be noted that the detailed structural design of foundation is not contemplated in the report. The report is aimed at providing general information regarding the geotechnical aspects of subsoil formations from safe bearing capacity and settlement point of view.

Methodology of investigation

The work in general was carried out in accordance with the following Indian standard specification.

- a. **I.S. - 1892** - Code of Practice for Sub Surface Investigations for Foundations.
- b. **I.S. -1498** - Classification and Identification of Soils for General Engineering Purpose.
- c. **I.S. - 2131** - Method for Standard Penetration Test for Soils.
- d. **I.S. - 6926** - Code of Practice for Diamond Core Drilling for Site Investigation.

- e. **I.S. – 5313** - Guide for Core Drilling Observations.
- f. **I.S. – 12070**- Design and construction of shallow foundation on rock.

Soil Profile

Site shows the presence of rock under a layer of overburden comprising of filling, Brownish sandy clay, and yellowish/Brownish sandy clay with rock fragments. Thickness of this layer was observed to vary from 2.20 m to 2.80 m.

The Standard Penetration Test (SPT) conducted on overburden soil layers shows refusal SPT values ($N > 50$).

Beneath all the soil layers, bedrock of basaltic origin was encountered at depths ranging from 2.20 m to 2.80 m at the locations where boreholes were taken. Except for a few drill runs, core recovery and RQD values in the rocky zone were moderate to high.

Bores were terminated in the rocky strata upon establishing its continuity. Total depth drilled was around 20.00 m and ground water was seen at shallower depth of around 0.30 m to 2.80 m depth.

Soil test results

Selected undisturbed soil sample was tested in the laboratory to determine its composition, index and engineering properties. Results indicate that the soil is chiefly fine grained (76.54%).

The fine fraction was further subject to Atterberg's limits tests. These results indicate that the liquid limit was 69.35% with the plasticity index being 34.85%. Natural moisture content of the sample was recorded as 27%. Field density was recorded as 1.92 gm/cc.

Engineering properties of the soil were measured by the unconfined compressive strength test and the UCS value obtained was 1.426 kg/cm².

Rock test results

Selected rock samples from 3.00 m to 12.00 m depth were subjected to laboratory tests. Unconfined compressive strength (UCS) values were observed to vary from 28.8 kg/cm² to 190.1 kg/cm².

The point load strength index is various form 1.93 kg/cm².

Table No.2:-Rock classes with respect to Dry density and Porosity (IAEG (Anon 1979a))

Class	Dry density (gm/cm ³)	Description	Porosity (%)	Description
1	Less than 1.80	Very low	Over 30	Very high
2	1.80-2.20	Low	30-15	High
3	2.20-2.55	Moderate	15-5	Medium
4	2.55-2.75	High	5-1	Low
5	Over 2.75	Very high	Less than 1	Very low

The IAEG (Anon 1979a) has proposed a table grouping the strata on strength of dry density and porosity in five classes (Table No. 2). As per this table, the rock at the site has low to moderate dry density (1.932 gm/cc – 2.385 gm/cc) and medium to high porosity (9.02% to 21.88%).

Water Test Results

Chemical tests on the water sample recovered from site indicate that it is closer to neutral (pH=6.70 to 8.36). Chlorides (40 ppm to 140 ppm), sulphates (30 ppm to 53 ppm) and organic matter (15 ppm to 35 ppm) are well within the limits as prescribed by IS-456.

Foundation Aspects

It is learnt that the promoters plan to construct a one basement plus ground plus nineteen storied residential hostel building. The loads on individual columns are expected to be around 450 MT to 500 MT depending on the column grid adopted.

For provision of single level basement, it is obligatory to excavate 4.00 m to 5.00 m considering clear depth of basement and foundation thickness. Borelogs shows that open footings can be rested on weathered basaltic rock at 4.00 m to 5.00 m below existing ground level on weathered rock.

A safe bearing capacity (SBC) of **80 t/m²** on weathered basaltic rock can be used for their design, and the corresponding settlement shall be around **12 mm** which is well within the limit from serviceability point of view.

Feasibility of conventional open excavation to the tune of 4.00 m to 5.00 m shall be verified in view of available open spaces. For safe open excavation the slope

angle of 45° (degrees) shall be maintained in soil. If is deemed infeasible, some temporary enabling scheme like touching piles shall be adopted.

Nowadays hydraulic excavators are used for mass excavations and the present case is not likely to be any different. It is however recommended to exercise caution while using the hydraulic excavators so as not to disturb the founding stratum by its sharp edged teeth.

Recommendations

1. Open foundations may be designed for the proposed one basement plus ground plus nineteen storied residential hostel building.
2. SBC of **80 t/m²** can be assumed on weathered basaltic rock at 4.00 m to 5.00 m depth below existing ground level, and the corresponding settlement shall be in the range of **12 mm**.
3. Feasibility of conventional open excavation to the tune of 4.00 m to 5.00 m shall be verified in view of available open spaces. For safe open excavation the slope angle of 45° shall be maintained in soil. If is deemed infeasible, some temporary enabling scheme like touching piles shall be adopted.
4. The use of hydraulic excavators should be made carefully so as not to disturb the founding strata by its sharp edged teeth.
5. It is desirable that the founding stratum is confirmed by a competent geotechnical professional before laying the PCC.

The attached borelogs and lab test results complete the report.

