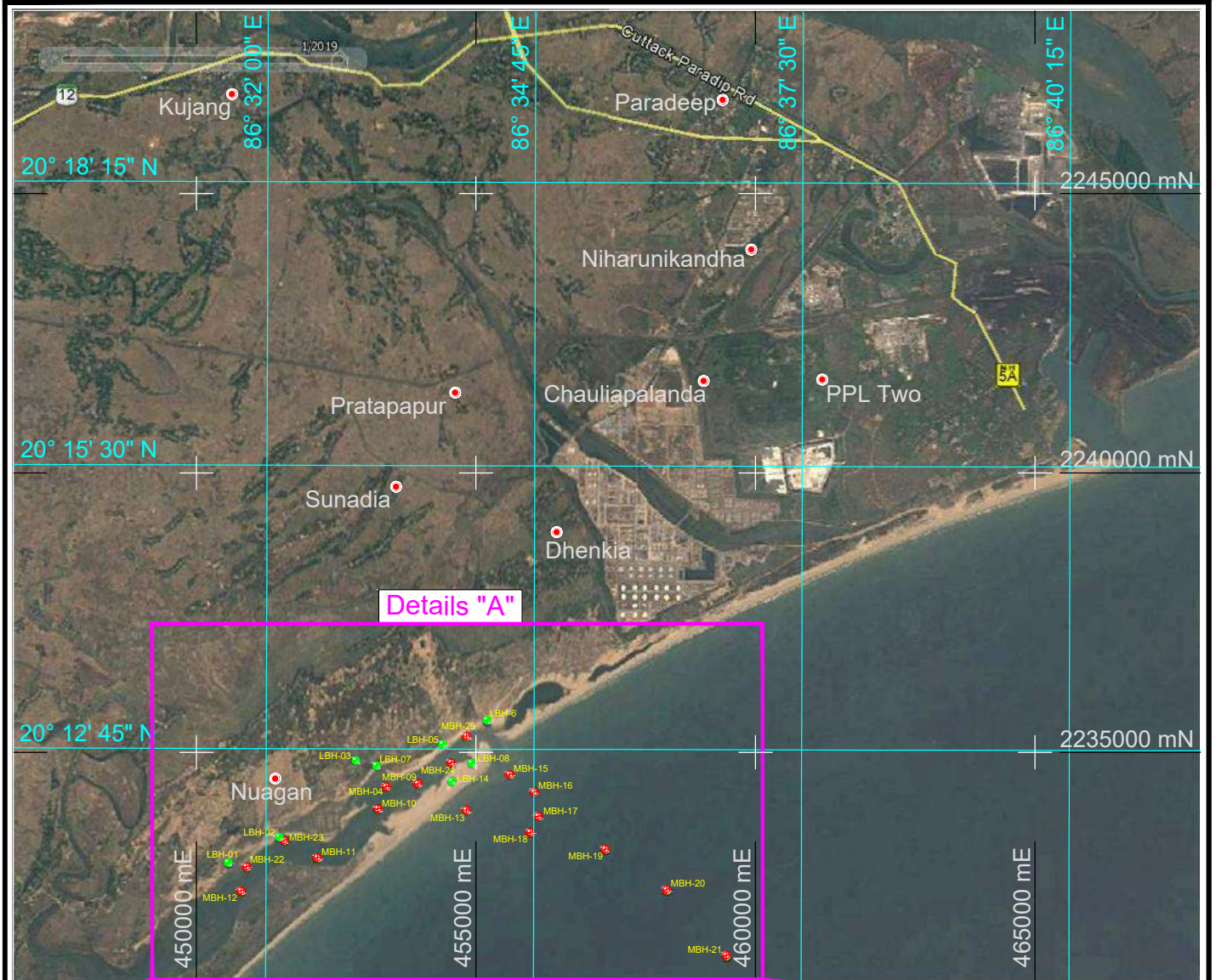


LOCATION MAP



For Details "A"



Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-01			
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 450590.18	N: 2233025.63	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 450569.0	N: 2233024.0	Zone	45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling			
Termination Depth	30.45m below Ground Level.	Drilling Period	27/03/2019 to 29/03/2019			

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	2	2	4	100		-	-	-	Very Loose to Loose, Grayish Brown(10YR 5/2), Sity Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	2	3	3	6	100		-	-	-	
3.00-3.45	3.00-3.45	SPT-3	3	3	4	4	8	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	4	5	6	11	100		-	-	-	Medium Dense, Dark grayish Brown(10YR 4/2), Silty Fine SAND .
6.00-6.45	6.00-6.45	SPT-5	5	5	5	6	11	100		-	-	-	
7.50-7.95	7.50-7.95	SPT-6	6	4	7	6	13	100		-	-	-	
9.00-9.45	9.00-9.45	SPT-7	7	5	6	8	14	100		-	-	-	
10.50-10.95	10.50-10.95	SPT-8	8	5	7	7	14	100		-	-	-	
12.00-12.45	12.00-12.45	SPT-9	9	4	6	8	14	100		-	-	-	
13.50-13.95	13.50-13.95	SPT-10	10	7	9	10	19	100		-	-	-	
15.00-15.45	15.00-15.45	SPT-11	11	9	9	12	21	100		-	-	-	Medium Dense, Greenish Gray(10YR 6/1), Silty Fine SAND with trace to few of clay pockets.
16.50-16.95	16.50-16.95	SPT-12	12	10	10	12	22	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-13	13	6	6	8	14	100		-	-	-	
19.50-19.95	19.50-19.95	SPT-14	14	6	7	9	16	100		-	-	-	Medium Dense, Brownish(10YR 4/3), Silty Fine SAND .
21.00-21.45	21.00-21.45	SPT-15	15	7	7	9	16	100		-	-	-	
22.50-22.95	22.50-22.95	SPT-16	16	8	9	9	18	100		-	-	-	
24.00-24.45	24.00-24.45	SPT-17	17	6	9	8	17	100		-	-	-	
25.50-25.95	25.50-25.95	SPT-18	18	10	13	15	28	100		-	-	-	
27.00-27.45	27.00-27.45	SPT-19	19	8	10	12	22	100		-	-	-	Medium Dense, Dark grayish Brown(10YR 4/2), Silty Fine SAND .
28.50-28.95	28.50-28.95	SPT-20	20	10	12	12	24	100		-	-	-	
30.00-30.45	30.00-30.45	SPT-21	21	11	11	14	25	100		-	-	-	

Borehole LBH-01 Terminated at 30.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-02			
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 451504.72	N: 2233435.56	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 451483.00	N: 2233481.00	Zone	45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling			
Termination Depth	30.45m below Ground Level.	Drilling Period	29/03/2019 to 31/03/2019			

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	1	2	3	100		-	-	-	Very Loose, Grayish Brown(10YR 5/2), Silty Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	2	3	3	6	100		-	-	-	Loose, Grayish Brown(10YR 5/2), Silty Fine SAND .
3.00-3.45	3.00-3.45	SPT-3	3	2	4	3	7	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	3	3	4	7	100		-	-	-	
6.00-6.45	6.00-6.45	SPT-5	5	3	5	4	9	100		-	-	-	
7.50-7.95	7.50-7.95	SPT-6	6	4	4	4	8	100		-	-	-	
9.00-9.45	9.00-9.45	SPT-7	7	5	6	6	12	100		-	-	-	Medium Dense, Dark grayish Brown(10YR 4/2), Silty Fine SAND with traces of shell fragments.
10.50-10.95	10.50-10.95	SPT-8	8	5	6	5	11	100		-	-	-	Medium Dense, Grayish Brown(10YR 5/2), Silty Fine SAND .
12.00-12.45	12.00-12.45	SPT-9	9	4	6	7	13	100		-	-	-	Medium Dense, Dark grayish Brown(10YR 5/2), Silty Fine SAND with traces of shell fragments.
13.50-13.95	13.50-13.95	SPT-10	10	6	8	8	16	100		-	-	-	
15.00-15.45	15.00-15.45	SPT-11	11	9	11	13	24	100		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .
16.50-16.95	16.50-16.95	SPT-12	12	8	12	11	23	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-13	13	6	8	9	17	100		-	-	-	
19.50-19.95	19.50-19.95	SPT-14	14	5	6	7	13	100		-	-	-	Medium Dense, Gray(10YR 6/1), Silty Fine SAND .
21.00-21.45	21.00-21.45	SPT-15	15	7	7	9	16	100		-	-	-	
22.50-22.95	22.50-22.95	SPT-16	16	9	8	9	17	100		-	-	-	Medium Dense, Dark Gray(10YR 4/1), Silty Fine SAND .
24.00-24.45	24.00-24.45	SPT-17	17	11	11	12	23	100		-	-	-	
25.50-25.95	25.50-25.95	SPT-18	18	10	13	13	26	100		-	-	-	Medium Dense, Dark Grayish Brown(10YR 5/2), Silty Fine SAND .
27.00-27.45	27.00-27.45	SPT-19	19	9	11	13	24	100		-	-	-	
28.50-28.95	28.50-28.95	SPT-20	20	9	10	13	23	100		-	-	-	
30.00-30.45	30.00-30.45	SPT-21	21	11	13	13	26	100		-	-	-	

Borehole LBH-02 Terminated at 30.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	VST	Vane Shear Test	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-03			
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 452927.54	N: 2234236.44	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 452852.0	N: 2234852.0	Zone	45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling			
Termination Depth	30.45m below Ground Level.	Drilling Period	31/03/2019 to 02/04/2019			

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	1	2	3	100		-	-	-	Very Loose to Loose, Yellowish Brown(10YR 5/6), Silty Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	2	3	3	6	100		-	-	-	
3.00-3.45	3.00-3.45	SPT-3	3	2	3	4	7	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	3	4	3	7	100		-	-	-	
6.00-6.45	6.00-6.45	SPT-5	5	5	6	8	14	100		-	-	-	Loose, Dark yellowish Brown(10YR 4/6), Silty Fine SAND .
7.50-7.95	7.50-7.95	SPT-6	6	3	4	5	9	100		-	-	-	
9.00-9.45	9.00-9.45	SPT-7	7	5	4	5	9	100		-	-	-	
10.50-10.95	10.50-10.95	SPT-8	8	8	11	12	23	100		-	-	-	Medium Dense, Dark yellowish Brown(10YR 4/6), Silty Medium to Fine SAND with traces of shell fragments.
12.00-12.45	12.00-12.45	SPT-9	9	6	8	9	17	100		-	-	-	Medium Dense, dark grayish Brown(10YR 4/2), Silty Fine SAND with trace of shell fragments.
13.50-13.95	13.50-13.95	SPT-10	10	6	7	9	16	100		-	-	-	
15.00-15.45	15.00-15.45	SPT-11	11	3	3	4	7	100		-	-	-	Medium, Greenish Gray(10GY 6/1), Sandy Clayey Silt .
16.50-17.00	16.50-17.00	UDS-1	12	-	-	-	-	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-12	13	6	8	7	15	100		-	-	-	Medium Dense, Olive Gray(5Y 4/2), Silty Fine SAND with few of shell fragments.
19.50-19.95	19.50-19.95	SPT-13	14	6	9	9	18	100		-	-	-	
21.00-21.45	21.00-21.45	SPT-14	15	5	8	9	17	100		-	-	-	
22.50-22.95	22.50-22.95	SPT-15	16	7	9	9	18	100		-	-	-	Medium Dense, Brownish(10YR 4/3), Silty Fine SAND .
24.00-24.45	24.00-24.45	SPT-16	17	6	8	11	19	100		-	-	-	
25.50-25.95	25.50-25.95	SPT-17	18	8	8	9	17	100		-	-	-	
27.00-27.45	27.00-27.45	SPT-18	19	9	10	11	21	100		-	-	-	Medium Dense, Brownish(10YR 4/3), Silty Fine SAND with traces of shell fragments.
28.50-28.95	28.50-28.95	SPT-19	20	8	12	11	23	100		-	-	-	
30.00-30.45	30.00-30.45	SPT-20	21	7	10	12	22	100		-	-	-	Medium Dense, yellowish Brown(10YR 5/6), Silty Fine SAND .

Borehole LBH-03 Terminated at 30.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	VST	Vane Shear Test	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-04			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 453395.0	N: 2234385.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 453401.0	N: 2234393.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-			-4.00 mtrs.			Drilling Period		22/05/2019 to 25/05/2019	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
4.00-4.45	0.00-0.45	SPT-1	1	3	4	4	8	32		-	-	-	Loose, Dark Grayish to Brownish(10Y-5GY 4/2), Silty Fine SAND with traces of shell fragments.	
5.50-5.95	1.50-1.95	SPT-2	2	12	14	15	29	52		-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium SAND with trace of shell fragments.	
7.00-7.45	3.00-3.45	SPT-3	3	10	12	16	28	24		-	-	-		
8.50-8.95	4.50-4.95	SPT-4	4	16	20	22	42	30		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/3), Silty Fine SAND.	
10.00-10.45	6.00-6.45	SPT-5	5	19	26	19	45	44		-	-	-		
11.50-11.95	7.50-7.95	SPT-6	6	12	14	13	27	60		-	-	-	Medium Dense, Pale Olive(5Y 6/4), Silty Fine SAND.	
13.00-13.45	9.00-9.45	SPT-7	7	10	14	14	28	52		-	-	-		
14.50-14.95	10.50-10.95	SPT-8	8	13	15	16	31	54		-	-	-	Medium Dense, Grayish Brown(2.5Y 5/2), Fine to Medium Silty SAND.	
16.00-16.45	12.00-12.45	SPT-9	9	9	17	13	30	48		-	-	-		
16.50	12.50	--	--	--	--	--	--	--		-	-	-	Firm, Dark Greenish Gray(10GY 4/1), Sandy CLAY with few shell fragments. (12.50 to 15.0m)	
17.50-17.95	13.50-13.95	SPT-10	10	3	3	4	7	35		-	-	-		
19.00-19.45	15.00-15.45	SPT-11	11	8	8	12	20	43		-	-	-	Medium Dense, Dark Grayish, Fine SAND with few CLAY pockets. Sandy CLAY/Clayey SAND.	
20.50-20.95	16.50-16.95	SPT-12	12	8	12	13	25	42		-	-	-	Medium Dense, Greenish Gray(Gley-1 5/1), Silty Fine SAND.	
22.00-22.45	18.00-18.45	SPT-13	13	12	15	17	32	55		-	-	-	Medium Dense to Dense, Light Brownish Grey(2.5Y 6/2), Fine to Medium SAND.	
23.50-23.95	19.50-19.95	SPT-14	14	6	14	14	28	32		-	-	-	Medium Dense, Pale Olive(5Y 6/4), Silty Fine SAND.	
25.00-25.45	21.00-21.45	SPT-15	15	10	10	20	30	50		-	-	-		
26.50-26.95	22.50-22.95	SPT-16	16	12	15	17	32	63		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND.	
28.00-28.45	24.00-24.45	SPT-17	17	13	17	20	37	46		-	-	-		
29.50-29.95	25.50-25.95	SPT-18	18	17	19	26	45	53		-	-	-	Dense, Brownish(10YR 5/3), Fine to Medium, Silty SAND.	
31.00-31.45	27.00-27.45	SPT-19	19	15	21	22	43	55		-	-	-		
32.50-32.95	28.50-28.95	SPT-20	20	20	22	25	47	48		-	-	-	Dense, Olive Yellow(2.5Y 6/6), Silty Fine SAND.	
34.00-34.45	30.00-30.45	SPT-21	21	13	15	21	36	52		-	-	-		
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar			Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test
Checked By	Vijayendra Patil		Inner Casing	NX Size			CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite
Soil type	SAND			SILT			CLAY		ROCK					



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-04			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 453395.0	N: 2234385.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates				Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-			-4.00 mtrs.			Drilling Period		22/05/2019 to 25/05/2019	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
35.50-35.95	31.50-31.95	SPT-22	22	17	20	20	40	46		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
37.00-37.45	33.00-33.45	SPT-23	23	14	17	17	34	51		-	-	-		
38.50-38.95	34.50-34.95	SPT-24	24	14	18	24	42	48		-	-	-	Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND .	
40.00-40.45	36.00-36.45	SPT-25	25	20	24	27	51	51		-	-	-		
41.50-41.95	37.50-37.95	SPT-26	26	21	22	23	45	46		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
43.00-43.45	39.00-39.45	SPT-27	27	23	23	26	49	54		-	-	-		
44.50-44.95	40.50-40.95	SPT-28	28	20	22	29	51	52		-	-	-	Dense to Very Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND .	
46.00-46.45	42.00-42.45	SPT-29	29	25	26	31	57	46		-	-	-		
47.50-47.95	43.50-43.95	SPT-30	30	20	21	25	46	44		-	-	-		
49.00-49.45	45.00-45.45	SPT-31	31	22	25	28	53	49		-	-	-		

Borehole MBH-04 Terminated at 45.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-05 A			
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 4544707.00	N: 2235142.00	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 454406.90	N: 2235142.04	Zone	45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling			
Termination Depth	30.45m below Ground Level.	Drilling Period	03/04/2019 to 05/04/2019			

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	2	2	4	100		-	-	-	Very Loose to Loose, Dark Grayish Brown(10YR 4/2), Silty Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	1	4	5	9	100		-	-	-	
3.00-3.45	3.00-3.45	SPT-3	3	4	5	6	11	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	3	3	4	7	100		-	-	-	
6.00-6.45	6.00-6.45	SPT-5	5	5	6	5	11	100		-	-	-	Loose to medium dense, Dark grayish Brown(10YR 4/2), Silty Fine SAND with traces of shell fragments.
7.50-7.95	7.50-7.95	SPT-6	6	4	4	5	9	100		-	-	-	
9.00-9.45	9.00-9.45	SPT-7	7	6	8	9	17	100		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND with traces of shell fragments.
10.50-10.95	10.50-10.95	SPT-8	8	6	9	9	18	100		-	-	-	
12.00-12.45	12.00-12.45	SPT-9	9	5	8	7	15	100		-	-	-	Medium Dense, Grayish(5/1), Silty Fine SAND with traces of shell fragments.
13.50-13.95	13.50-13.95	SPT-10	10	6	6	8	14	100		-	-	-	
15.00-15.45	15.00-15.45	SPT-11	11	6	7	8	15	100		-	-	-	
16.50-16.95	16.50-16.95	SPT-12	12	9	8	9	17	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-13	13	8	9	9	18	100		-	-	-	
19.50-19.95	19.50-19.95	SPT-14	14	10	10	9	19	100		-	-	-	
21.00-21.45	21.00-21.45	SPT-15	15	10	10	11	21	100		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .
22.50-22.95	22.50-22.95	SPT-16	16	8	9	12	21	100		-	-	-	
24.00-24.45	24.00-24.45	SPT-17	17	9	11	10	21	100		-	-	-	
25.50-25.95	25.50-25.95	SPT-18	18	10	12	13	25	100		-	-	-	
27.00-27.45	27.00-27.45	SPT-19	19	11	12	14	26	100		-	-	-	

Borehole LBH-05 A Terminated at 27.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	VST	Vane Shear Test	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugum
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		LBH-06A			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 455186.0	N: 2235662.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 455206.0	N: 2235546.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		30.45m below Bed Level.			C.D. Depth:-			-1.00 mtrs.			Drilling Period		29/05/2019 to 31/05/2019	
Drill Depth wrt C.D	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
1.00-1.45	0.00-0.45	SPT-1	1	5	5	4	9	60		-	-	-	Loose to Medium Dense, Light Olive Brown(2.5Y 5/4), Fine SAND .	
2.50-2.95	1.50-1.95	SPT-2	2	4	8	10	18	62		-	-	-	Medium Dense, Dark Grayish Brown(2.5Y 4/2) to Grayish Brown(2.5Y 5/2), Silty Fine SAND .	
4.00-4.45	3.00-3.45	SPT-3	3	7	9	13	22	46		-	-	-		
5.50-5.95	4.50-4.95	SPT-4	4	12	12	17	29	42		-	-	-	Medium Dense, Light Yellowish Brown(10YR 6/4), Fine to Medium Silty SAND .	
7.00-7.45	6.00-6.45	SPT-5	5	15	14	19	33	34		-	-	-	Dense, Light Yellowish Brown(10YR 6/4), Fine to Medium SAND .	
8.50-8.95	7.50-7.95	SPT-6	6	15	18	18	36	38		-	-	-		
10.00-10.45	9.00-9.45	SPT-7	7	17	20	22	42	22		-	-	-		
11.50-11.95	10.50-10.95	SPT-8	8	21	19	20	39	30		-	-	-	Dense, Olive(5Y 5/3), Silty Fine SAND .	
13.00-13.35	12.00-12.45	SPT-9	9	12	15	15	30	67		-	-	-	Medium Dense to Dense, Olive Gray(5Y 5/2), Silty SAND / Sandy SILT .	
14.50-14.95	13.50-13.95	SPT-10	10	10	15	16	31	56		-	-	-		
16.00-16.45	15.00-15.45	SPT-11	11	10	10	11	21	49		-	-	-	Medium Dense, Grayish(5Y 5/1), Silty Clayey SAND with traces of CLAY pockets.	
17.50-17.95	16.50-16.95	SPT-12	12	8	9	11	20	45		-	-	-	Medium Dense, Grayish(5Y 6/1), Silty Fine SAND with traces of CLAY pockets	
19.00-19.45	18.00-18.45	SPT-13	13	10	13	14	27	35		-	-	-	Medium Dense, Olive(5Y 4/4), Silty Fine SAND with traces of CLAY pockets.	
20.50-20.95	19.50-19.95	SPT-14	14	12	14	18	32	25		-	-	-	Medium Dense to Dense, Olive Gray(5Y 5/2), Silty Fine SAND .	
22.00-22.45	21.00-21.45	SPT-15	15	17	18	17	35	37		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/3) to Yellowish(2.5Y 7/8), Silty Fine SAND .	
23.50-23.95	22.50-22.95	SPT-16	16	16	19	21	40	55		-	-	-		
25.00-25.45	24.00-24.45	SPT-17	17	18	20	20	40	26		-	-	-		
26.50-26.95	25.50-25.95	SPT-18	18	20	20	15	35	35		-	-	-	Dense, Olive Yellow(2.5Y 6/6), Fine to Medium Silty SAND .	
28.00-28.45	27.00-27.45	SPT-19	19	20	19	23	42	33		-	-	-	Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND .	
29.50-29.95	28.50-28.95	SPT-20	20	17	20	26	46	34		-	-	-		
31.00-31.45	30.00-30.45	SPT-21	21	20	24	28	52	32		-	-	-	Dense to Very Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND .	
Borehole LBH-06A Terminated at 30.45m Below Bed Level.														
Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test					
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite					
Soil type	SAND		SILT		CLAY		ROCK							

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-07-Opt.1		
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 453224.00	N: 2234760.00	Datum WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 453223.96	N: 2234760.04	Zone 45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling		
Termination Depth	30.45m below Ground Level.	Drilling Period	10/03/2019 to 11/03/2019		

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	FGD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	1	2	3	100		-	-	-	Very Loose, BrownISH(10YR 4/3), Sity Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	1	3	4	7	100		-	-	-	Loose to Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .
3.00-3.45	3.00-3.45	SPT-3	3	3	4	4	8	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	3	5	5	10	100		-	-	-	
6.00-6.45	6.00-6.45	SPT-5	5	4	5	7	12	100		-	-	-	
7.50-7.95	7.50-7.95	SPT-6	6	6	7	8	15	100		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND with traces of shell fragments.
9.00-9.45	9.00-9.45	SPT-7	7	8	9	11	20	100		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine to Medium SAND .
10.50-10.95	10.50-10.95	SPT-8	8	6	8	9	17	100		-	-	-	Medium Dense, Dark grayish Brown(10YR 4/2), Silty Fine SAND with traces of shell fragments.
12.00-12.45	12.00-12.45	SPT-9	9	5	7	9	16	100		-	-	-	
13.50-13.95	13.50-13.95	SPT-10	10	6	7	9	16	100		-	-	-	
15.00-15.45	15.00-15.45	SPT-11	11	7	7	9	16	100		-	-	-	Medium Dense, Dark Grayish Brown(10YR 4/2), Silty Fine SAND .
16.50-16.95	16.50-16.95	SPT-12	12	8	9	9	18	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-13	13	3	3	4	7	100		-	-	-	Soft, Greenish Gray(5GY 6/1), Sandy silty CLAY .
19.50-20.00	19.50-20.00	UDS-1	14	-	-	-	-	100		-	-	-	
21.00-21.45	21.00-21.45	SPT-14	15	3	4	4	8	100		-	-	-	Loose, Greenish Gray(5GY 6/1), Clayey Silty SAND .
22.50-22.95	22.50-22.95	SPT-15	16	6	8	8	16	100		-	-	-	Medium Dense, Olive Gray(5Y 4/2), Silty Fine SAND .
24.00-24.45	24.00-24.45	SPT-16	17	7	8	9	17	100		-	-	-	
25.50-25.95	25.50-25.95	SPT-17	18	9	9	10	19	100		-	-	-	Medium Dense, Brownish (10YR 4/3), Silty Fine SAND .
27.00-27.45	27.00-27.45	SPT-18	19	8	9	11	20	100		-	-	-	
28.50-28.95	28.50-28.95	SPT-19	20	9	10	12	22	100		-	-	-	Medium Dense, Dark Yellowish Brown (10YR 4/4), Silty Fine SAND .
30.00-30.45	30.00-30.45	SPT-20	21	10	12	12	24	100		-	-	-	