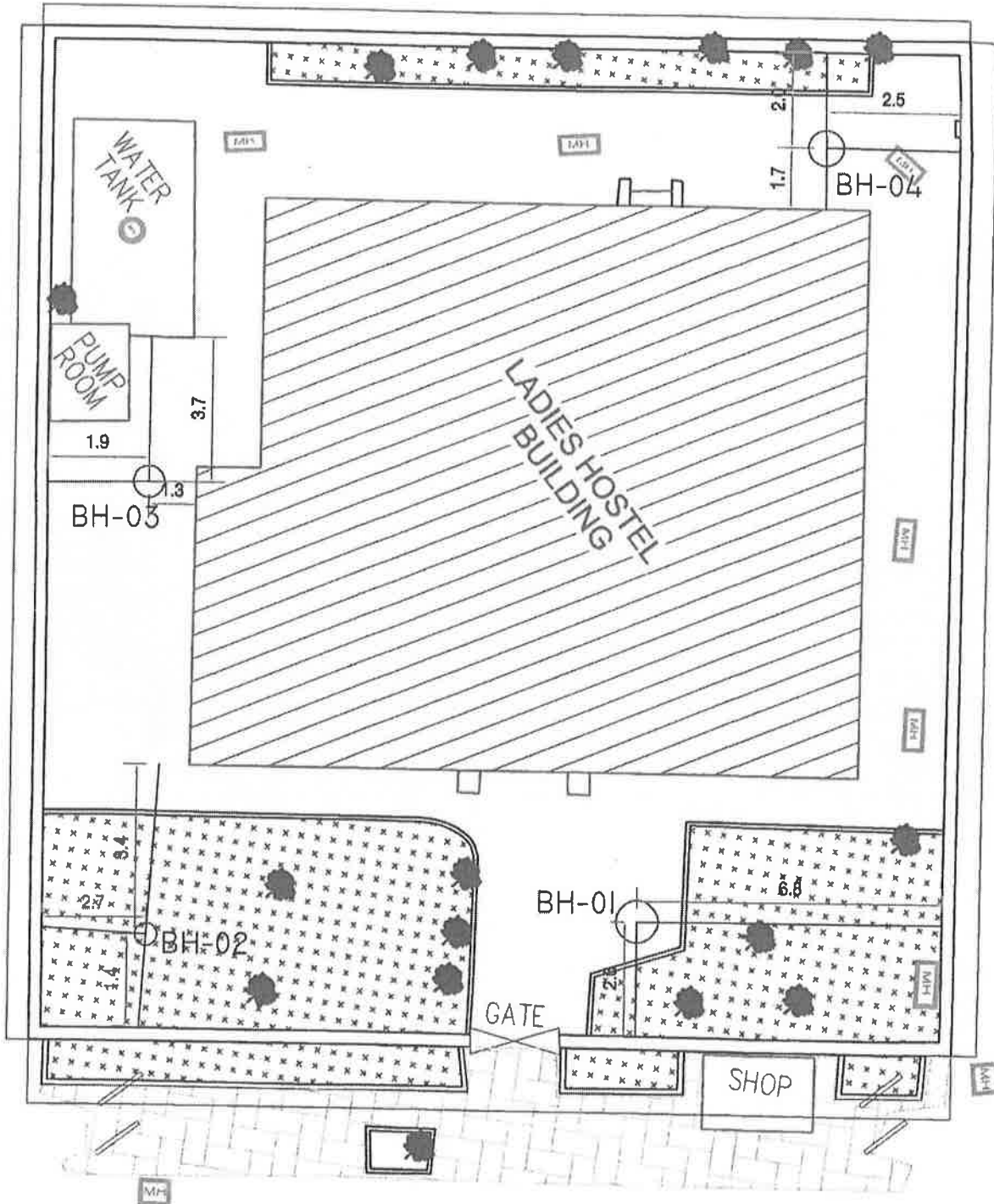
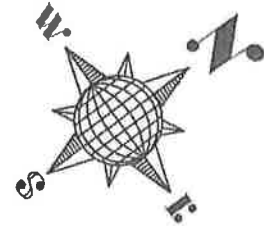


(GAURAV S. PARAB)
B.E. (Civil) M. Tech (Geotech)



(VIJAY V. DANDAGE)
B.E. (Civil) M. Tech (Geotech)

ANNEXURE A: BOREHOLE LOCATION PLAN



Client: M/S. S.P. Mandali's Welingkar Institute of Management

Site : 226, Sir Bhalchandra Road, Matunga (E), Mumbai.

Ref. No. : GG/19-20/01/SI/307	Borehole Location : ○	<p>Geotechnical Engineering Consultants</p> <p><small>I 202 'A' Swati Manor CHB, 2nd Floor, N.C. Kethkar Road, Opp. Shreeji Mandir, GADDA (West), Mumbai 400 033 * Phone : +91 22 55559920, +91 22 24216047</small></p>
Date: 05.02.2020	Scale - Not to Scale	
Drawn by	Checked by	

ANNEXURE B: BORE HOLE LOGS



BORE LOG

(As per IS : 1892 - 1979, 4453 - 1980, & 4464 - 1967)

Job No. : 1920_307

Date : 02-01-20

Page No. : 1 of 2

Project : Proposed 1 Basement + G + 19 storeys Residential Hostel

Client : M/S. S.P.Mandalis Welingkar Institute of Management

Co-Ordinate : -

R.L. :

Location : 226, Sir Bhaichandra Road, Matunga (E), Mumbai

Dia. of Borehole : Nx

Depth of GWT : 0.7 m

Bore Hole No. : 01

Depth of Bore Hole : 20 m

Depth of Casing : 2.5 m

Date of Commencement : 28-01-20

Date of Completion : 31-01-20

Scale m	Depth m	R.L. m	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value					CR %	RQD %	P.R. m/hr.	Remarks/ Other Tests
							From	To	15	15	15	15	N				
	0.50			Filling (0.50m)													
1				Yellowish brown sandy clay with disintegrated rock fragments	01	SPT-1	1.5	1.56	6/50				R				▽ GWT
2																	
	2.50			(2.00m)													
3				Brownish weathered altered basalt	1-4	DR1	2.5	4						47	47		
4																	
5					5-9	DR2	4	5.5						49	43		
	5.50			(3.00m)													
6				Brownish grey altered basalt	10-14	DR3	5.5	7						62	57		
7																	
	7.00			(1.50m)													
8				Grey basalt	15-19	DR4	7	8.5						67	65		
9																	
10					20-24	DR5	8.5	10						67	67		
11					SP,25-31	DR6	10	11.5						73	59		
	11.50			(4.50m)													
12				Greyish weathered basalt	32-41	DR7	11.5	13						71	43		
13																	
14					SP,42-49	DR8	13	14.5						65	39		
	14.50			(3.00m)													
15				Grey basalt (0.50m)													

DS: Disturbed Sample

UDS: Undisturbed Sample

SPT: Standard Penetration Test

WS: Wash Sample

CR: Core Recovery

RQD: Rock Quality Designation

PR: Rate of Penetration in Rock

VST: Vane Shear Test

K: Permeability of Soil / Rock

PT: Packer Permeability Test

DR: Drill Run

GWT: Ground Water Table

Site Engr.	Drawn By	Chkd. By	Client Rept.	GLOBAL GEOTECHNICS 202, Swati Manoj CHS, Opp Shivaji Mandir, N C Kelkar Road Dadar-W, Mumbai Tel No : 022 6555 9920 Email : globalgeotechnics@ymail.com
	Siddhesh			



BORE LOG

(As per IS : 1892 - 1979, 4453 - 1980, & 4464 - 1967)