Borehole LBH-07-Opt.1 Terminated at 30.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	VST	Vane Shear Test	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-08		
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 454929.00	N: 2234802.00	Datum WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 454928.97	N: 2234802.04	Zone 45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling		
Termination Depth	30.45m below Ground Level.	Drilling Period	08/04/2019 to 09/04/2019		

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	2	1	3	100		-	-	-	Very Loose to Loose, Yellowish Brown(10YR 5/6), Silty Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	2	2	3	5	100		-	-	-	
3.00-3.45	3.00-3.45	SPT-3	3	2	3	3	6	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	3	3	4	7	100		-	-	-	Loose, Yellowish Brown(10YR 5/6), Silty Fine to Medium SAND .
6.00-6.45	6.00-6.45	SPT-5	5	3	4	3	7	100		-	-	-	Loose, Dark Grayish Brown(10YR 4/2), Silty Fine SAND .
7.50-7.95	7.50-7.95	SPT-6	6	3	3	5	8	100		-	-	-	Loose, Yellowish Brown(10YR 5/6), Silty Fine SAND .
9.00-9.45	9.00-9.45	SPT-7	7	4	4	5	9	100		-	-	-	
10.50-10.95	10.50-10.95	SPT-8	8	5	6	7	13	100		-	-	-	Medium Dene,Dark Grayish Brown(10YR 4/2), Silty Fine SAND .
12.00-12.45	12.00-12.45	SPT-9	9	7	8	8	16	100		-	-	-	Medium Dense, Dark Yellowish Brown (10YR 4/4), Silty Fine SAND .
13.50-13.95	13.50-13.95	SPT-10	10	8	7	9	16	100		-	-	-	
15.00-15.45	15.00-15.45	SPT-11	11	9	10	10	20	100		-	-	-	
16.50-16.95	16.50-16.95	SPT-12	12	10	11	13	24	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-13	13	10	12	13	25	100		-	-	-	
19.50-20.00	19.50-20.00	SPT-14	14	8	9	10	19	100		-	-	-	
21.00-21.45	21.00-21.45	SPT-15	15	9	11	10	21	100		-	-	-	
22.50-22.95	22.50-22.95	SPT-16	16	10	10	12	22	100		-	-	-	
24.00-24.45	24.00-24.45	SPT-17	17	12	12	13	25	100		-	-	-	
25.50-25.95	25.50-25.95	SPT-18	18	13	15	15	30	100		-	-	-	Dense, Yellowish Brown (10YR 5/6), Silty Fine SAND .
27.00-27.45	27.00-27.45	SPT-19	19	14	16	17	33	100		-	-	-	
28.50-28.95	28.50-28.95	SPT-20	20	14	16	18	34	100		-	-	-	
30.00-30.45	30.00-30.45	SPT-21	21	16	17	19	36	100		-	-	-	

Borehole LBH-08 Terminated at 30.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	VST	Vane Shear Test	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-09			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 453964.0	N: 2234439.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:453962	N:2234445	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		40.45m below Bed Level.			C.D. Depth:-		-3.40 mtrs.			Drilling Period		20/05/2019 to 22/05/2019		
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
3.40-3.85	0.00-0.45	SPT-1	1	2	3	4	7	42		-	-	-	Loose, Dark Grayish Olive(10Y-5GY 4/2), Silty Fine SAND with traces of shell fragments.	
4.90-5.35	1.50-1.95	SPT-2	2	5	8	8	16	48		-	-	-	Medium Dense, Dark Grayish Olive(10Y-5GY 4/2), Silty Fine SAND with trace of shell fragments.	
6.40-6.85	3.00-3.45	SPT-3	3	14	13	15	28	60		-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND with trace of shell fragments.	
7.90-8.35	4.50-4.95	SPT-4	4	10	14	15	29	52		-	-	-		
9.40-9.85	6.00-6.45	SPT-5	5	12	19	22	41	45		-	-	-	Medium Dense to Dense, Grayish Brown(2.5Y 5/2), Silty Fine SAND .	
10.90-11.35	7.50-7.95	SPT-6	6	14	22	20	42	52		-	-	-		
12.40-12.85	9.00-9.45	SPT-7	7	12	15	15	30	60		-	-	-	Medium Dense to Dense, Brownish(10YR 5/3), Fine to Medium Silty SAND .	
13.90-14.35	10.50-10.95	SPT-8	8	10	14	18	32	51		-	-	-		
15.40-15.85	12.00-12.45	SPT-9	9	14	15	13	28	64		-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/3), Silty Fine SAND .	
16.40-16.90	13.00-13.50	--	--	--	--	--	--	--		-	-	-	Firm, Dark Grayish(10GY 3/1), Clayey SAND / Sandy CLAY .	
16.90-17.35	13.50-13.95	SPT-10	10	8	9	14	23	48		-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND with traces of clay pockets.	
18.40-18.85	15.00-15.45	SPT-11	11	4	5	5	10	100		-	-	-	Firm to Stiff, Very Dark Greenish Gray(10GY 3/1), Sandy CLAY with traces of shell fragments.	
19.90-20.35	16.50-16.95	SPT-12	12	9	12	12	24	70		-	-	-	(16.20mtrs onwards) Medium Dense, Light Brownish Gray(10YR 6/2), Fine to Medium Silty SAND with traces of CLAY pockets.	
21.40-21.85	18.00-18.45	SPT-13	13	12	14	20	34	48		-	-	-	Medium Dense to Dense, Light Olive Brown(2.5Y 5/4), Silty Fine SAND .	
22.90-23.35	19.50-19.95	SPT-14	14	15	15	16	31	42		-	-	-		
24.40-24.85	21.00-21.45	SPT-15	15	17	16	19	35	35		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/3), Fine to Medium Silty SAND .	
25.90-26.35	22.50-22.95	SPT-16	16	10	12	16	28	61		-	-	-	Medium Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
27.40-27.85	24.00-24.45	SPT-17	17	11	16	16	32	64		-	-	-	Medium Dense to Dense, Pale Brown (10YR 6/3), Silty Fine SAND .	
28.90-29.35	25.50-25.95	SPT-18	18	14	14	16	30	62		-	-	-		
30.40-30.85	27.00-27.45	SPT-19	19	12	18	20	38	38		-	-	-	Dense, Light yellowish Brown(10YR 6/4), Fine to Medium, Silty SAND .	
31.90-32.35	28.50-28.95	SPT-20	20	12	15	19	34	60		-	-	-	Dense, Light Olive Brown(2.5Y 6/4), Fine to Medium, Silty SAND .	
33.40-33.85	30.00-30.45	SPT-21	21	15	15	16	31	52		-	-	-		
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar			Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test
Checked By	Vijayendra Patil		Inner Casing	NX Size			CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite
Soil type	SAND			SILT			CLAY			ROCK				



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-09			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 453964.0	N: 2234439.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:453962	N:2234445	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		40.45m below Bed Level.			C.D. Depth:-			-3.40 mtrs.			Drilling Period		20/05/2019 to 22/05/2019	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
35.40-35.85	32.00-32.45	SPT-22	22	12	18	20	38	48		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
36.90-37.35	33.50-33.95	SPT-23	23	17	17	25	42	42		-	-	-	Dense, Yellowish(2.5Y 7/6), Silty Fine SAND .	
38.40-38.85	35.00-35.45	SPT-24	24	15	20	20	40	58		-	-	-		
39.90-40.35	36.50-36.95	SPT-25	25	18	18	19	37	70		-	-	-	Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND .	
41.40-41.85	38.00-38.45	SPT-26	26	22	23	22	45	51		-	-	-		
43.40-43.85	40.00-40.45	SPT-27	27	24	21	22	43	43		-	-	-		

Borehole MBH-09 Terminated at 40.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		

Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-10			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 453245.0	N: 2233989.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:453245	N:2233986	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		40.45m below Bed Level.			C.D. Depth:-		-6.00 mtrs.			Drilling Period		18/05/2019 to 20/05/2019		
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
6.00-6.45	0.00-0.45	SPT-1	1	1	2	2	4	67		-	-	-	Loose, Very Dark Grayish Gray(5GY 3/1), Silty Fine SAND with traces of shell fragments.	
7.50-7.95	1.50-1.95	SPT-2	2	3	6	7	13	65		-	-	-	Medium Dense, Dark Greenish Gray(5GY 4/1), Fine SAND with trace of shell fragments.	
9.00-9.45	3.00-3.45	SPT-3	3	6	6	10	16	35		-	-	-	Medium Dense, Light Yellowish Brown(10YR 6/4), Fine to Medium SAND with trace of shell fragments.	
10.50-10.95	4.50-4.95	SPT-4	4	4	8	7	15	32		-	-	-		
12.00-12.45	6.00-6.45	SPT-5	5	10	13	15	28	60		-	-	-	Medium Dense, Olive Yellow(5Y 6/6), Silty Fine SAND .	
13.50-13.95	7.50-7.95	SPT-6	6	6	10	12	22	35		-	-	-		
15.00-15.45	9.00-9.45	SPT-7	7	4	10	14	24	62		-	-	-	Medium Dense, Grayish Brown(2.5Y 5/2), Silty Fine SAND .	
16.50-16.95	10.50-10.95	SPT-8	8	7	9	9	18	69		-	-	-	Medium Dense, Grayish Brown(2.5Y 5/2), Silty Clayey SAND/ Sandy CLAY with traces of Clay pockets & shell fragments.	
18.00-18.45	12.00-12.45	SPT-9	9	7	8	8	16	60		-	-	-		
19.50-19.95	13.50-13.95	SPT-10	10	6	10	13	23	70		-	-	-	Medium Dense, Grayish Brown(2.5Y 5/2), Silty Fine SAND .	
21.00-21.45	15.00-15.45	SPT-11	11	9	12	11	23	70		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Fine to Medium Silty SAND with trace of shell fragments.	
22.50-22.95	16.50-16.95	SPT-12	12	7	11	14	25	75		-	-	-		
24.00-24.45	18.00-18.45	SPT-13	13	9	14	15	29	70		-	-	-		
25.50-25.95	19.50-19.95	SPT-14	14	6	10	13	23	60		-	-	-	Medium Dense, Grayish Brown(2.5Y 5/2), Silty Fine SAND .	
27.00-27.45	21.00-21.45	SPT-15	15	9	12	13	25	66		-	-	-		
28.50-28.95	22.50-22.95	SPT-16	16	12	14	15	29	72		-	-	-	Medium Dense to Dense, Light Olive Brown(2.5Y 5/6), Silty Fine SAND .	
30.00-30.45	24.00-24.45	SPT-17	17	15	15	14	29	60		-	-	-		
31.50-31.95	25.50-25.95	SPT-18	18	13	16	15	31	52		-	-	-		
33.00-33.45	27.00-27.45	SPT-19	19	9	12	18	30	48		-	-	-	Medium Dense to Dense, Olive Yellow(2.5Y 6/6), Fine to Medium Silty SAND .	
34.50-34.95	28.50-28.95	SPT-20	20	14	17	17	34	55		-	-	-	Dense, Light yellowish Brown(2.5Y 6/4), Medium grained, Silty SAND .	
36.00-36.45	30.00-30.45	SPT-21	21	13	17	19	36	62		-	-	-	Dense, Brownish(10YR 5/3), Medium to Coarse SAND .	
37.50-37.95	31.50-31.95	SPT-22	22	15	15	17	32	49		-	-	-		
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test	
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite	
Soil type	SAND			SILT		CLAY		ROCK						



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-10			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 453245.0	N: 2233989.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:453245	N:2233986	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		40.45m below Bed Level.			C.D. Depth:-			-6.00 mtrs.			Drilling Period		18/05/2019 to 20/05/2019	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
39.00-39.45	33.00-33.45	SPT-23	23	17	18	20	38	66		-	-	-	Dense, Brownish(10YR 5/3), Medium grained SAND .	
40.50-40.95	34.50-34.95	SPT-24	24	12	15	18	33	61		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/4), Medium to Fine Silty SAND .	
42.00-42.45	36.00-36.45	SPT-25	25	10	16	21	37	55		-	-	-		
43.50-43.95	37.50-37.95	SPT-26	26	13	19	23	42	42		-	-	-		
45.00-45.45	39.00-39.45	SPT-27	27	18	21	25	46	66		-	-	-	Dense to Very Dense, Light Yellowish Brown(2.5Y 6/4), Fine to Medium Silty SAND .	
46.00-46.45	40.00-40.45	SPT-28	28	21	23	24	47	48		-	-	-		

Borehole MBH-10 Terminated at 40.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-11			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 452159.0	N: 2233120.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 452165.0	N: 2233112.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		40.45m below Bed Level.			C.D. Depth:-			-4.90 mtrs.			Drilling Period		31/05/2019 to 02/06/2019	
CBH Depth (M) BL	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
4.90-5.35	0.00-0.45	SPT-1	1	6	8	9	17	56		-	-	-	Medium Dense, Dark Grayish Brown(2.5Y 4/2), Silty Fine SAND with traces of CLAY pockets.	
6.40-6.85	1.50-1.95	SPT-2	2	8	11	12	23	67		-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/4), Silty Fine SAND .	
7.90-8.35	3.00-3.45	SPT-3	3	9	12	16	28	58		-	-	-	Medium Dense, Light Yellowish Brown(2.5Y 6/4), Fine to Medium Silty SAND .	
9.40-9.85	4.50-4.95	SPT-4	4	10	11	13	24	40		-	-	-	Medium Dense to Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium SAND with traces of shell fragments.	
10.90-11.35	6.00-6.45	SPT-5	5	12	14	18	32	55		-	-	-		
12.40-12.85	7.50-7.95	SPT-6	6	11	15	15	30	53		-	-	-		
13.90-14.35	9.00-9.45	SPT-7	7	14	15	17	32	78		-	-	-	Dense, Grayish Brown(2.5Y 5/2), Fine to Medium Silty SAND with traces of Shell fragments.	
15.40-15.85	10.50-10.95	SPT-8	8	12	17	18	35	64		-	-	-	Dense, Light Olive Brown(2.5Y 5/3), Silty Fine SAND .	
16.90-17.35	12.00-12.45	SPT-9	9	8	6	8	14	72		-	-	-	Medium Dense, Dark Grayish Brown(2.5Y4/2), Silty Clayey SAND or Sandy CLAY .	
18.40-18.85	13.50-13.95	SPT-10	10	8	8	9	17	67		-	-	-		
19.90-20.35	15.00-15.45	SPT-11	11	12	14	16	30	64		-	-	-	Medium Dense, Olive Brown(2.5Y 4/3), Fine to Medium Silty SAND with traces of Shell fragments.	
21.40-21.85	16.50-16.95	SPT-12	12	14	14	18	32	70		-	-	-	Medium Dense to Dense, Grayish Brown(2.5Y 5/2) to Light Brownish Gray(2.5Y 6/2), Silty Fine SAND .	
22.90-23.35	18.00-18.45	SPT-13	13	12	14	19	33	68		-	-	-		
24.40-24.85	19.50-19.95	SPT-14	14	15	15	14	29	56		-	-	-		
25.90-26.35	21.00-21.45	SPT-15	15	12	14	17	31	58		-	-	-	Dense, Light Gray(5Y 7/2), Silty Fine SAND .	
27.40-27.85	22.50-22.95	SPT-16	16	14	16	18	34	56		-	-	-		
28.90-29.35	24.00-24.45	SPT-17	17	17	20	19	39	52		-	-	-		
30.40-30.85	25.50-25.95	SPT-18	18	14	16	19	35	55		-	-	-	Dense, Brownish Yellow(10YR 6/6), Silty Fine SAND traces of Medium sand.	
31.90-32.35	27.00-27.45	SPT-19	19	16	14	18	32	48		-	-	-		
33.40-33.85	28.50-28.95	SPT-20	20	14	15	15	30	56		-	-	-	Dense, Pale Olive(5Y 6/4), Silty Fine SAND .	
34.90-35.35	30.00-30.45	SPT-21	21	17	16	19	35	58		-	-	-		
36.40-36.85	31.50-31.95	SPT-22	22	20	19	20	39	52		-	-	-	Dense, Light Olive Brown(2.5Y 5/6), Fine to Medium Silty SAND .	
Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing		150 mm	SBL	Sea Bed Level		SPT		Standard Penetration Test		
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD		Chart Datum	UDS	UnDisturbed Soil Sample		Drill Mud		Bentonite		
Soil type	SAND		SILT			CLAY		ROCK						



FIELD BOREHOLE LOG



Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.				Borehole No	MBH-11			
Location	Jagatsinghpur Dist, Paradip, Odisha.				Proposed Coordinates	E: 452159.0	N: 2233120.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED				Positioned Coordinates	E: 452165.0	N: 2233112.0	Zone	45 N
Project Code	CM 19 01 03				Drilling Method	Rotary drilling			
Termination Depth	40.45m below Bed Level.			C.D. Depth:-	-4.90 mtrs.			Drilling Period	31/05/2019 to 02/06/2019

CBH Depth (M) BL	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
37.90-38.35	33.00-33.45	SPT-23	23	20	21	21	42	48	-	-	-	Dense, Light Olive Brown(2.5Y 5/6), Fine to Medium Silty SAND .	
39.40-39.85	34.50-34.95	SPT-24	24	22	23	25	48	62	-	-	-		
40.90-41.35	36.00-36.45	SPT-25	25	25	20	18	38	53	-	-	-	Dense to Very Dense, Pale Olive(5Y 6/4), Silty Fine SAND .	
42.90-43.35	38.00-38.45	SPT-26	26	24	21	21	42	60	-	-	-		
44.90-45.35	40.00-40.45	SPT-27	27	20	20	27	47	50	-	-	-		

Borehole MBH-11 Terminated at 40.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-12			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 450797.0	N: 2232520.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:450806	N:2232515	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		39.45m below Bed Level.			C.D. Depth:-			-6.80 mtrs.			Drilling Period		30.04.19 to 02.05.19	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
6.80-7.25	0.00-0.45	SPT-1	1	1	2	1	3	32	-	-	-	Very Loose to Loose, Yellowish Brown(10YR 5/6), Silty Fine SAND.		
8.30-8.75	1.50-1.95	SPT-2	2	3	2	4	6	62	-	-	-			
9.80-10.25	3.00-3.45	SPT-3	3	3	3	3	6	35	-	-	-	Loose, Dark Yellowish Brown(10YR 4/6), Silty Fine SAND with trace of shell fragments.		
11.30-11.75	4.50-4.95	SPT-4	4	3	4	5	9	28	-	-	-			
12.80-13.25	6.00-6.45	SPT-5	5	3	4	4	8	52	-	-	-			
14.30-14.75	7.50-7.95	SPT-6	6	4	3	5	8	38	-	-	-	Loose, Light Olive Brown(2.5YR 5/4), Silty Fine SAND.		
15.80-16.25	9.00-9.45	SPT-7	7	5	6	6	12	34	-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/4), Silty Fine SAND.		
17.30-17.75	10.50-10.95	SPT-8	8	6	7	8	15	42	-	-	-			
18.80-19.25	12.00-12.45	SPT-9	9	6	8	8	16	30	-	-	-			
20.30-20.75	13.50-13.95	SPT-10	10	8	8	10	18	34	-	-	-			
21.80-22.25	15.00-15.45	SPT-11	11	7	7	9	16	30	-	-	-			
23.30-23.75	16.50-16.95	SPT-12	12	8	9	10	19	46	-	-	-	Medium Dense, Olive Brown(2.5Y 4/4), Silty Fine SAND.		
24.80-25.25	18.00-18.45	SPT-13	13	8	8	9	17	48	-	-	-			
26.30-26.75	19.50-19.95	SPT-14	14	8	7	9	16	42	-	-	-			
27.80-28.25	21.00-21.45	SPT-15	15	9	9	10	19	38	-	-	-			
29.30-29.75	22.50-22.95	SPT-16	16	10	9	10	19	30	-	-	-			
30.80-31.25	24.00-24.45	SPT-17	17	11	11	11	22	42	-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND.		
32.30-32.75	25.50-25.95	SPT-18	18	10	11	12	23	32	-	-	-			
33.80-34.25	27.00-27.45	SPT-19	19	11	12	11	23	40	-	-	-			
35.30-35.75	28.50-28.95	SPT-20	20	11	11	14	25	28	-	-	-			
36.80-37.25	30.00-30.45	SPT-21	21	12	13	14	27	28	-	-	-			
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test	
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite	
Soil type	SAND			SILT		CLAY		ROCK						



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-12			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 450797.0	N: 2232520.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates				Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		39.45m below Bed Level.			C.D. Depth:-			-6.80 mtrs.			Drilling Period		30.04.19 to 02.05.19	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
38.30-38.75	31.50-31.95	SPT-22	22	12	12	13	25	32		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND.	
39.80-40.25	33.00-33.45	SPT-23	23	13	13	15	28	24		-	-	-		
41.30-41.75	34.50-34.95	SPT-24	24	15	16	16	32	26		-	-	-	Dense, Light Olive Brown(2.5Y 5/4), Silty Fine SAND.	
42.80-43.25	36.00-36.45	SPT-25	25	16	17	16	33	28		-	-	-		
44.30-44.75	37.50-37.95	SPT-26	26	17	18	19	37	30		-	-	-		
45.80-46.25	39.00-39.45	SPT-27	27	18	18	20	38	26		-	-	-		

Borehole MBH-12 Terminated at 39.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.				Borehole No	MBH-13			
Location	Jagatsinghpur Dist, Paradip, Odisha.				Proposed Coordinates	E: 454838.0	N: 2233973.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED				Positioned Coordinates	E: 454828.1	N: 2233964.8	Zone	45 N
Project Code	CM 19 01 03				Drilling Method	Rotary drilling			
Termination Depth	26.95m below Bed Level.			SBL	(-)3.20m below CD			Drilling Period	22/02/2019 to 23/02/2019

BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	3.20-3.65	SPT-1	1	6	3	3	6	43		-	-	-	Loose, Olive brown(2.5Y 4/3), Silty fine SAND .
1.50-1.95	4.70-5.15	SPT-2	2	6	7	8	15	33		-	-	-	Medium Dense, Olive brown(2.5Y 4/3), Silty fine SAND .
3.00-3.45	6.20-6.65	SPT-3	3	8	17	20	37	43		-	-	-	Dense, Olive gray(5Y 4/2), Silty fine SAND .
4.50-4.95	7.70-8.15	SPT-4	4	13	24	31	55	68		-	-	-	Very Dense, Yellowish brown(10YR 5/4), Silty fine to medium SAND .
6.00-6.45	9.20-9.65	SPT-5	5	3	13	28	41	34		-	-	-	Dense, Dark greenish gray(10Y 4/1), Silty fine SAND .
7.50-7.95	10.70-11.15	SPT-6	6	8	18	16	34	62		-	-	-	
9.00-9.45	12.20-12.65	SPT-7	7	15	20	20	40	33		-	-	-	Dense, Dark greenish gray(10Y 4/1), Silty fine SAND with traces of Shell fragments.
10.50-11.00	13.70-14.20	UDS-1	8	-	-	-	-	100		-	-	-	Soft, Dark greenish gray(10GY 5/1), Silty CLAY with traces of silt & sand pockets and fewof Shell fragments.
12.00-12.50	15.20-15.70	UDS-2	9	-	-	-	-	100		-	-	-	Stiff to very stiff, Light olive gray(2.5Y 6/2), Sandy CLAY .
13.50-13.95	16.70-17.15	SPT-8	10	13	15	18	33	100		-	-	-	
15.00-15.45	18.20-18.65	SPT-9	11	11	17	20	37	100		-	-	-	Dense, greenish gray(5GY 6/1), Silty fine SAND .
16.50-16.95	19.70-20.15	SPT-10	12	13	19	20	39	33		-	-	-	
18.00-18.45	21.20-21.65	SPT-11	13	15	20	22	42	44		-	-	-	
19.50-19.95	22.70-23.15	SPT-12	14	14	24	27	51	40		-	-	-	Very Dense, Yellowish brown(10YR 5/4), Sandy SILT .
21.00-21.45	24.20-24.65	SPT-13	15	13	27	29	56	48		-	-	-	
22.50-22.95	25.70-26.15	SPT-14	16	8	16	19	35	53		-	-	-	Dense, Yellowish brown(10YR 5/6), Clayey Silty fine to medium SAND .
24.00-24.45	27.20-27.65	SPT-15	17	8	15	16	31	100		-	-	-	Very Stiff, Grayish brown(2.5Y 5/2), Silty CLAY with trace to few sand pockets.
25.50-25.95	28.70-29.15	SPT- 16	18	7	16	14	30	86		-	-	-	Very Stiff, Light greenish gray(10GY 7/1) becoming Yellowish, Silty CLAY with traces of sand pockets & partings.
26.50-26.95	29.70-30.15	SPT-17	19	26	27	35	62	56		-	-	-	Very Dense, Light greenish gray(10GY 7/1), Silty fine SAND with traces clay pockets.