Job No. : 1920_307

Date : 02-01-20

Page No. : 1 of 2

Project : Proposed 1 Basement + G + 19 storeys Residential Hostel

Client : M/S. S.P.Mandalis Welingkar Institute of Management

Co-Ordinate : -

R.L. :

Location : 226, Sir Bhalchandra Road, Matunga (E), Mumbai

Dia. of Borehole : 11x

Depth of GWT : 2.2 m

Bore Hole No. : 02

Depth of Bore Hole : 20 m

Depth of Casing : 3 m

Date of Commencement : 01-02-20

Date of Completion : 03-02-20

Scale m	Depth m	R.L. m	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value					CR %	RQD %	P.R. m/hr.	Remarks/ Other Tests
							From	To	15	15	15	15	N				
	1.00			Brownish sandy clayey gravel [1.00m]													
	2.50			Yellowish brown sandy clay with disintegrated rock fragments [1.50m]	WS 01	DR1 UDS	1	1.5									31 blows/ 28cm GWT
	3.00			Brownish weathered altered basalt [0.50m]	WS	DR2	1.9	2.5									
	4.50			Brownish grey altered basalt	SP.1	DR3	2.5	3					40	20			
	6.00			Brownish grey altered basalt	SP,2-3	DR4	3	4.5					50	40			
	6.00			Greyish weathered basalt	4-13	DR5	4.5	6					53	31			
	9.00			Greyish weathered basalt	14-22	DR6	6	7.5					33	NIL			
	9.00			Greyish weathered basalt	23-31	DR7	7.5	9					74	66			
	13.50			Grey basalt	32-39	DR8	9	10.5					79	65			
	13.50			Grey basalt	SP,40-48	DR9	10.5	12					71	54			
	13.50			Grey basalt	SP,49-56	DR10	12	13.5					78	67			
	15.00			Greyish weathered basalt [1.50m]	SP,57-64	DR11	13.5	15					61	37			

DS: Disturbed Sample

UDS: Undisturbed Sample

SPT: Standard Penetration Test

WS: Wash Sample

CR: Core Recovery

RQD: Rock Quality Designation

PR: Rate of Penetration in Rock

VST: Vane Shear Test

K: Permeability of Soil / Rock

PT: Packer Permeability Test

DR: Drill Run

GWT: Ground Water Table

Site Engr. Drawn By Chkd. By Client Rept.

Merrill

GLOBAL GEOTECHNICS

202, Swati Manor CHS, Opp Shivaji Mandir, N C Kekar Road Dadar-W, Mumbai
Tel No : 022 6555 9920 Email : globalgeotechnics@gmail.com



BORE LOG

(As per IS : 1892 - 1979, 4453 - 1980, & 4464 - 1967)

Job No. : 1920_307

Date : 02-01-20

Page No. : 1 of 2

Project : Proposed 1 Basement + G + 19 storeys Residential Hostel

Client : M/S. S.P.Mandalis Welingkar Institute of Management

Co-Ordinate : -

R.L. :

Location : 226, Sir Bhalchandra Road, Matunga (E), Mumbai

Dia. of Borehole : Nx

Depth of GWT : 0.3 m

Bore Hole No. : 03

Depth of Bore Hole : 20 m

Depth of Casing : 2 m

Date of Commencement : 28-01-20

Date of Completion : 31-01-20

Scale m	Depth m	R.L. m	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value					CR %	RQD %	P.R. m/hr.	Remarks/ Other Tests
							From	To	15	15	15	15	N				
	0.50			Filling [0.50m]													GW
1				Brownish sandy clay													
2					01	UDS	2	2.45									16 blows/ No Recovery
3	2.80			[2.30m]													
				Brownish weathered altered basalt	1	DR1	2.8	3									
4					SP,2-3	DR2	3	4.5					14	NIL			
5																	
					SP,4	DR3	4.5	6					13	NIL			
6																	
					SP,5-8	DR4	6	7.5					27	13			
7																	
8																	
					SP,9-13	DR5	7.5	9					33	13			
9	9.00			[6.20m]													
				Brownish grey altered basalt													
10					14-16	DR6	9	10.5					57	52			
11																	
					17-25	DR7	10.5	12					46	24			
12	12.00			[3.00m]													
				Grey basalt													
13					26-30	DR8	12	13.5					68	68			
	13.50			[1.50m]													
				Greyish weathered basalt													
14					SP,31-37	DR9	13.5	15					59	33			Isolated patches of amygdales from 13.5m to 19.5m
15	15.00			[1.50m]													

DS: Disturbed Sample

UDS: Undisturbed Sample

SPT: Standard Penetration Test

WS: Wash Sample

CR: Core Recovery

RQD: Rock Quality Designation

PR: Rate of Penetration in Rock

VST: Vane Shear Test

K: Permeability of Soil / Rock

PT: Packer Permeability Test

DR: Drill Run

GWT: Ground Water Table

Site Engr.	Drawn By Siddhesh	Chkd. By	Client Rept.	GLOBAL GEOTECHNICS 202, Swati Manor CHS, Opp Shivaji Mandir, N C Kelkar Road Dadar-W, Mumbai Tel No : 022 6555 9920 Email : globalgeotechnics@ymail.com
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BORE LOG

(As per IS : 1892 - 1979, 4453 - 1980, & 4464 - 1967)

Job No. : 1920_307

Date : 02-01-20

Page No. : 2 of 2

Project : Proposed 1 Basement + G + 19 storeys Residential Hostel

Client : M/S. S.P.Mandalis Welingkar Institute of Management

Co-Ordinate : -

R.L. :

Location : 226, Sir Bhalchandra Road, Matunga (E), Mumbai

Dia. of Borehole : Nx

Depth of GWT : 0.3 m

Bore Hole No. : 03

Depth of Bore Hole : 20 m

Depth of Casing : 2 m

Date of Commencement : 28-01-20

Date of Completion : 31-01-20

Scale m	Depth m	R.L. m	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value					CR %	RQD %	P.R. m/hr	Remarks/ Other Tests
							From	To	15	15	15	15	N				
				Grey basalt													
	16				38-46	DR10	15	16.5						69	53		
	17				47-54	DR11	16.5	18						71	59		
	18																
	19				55-63	DR12	18	19.5						83	79		
	20	20.00		(5.00m)	64-65	DR13	19.5	20						68	68		
	21			The Bore Hole is Terminated at 20.00 m depth													
	22																
	23																
	24																
	25																
	26																
	27																
	28																
	29																
	30																

DS : Disturbed Sample

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	Siddhesh			



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Job No. : 1920_307

Date : 02-01-20

Page No. : 1 of 2

Project : Proposed 1 Basement + G + 19 storeys Residential Hostel

Client : M/S. S.P.Mandalis Welingkar Institute of Management

Co-Ordinate : -

RL :