Borehole MBH-13 Terminated at 26.95m Below Seabed Level(30.15m below CD)

Logged By	Vijayendra & Ramsundar	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.	Borehole No	LBH-14			
Location	Jagatsinghpur Dist, Paradip, Odisha.	Proposed Coordinates	E: 454572.00	N: 2234478.00	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED	Positioned Coordinates	E: 454572.00	N: 2234478.00	Zone	45 N
Project Code	CM 19 01 03	Drilling Method	Rotary drilling			
Termination Depth	30.45m below Ground Level.	Drilling Period	06/04/2019 to 07/04/2019			

LBH Depth (M) GL	Drill Depth wrt G.L.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	0.00-0.45	SPT-1	1	1	2	2	4	100		-	-	-	Very Loose, yellowish Brown(10YR 5/6), Silty Fine SAND .
1.50-1.95	1.50-1.95	SPT-2	2	2	3	3	6	100		-	-	-	Loose, yellowish Brown(10YR 5/6), Silty Fine SAND .
3.00-3.45	3.00-3.45	SPT-3	3	3	3	3	6	100		-	-	-	
4.50-4.95	4.50-4.95	SPT-4	4	4	4	3	7	100		-	-	-	
6.00-6.45	6.00-6.45	SPT-5	5	4	4	5	9	100		-	-	-	Loose to Medium Dense, Dark Grayish Brown(10YR 4/2), Silty Fine SAND .(6.00-7.50m) traces of shell fragments.
7.50-7.95	7.50-7.95	SPT-6	6	4	5	6	11	100		-	-	-	
9.00-9.45	9.00-9.45	SPT-7	7	4	6	5	11	100		-	-	-	
10.50-10.95	10.50-10.95	SPT-8	8	5	5	7	12	100		-	-	-	Medium Dense, yellowish Brown(10YR 5/6), Silty Fine SAND .
12.00-12.45	12.00-12.45	SPT-9	9	8	8	7	15	100		-	-	-	
13.50-13.95	13.50-13.95	SPT-10	10	10	10	11	21	100		-	-	-	Medium Dense, yellowish Brown(10YR 5/6), Silty Fine to Medium SAND with traces of shell fragments.
15.00-15.45	15.00-15.45	SPT-11	11	11	12	12	24	100		-	-	-	Medium Dense, Dark Grayish Brown(10YR 4/2), Silty Fine to Medium SAND .
16.50-16.95	16.50-16.95	SPT-12	12	11	12	11	23	100		-	-	-	
18.00-18.45	18.00-18.45	SPT-13	13	6	7	8	15	100		-	-	-	Medium Dense, Dark Grayish Brown(10YR 5/6), Silty Fine SAND .
19.50-20.00	19.50-20.00	SPT-14	14	9	9	10	19	100		-	-	-	
21.00-21.45	21.00-21.45	SPT-15	15	9	10	11	21	100		-	-	-	
22.50-22.95	22.50-22.95	SPT-16	16	10	10	12	22	100		-	-	-	
24.00-24.45	24.00-24.45	SPT-17	17	12	12	13	25	100		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .
25.50-25.95	25.50-25.95	SPT-18	18	13	14	14	28	100		-	-	-	
27.00-27.45	27.00-27.45	SPT-19	19	13	15	16	31	100		-	-	-	Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .
28.50-28.95	28.50-28.95	SPT-20	20	14	16	18	34	100		-	-	-	
30.00-30.45	30.00-30.45	SPT-21	21	14	16	19	35	100		-	-	-	

Borehole LBH-14 Terminated at 30.45m Below Ground Level.

Logged By	Vijayendra & Ramsundar	VST	Vane Shear Test	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.				Borehole No	MBH-15			
Location	Jagatsinghpur Dist, Paradip, Odisha.				Proposed Coordinates	E: 455610.0	N: 2234607.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED				Positioned Coordinates	E: 455603.3	N: 2234600.9	Zone	45 N
Project Code	CM 19 01 03				Drilling Method	Rotary drilling			
Termination Depth	27.45m below Bed Level.			SBL	2.30m below CD			Drilling Period	20/02/2019 to 22/02/2019

BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	2.30-2.75	SPT-1	1	3	6	8	14	45		-	-	-	Medium Dense, Light yellowish brown(2.5Y 6/3), Silty fine SAND .
1.50-1.95	3.80-4.25	SPT-2	2	7	8	10	18	37		-	-	-	
3.00-3.45	5.30-5.75	SPT-3	3	11	20	21	41	44		-	-	-	Dense, Light yellowish brown(2.5Y 6/3), Silty fine SAND .
4.50-4.95	6.80-7.25	SPT-4	4	9	15	19	34	40		-	-	-	
6.00-6.45	8.30-8.75	SPT-5	5	11	18	21	39	42		-	-	-	Dense, Dark greenish gray(10GY 4/1), Silty fine SAND with traces of Shell fragments.
7.50-7.95	9.80-10.25	SPT-6	6	10	12	16	28	44		-	-	-	Medium Dense, Dark greenish gray(10GY 4/1), Silty fine SAND with traces of Shell fragments.
9.00-9.45	11.30-11.75	SPT-7	7	11	17	19	36	35		-	-	-	
10.50-10.95	12.80-13.25	SPT-8	8	4	6	10	16	100		-	-	-	Stiff, Dark greenish gray(10GY 4/1), Silty CLAY with traces to few of sand pockets and Shell fragments.
12.00-12.45	14.30-14.75	SPT-9	9	10	9	16	25	100		-	-	-	Very Stiff, Greenish gray(10GY 6/1), Sandy CLAY .
13.50-13.95	15.80-16.25	SPT-10	10	5	4	5	9	20		-	-	-	Stiff, Brownish(10YR 5/3), Clayey SAND/SANDY CLAY .
15.00-15.45	17.30-17.75	SPT-11	11	11	14	12	26	56		-	-	-	Medium Dense, Dark yellowish brown(10YR 4/6), Fine to Medium Silty SAND .
16.50-16.95	18.80-19.25	SPT-12	12	12	16	20	36	44		-	-	-	Dense, Dark Yellowish brown(10YR 4/6), Fine to Medium Silty SAND .
18.00-18.45	20.30-20.75	SPT-13	13	10	24	32	56	36		-	-	-	Very Dense, Dark yellowish brown(10YR 4/6), Silty fine SAND .
19.50-19.95	21.80-22.25	SPT-14	14	23	37	45	82	60		-	-	-	
21.00-21.45	23.30-23.75	SPT-15	15	14	17	30	47	42		-	-	-	Very Dense, Dark yellowish brown(10YR 4/6), Silty fine SAND with few of Clay pockets.
22.50-22.95	24.80-25.25	SPT-16	16	7	11	19	30	100		-	-	-	Very Stiff, Light Yellowish brown(2.5Y 6/3), Silty CLAY .
24.00-24.45	26.30-26.75	SPT-17	17	11	13	18	31	100		-	-	-	Very Stiff, Dark yellowish brown(10YR 4/6), Sandy CLAY .
25.50-25.95	27.80-28.25	SPT-18	18	6	11	17	28	100		-	-	-	
27.00-27.45	29.30-29.75	SPT-19	19	24	28	30	58	44		-	-	-	Very Dense, Light Greenish grey(10GY 7/1), Silty fine SAND with few Clay pockets.

Borehole MBH-15 Terminated at 27.45m Below Seabed Level(29.75m below CD)

Logged By	Vijayendra & Ramsundar	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		

**FIELD BOREHOLE LOG**

Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.				Borehole No	MBH-16			
Location	Jagatsinghpur Dist, Paradip, Odisha.				Proposed Coordinates	E: 456046.0	N: 2234291.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED				Positioned Coordinates	E: 456043.1	N: 2234288.7	Zone	45 N
Project Code	CM 19 01 03				Drilling Method	Rotary drilling			
Termination Depth	21.45m below Bed Level.			SBL	8.20m below CD			Drilling Period	16/02/2019 to 17/02/2019

BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-0.45	8.20-8.65	SPT-1	1	3	3	6	9	40		-	-	-	Loose, Light Olive Brown(2.5Y 5/4), Silty Fine SAND .
1.50-1.95	9.70-10.15	SPT-2	2	11	15	16	31	46		-	-	-	Dense, Yellowish Brown(10YR 5/4), Silty Fine SAND .
3.00-3.45	11.20-11.65	SPT-3	3	9	14	15	29	53		-	-	-	Medium Dense, Greenish Gray(GLEY 6/1), Silty Fine SAND .
4.50-4.95	12.70-13.15	SPT-4	4	9	15	20	35	35		-	-	-	Dense, Dark Greenish Gray(GLEY 4/1), Silty Fine SAND . with traces of CLAY pockets.
6.00-6.45	14.20-14.65	SPT-5	5	3	3	3	6	33		-	-	-	Soft, Dark Greenish Gray(GLEY 4/1), Sandy Silty CLAY with few shell fragments.
7.50-7.95	15.70-16.15	SPT-6	6	6	7	11	18	84		-	-	-	Very Stiff, Light yellowish brown(2.5Y 6/3), Sandy Silty CLAY .
9.00-9.45	17.20-17.65	SPT-7	7	4	8	10	18	100		-	-	-	Very stiff, Light Yellowish Brown(2.5Y 6/3), Clayey Silty SAND / Sandy Silty CLAY with traces of gravels. (9.00-10.70mtrs)
10.50-10.95	18.70-19.15	SPT-8	8	4	5	8	13	90		-	-	-	Medium Dense, Yellowish Brown(10YR 5/4), Silty Fine SAND .
12.00-12.45	20.20-20.65	SPT-9	9	12	16	21	37	46		-	-	-	Dense, Brownish Yellow(10YR 6/6), Fine to Medium SAND .
13.50-13.95	21.70-22.15	SPT-10	10	10	9	16	25	70		-	-	-	Medium Dense to Dense, Brownish Yellow(10YR 6/6), Silty Fine SAND .
15.00-15.45	23.20-23.65	SPT-11	11	10	14	16	30	44		-	-	-	Very Stiff to Hard, Brownish Yellow(10YR 6/6), Silty SAND / Sandy SILT .
16.50-16.95	24.70-25.15	SPT-12	12	15	18	20	38	48		-	-	-	
18.00-18.45	26.20-26.65	SPT-13	13	6	7	11	18	40		-	-	-	(18.00-18.20)Medium Dense, Brownish Yellow(10YR 6/6), Silty SAND .
													(18.20-18.45)Very Stiff, Brownish Yellow(10YR 6/6), Sandy SILT .
19.50-19.95	27.70-28.15	SPT-14	14	9	13	20	33	100		-	-	-	Hard, Brownish Yellow(10YR 6/6), Sandy Silty CLAY .
21.00-21.45	29.20-29.65	SPT-15	15	7	9	15	24	100		-	-	-	Very Stiff, Brownish Yellow(10YR 6/6) Sandy Clayey SILT .

Borehole MBH-16 Terminated at 21.450m Below Seabed Level(29.65m below CD)

Logged By	Vijayendra & Rahul	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugum
Soil type	SAND		SILT		CLAY		ROCK		Page 1 of 1



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-17			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 456110.0	N: 2233853.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 456112.8	N: 2233855.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		17.05m below Bed Level.			SBL		12.40m below CD			Drilling Period		18/02/2019 to 19/02/2019		
BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
0.00-0.45	12.40-12.85	SPT-1	1	6	8	12	20	54		-	-	-	Loose to Medium Dense, Yellowish Brown(10YR 5/4), Silty Fine SAND with traces of shell fragments.	
1.50-1.95	13.90-14.35	SPT-2	2	7	11	17	28	62		-	-	-	Medium Dense, Dark Grayish(GLEY 4/1), Silty Fine SAND with traces of shell fragments.	
3.00-3.45	15.40-15.85	SPT-3	3	2	2	3	5	94		-	-	-	Soft, Dark Greenish Gray(GLEY 4/1), Sandy Silty CLAY with few shell fragments.	
4.50-4.95	16.90-17.35	SPT-4	4	5	7	7	14	100		-	-	-	(4.50-6.30mtrs) Stiff, Light Yellowish Brown(2.5Y 6/3), Silty CLAY .	
6.00-6.45	18.40-18.85	SPT-5	5	3	6	11	17	100		-	-	-	(6.30- 7.50mtrs) Very Stiff, Light Yellowish Brown(2.5Y 6/3) Sandy SILT with Gravels.	
7.50-7.95	19.90-20.35	SPT-6	6	8	8	9	17	67		-	-	-	Medium Dense, Light Yellowish Brown(2.5Y 6/3), Silty Fine SAND .	
9.00-9.45	21.40-21.85	SPT-7	7	23	33	37	70	64		-	-	-	Very Dense to Dense, Brownish Yellowish(10YR 7/6), Silty Fine SAND .	
10.50-10.95	22.90-23.35	SPT-8	8	17	18	20	38	60		-	-	-		
12.00-12.45	24.40-24.85	SPT-9	9	17	21	30	51	60		-	-	-	Dense, Brownish Yellow(10YR 6/6), Fine SAND .	
13.50-13.95	25.90-26.35	SPT-10	10	9	16	25	41	67		-	-	-	Hard, Brownish Yellow(10YR 6/6), Sandy SILT .	
15.00-15.45	27.40-27.85	SPT-11	11	5	8	12	20	100		-	-	-	Stiff, Brownish Yellow(10YR 6/6), Sandy SILT / Sandy CLAY with traces of fine Gravels.	
16.60-17.05	29.00-29.45	SPT-12	12	6	10	13	23	46		-	-	-	Medium Dense, Brownish Yellow(10YR 6/6), Silty SAND / Sandy SILT .	
Borehole MBH-17 Terminated at 17.05m Below Seabed Level(29.45m below CD)														
Logged By	Vijayendra & Rahul	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test					
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugum					
Soil type	SAND		SILT		CLAY		ROCK							



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.						Borehole No		MBH-18			
Location		Jagatsinghpur Dist, Paradip, Odisha.						Proposed Coordinates		E: 455975.0	N: 2233567.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED						Positioned Coordinates		E: 455974.6	N: 2233564.3	Zone	45 N
Project Code		CM 19 01 03						Drilling Method		Rotary drilling			
Termination Depth		16.95m below Bed Level.			SBL		12.80m below CD			Drilling Period		12/02/2019 to 12/02/2019	
BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-1.00	12.80-13.80	UDS-1	1	-	-	-	-	60		-	-	-	Very soft, Dark Greenish Gray(10Y 4/1), Silty CLAY .
1.00-1.45	13.80-14.25	SPT-1	2	-	-	-	-	57		-	-	-	
2.00-3.00	14.80-15.80	UDS-2	3	-	-	-	-	54		-	-	-	Soft, Light Yellowish Brown(2.5Y 6/3), Silty Clayey SAND / Silty Sandy CLAY .
3.00-3.45	15.80-16.25	SPT-2	4	5	8	11	19	100		-	-	-	Medium Dense, Light Yellowish Brown(2.5Y 6/3), Silty Fine SAND with traces of gravels.
4.50-4.95	17.30-17.75	SPT-3	5	5	6	9	15	90		-	-	-	Medium Dense, Olive Yellow(2.5Y 6/6), Silty SAND with traces of clay pockets.
6.00-6.45	18.80-19.25	SPT-4	6	4	8	13	21	70		-	-	-	Medium Dense, Olive Yellow(2.5Y 6/6) to light gray(2.5Y 7/1), Silty Fine SAND .
7.50-7.95	20.30-20.75	SPT-5	7	8	8	11	19	54		-	-	-	
9.00-9.45	21.80-22.25	SPT-6	8	8	13	14	27	56		-	-	-	Medium Dense, Light Greenish Gray(10Y 8/1), Fine to Medium, Silty SAND .
10.50-10.95	23.30-23.75	SPT-7	9	10	15	15	30	30		-	-	-	
12.00-12.45	24.80-25.25	SPT-8	10	15	18	18	36	42		-	-	-	Dense, Yellowish(10YR 7/6), Sandy SILT / Silty SAND .
13.50-13.95	26.30-26.75	SPT-9	11	11	16	26	42	54		-	-	-	
15.00-15.45	27.80-28.25	SPT-10	12	5	7	9	16	75		-	-	-	Stiff, Yellowish(10YR 7/6), Sandy Silty CLAY .
16.50-16.95	29.30-29.75	SPT-11	13	29	39	48	87	78		-	-	-	Very Dense, Yellowish Brown(10YR 5/4), Fine to Medium Silty SAND .
Borehole MBH-18 Terminated at 16.95m Below Seabed Level(29.75m below CD)													
Logged By	Vijayendra & Rahul		Drill Rig	Dando-250		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite/Gaugrum
Soil type	SAND			SILT		CLAY		ROCK					



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.						Borehole No		MBH-19			
Location		Jagatsinghpur Dist, Paradip, Odisha.						Proposed Coordinates		E: 457311.0	N: 2233270.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED						Positioned Coordinates		E: 457313.4	N: 2233263.5	Zone	45 N
Project Code		CM 19 01 03						Drilling Method		Rotary drilling			
Termination Depth		15.80m below Bed Level.			SBL			13.65m below CD			Drilling Period		15/02/2019 to 16/02/2019
BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-1.00	13.65-14.65	UDS-1	1	-	-	-	-	30		-	-	-	Loose, Grayish (7.5Y 6/1), Silty Fine SAND .
1.50-1.95	15.15-15.60	SPT-1	2	3	5	6	11	78		-	-	-	Medium Dense, Light Greenish Gray(10GY 5/1), Clayey Silty SAND .
3.00-3.45	16.65-17.10	SPT-2	3	5	5	8	13	100		-	-	-	Stiff, Yellowish Brown(10YR 6/4), Silty CLAY .
4.50-4.95	18.15-18.60	SPT-3	4	7	11	12	23	100		-	-	-	Very Stiff, Pale Yellow(2.5Y 7/3), Fine Sandy Silty CLAY .
6.00-6.45	19.65-20.10	SPT-4	5	3	4	5	9	100		-	-	-	Medium Dense to Dense, Yellow(10YR 7/6), Silty Fine SAND .
7.50-7.95	21.15-21.60	SPT-5	6	8	13	20	33	50		-	-	-	
9.00-9.45	22.65-23.10	SPT-6	7	38	37	25	62	70		-	-	-	Very Dense, Yellowish(10YR 7/6), Fine to Medium, Silty SAND .
10.50-10.95	24.15-24.60	SPT-7	8	11	12	20	32	52		-	-	-	Dense, Light Yellowish Brown(10YR 6/4), Silty Fine SAND .
12.00-12.45	25.65-26.10	SPT-8	9	14	17	22	39	62		-	-	-	Dense, Light Yellowish Brown(10YR 6/4), Fine to Medium, Silty SAND .
13.50-13.95	27.15-27.60	SPT-9	10	15	18	18	36	46		-	-	-	
15.35-15.80	29.00-29.45	SPT-10	11	5	8	12	20	90		-	-	-	Very Stiff, Light Yellowish Brown(10YR 6/4), Silty CLAY .

Borehole MBH-19 Terminated at 15.80m Below Seabed Level(29.45m below CD)

Logged By	Vijayendra & Rahul	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.						Borehole No	MBH-20			
Location	Jagatsinghpur Dist, Paradip, Odisha.						Proposed Coordinates	E: 458405.0	N: 2232535.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED						Positioned Coordinates	E: 458414.2	N: 2232537.8	Zone	45 N
Project Code	CM 19 01 03						Drilling Method	Rotary drilling			
Termination Depth	14.95m below Bed Level.			SBL	14.50m below CD			Drilling Period	14/02/2019 to 15/02/2019		

BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	ROD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-1.00	14.50-15.50	UDS-1	1	-	-	-	-	30		-	-	-	Loose, Grayish (7.5Y 6/1), Silty Fine SAND .
1.00-1.45	15.50-15.94	SPT-1	2	2	4	2	6	100		-	-	-	1.00-1.10m - Loose, Grayish(7.5Y 6/1), Silty Fine SAND with traces of shell fragments and clay pockets.
													1.10-1.45 - Soft, Dark Grayish(10YR 4/1), Silty CLAY with traces of shell fragments and Fine SAND .
2.50-3.50	17.00-18.00	UDS-2	3	-	-	-	-	50		-	-	-	Soft to Firm, Dark Greenish gray(10GY 4/1), Sandy Silty CLAY with Sand partings.
4.00-4.45	18.50-18.95	SPT-2	4	8	8	10	18	67		-	-	-	Very Stiff, Light Yellowish Brown (2.5Y 6/4), Silty CLAY . (4.00m - 5.65m)
5.50-5.95	20.00-20.45	SPT-3	5	8	9	12	21	100		-	-	-	(5.65m onwards) Medium Dense, Light Yellowish Brown(10YR 6/4), Silty Fine SAND with fewClay pockets.
7.00-7.45	21.50-21.95	SPT-4	6	8	11	14	25	51		-	-	-	
8.50-8.95	23.00-23.45	SPT-5	7	8	18	27	45	61		-	-	-	Dense, Light Yellowish Brown(10YR 6/4), Silty Fine SAND .
10.00-10.45	24.50-24.95	SPT-6	8	9	17	26	43	65		-	-	-	Dense, Light Yellowish Brown(10YR 6/4), Fine to Medium Silty SAND .
11.50-11.95	26.00-26.45	SPT-7	9	9	20	25	45	64		-	-	-	
13.00-13.45	27.50-27.95	SPT-8	10	9	13	17	30	52		-	-	-	Medium Dense, Brownish Yellow(10YR 6/6), Fine to Medium Silty SAND .
14.50-14.95	29.00-29.45	SPT-9	11	10	17	20	37	92		-	-	-	Hard, Light Yellowish Brown(10YR 6/4), Silty CLAY .

Borehole MBH-20 Terminated at 14.95m Below Seabed Level(29.45m below CD)

Logged By	Vijayendra & Rahul	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugum
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.						Borehole No		MBH-21			
Location		Jagatsinghpur Dist, Paradip, Odisha.						Proposed Coordinates		E: 459484.0	N: 2231369.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED						Positioned Coordinates		E: 459478.1	N: 2231367.0	Zone	45 N
Project Code		CM 19 01 03						Drilling Method		Rotary drilling			
Termination Depth		14.15m below Bed Level.			SBL			15.30m below CD			Drilling Period		13/02/2019 to 14/02/2019
BH Depth (M) SBL	Drill Depth wrt C.D.	Sample Type	Sample No	Standard Penetration Test (SPT)			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
0.00-1.00	15.30-16.30	UDS-1	1	-	-	-	-	95		-	-	-	Very Soft to Soft, Dark Greenish Gray(10Y 4/1), Sandy CLAY with few shell fragments.
1.50-1.95	16.80-17.25	SPT-1	2	2	4	5	9	91		-	-	-	Loose, Dark Greenish Gray(10GY 4/1), Clayey SAND with traces of shell fragments.
3.00-3.45	18.30-18.75	SPT-2	3	7	8	11	19	100		-	-	-	Very Stiff, Light Yellowish Brown(2.5Y 6/3), Sandy Silty CLAY .
4.50-4.95	19.80-20.25	SPT-3	4	6	8	9	16	89		-	-	-	Medium Dense, Light Brownish Gray(2.5Y 6/2), Silty Fine SAND .
6.00-6.45	21.30-21.75	SPT-4	5	10	13	14	27	56		-	-	-	
7.50-7.95	22.80-23.25	SPT-5	6	10	15	17	32	100		-	-	-	Dense, Olive Yellow(2.5Y 6/6), Silty Fine SAND with traces of few Gravels.
9.00-9.45	24.30-24.75	SPT-6	7	6	14	22	36	45		-	-	-	Dense, Olive Yellow(2.5Y 6/6), Fine to Medium Silty SAND .
10.50-10.95	25.80-26.25	SPT-7	8	13	27	41	68	89		-	-	-	Very Dense, Pale yellow(2.5Y 8/4) to Yellow (2.5Y 8/6), Fine to Medium Silty SAND .
12.00-12.45	27.30-27.75	SPT-8	9	10	13	14	27	40		-	-	-	Medium Dense to Dense, Dark Yellowish Brown(10YR 4/6), Silty Fine SAND with traces of Clay Pockets.
13.70-14.15	29.00-29.45	SPT-9	10	11	25	35	60	100		-	-	-	Very Dense, Dark Yellowish Brown(10YR 4/6), Silty Fine SAND .
Borehole MBH-21 Terminated at 14.15m Below Seabed Level(29.45m below CD)													
Logged By	Vijayendra & Rahul	Drill Rig	Dando-250	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test				
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite/Gaugrum				
Soil type	SAND		SILT		CLAY		ROCK						



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-22			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 450893.0	N: 2232951.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:450879	N:2232943	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-			-3.80 mtrs.			Drilling Period		11.05.19 to 13.05.19	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
3.80-4.25	0.00-0.45	SPT-1	1	1	2	2	4	74		-	-	-	Loose, Dark Grayish Brown(2.5Y 4/2), Silty Fine SAND.	
5.30-5.75	1.50-1.95	SPT-2	2	5	8	9	17	32		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND.	
6.80-7.25	3.00-3.45	SPT-3	3	6	8	8	16	22		-	-	-		
8.30-8.75	4.50-4.95	SPT-4	4	6	9	11	20	26		-	-	-		
9.80-10.25	6.00-6.45	SPT-5	5	5	8	9	17	28		-	-	-		
11.30-11.75	7.50-7.95	SPT-6	6	5	8	7	15	64		-	-	-		
12.80-13.25	9.00-9.45	SPT-7	7	8	9	9	18	66		-	-	-		
14.30-14.75	10.50-10.95	SPT-8	8	10	11	14	25	62		-	-	-	Medium Dense, Greenish Gray(10Y 5/1), Silty Fine SAND with traces of shell fragments.	
15.80-16.25	12.00-12.45	SPT-9	9	10	10	11	21	60		-	-	-	Medium Dense, Greenish Gray(10Y 5/1), Silty Fine SAND with traces of clay pockets & shell fragments.	
17.30-17.75	13.50-13.95	SPT-10	10	10	12	13	25	52		-	-	-	Medium Dense, Greenish Gray(10Y 5/1), Silty Fine SAND with traces of shell fragments.	
18.80-19.25	15.00-15.45	SPT-11	11	11	11	13	24	49		-	-	-		
20.30-20.75	16.50-16.95	SPT-12	12	11	12	14	26	42		-	-	-		
21.80-22.25	18.00-18.45	SPT-13	13	12	13	15	28	54		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND with trace of shell fragments.	
23.30-23.75	19.50-19.95	SPT-14	14	12	13	16	29	40		-	-	-		
24.80-25.25	21.00-21.45	SPT-15	15	13	13	15	28	66		-	-	-		
26.30-26.75	22.50-22.95	SPT-16	16	13	13	15	28	56		-	-	-		
27.80-28.25	24.00-24.45	SPT-17	17	12	14	16	30	52		-	-	-	Medium Dense to Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND.	
29.30-29.75	25.50-25.95	SPT-18	18	13	13	15	28	66		-	-	-		
30.80-31.25	27.00-27.45	SPT-19	19	15	15	16	31	54		-	-	-		
32.30-32.75	28.50-28.95	SPT-20	20	15	16	17	33	62		-	-	-	Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND.	
33.80-34.25	30.00-30.45	SPT-21	21	13	14	15	29	48		-	-	-	Medium Dense, Dark Grayish Brown(2.5Y 4/2), Silty Fine SAND with traces of shell fragments.	
35.30-35.75	31.50-31.95	SPT-22	22	13	14	14	28	50		-	-	-		
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test	
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite	
Soil type	SAND			SILT			CLAY			ROCK				



FIELD BOREHOLE LOG



Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.				Borehole No	MBH-22			
Location	Jagatsinghpur Dist, Paradip, Odisha.				Proposed Coordinates	E: 450893.0	N: 2232951.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED				Positioned Coordinates	E:450879	N:2232943	Zone	45 N
Project Code	CM 19 01 03				Drilling Method	Rotary drilling			
Termination Depth	45.45m below Bed Level.			C.D. Depth:-	-3.80 mtrs.			Drilling Period	11.05.19 to 13.05.19

Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
36.80-37.25	33.00-33.45	SPT-23	23	14	15	15	30	46	-	-	-	Medium Dense to Dense, Dark Grayish Brown(2.5Y 4/2), Silty Fine SAND with traces of shell frgments.	
38.30-38.75	34.50-34.95	SPT-24	24	14	15	16	31	42	-	-	-		
39.80-40.25	36.00-36.45	SPT-25	25	15	16	18	34	72	-	-	-	Dense, Olive Brown(2.5Y 4/4), Silty Fine SAND .	
41.30-41.75	37.50-37.95	SPT-26	26	16	18	19	37	52	-	-	-		
42.80-43.25	39.00-39.45	SPT-27	27	17	19	25	44	64	-	-	-		
44.30-44.75	40.50-40.95	SPT-28	28	19	21	25	46	48	-	-	-	Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .	
45.80-46.25	42.00-42.45	SPT-29	29	20	24	27	51	48	-	-	-	Very Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .	
47.30-47.75	43.50-43.95	SPT-30	30	21	26	26	52	52	-	-	-		
48.80-49.25	45.00-45.45	SPT-31	31	23	27	28	55	46	-	-	-		

Borehole MBH-22 Terminated at 45.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite.
Soil type	SAND		SILT		CLAY		ROCK		

Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-23			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 451569.0	N: 2233421.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:451568	N:2233417	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-		-4.50 mtrs.			Drilling Period		15/05/2019 to 17/05/2019		
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
4.50-4.95	0.00-0.45	SPT-1	1	1	1	1	2	64		-	-	-	Very Loose, Dark Grayish Gray(10Y 4/1), Silty Fine SAND with traces of shell fragments.	
6.00-6.45	1.50-1.95	SPT-2	2	1	2	2	4	60		-	-	-		
7.50-7.95	3.00-3.45	SPT-3	3	4	7	9	16	52		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND with trace of shell fragments.	
9.00-9.45	4.50-4.95	SPT-4	4	5	8	10	18	70		-	-	-		
10.50-10.95	6.00-6.45	SPT-5	5	4	7	14	21	64		-	-	-	Medium Dense, Greenish Gray(10Y 6/1) become Yellowish Brown(10YR 5/6), Silty Fine to Medium SAND .	
12.00-12.45	7.50-7.95	SPT-6	6	7	10	13	23	66		-	-	-	Medium Dense, Light Olive Brown(2.5Y 5/3), Silty Fine SAND .	
13.50-13.95	9.00-9.45	SPT-7	7	9	13	12	25	60		-	-	-	Medium Dense, Dark Gray(2.5Y 4/1), Silty Fine SAND .	
15.00-15.45	10.50-10.95	SPT-8	8	8	12	14	26	48		-	-	-		
16.50-16.95	12.00-12.45	SPT-9	9	5	6	6	12	46		-	-	-	Medium Dense, Greenish Gray(10Y 5/1), Silty Fine SAND with traces to few of clay pockets.	
18.00-18.45	13.50-13.95	SPT-10	10	5	6	7	13	42		-	-	-		
19.50-19.95	15.00-15.45	SPT-11	11	7	10	12	22	39		-	-	-	Medium Dense, Dark Gray(2.5Y 4/1), Silty Fine SAND .	
21.00-21.45	16.50-16.95	SPT-12	12	8	11	13	24	62		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND with trace of shell fragments.	
22.50-22.95	18.00-18.45	SPT-13	13	9	12	14	26	70		-	-	-	Medium Dense, Dark Yellowish Brown(10YR 4/4), Silty Fine SAND .	
24.00-24.45	19.50-19.95	SPT-14	14	10	13	16	29	74		-	-	-		
25.50-25.95	21.00-21.45	SPT-15	15	10	11	14	25	74		-	-	-		
27.00-27.45	22.50-22.95	SPT-16	16	11	11	14	25	69		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .	
28.50-28.95	24.00-24.45	SPT-17	17	10	12	14	26	72		-	-	-		
30.00-30.45	25.50-25.95	SPT-18	18	11	16	15	31	66		-	-	-		
31.50-31.95	27.00-27.45	SPT-19	19	11	14	14	28	70		-	-	-		
33.00-33.45	28.50-28.95	SPT-20	20	13	14	15	29	68		-	-	-	Medium Dense to Dense, Olive Brown(2.5Y 4/3), Silty Fine SAND .	
34.50-34.95	30.00-30.45	SPT-21	21	12	15	15	30	64		-	-	-		
36.00-36.45	31.50-31.95	SPT-22	22	11	15	15	30	60		-	-	-		
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test	
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite	
Soil type	SAND			SILT		CLAY		ROCK						



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-23			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 451569.0	N: 2233421.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E:451568	N:2233417	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-			-4.50 mtrs.			Drilling Period		15/05/2019 to 17/05/2019	
Drill Depth(M) wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
37.50-37.95	33.00-33.45	SPT-23	23	13	16	18	34	66		-	-	-		Dense, Yellowish Brown(10YR 5/6), Silty Fine SAND .
39.00-39.45	34.50-34.95	SPT-24	24	14	16	20	36	60		-	-	-		
40.50-40.95	36.00-36.45	SPT-25	25	14	17	19	36	52		-	-	-		
42.00-42.45	37.50-37.95	SPT-26	26	16	19	21	40	58		-	-	-		
43.50-43.95	39.00-39.45	SPT-27	27	15	22	24	46	58		-	-	-		
45.00-45.45	40.50-40.95	SPT-28	28	16	24	26	50	48		-	-	-		Dense to Very Dense, Light Olive Brown(2.5Y 5/3), Silty Fine SAND .
46.50-46.95	42.00-42.45	SPT-29	29	17	26	27	53	46		-	-	-		
48.00-48.45	43.50-43.95	SPT-30	30	17	27	29	56	42		-	-	-		
49.50-49.95	45.00-45.45	SPT-31	31	18	27	30	57	30		-	-	-		

Borehole MBH-23 Terminated at 45.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		

Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-24			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 454561.0	N: 2234801.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 454558.0	N: 2234811.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		40.45m below Bed Level.			C.D. Depth:-			-2.30 mtrs.			Drilling Period		25/05/2019 to 27/05/2019	
Drill Depth wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
2.30-2.75	0.00-0.45	SPT-1	1	7	8	10	18	52		-	-	-	Loose to Medium Dense, Grayish Brown(2.5Y 5/2), Silty Fine SAND with traces of shell fragments.	
3.80-4.25	1.50-1.95	SPT-2	2	11	13	16	29	47		-	-	-	Medium Dense, Yellowish Brown(10YR 5/4), Fine to Medium SAND with trace of shell fragments.	
5.30-5.75	3.00-3.45	SPT-3	3	13	14	18	32	44		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/3), Fine to Medium SAND with traces of shell fragments.	
6.80-7.25	4.50-4.95	SPT-4	4	18	20	22	42	46		-	-	-	Dense, Light Olive Brown(2.5Y 5/6), Medium grained SAND .	
8.30-8.75	6.00-6.45	SPT-5	5	19	22	21	43	42		-	-	-		
9.80-10.25	7.50-7.95	SPT-6	6	21	16	20	36	50		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/3), Fine to Medium Silty SAND .	
11.30-11.75	9.00-9.45	SPT-7	7	15	18	20	38	48		-	-	-	Dense, Grayish Brown(2.5Y 5/2) to Light Yellowish Brown(2.5Y 6/3), Silty Fine SAND .	
12.80-13.25	10.50-10.95	SPT-8	8	16	16	17	33	51		-	-	-		
14.30-14.75	12.00-12.45	SPT-9	9	12	12	15	27	56		-	-	-	Medium Dense, Olive(5Y 5/3) to Olive Gray(5Y 5/2), Silty SAND .	
15.80-16.25	13.50-13.95	SPT-10	10	13	12	12	24	54		-	-	-		
17.30-17.75	15.00-15.45	SPT-11	11	3	4	6	10	86		-	-	-	Firm to Stiff, Grayish(5Y 4/1), Sandy Silty CLAY . (14.70m onwards CLAY started)	
18.80-19.25	16.50-16.95	SPT-12	12	7	8	8	16	52		-	-	-	Medium Dense, Olive Gray(5Y 5/2),Silty Fine SAND with few CLAY pockets.	
20.30-20.75	18.00-18.45	SPT-13	13	10	10	12	22	45		-	-	-	Medium Dense, Olive Gray(5Y 5/2), Silty Fine SAND .	
21.80-22.25	19.50-19.95	SPT-14	14	13	12	13	25	42		-	-	-	Medium Dense, Pale Olive(5Y 6/3), Fine to Medium, Silty SAND .	
23.30-23.75	21.00-21.45	SPT-15	15	10	14	14	28	48		-	-	-		
24.80-25.25	22.50-22.95	SPT-16	16	12	15	17	32	54		-	-	-	Dense, Pale Yellow(5Y 7/3), Silty Fine SAND .	
26.30-26.75	24.00-24.45	SPT-17	17	15	14	16	30	50		-	-	-	Medium Dense, Pale Yellow(5Y 7/4), Fine to Medium Silty SAND .	
27.80-28.25	25.50-25.95	SPT-18	18	11	12	18	30	38		-	-	-		
29.30-29.75	27.00-27.45	SPT-19	19	13	13	20	33	46		-	-	-	Dense, Pale Olive(5Y 6/3), Silty Fine SAND .	
30.80-31.25	28.50-28.95	SPT-20	20	15	16	17	33	51		-	-	-		
32.30-32.75	30.00-30.45	SPT-21	21	18	18	20	38	58		-	-	-	Dense, Light Yellowish Brown(2.5Y 6/3), Fine to Medium SAND .	
33.80-34.25	31.50-31.95	SPT-22	22	20	21	24	45	43		-	-	-	Dense, Olive Yellow(2.5Y 6/6), Silty Fine SAND .	
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test	
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite	
Soil type	SAND			SILT			CLAY			ROCK				



FIELD BOREHOLE LOG



Project Name	Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.				Borehole No	MBH-24			
Location	Jagatsinghpur Dist, Paradip, Odisha.				Proposed Coordinates	E: 454561.0	N: 2234801.0	Datum	WGS1984
Client	JSW UTKAL STEEL LIMITED				Positioned Coordinates	E: 454558.0	N: 2234811.0	Zone	45 N
Project Code	CM 19 01 03				Drilling Method	Rotary drilling			
Termination Depth	40.45m below Bed Level.			C.D. Depth:-	-2.30 mtrs.			Drilling Period	25/05/2019 to 27/05/2019

Drill Depth wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description
				15 cm	15 cm	15 cm							
35.30-35.75	33.00-33.45	SPT-23	23	19	25	23	48	50	-	-	-	Dense, Olive Yellow(2.5Y 6/6) to Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
36.80-37.25	34.50-34.95	SPT-24	24	15	23	23	46	60	-	-	-		
37.30-37.75	36.00-36.45	SPT-25	25	21	24	28	52	42	-	-	-	Very Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
40.30-40.75	38.00-38.45	SPT-26	26	20	28	30	58	38	-	-	-	Very Dense, Light Olive Brown(2.5Y 5/6), Fine to Medium Silty SAND .	
42.30-42.75	40.00-40.45	SPT-27	27	20	27	32	59	49	-	-	-		

Borehole MBH-24 Terminated at 40.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		



FIELD BOREHOLE LOG



Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-25			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 454846.0	N: 2235263.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 454834.0	N: 2235266.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-			-1.50 mtrs.			Drilling Period		27/05/2019 to 29/05/2019	
Drill Depth wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
1.50-1.95	0.00-0.45	SPT-1	1	5	7	9	16	30		-	-	-	Medium Dense, Yellowish Brown(10YR 5/6), Fine to Medium Silty SAND with traces of shell fragments.	
3.00-3.45	1.50-1.95	SPT-2	2	6	8	12	20	42		-	-	-	Medium Dense, Dark Grayish Brown(10YR 4/2), Silty Fine SAND.	
4.50-4.95	3.00-3.45	SPT-3	3	10	13	15	28	44		-	-	-		
6.00-6.45	4.50-4.95	SPT-4	4	12	14	16	30	49		-	-	-		
7.50-7.95	6.00-6.45	SPT-5	5	15	17	20	37	47		-	-	-	Medium Dense to Dense, Grayish Brown(2.5Y 5/2), Fine to Medium SAND with traces of shell fragments.	
9.00-9.45	7.50-7.95	SPT-6	6	12	20	22	42	69		-	-	-		
10.50-10.95	9.00-9.45	SPT-7	7	17	21	20	41	54		-	-	-		
12.00-12.45	10.50-10.95	SPT-8	8	17	17	16	33	56		-	-	-	Dense, Light Brownish Gray(2.5Y 6/2), Silty Fine SAND.	
13.50-13.95	12.00-12.45	SPT-9	9	12	13	15	28	48		-	-	-	Medium Dense, Olive(5Y 5/4) to Olive Gray(5Y 4/2), Silty Fine SAND.	
15.00-15.45	13.50-13.95	SPT-10	10	15	15	14	29	54		-	-	-		
16.50-16.95	15.00-15.45	SPT-11	11	16	11	13	24	42		-	-	-	Medium Dense, Olive Gray(5Y 4/2), Silty Fine SAND with traces of CLAY pockets.	
18.00-18.45	16.50-16.95	SPT-12	12	7	6	7	13	70		-	-	-	Firm to Stiff, Dark Greenish Gray(10Y 4/1), Sandy Silty CLAY/ Clayey SAND.	
19.50-19.95	18.00-18.45	SPT-13	13	9	10	13	23	44		-	-	-	Medium Dense, Olive(5Y 4/4), Silty Fine SAND with traces of CLAY pockets.	
21.00-21.45	19.50-19.95	SPT-14	14	10	12	18	30	50		-	-	-	Medium Dense, Olive Gray(5Y 5/2) to Light Olive Gray(5Y6/2), Silty Fine SAND.	
22.50-22.95	21.00-21.45	SPT-15	15	13	16	17	33	42		-	-	-		
24.00-24.45	22.50-22.95	SPT-16	16	17	20	24	44	47		-	-	-	Dense, Olive Gray(5Y 5/2), Fine to Medium Silty SAND.	
25.50-25.95	24.00-24.45	SPT-17	17	20	24	23	47	52		-	-	-	Dense, Olive Gray(5Y 5/2), Silty Fine SAND.	
27.00-27.45	25.50-25.95	SPT-18	18	18	20	18	38	40		-	-	-	Dense, Pale Olive(5Y 6/4), Silty Fine SAND traces of Medium sand.	
28.50-28.95	27.00-27.45	SPT-19	19	18	19	21	40	60		-	-	-		
30.00-30.45	28.50-28.95	SPT-20	20	12	14	16	30	41		-	-	-	Medium Dense to Dense, Yellowish Brown(10YR 5/6), Fine to Medium Silty SAND.	
31.50-31.95	30.00-30.45	SPT-21	21	15	15	18	33	44		-	-	-		
33.00-33.45	31.50-31.95	SPT-22	22	19	20	21	41	40		-	-	-	Dense, Dark Yellowish Brown(10YR 4/4), Fine to Medium Silty SAND.	
Logged By	Vijayendra & Ramsundar		Drill Rig	Swanskar		Outer Casing	150 mm		SBL	Sea Bed Level		SPT	Standard Penetration Test	
Checked By	Vijayendra Patil		Inner Casing	NX Size		CD	Chart Datum		UDS	UnDisturbed Soil Sample		Drill Mud	Bentonite	
Soil type	SAND			SILT			CLAY			ROCK				



FIELD BOREHOLE LOG

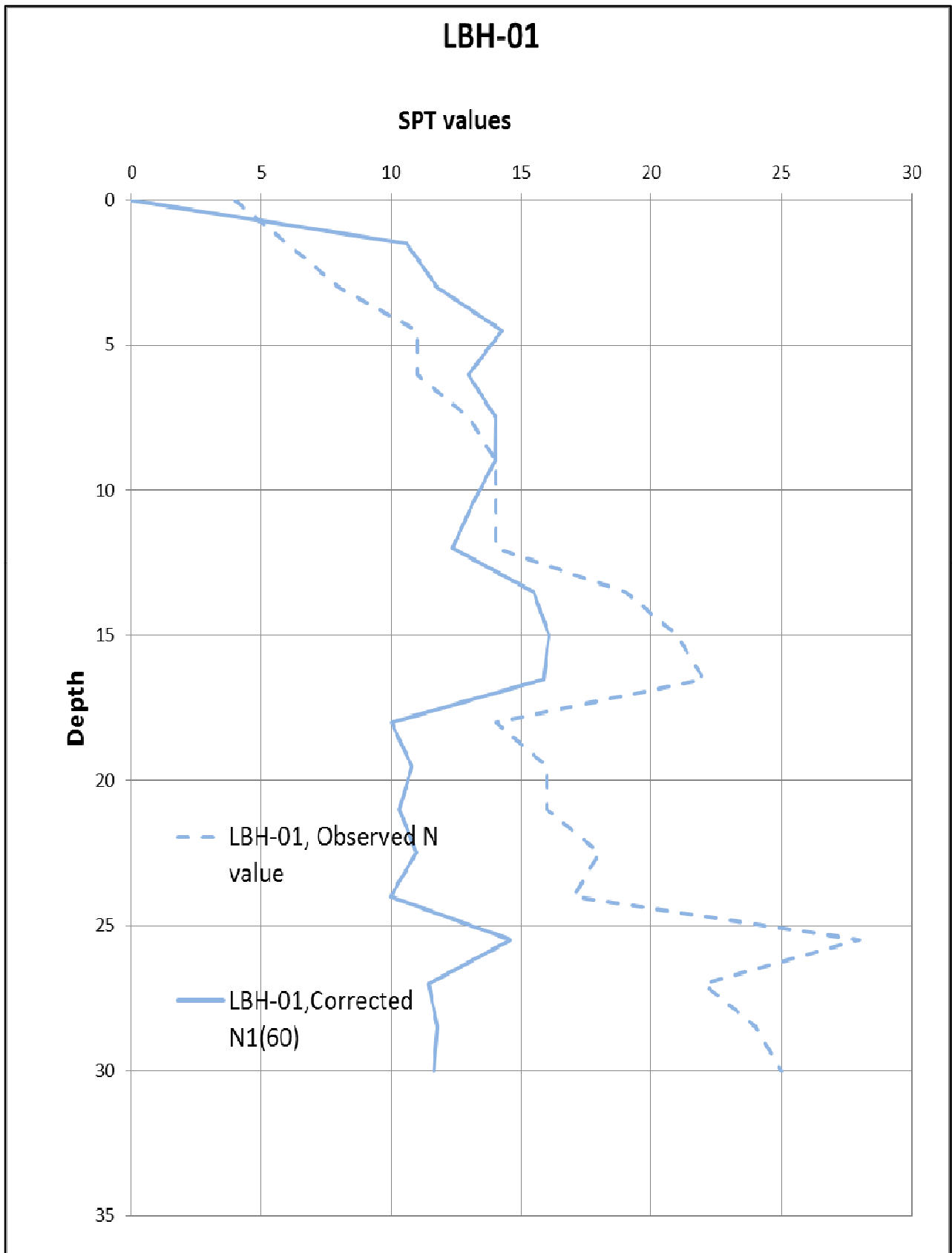


Project Name		Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.							Borehole No		MBH-25			
Location		Jagatsinghpur Dist, Paradip, Odisha.							Proposed Coordinates		E: 454846.0	N: 2235263.0	Datum	WGS1984
Client		JSW UTKAL STEEL LIMITED							Positioned Coordinates		E: 454834.0	N: 2235266.0	Zone	45 N
Project Code		CM 19 01 03							Drilling Method		Rotary drilling			
Termination Depth		45.45m below Bed Level.			C.D. Depth:-			-1.50 mtrs.			Drilling Period		27/05/2019 to 29/05/2019	
Drill Depth wrt C.D.	Drill Depth wrt B.L.	Sample Type	Sample No	Standard Penetration			SPT 'N' Value	Sample Recovery (%)	Soil Log	TCR (%)	SCR (%)	RQD (%)	Strata Description	
				15 cm	15 cm	15 cm								
34.50-34.95	33.00-33.45	SPT-23	23	24	22	23	45	50		-	-	-	Dense, Light Olive Brown(2.5Y 5/6), Fine to Medium Silty SAND .	
36.00-36.45	34.50-34.95	SPT-24	24	25	26	26	52	48		-	-	-		
37.50-37.95	36.00-36.45	SPT-25	25	28	26	28	54	30		-	-	-	Very Dense, Light Olive Brown(2.5Y 5/3), Silty Fine SAND .	
39.00-39.45	37.50-37.95	SPT-26	26	24	26	30	56	46		-	-	-		
40.50-40.95	39.00-39.45	SPT-27	27	20	24	26	50	30		-	-	-	Dense to Very Dense, Light Yellowish Brown(2.5Y 6/4), Silty Fine SAND .	
42.00-42.45	40.50-40.95	SPT-28	28	28	25	28	53	44		-	-	-		
43.50-43.95	42.00-42.45	SPT-29	29	22	25	24	49	30		-	-	-	Dense to Very Dense, Light Olive Brown(2.5Y 5/4), Fine to Medium Silty SAND .	
45.00-45.45	43.50-43.95	SPT-30	30	24	28	31	59	42		-	-	-		
46.50-46.95	45.00-45.45	SPT-31	31	21	28	28	56	34		-	-	-		

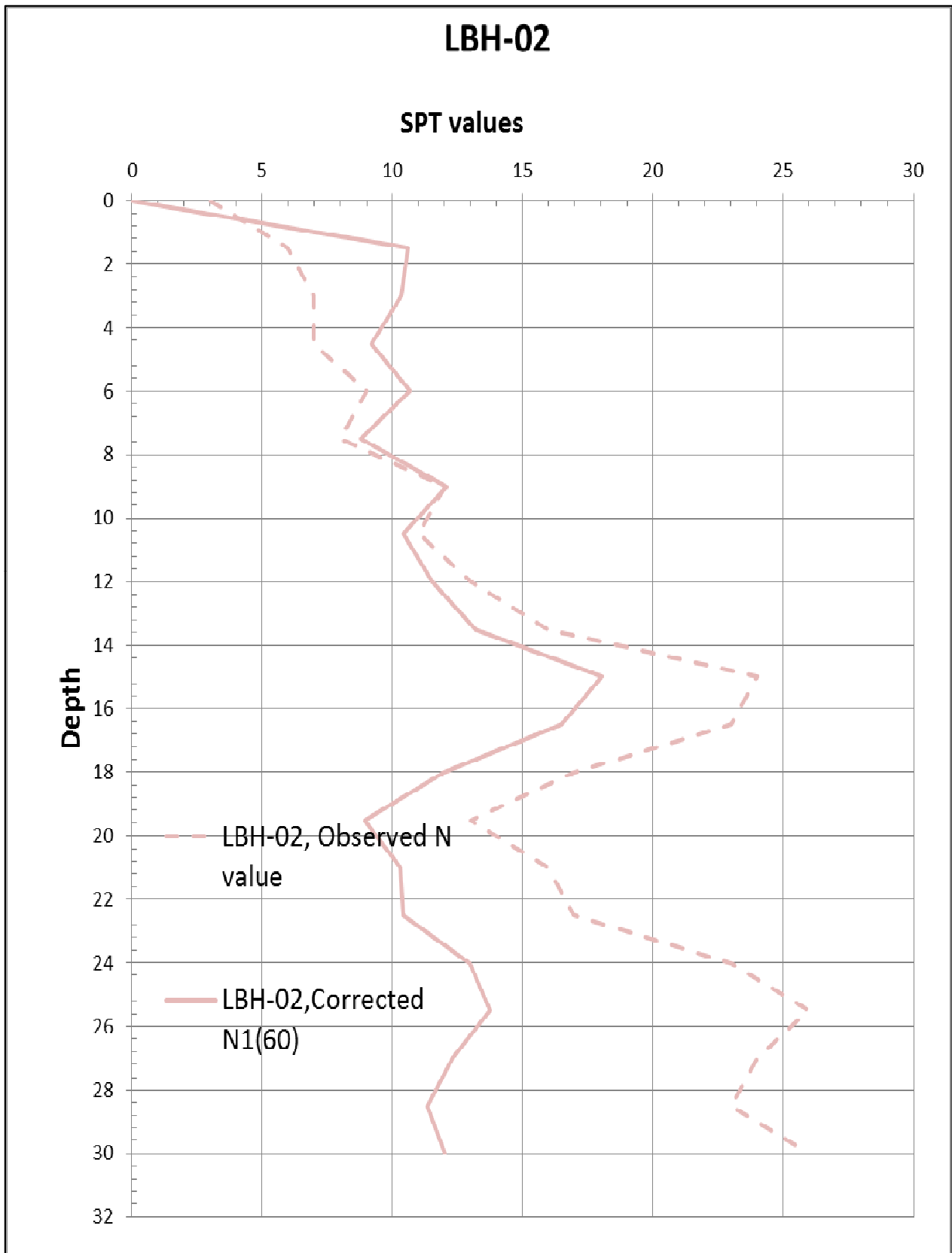
Borehole MBH-25 Terminated at 45.45m Below Bed Level.