Location : 226, Sir Bhalchandra Road, Matunga (E), Mumbai

Dia. of Borehole : Nx

Depth of GWT : 2.8 m

Bore Hole No. : 04

Depth of Bore Hole : 20 m

Depth of Casing : 3 m

Date of Commencement : 01-02-20

Date of Completion : 03-02-20

Scale m	Depth m	R.L. m	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value					CR %	RQD %	P.R. m/hr	Remarks/ Other Tests	
							From	To	15	15	15	15	N					
	0.50			Filling [0.50m]														
1				Brownish sandy clayey gravel	WS	DR1	0.5	1.5										
2	2.20					01	SPT-1	1.5	1.8	4	10	0/50		R				57% Recovery
				[1.70m]	WS	DR2	1.8	2.2										
3				Brownish weathered altered basalt	1-4	DR3	2.2	3						29	NIL		GWT	
4					5-7	DR4	3	4.5						23	13			
5					SP,8-10	DR5	4.5	6						15	NIL			
6					02	SPT-2 DR6	6.07	6.07	7/50					R	42	42		
7					SP,12	DR7	6.5	7							26	NIL		
8				[6.30m]	03	SPT-3 DR8	7.5	7.5	10/52					R	25	NIL		
8	8.50				SP	DR10	8	8.5							26	NIL		
9					13	DR11	8.5	9							36	36		
10				Brownish grey altered basalt	14-18	DR12	9	10.5						60	60			
11					SP,19-25	DR13	10.5	12							66	25		
12				[2.90m]														
13				Brownish grey weathered breccia with vesicles	SP,30-43	DR14	12	13.5						75	41			
14																		
14	13.80			[2.40m]														
15				Grey basalt	SP,44-54	DR15	13.5	15						79	49			
15	15.00																	
				[1.20m]														

DS: Disturbed Sample

UDS: Undisturbed Sample

SPT: Standard Penetration Test

WS: Wash Sample

CR: Core Recovery

RQD: Rock Quality Designation

PR: Rate of Penetration in Rock

VST: Vane Shear Test

K: Permeability of Soil / Rock

PT: Packer Permeability Test

DR: Drill Run

GWT: Ground Water Table

Site Engr.	Drawn By	Chkd. By	Client Rept.	GLOBAL GEOTECHNICS
	Merrill			202, Swati Manor CHS, Opp Shivaji Mandir, N C Kelkar Road Dadar-W, Mumbai Tel No : 022 6555 9920 Email : globalgeotechnics@gmail.com



BORE LOG

(As per IS : 1892 - 1979, 4453 - 1980, & 4464 - 1967)

Job No. : 1920_307

Date : 02-01-20

Page No. : 2 of 2

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Client : M/S. S.P.Mandalis Welingkar Institute of Management

Co-Ordinate : -

R.L. :

Location : 226, Sir Bhalchandra Road, Matunga (E), Mumbai

Dia. of Borehole : Nx

Depth of GWT : 2.8 m

Bore Hole No. : 04

Depth of Bore Hole : 20 m

Depth of Casing : 3 m

Date of Commencement : 01-02-20

Date of Completion : 03-02-20

Scale m	Depth m	R.L. m	Log	Description	Sample No.	Type	Depth (m)		SPT 'N' Value					CR %	RQD %	P.R. m/hr	Remarks/ Other Tests
							From	To	15	15	15	15	N				
				Grey basalt													
	16				55-65	DR16	15	16.5						82	59		
	17																
	18																
	19	19.00		(4m)	72-75	DR18	18	19.5						77	77		
	20	20.00		Greenish grey amygdaloidal basalt (1m)	SP,76-77	DR19	19.5	20						46	26		
	21			The Bore Hole is Terminated at 20.00 m depth													
	22																
	23																
	24																
	25																
	26																
	27																
	28																
	29																
	30																

DS: Disturbed Sample

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PT: Packer Permeability Test