Logged By	Vijayendra & Ramsundar	Drill Rig	Swanskar	Outer Casing	150 mm	SBL	Sea Bed Level	SPT	Standard Penetration Test
Checked By	Vijayendra Patil	Inner Casing	NX Size	CD	Chart Datum	UDS	UnDisturbed Soil Sample	Drill Mud	Bentonite
Soil type	SAND		SILT		CLAY		ROCK		

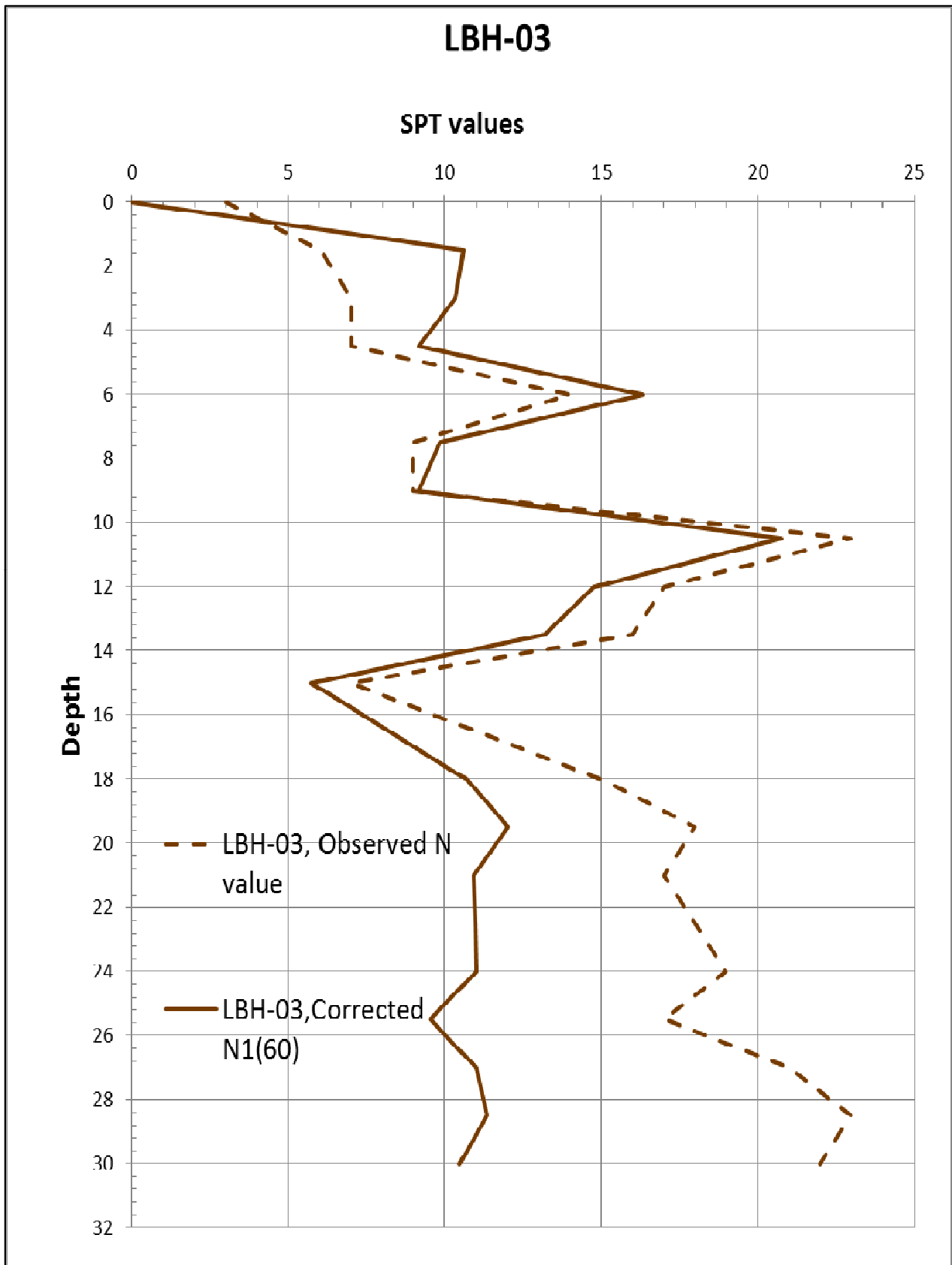
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



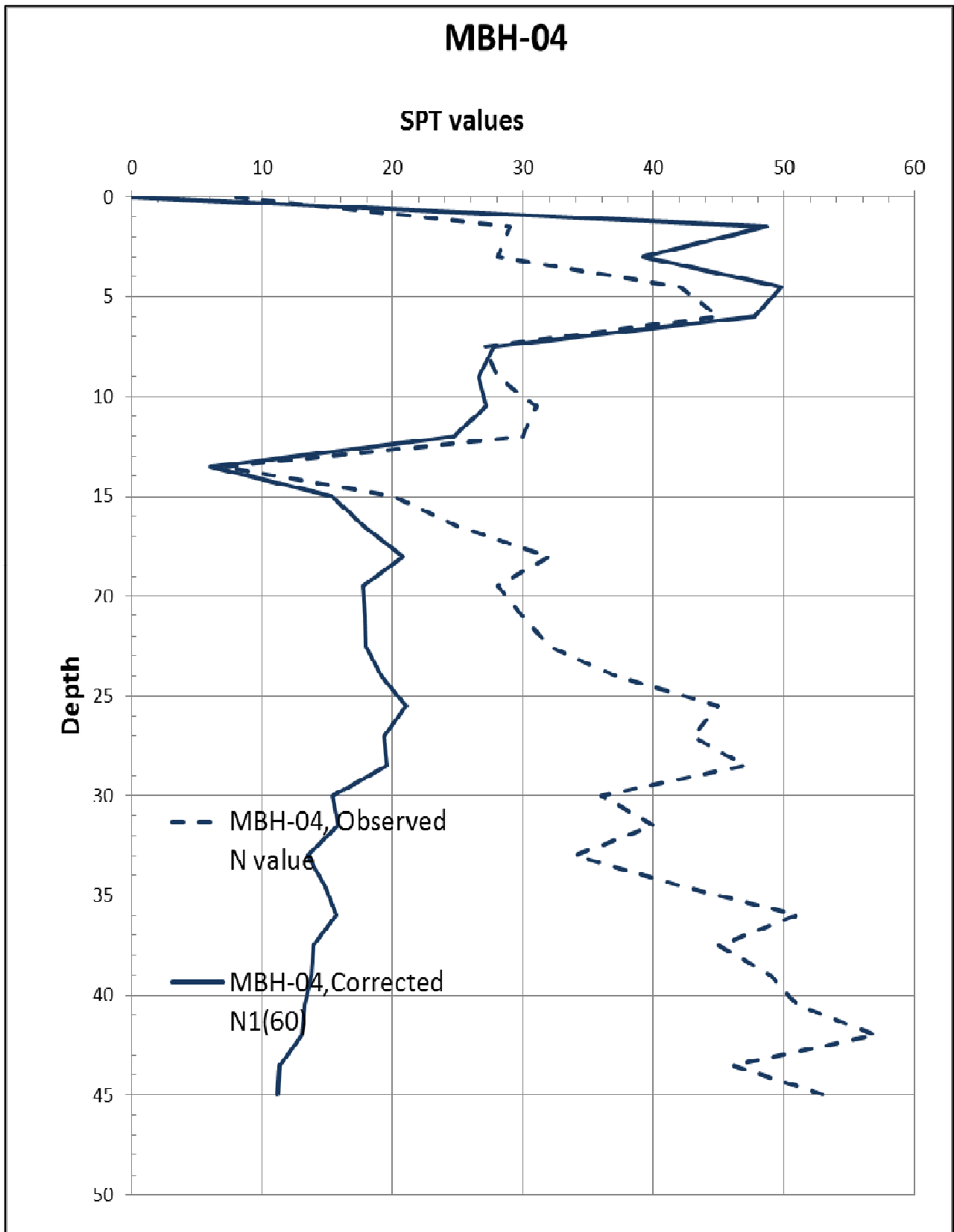
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



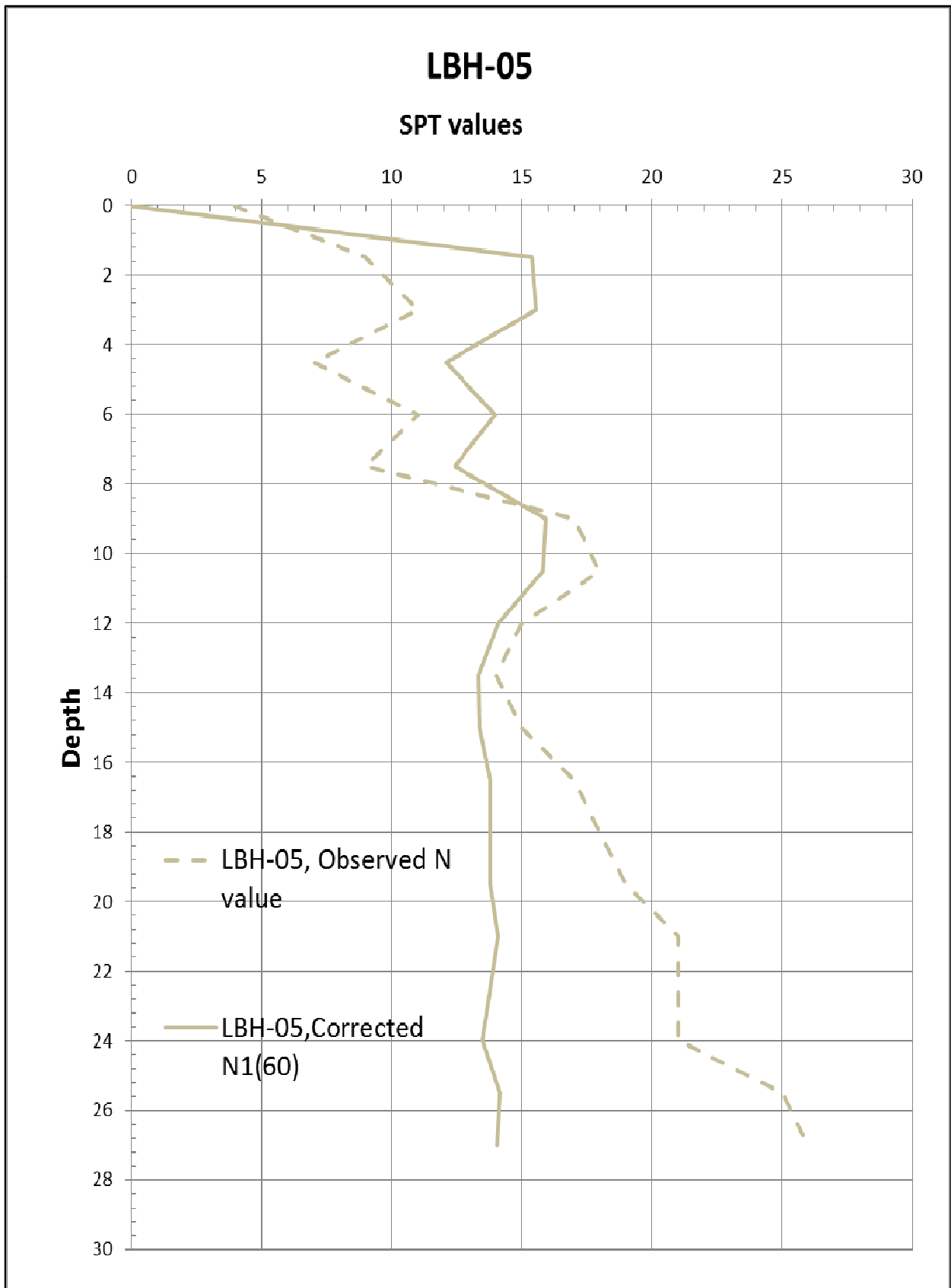
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



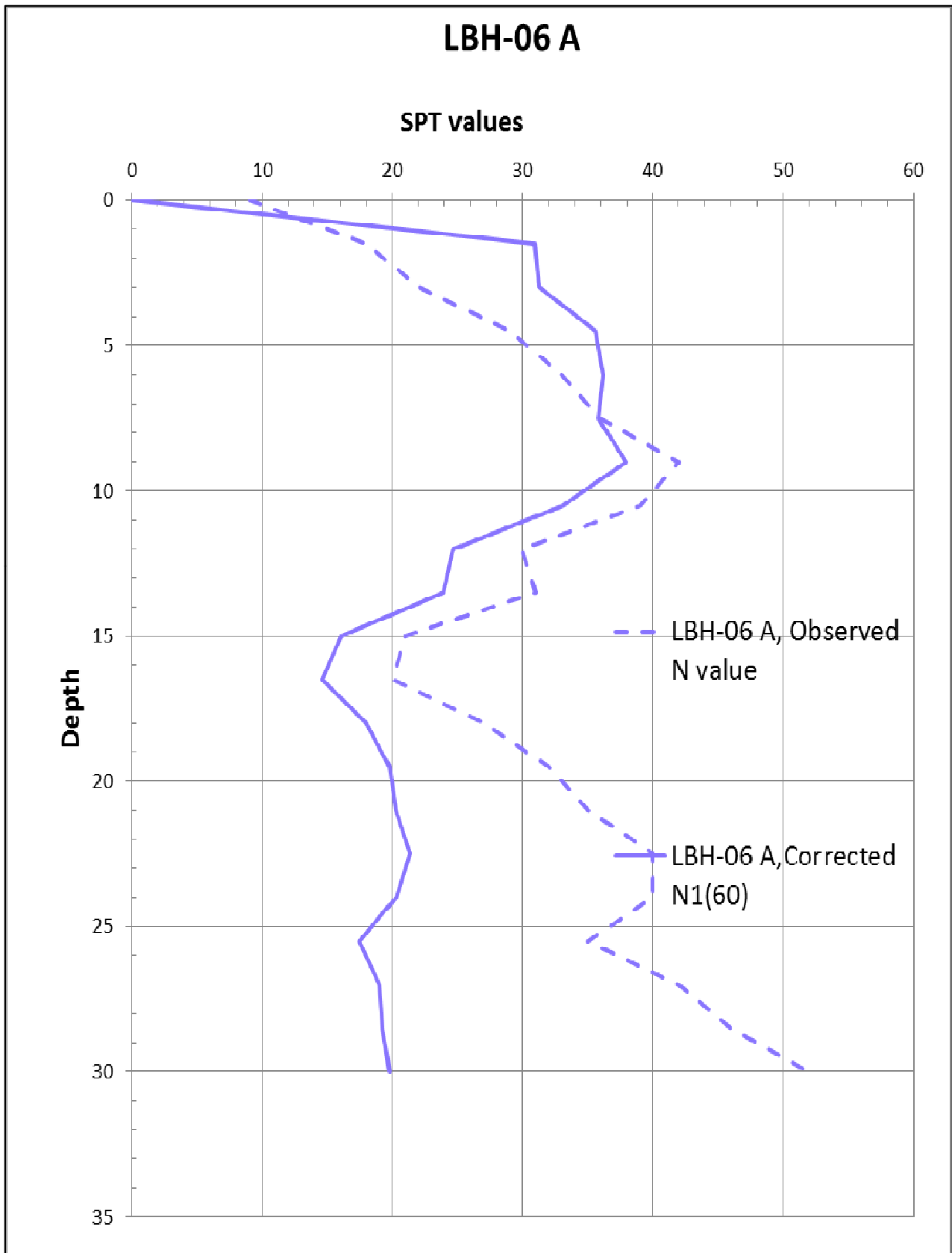
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



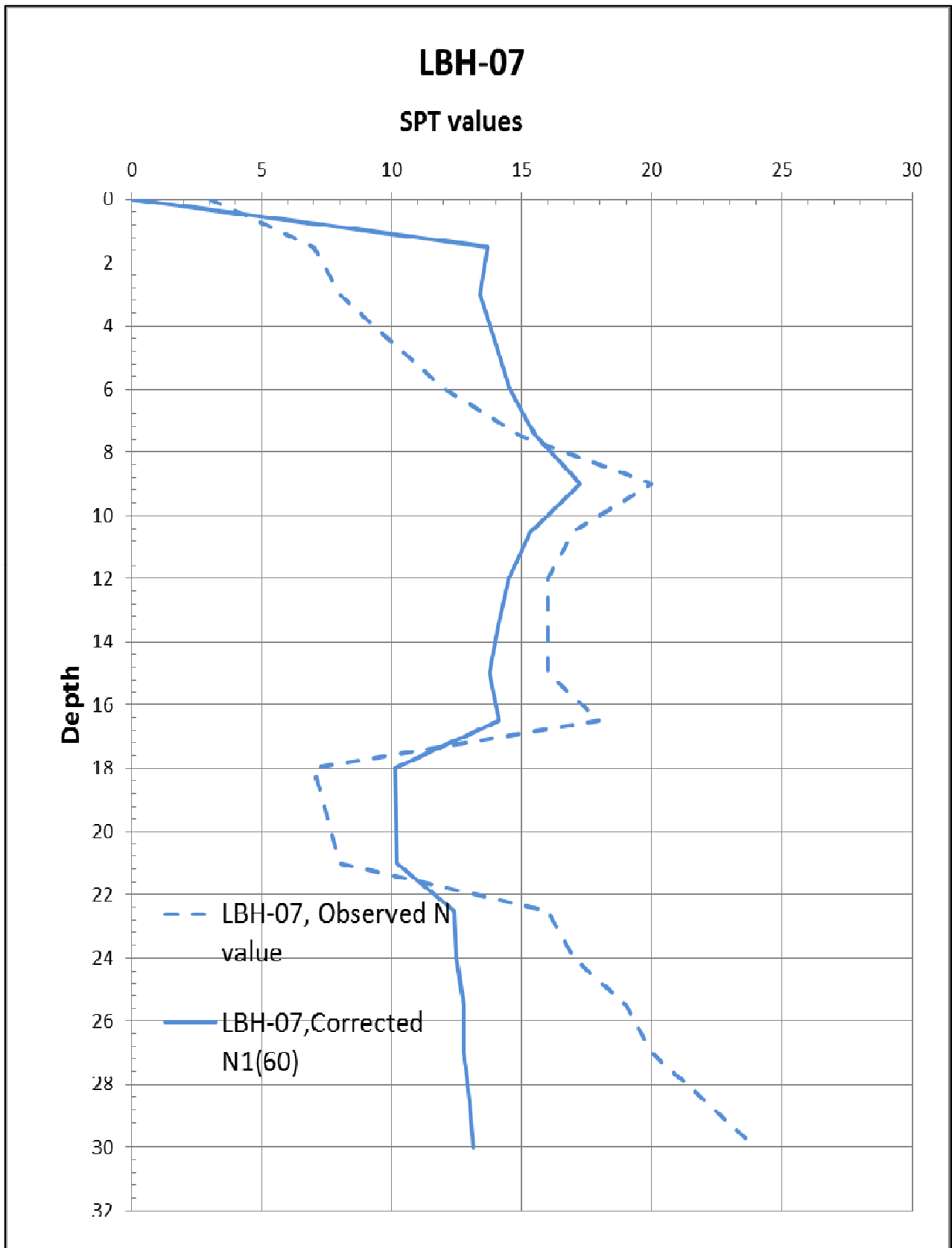
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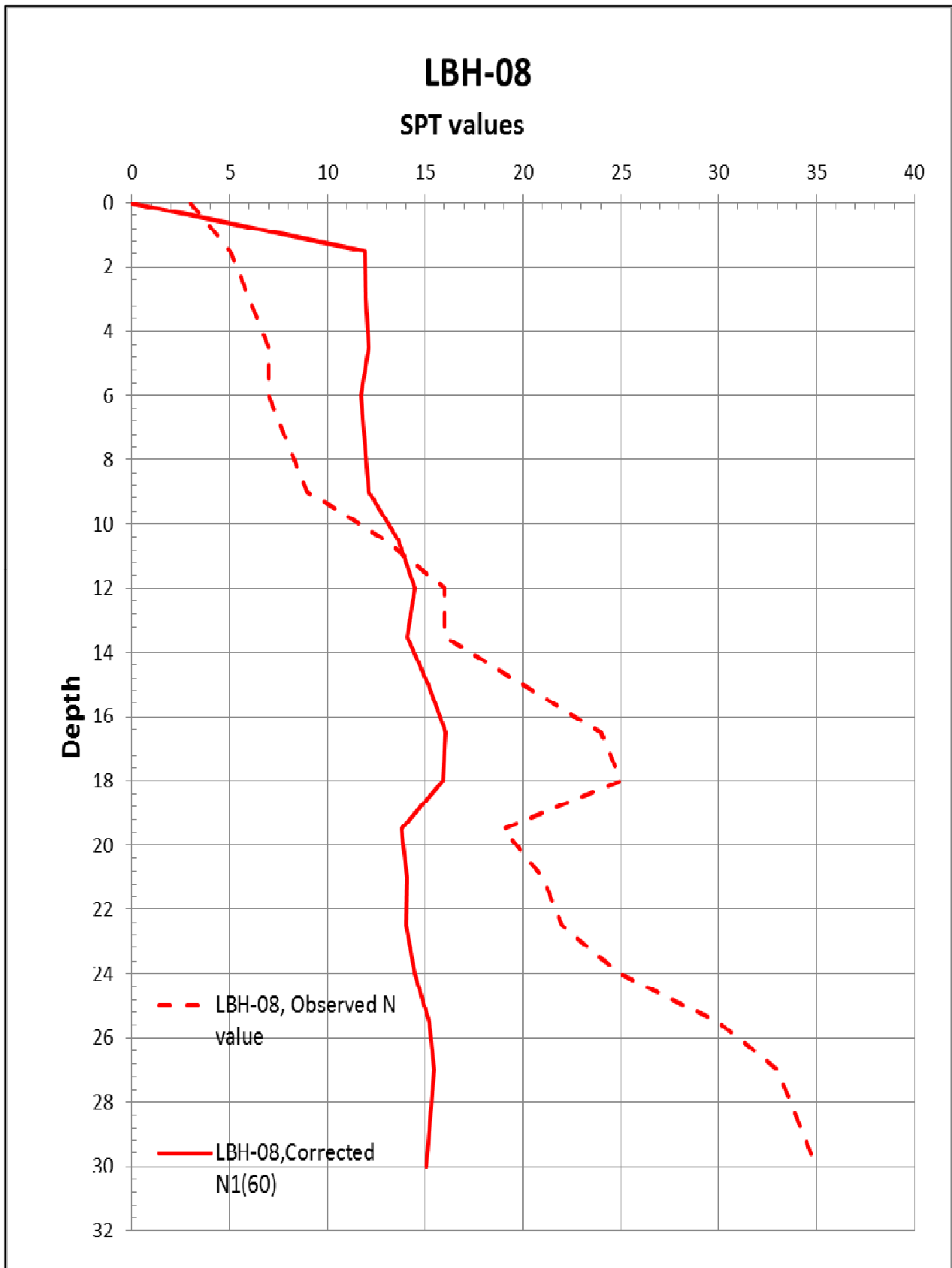
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