DR: Drill Run

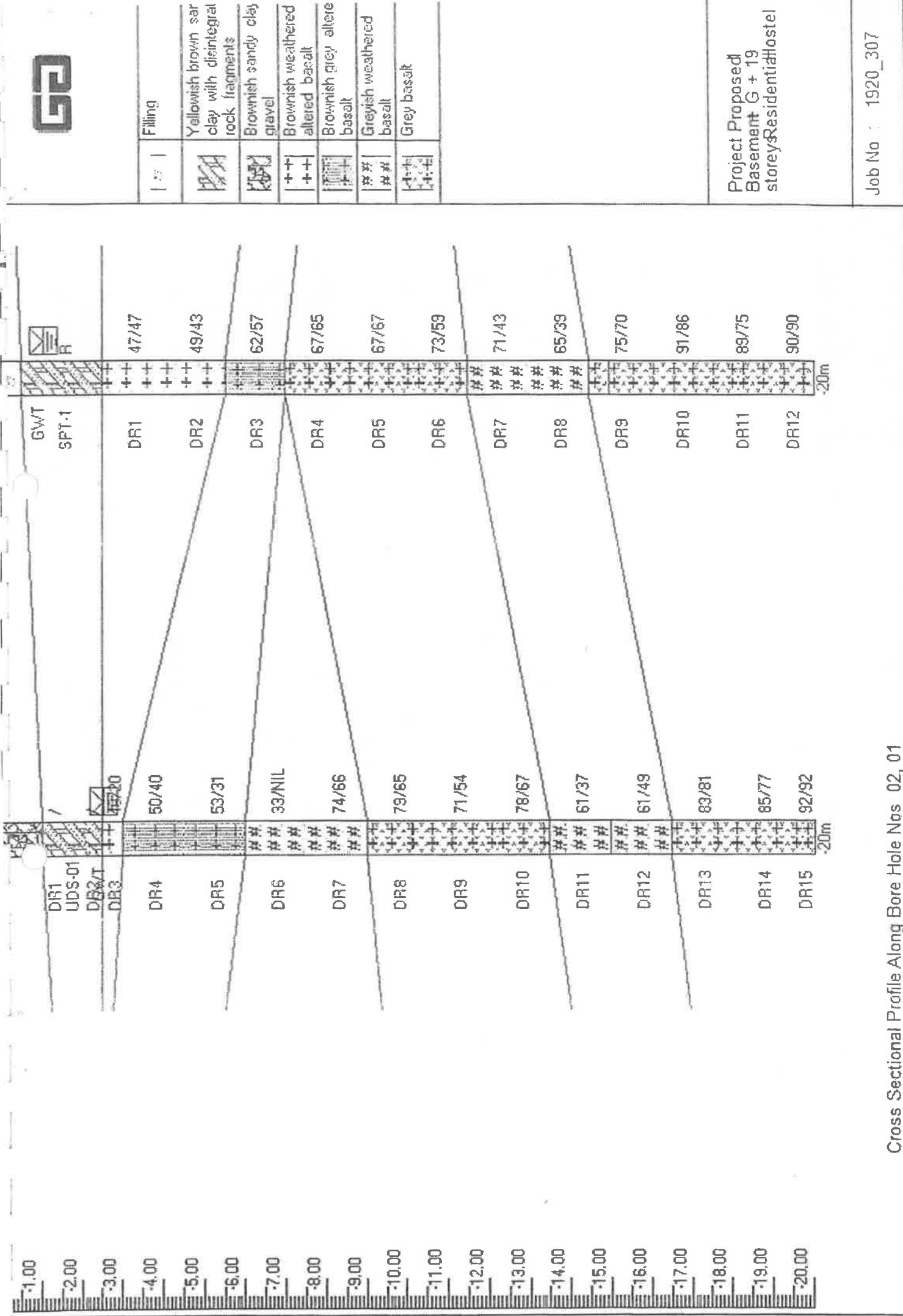
GWT: Ground Water Table

Site Engr.	Drawn By	Chkd. By	Client Rept.
	Merrill		

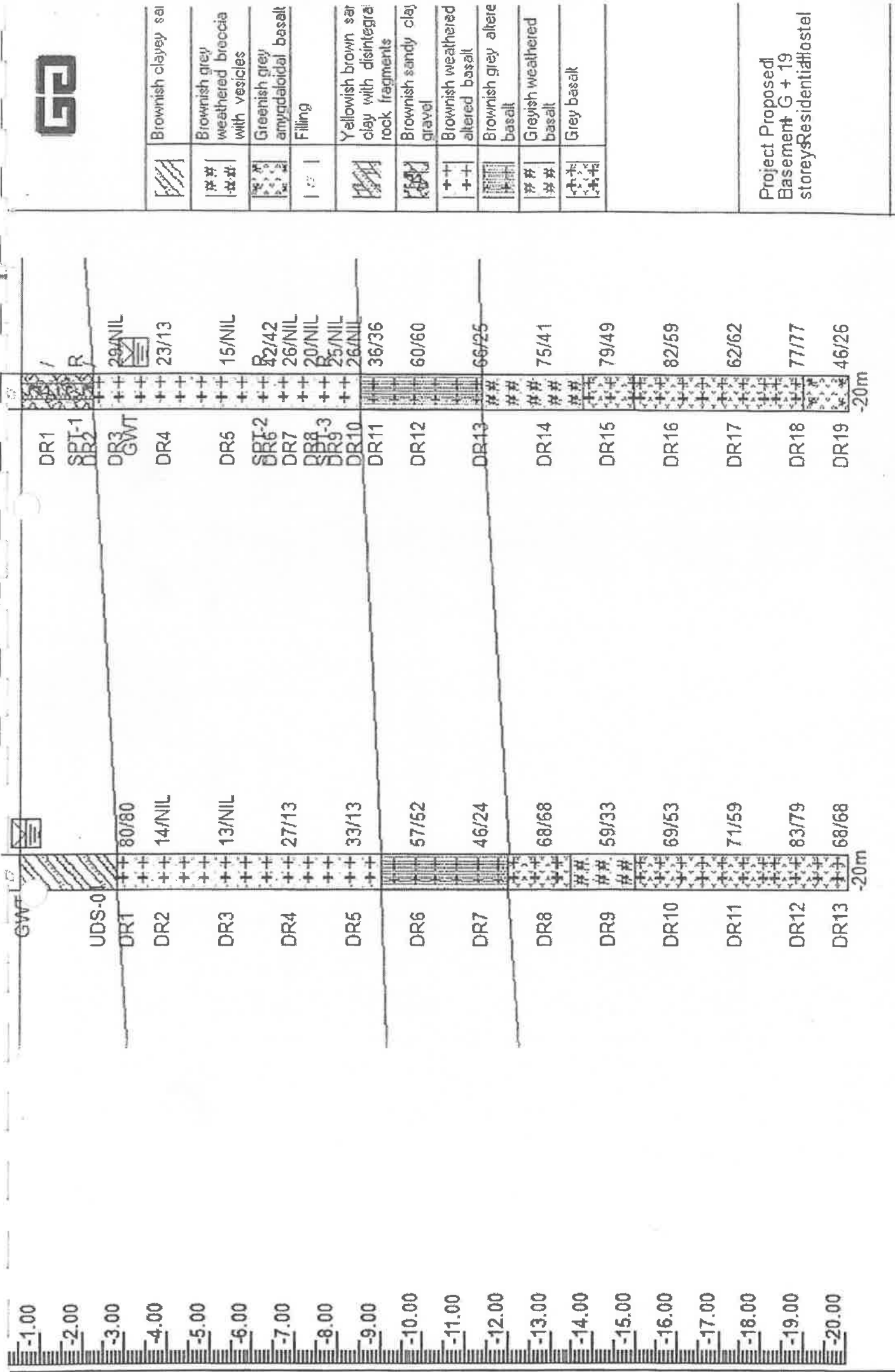
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Tel No : 022 6555 9920 Email : globalgeotechnics@gmail.com

ANNEXURE C: SUB SURFACE PROFILE



Cross Sectional Profile Along Bore Hole Nos 02, 01



Cross Sectional Profile Along Bore Hole Nos 03, 04

Project Proposed
Basement G + 19
storeys Residential Hostel

ANNEXURE D: SOIL TEST RESULTS

SOIL LABORATORY TEST

Client Name: M/s.S.P.Mandali's Welingkar Institute of Management

Site: Matunga, Mumbai

Ref no. GG/19-20/02/SI/307 B

Date: 10/02/2020

Bore Hole No.	Type / Sample No.	Depth in m	Density		Natural Moisture Content (%)	Specific Gravity	Grain Size Analysis			Atterbergs Limit			Unconfined Compressive Strength (kg/cm ²)	Swelling Index (%)
			Field Density (gm/cc)	Dry Density (gm/cc)			Gravel (%)	Sand (%)	Silt & Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)		
BH-02	UDS-1	1.50 m - 1.90 m	1.920	1.508	27.31	2.572	9.10	14.36	76.54	69.35	34.50	34.85	1.426	56.56