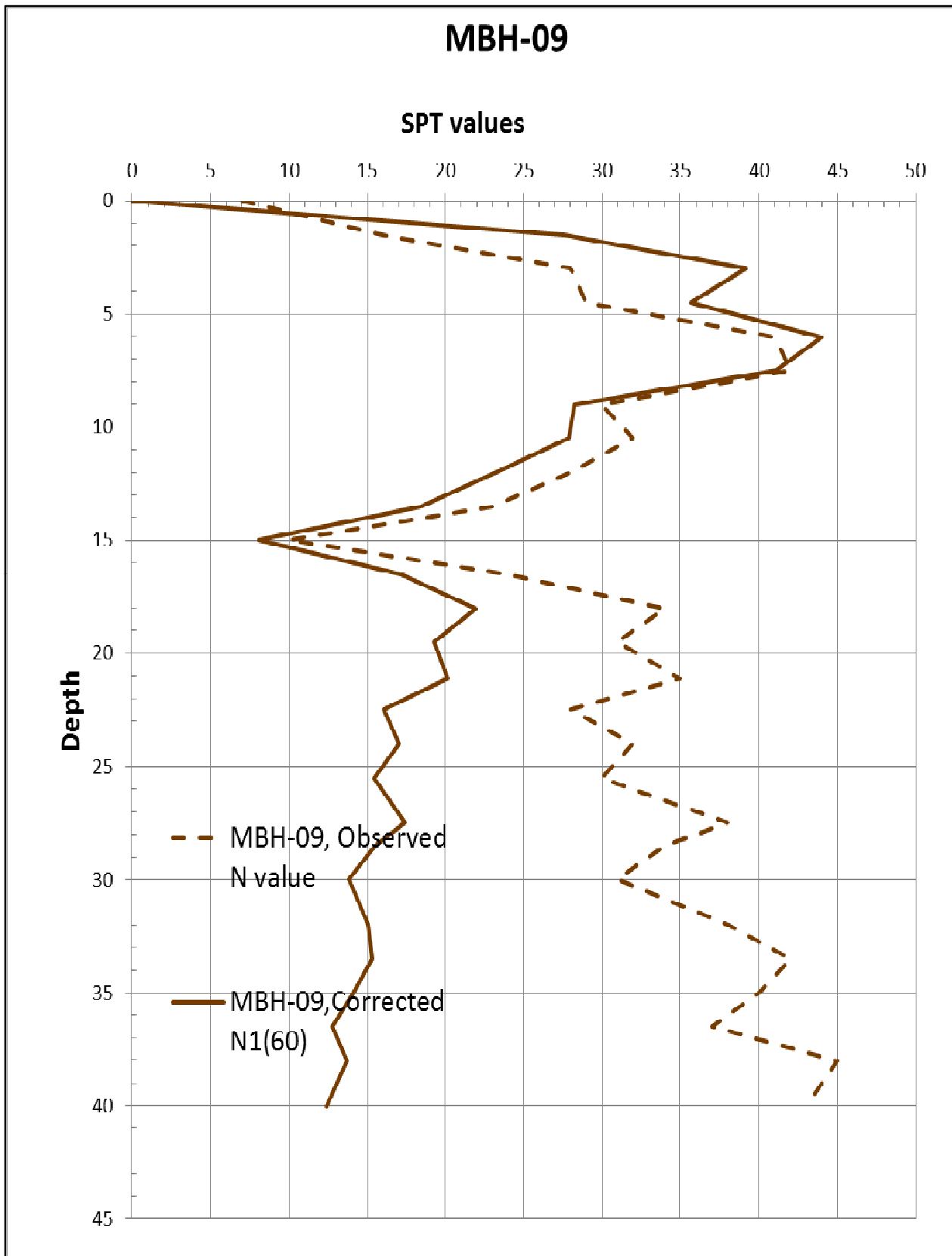
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



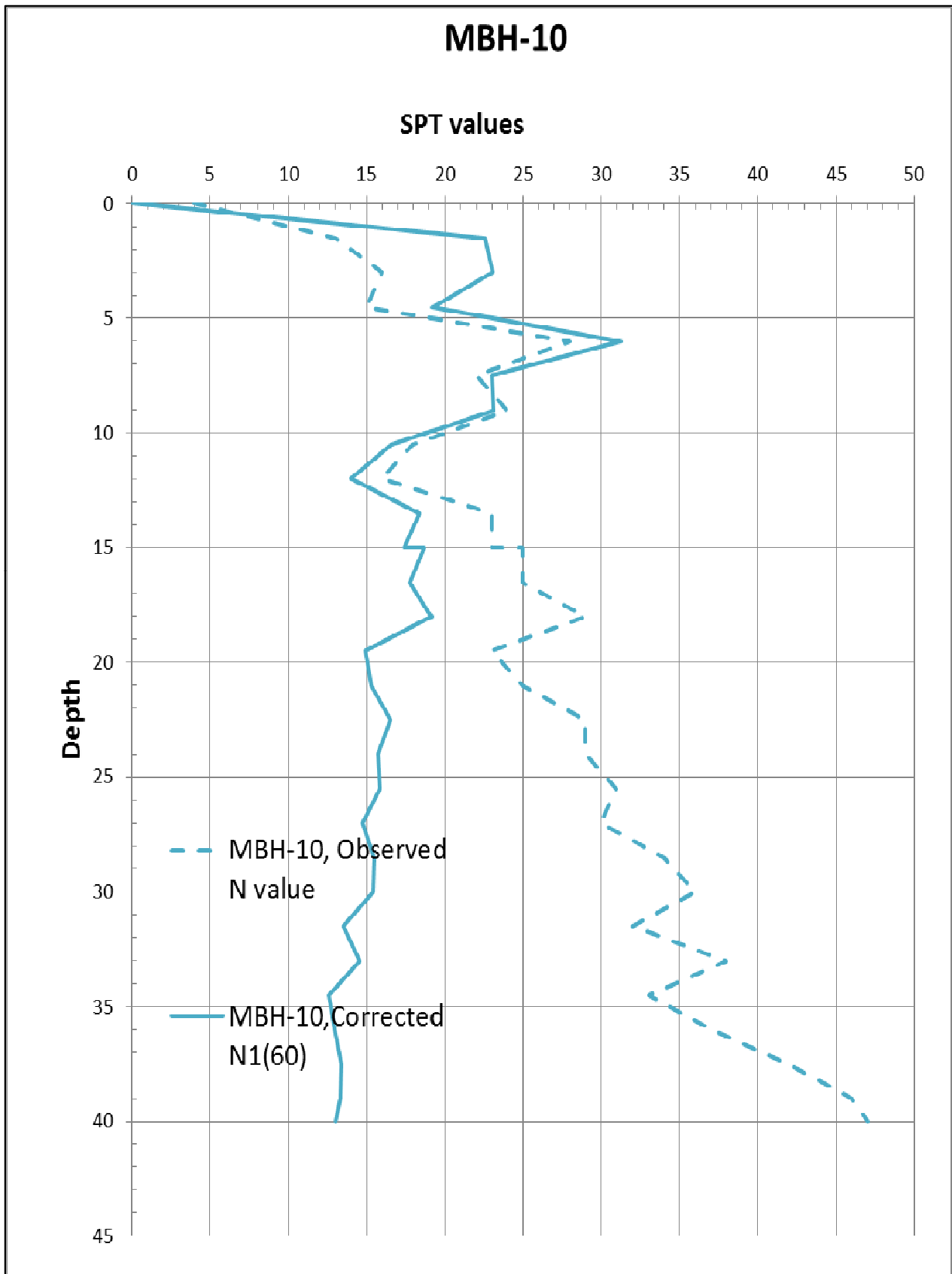
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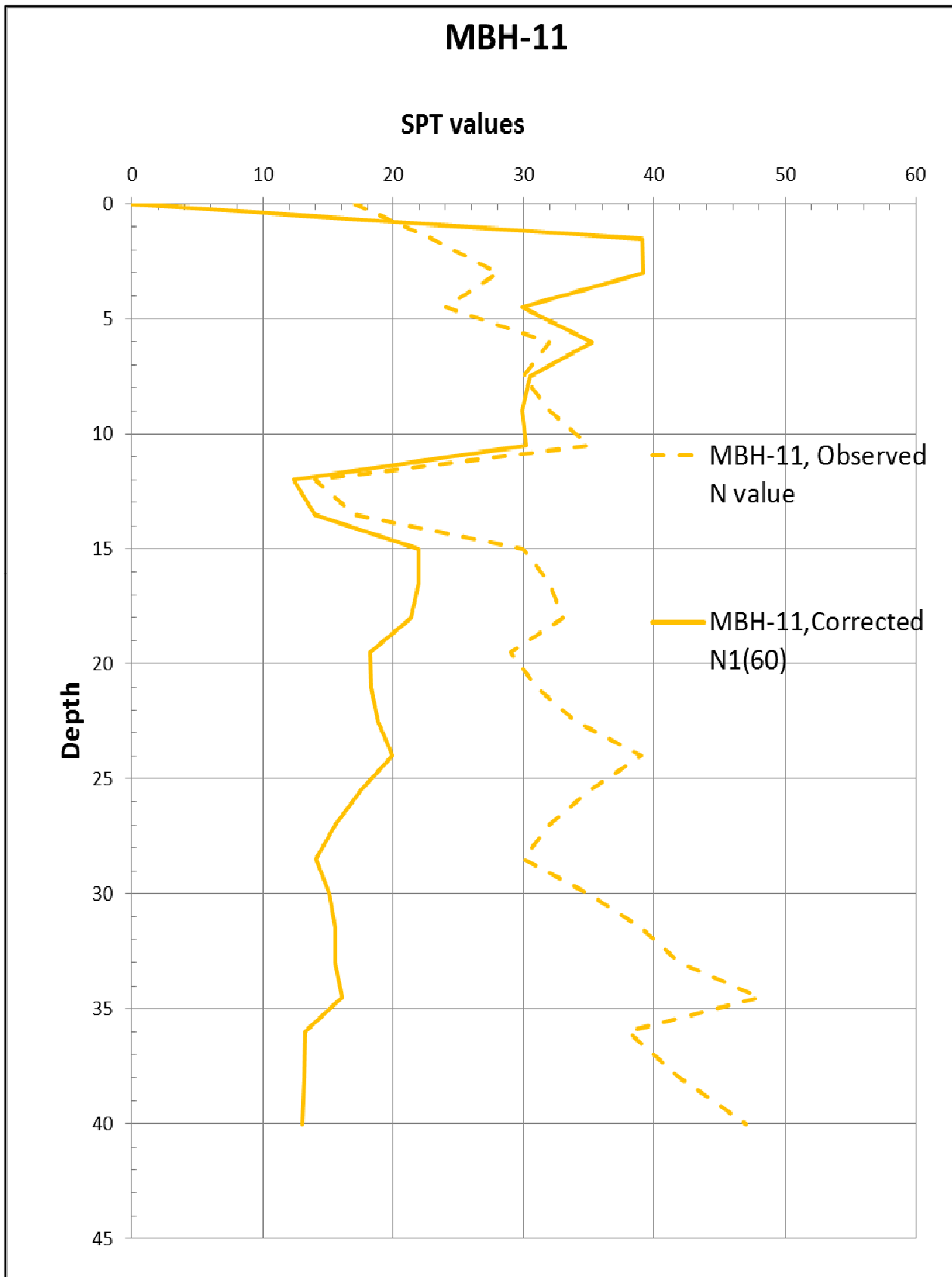
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



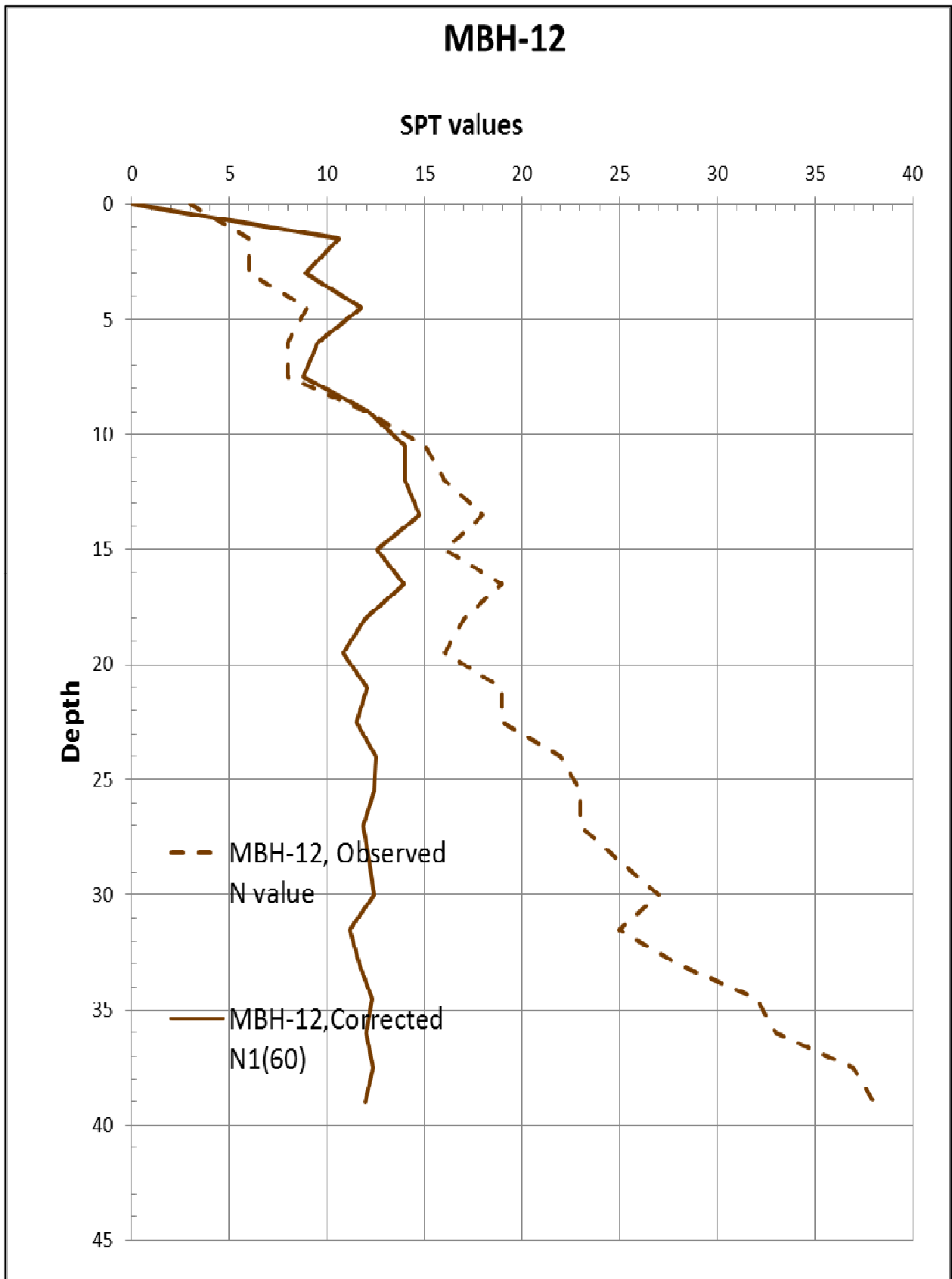
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



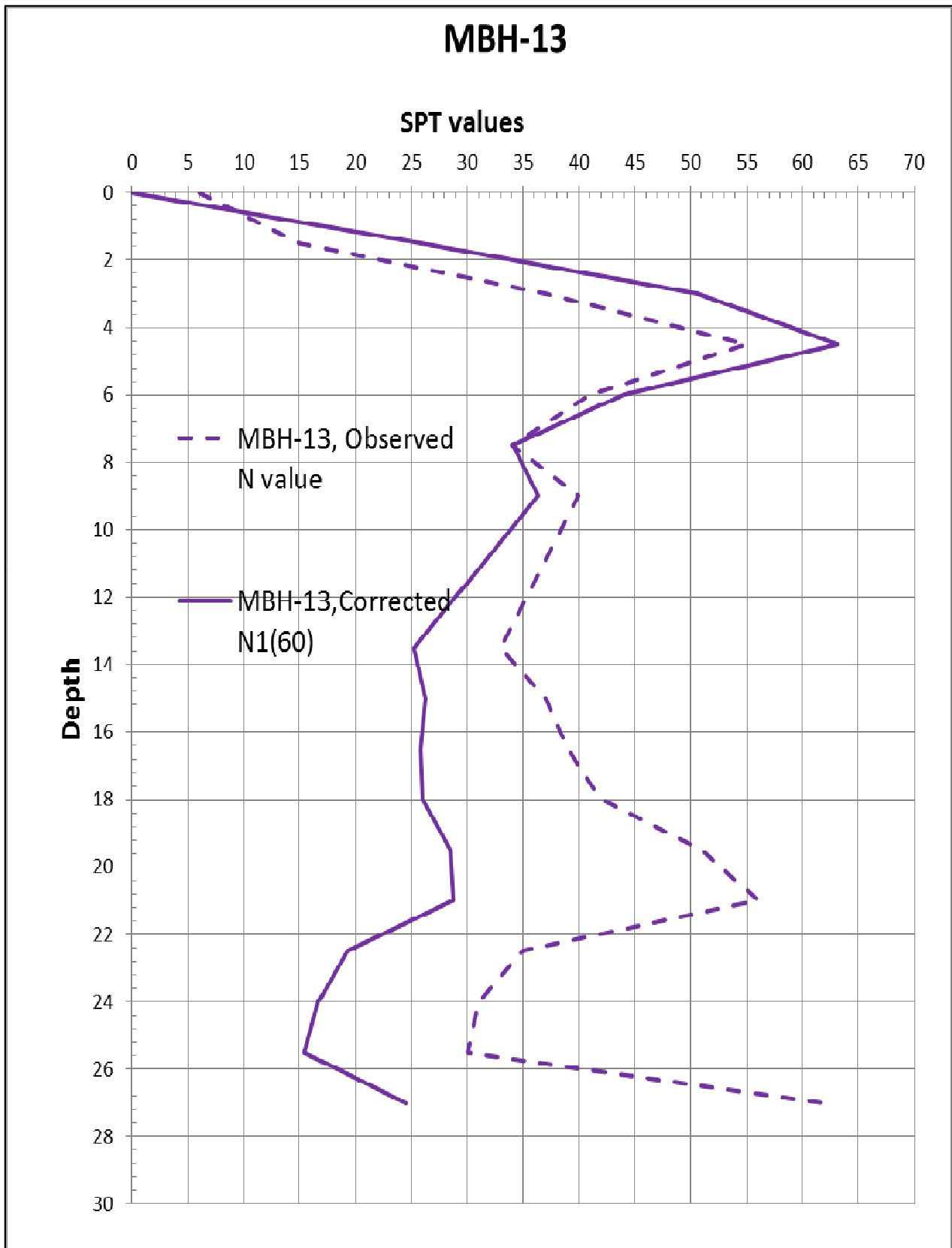
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



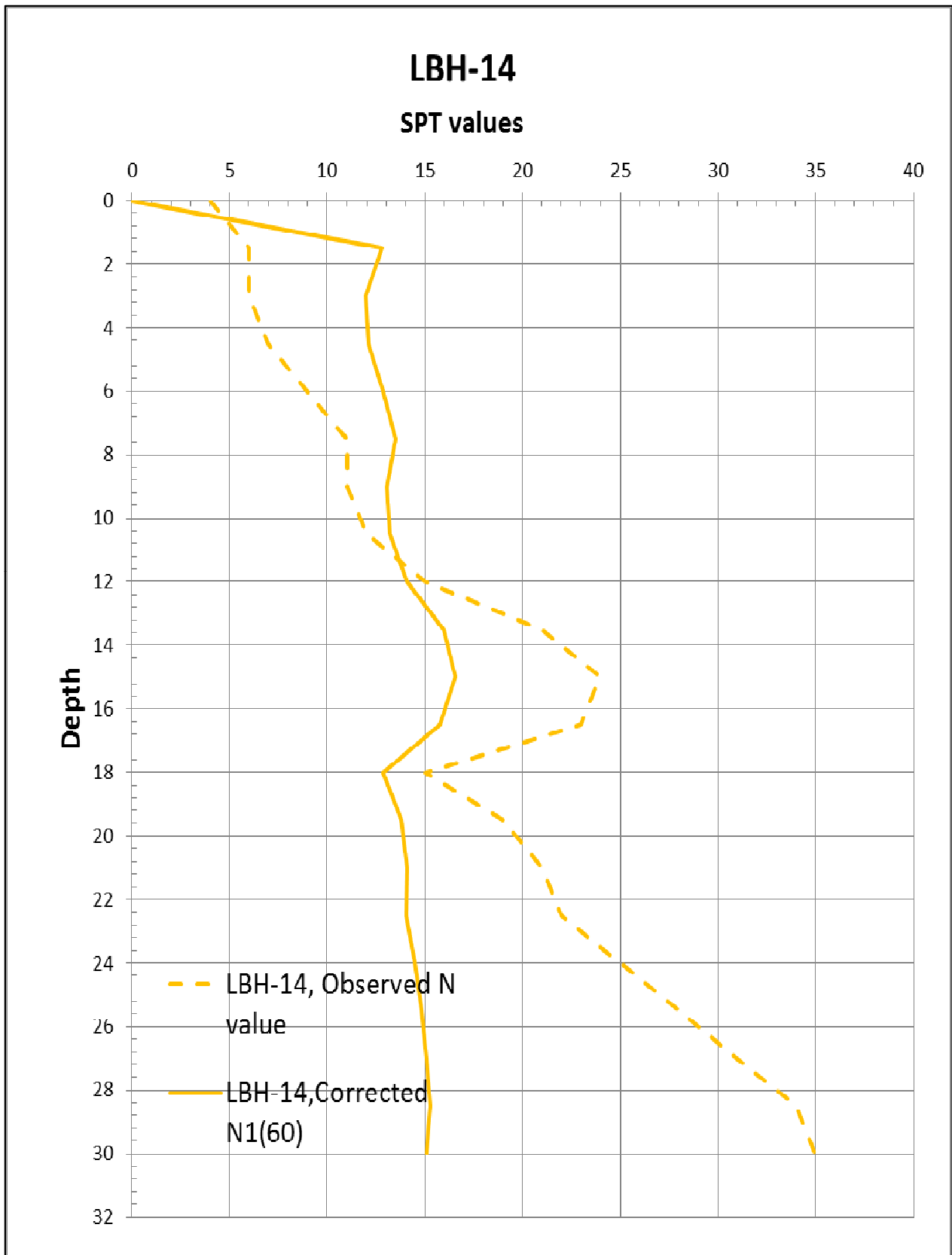
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



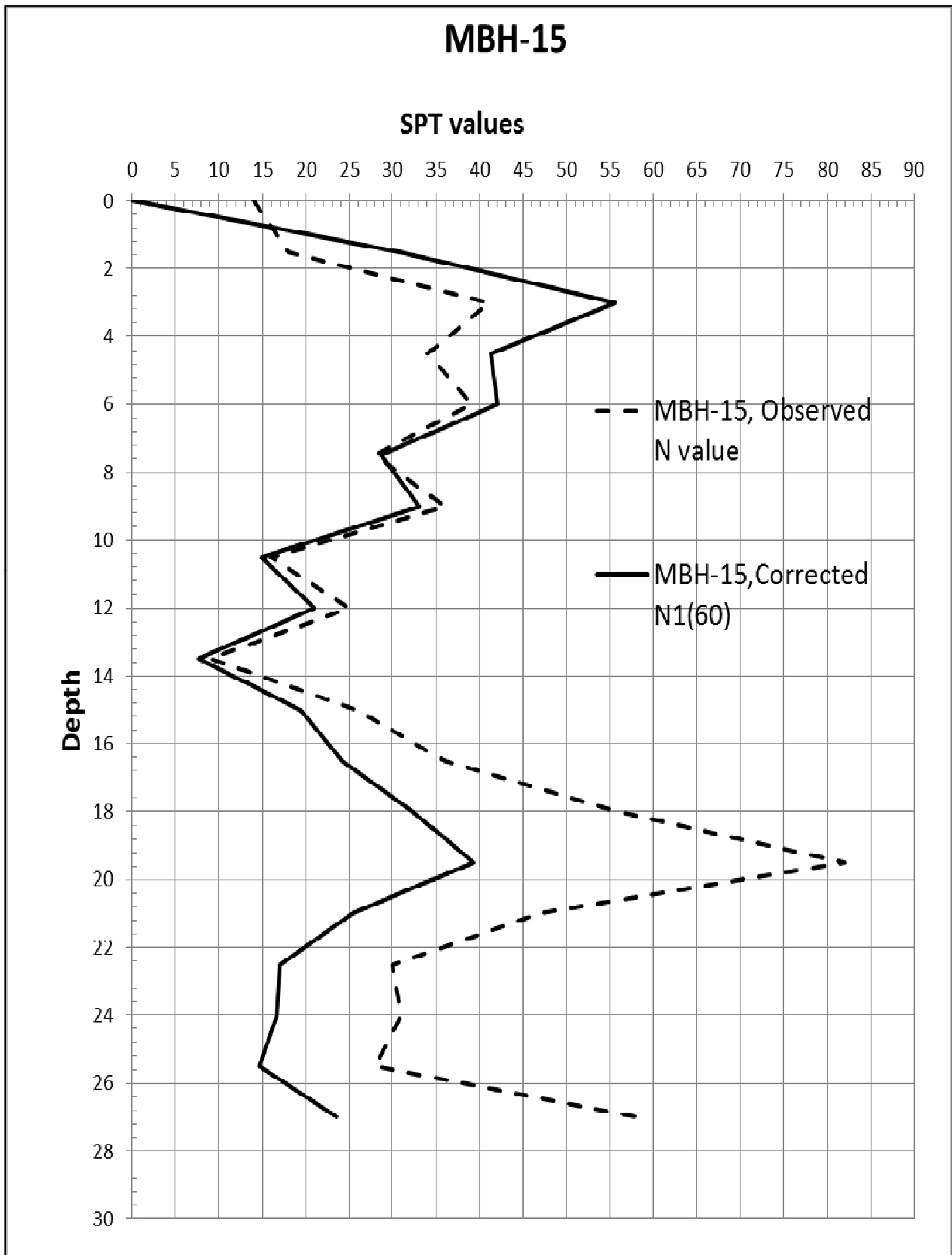
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