For GLOBAL GEOTECHNICS

ANNEXURE E: ROCK TEST RESULTS

ROCK CORE COMPRESSIVE STRENGTH TEST REPORT (UCS)

Test Report No. : GGL/19-20/RK/02/02

Report Date : 01/02/2020

Client Name : M/s. S.P.Mandali's Welingkar Institute of Management Sample Tested : In Laboratory

Project * : Date of Receipt : 01/02/2020

Site* : Sir Bhalchandra Road, Matunga East Job Ref. No. : GGL/19-20/RK/02/02

Ofc Ref. No. : GG/19-20/02/SI/307B

Ref. IS Code: 1) IS 9143: 1979 (RA 2016),
2) IS 13030: 1991 (RA 2016), 3) IS 1122: 1974 (RA-2017)

Date of Testing : 03/02/2020

Bore Hole No.*	BH-02	BH-03		BH-04	
Piece No.*	54	9	18	11	28
Depth* (m)	12.00 to 13.5m	7.50 to 9.00m	10.50 to 12.00m	6.00 to 6.50m	10.50 to 12.00m
Specimen Diameter (cm)	5.32	5.17	5.19	5.35	5.34
Specimen Length (cm)	9.24	8.60	9.53	9.96	9.71
Length / Diameter Ratio	1.74	1.66	1.84	1.86	1.82
Failure Load (kN)	6.40	29.80	13.10	32.10	8.20
Compressive Strength (N/mm ²)	2.88	14.22	6.18	14.29	3.66
Correction Factor	0.97	0.96	0.98	0.99	0.98
Corrected Compressive Strength for L/D (N/mm ²)	2.80	13.71	6.07	14.08	3.59
Porosity (%)	17.91	14.17	21.88	10.01	19.04
Water Content (%)	16.78	7.62	15.65	5.87	17.86
Dry Density (kg/m ³)	2017	2104	1933	2255	1932

* Information as submitted by client, ** Not Under NABL Scope

NOTES:

1. This results certify the adequacy & representative character of the test samples only.
2. Rock core are tested as per submitted by client.
3. Compression testing machine is used.

For Global Geotechnics

ROCK CORE COMPRESSIVE STRENGTH TEST REPORT (UCS)

Test Report No. : GGL/19-20/RK/02/08

Report Date : 07/02/2020

Client Name : M/s. S.P.Mandali's Welingkar Institute of Management

Sample Tested : In Laboratory

Project * :

Date of Receipt : 03/02/2020

Site* : Sir Bhalchandra Road, Matunga East

Job Ref. No. : GGL/19-20/RK/02/08

Ofc Ref. No. : GG/19-20/02/SI/307 B

Ref. IS Code: 1) IS 9143: 1979 (RA 2016),
2) IS 13030: 1991 (RA 2016),
3) IS 1122: 1974 (RA-2017)

Date of Testing : 05/02/2020

Bore Hole No.*	BH-04	-	-	-	-
Piece No.*	55	-	-	-	-
Depth* (m)	15.00 to 16.50m	-	-	-	-
Specimen Diameter (cm)	5.34	-	-	-	-
Specimen Length (cm)	5.44	-	-	-	-
Length / Diameter Ratio	1.02	-	-	-	-
Failure Load (kN)	42.50	-	-	-	-
Compressive Strength (N/mm ²)	19.01	-	-	-	-
Correction Factor	0.89	-	-	-	-
Corrected Compressive Strength for L/D (N/mm ²)	17.00	-	-	-	-
Porosity (%)	13.89	-	-	-	-
Water Content (%)	6.48	-	-	-	-
Dry Density (kg/m ³)	2321	-	-	-	-

* Information as submitted by client, ** Not Under NABL Scope

NOTES:

1. This results certify the adequacy & representative character of the test samples only.
2. Rock core are tested as per submitted by client.
3. Compression testing machine is used.



For Global Geotechnics

ROCK POINT LOAD TEST REPORT (PL)

Test Report No. : GGL/19-20/RK/02/02

Report Date : 01/02/2020

Client Name : M/s. S.P.Mandali's Welingkar Institute of Management

Sample Tested : In Laboratory

Project* :

Date of Receipt : 01/02/2020

Site* : Sir Bhalchandra Road, Matunga East

Job Ref. No. : GGL/19-20/RK/02/02

Ofc Ref. No. : GG/19-20/02/SI/307B

Ref. IS Code:

Date of Testing : 03/02/2020

1) IS 9143: 1979 (RA 2016),
2) IS 13030: 1991 (RA 2016),
3) IS 1122: 1974 (RA-2017)

Bore Hole No.*	BH-03	-	-	-	-
Piece No.*	32	-	-	-	-
Depth* (m)	13.50 to 15.00m	-	-	-	-
Specimen Diameter (cm)	5.150	-	-	-	-
Specimen Width (cm)	5.23	-	-	-	-
Diameter/Width Ratio	0.99	-	-	-	-
Failure Load (kN)	0.5	-	-	-	-
Point Load Strength (kg/cm ²)	1.93	-	-	-	-
Porosity (%)	14.55	-	-	-	-
Water Content (%)	8.58	-	-	-	-
Dry Density (kg/m ³)	2085	-	-	-	-

* Information as submitted by client, ** Not Under NABL Scope

NOTES:

1. This results certify the adequacy & representative character of the test samples only.
2. Rock core are tested as per submitted by client.
3. Point Load testing machine is used.



For Global Geotechnics

ANNEXURE F: WATER TEST RESULTS

TEST RESULTS OF WATER SAMPLE

Client Name: M/s. S.P.Mandali's Welinkar Institute of Management

Site: Matunga, Mumbai.