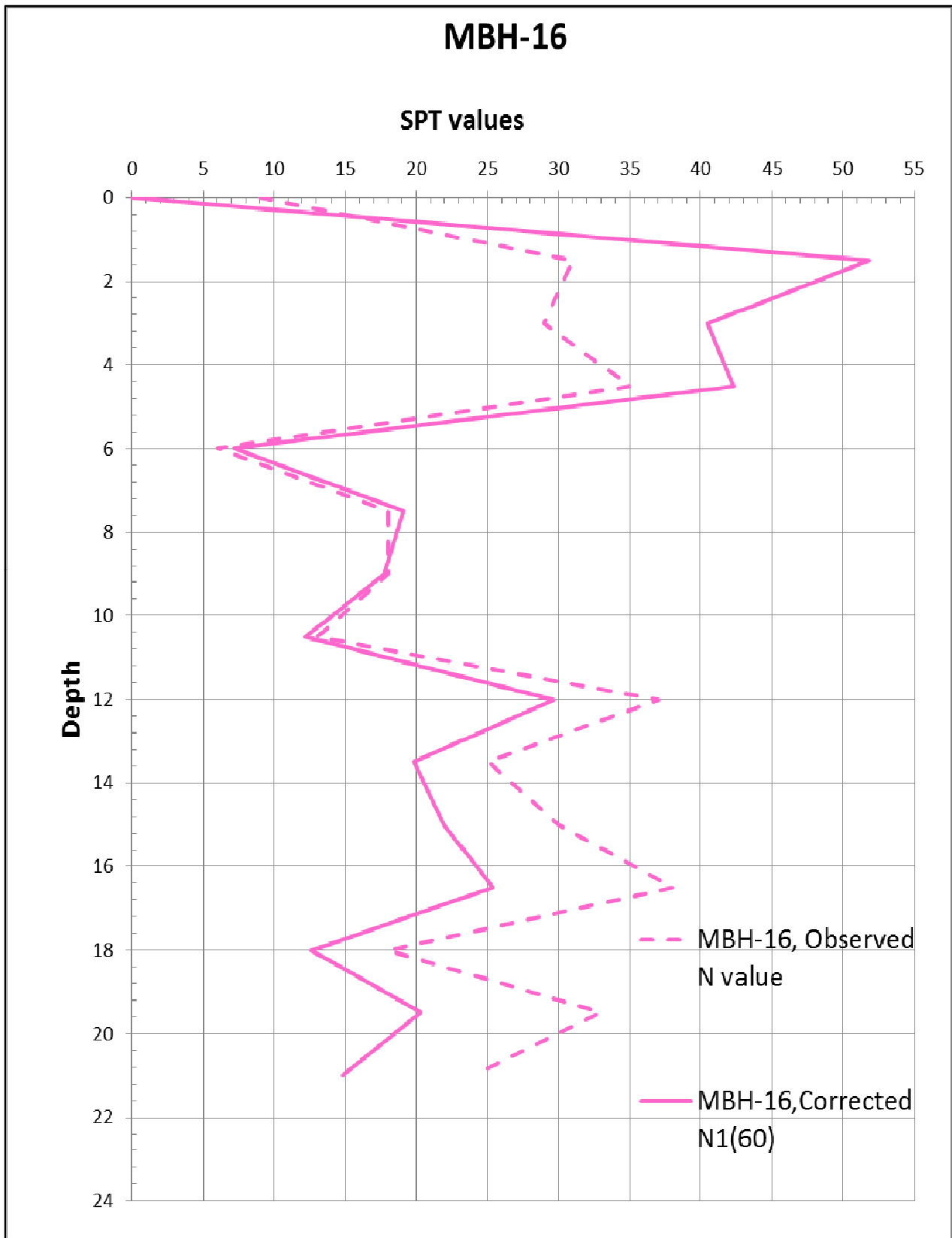
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



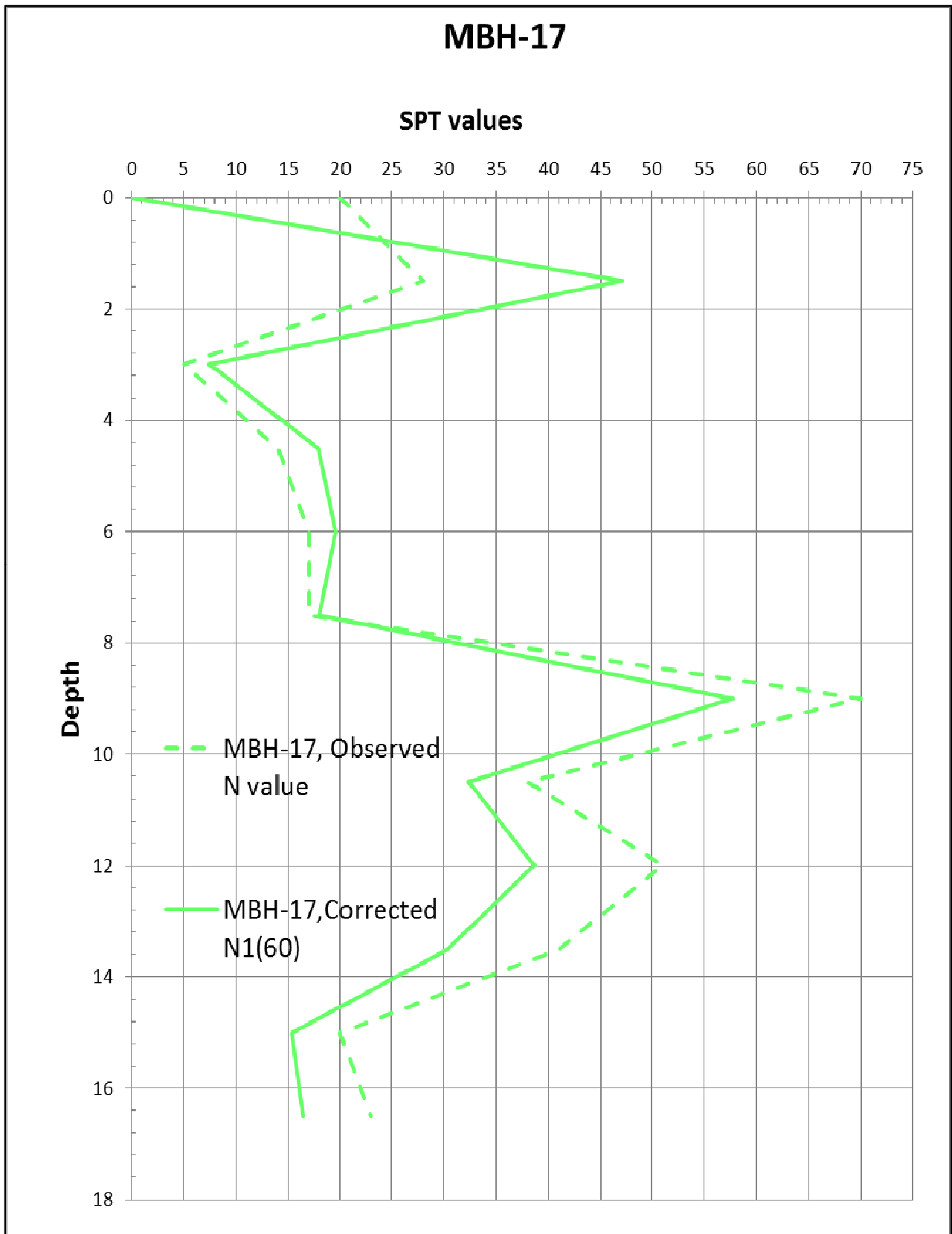
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



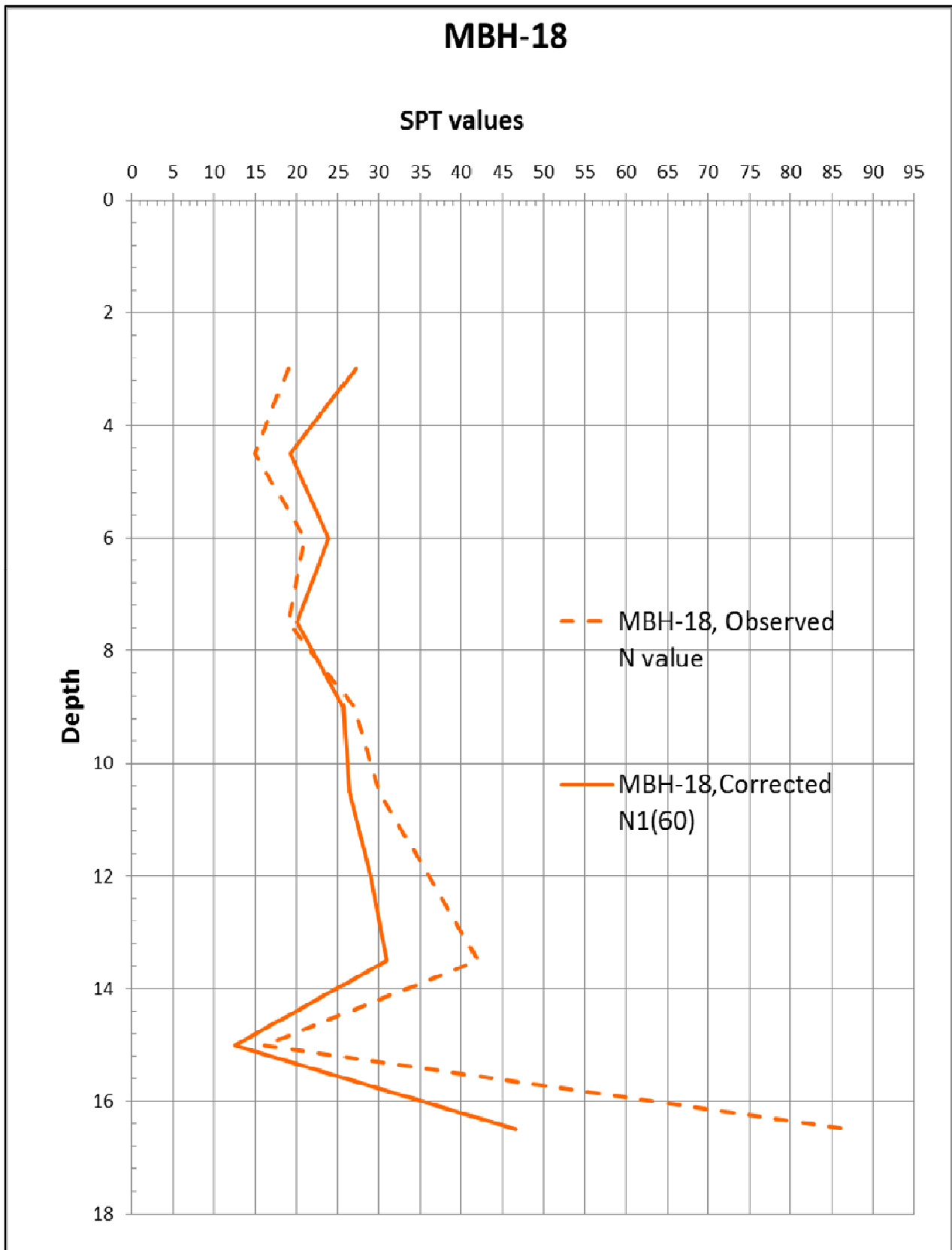
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



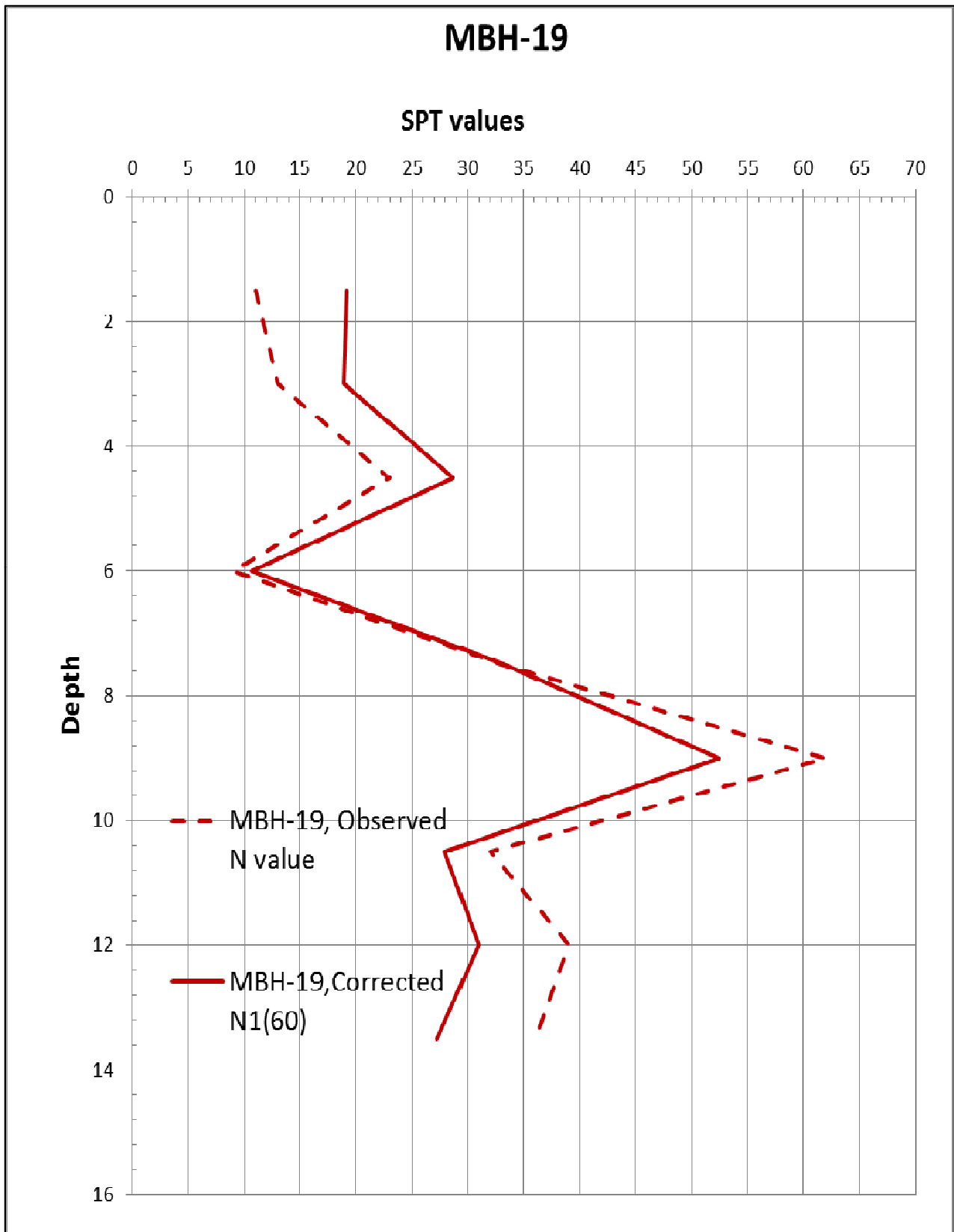
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



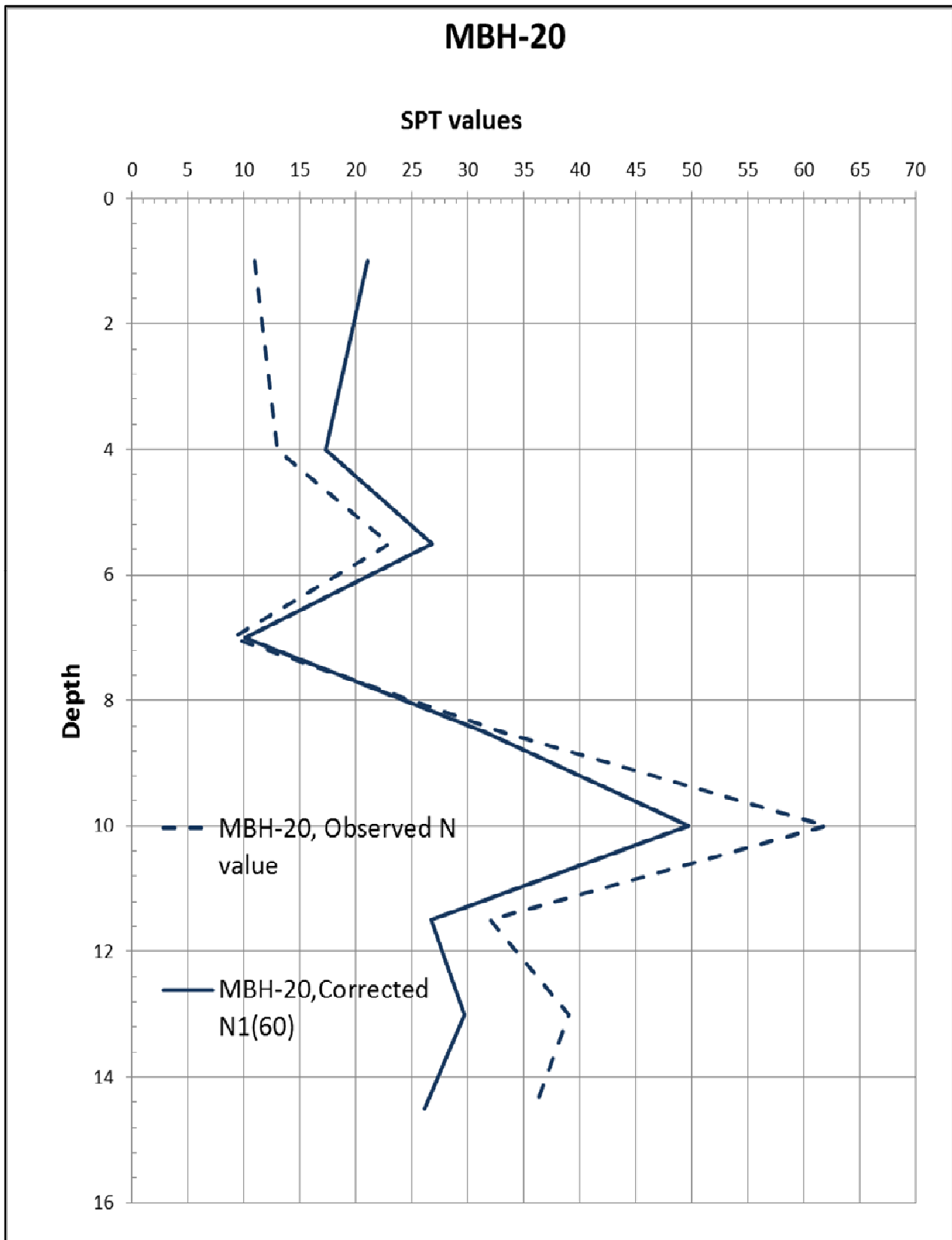
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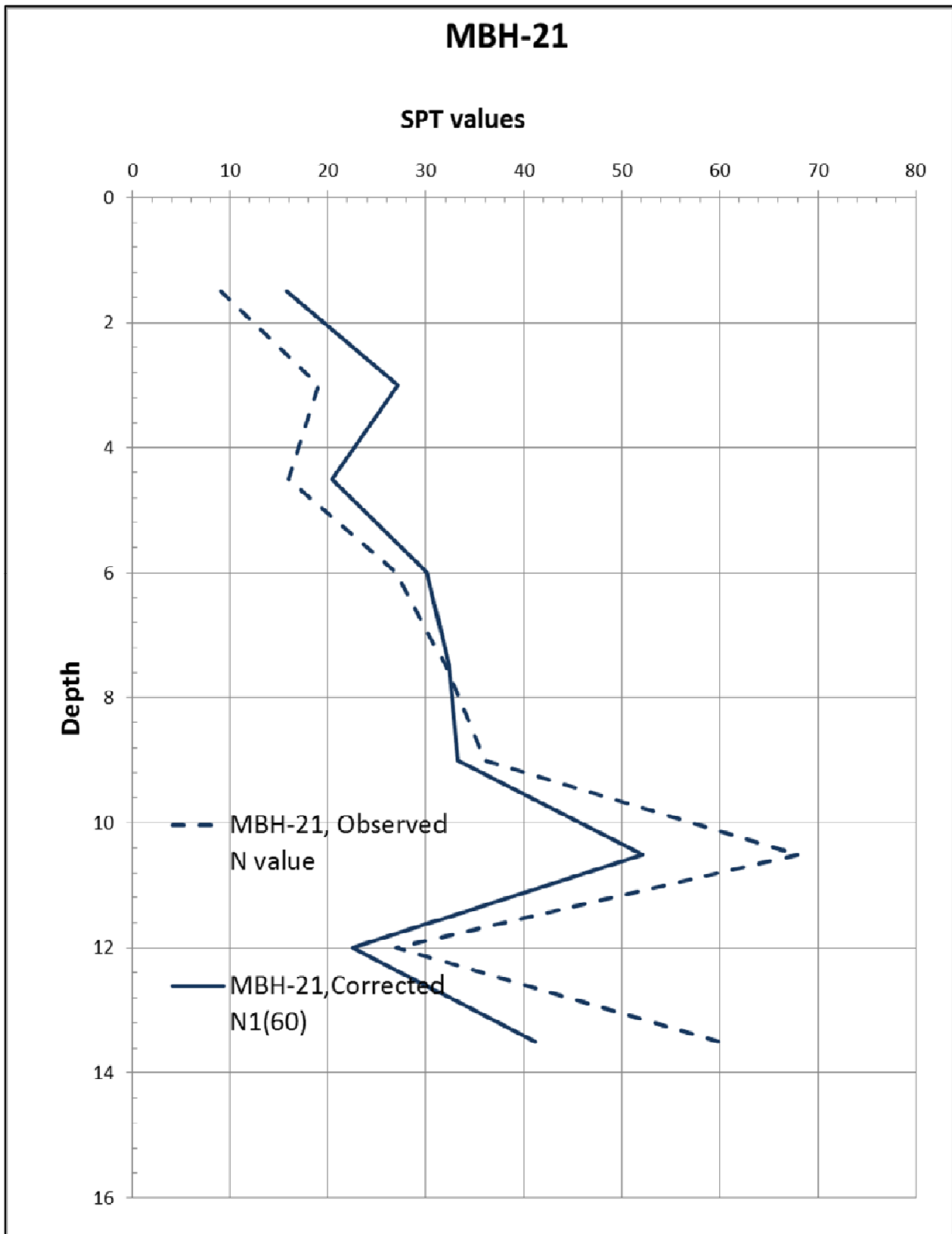
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