Ref no. : GG/19-20/02/SI/307 C

Date: 05/02/2020

Sample Type : Water

Results of Analysis :

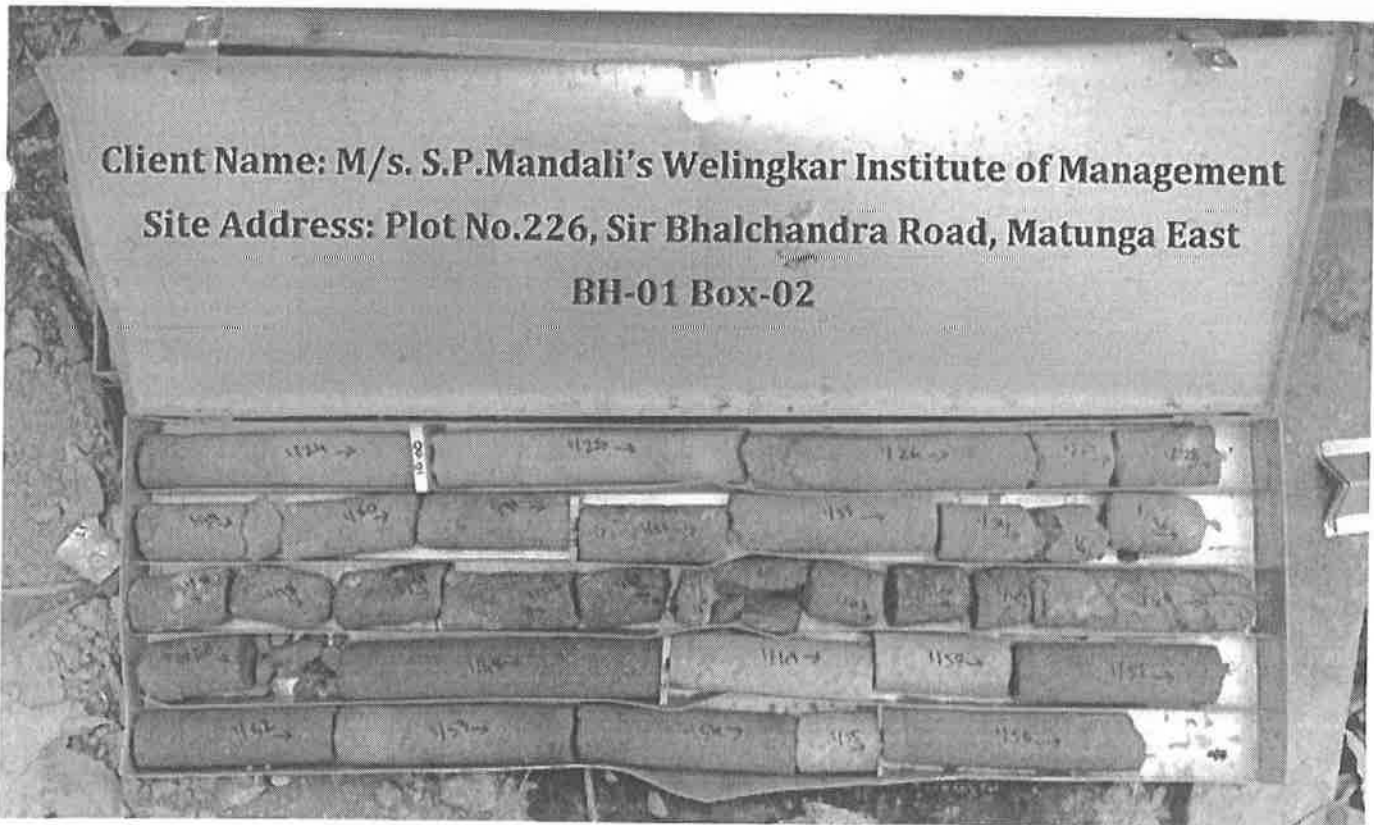
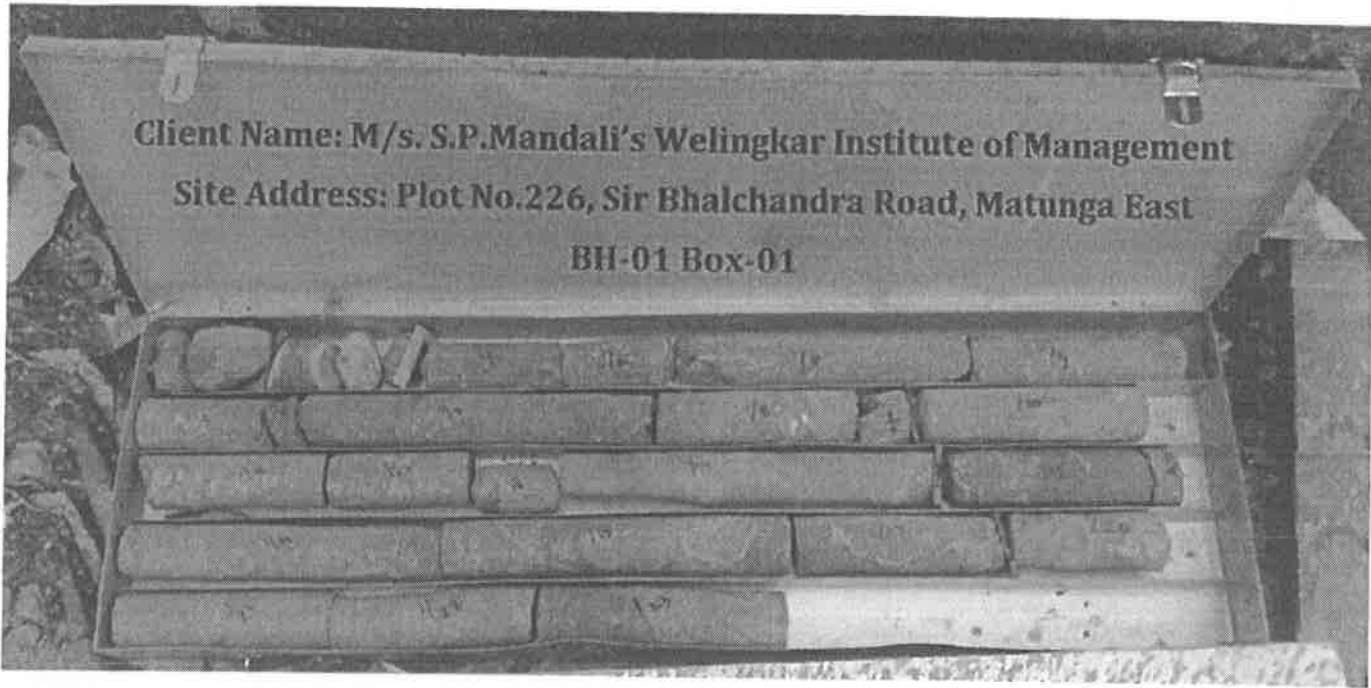
Sample Details	Water Level (m)	pH by Digital pH meter	Chloride As Cl (ppm)	Sulphate As SO ₄ (ppm)	Organic Matter (ppm)
BH-03	0.30	8.36	140	53	35
BH-04	2.80	6.70	40	31	15
<i>Limits as per IS 456 - 2000</i>		<i>6.50 - 8.30</i>	<i>2000 PPM</i>	<i>400 PPM</i>	<i>200 PPM</i>

These results are valid only for the above samples.



For GLOBAL GEOTECHNICS

ANNEXURE G: COREBOX PHOTOGRAPHS



Client Name: M/s. S.P.Mandali's Welingkar Institute of Management
Site Address: Plot No.226, Sir Bhalchandra Road, Matunga East
BH-01 Box-03



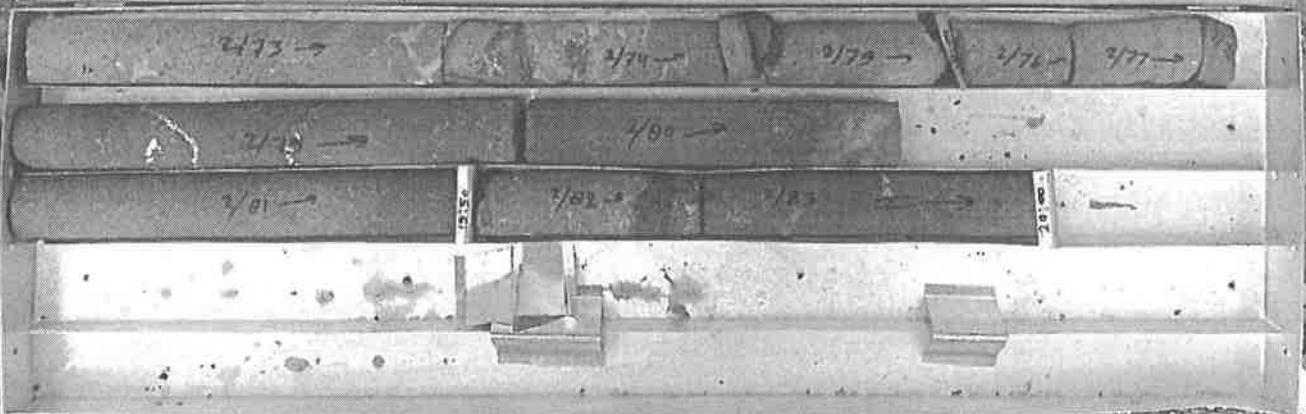
Client Name: M/s. S.P.Mandali's Welingkar Institute of Management
Site Address: Plot No.226, Sir Bhalchandra Road, Matunga East
BH-02 Box-01



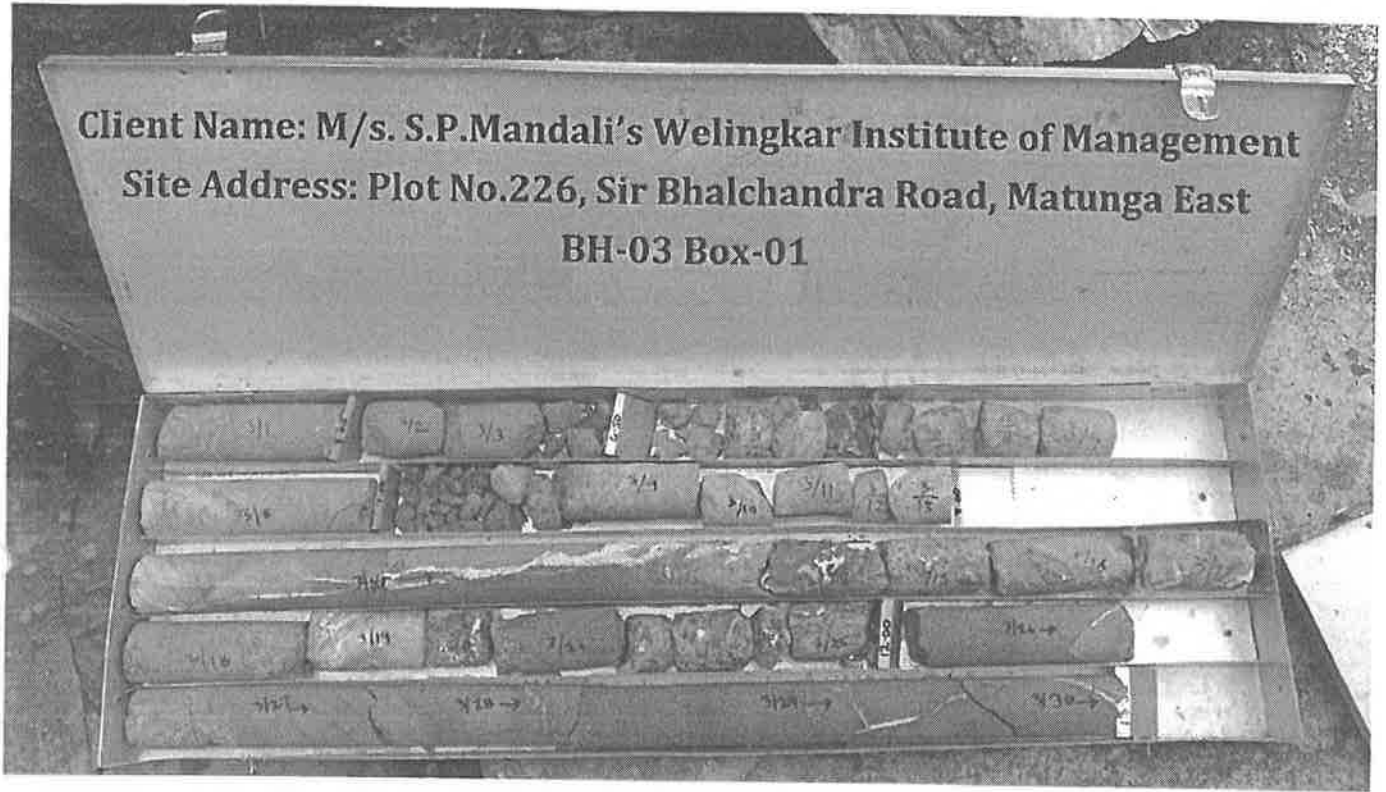
Client Name: M/s. S.P.Mandali's Welingkar Institute of Management
Site Address: Plot No.226, Sir Bhalchandra Road, Matunga East
BH-02 Box-02



Client Name: M/s. S.P.Mandali's Welingkar Institute of Management
Site Address: Plot No.226, Sir Bhalchandra Road, Matunga East
BH-02 Box-03



Client Name: M/s. S.P.Mandali's Welingkar Institute of Management
Site Address: Plot No.226, Sir Bhalchandra Road, Matunga East
BH-03 Box-01



Client Name: M/s. S.P.Mandali's Welingkar Institute of Management
Site Address: Plot No.226, Sir Bhalchandra Road, Matunga East
BH-03 Box-02