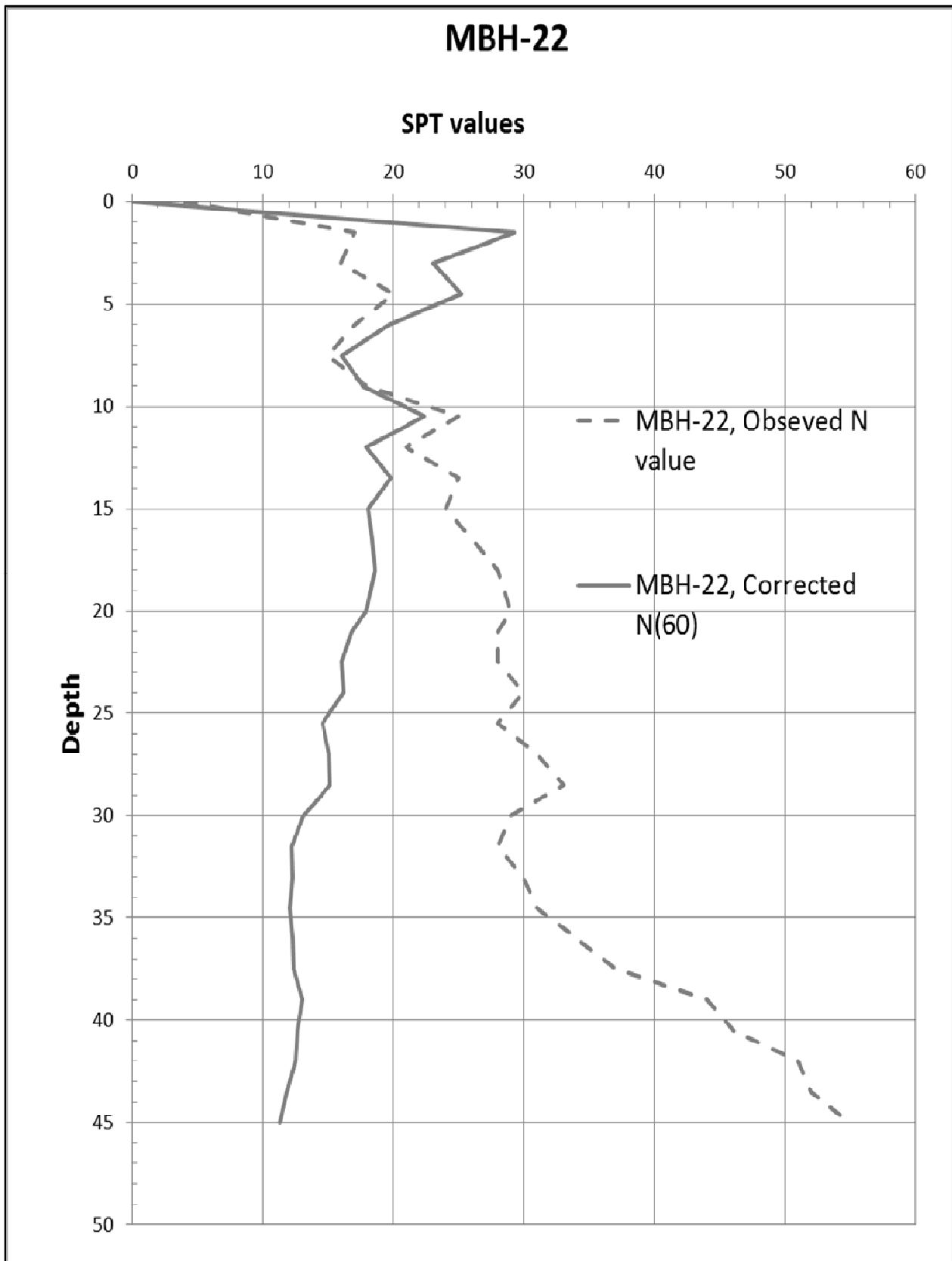
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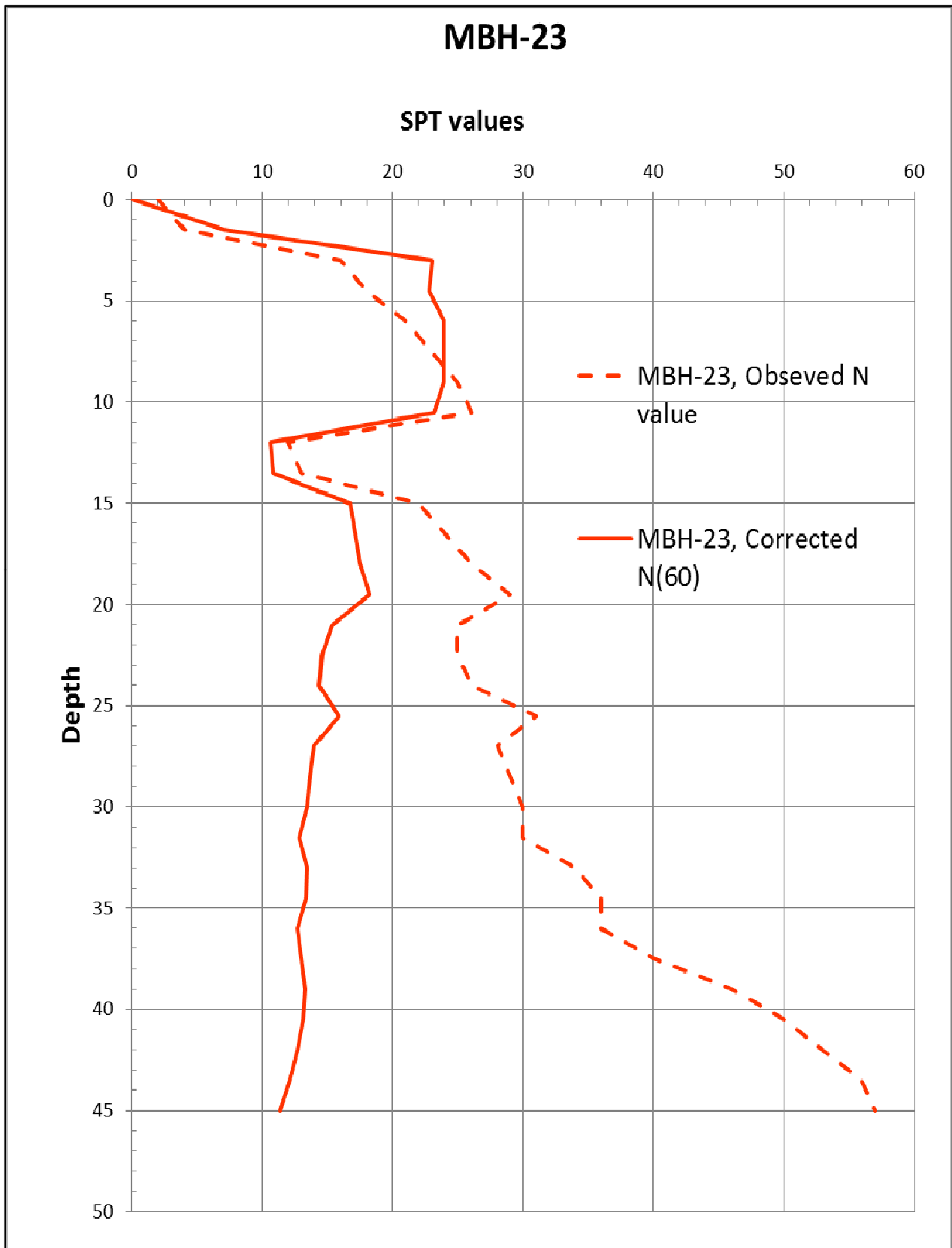
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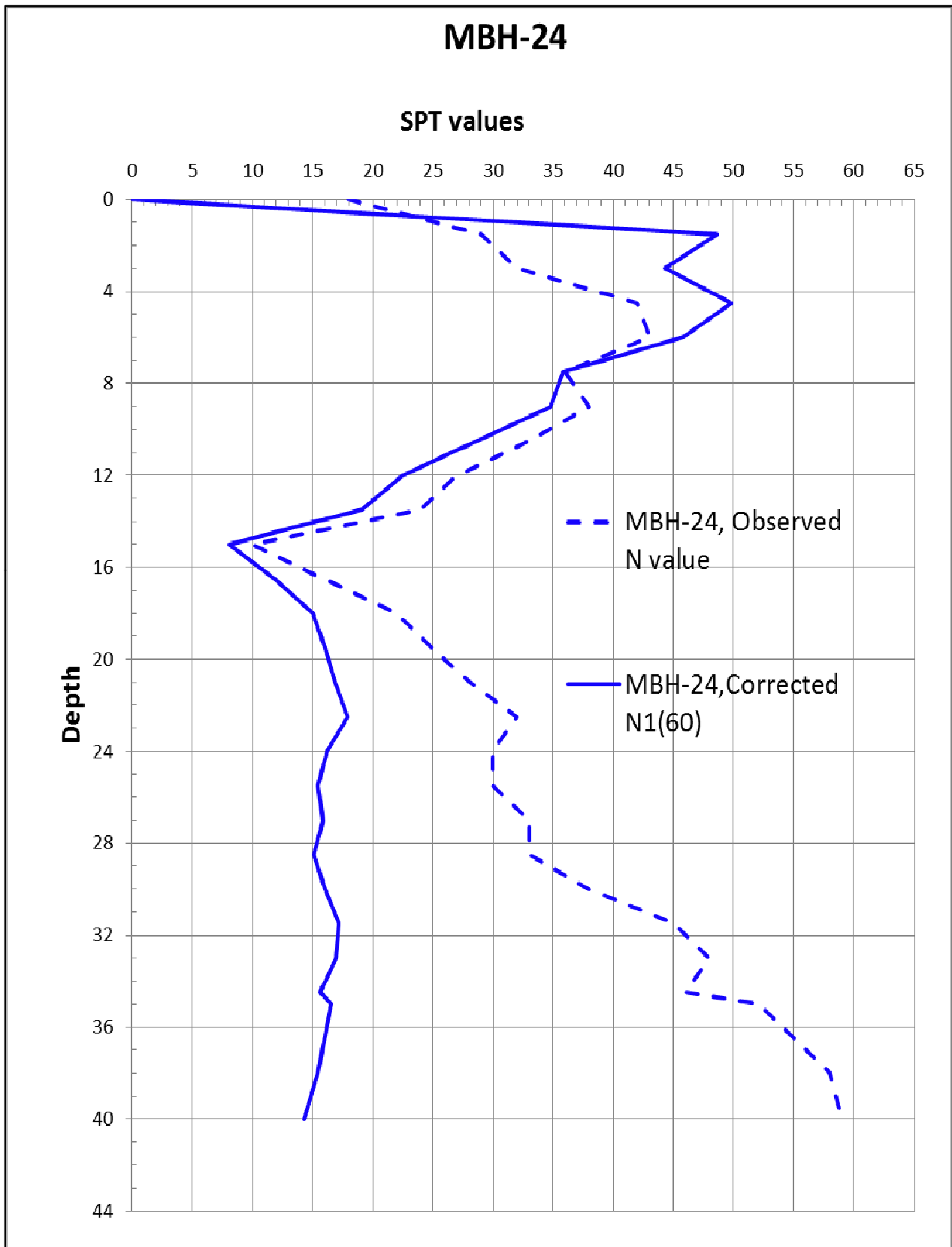
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



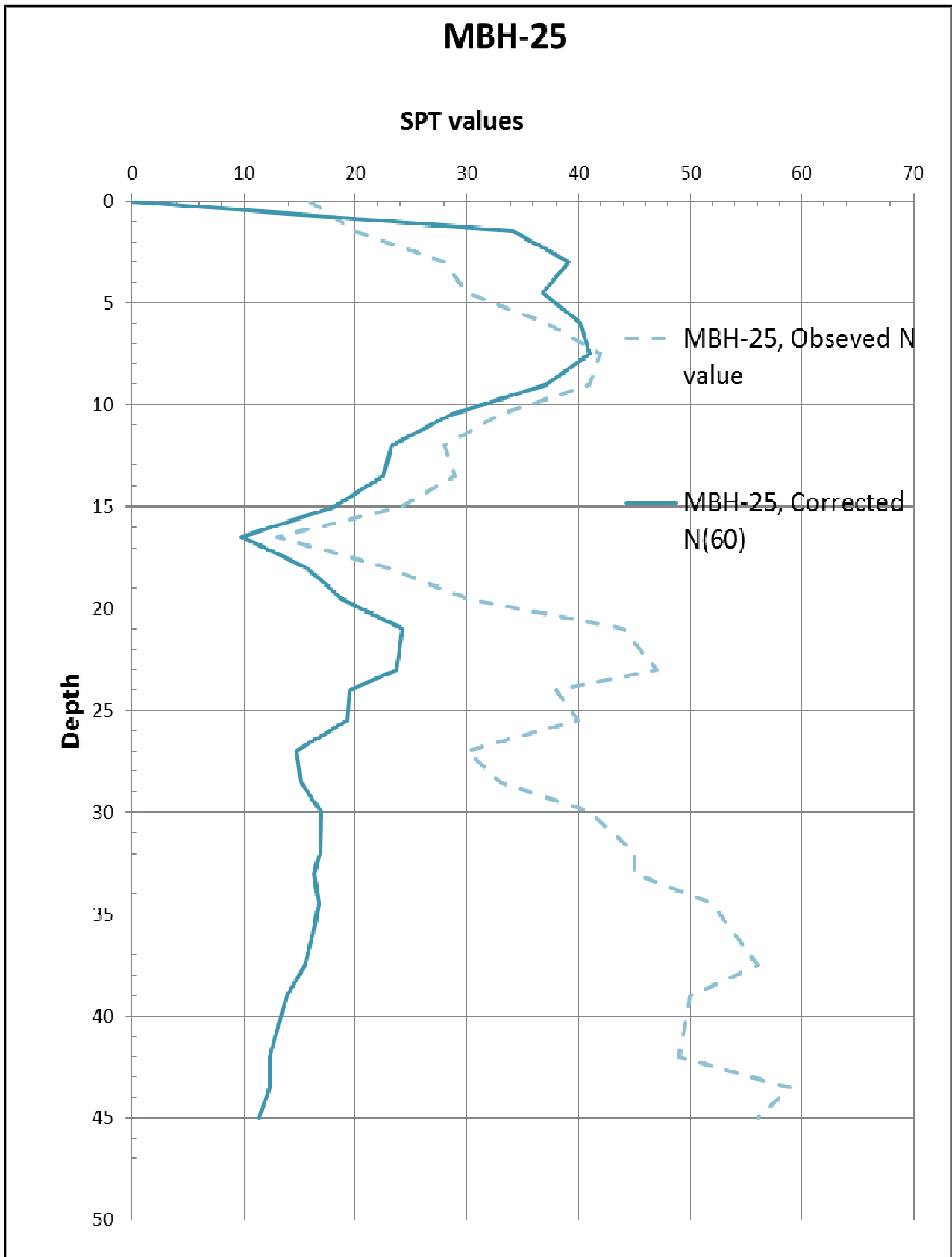
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



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PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-01					Date :			30-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	LBH-01	LBH-01	LBH-01	LBH-01											
Depth (m)	1.50-1.95	6.00-6.45	7.50-7.95	9.00-9.45											
Sample Type	SPT-1	SPT-4	SPT-5	SPT-6											
Classification	SP-SM	SP	SP	SP											
Gravel %	0	0	0	0											
Sand %	95	98	98	96											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	5	2	2	4											
D60 mm	0.300	0.380	0.410	0.240											
D30 mm	0.200	0.250	0.270	0.160											
D10 mm	0.130	0.150	0.160	0.090											
Cu	2.31	2.53	2.56	2.67											
Cc	1.03	1.10	1.11	1.19											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By : _____

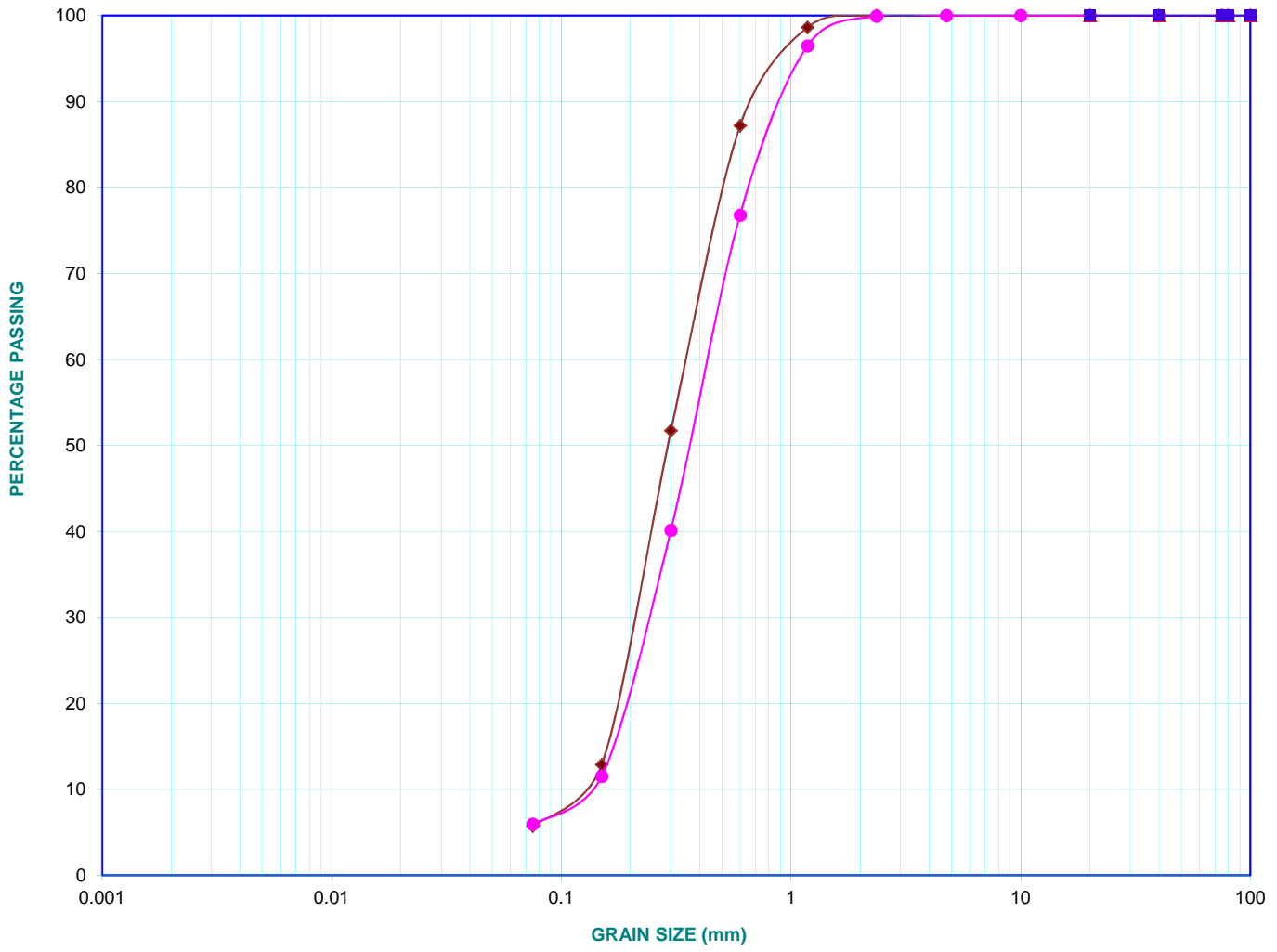
GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-01					Date :			30-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
									F	M	C	F	C		
Bore Hole .	LBH-01	LBH-01	LBH-01	LBH-01											
Depth (m)	13.50-13.95	15.00-15.45	19.50-19.95	21.50-21.95											
Sample Type	SPT-9	SPT-10	SPT-13	SPT-14											
Classification	SP-SM	SC-SM	SP-SM	SP-SM											
Gravel %	0	0	0	0											
Sand %	95	76	92	92											
Silt %	<---->	16	<---->	<---->											
Clay %	<---->	8	<---->	<---->											
Fines % (Silt+Clay)	5	24	8	8											
D60 mm	0.280	0.210	0.220	0.250											
D30 mm	0.180	0.120	0.180	0.180											
D10 mm	0.100	0.024	0.090	0.090											
Cu	2.80	8.75	2.44	2.78											
Cc	1.16	2.86	1.64	1.44											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By :

GRAIN SIZE ANALYSIS

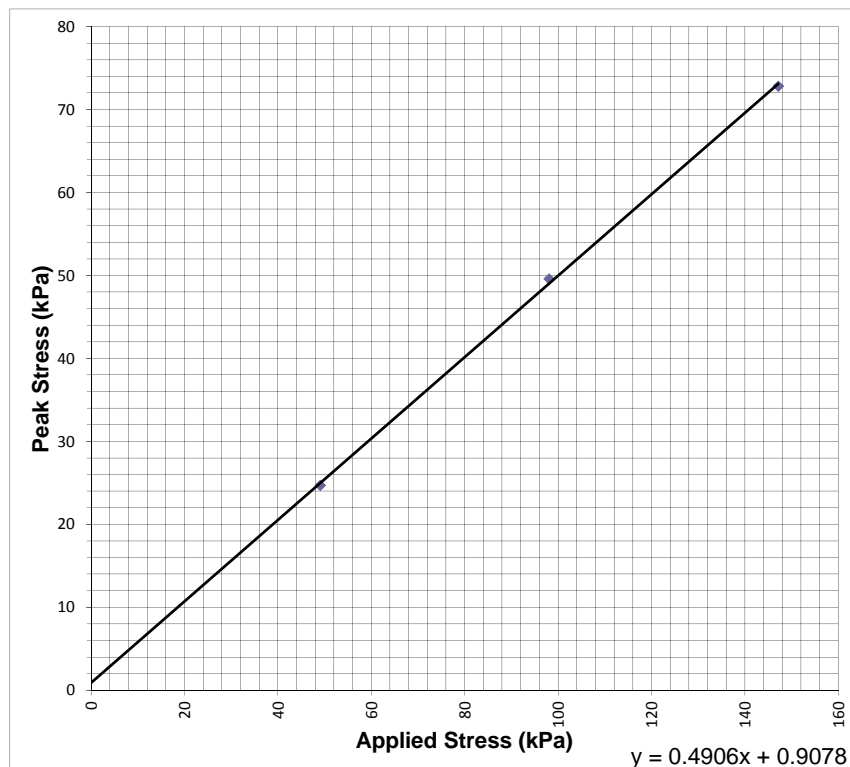
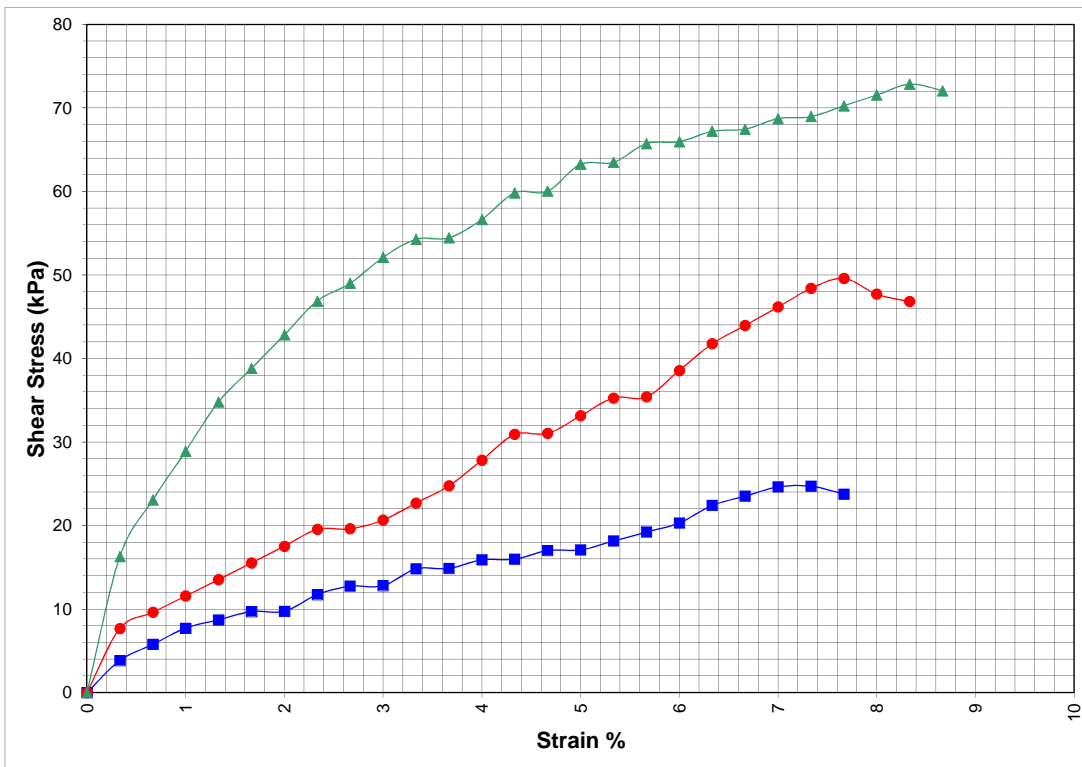
Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha												
Job No.	: CM 19 01 03		Borehole No. : LBH-01					Date :		30-May-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND		GRAVEL	
							F	M	C	F	C		
Bore Hole .	LBH-01	LBH-01											
Depth (m)	24.00-24.45	28.50-28.95											
Sample Type	SPT-16	SPT-19											
Classification	SP-SM	SP-SM											
Gravel %	0	0											
Sand %	94	94											
Silt %	<---->	<---->											
Clay %	<---->	<---->											
Fines % (Silt+Clay)	6	6											
D60 mm	0.350	0.420											
D30 mm	0.210	0.250											
D10 mm	0.130	0.140											
Cu	2.69	3.00											
Cc	0.97	1.06											
Liquid Limit %	---	---											
Plastic Limit %	---	---											
Plasticity Index	---	---											



Checked By :

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	50
▲	Stage 3	147	73

Angle of Friction	26.1 °
Apparent Cohesion	0.91 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

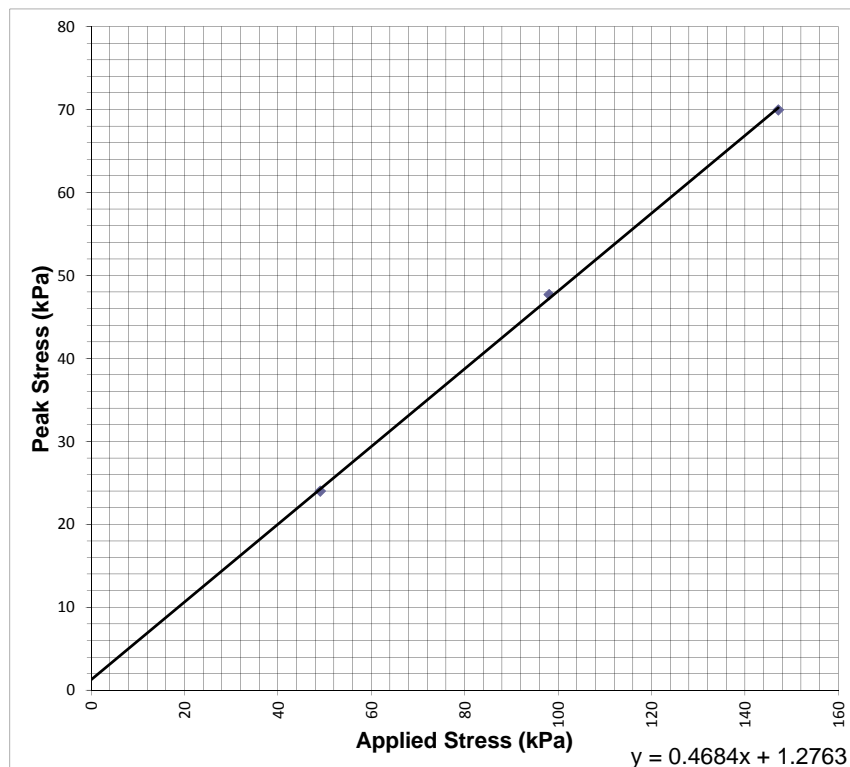
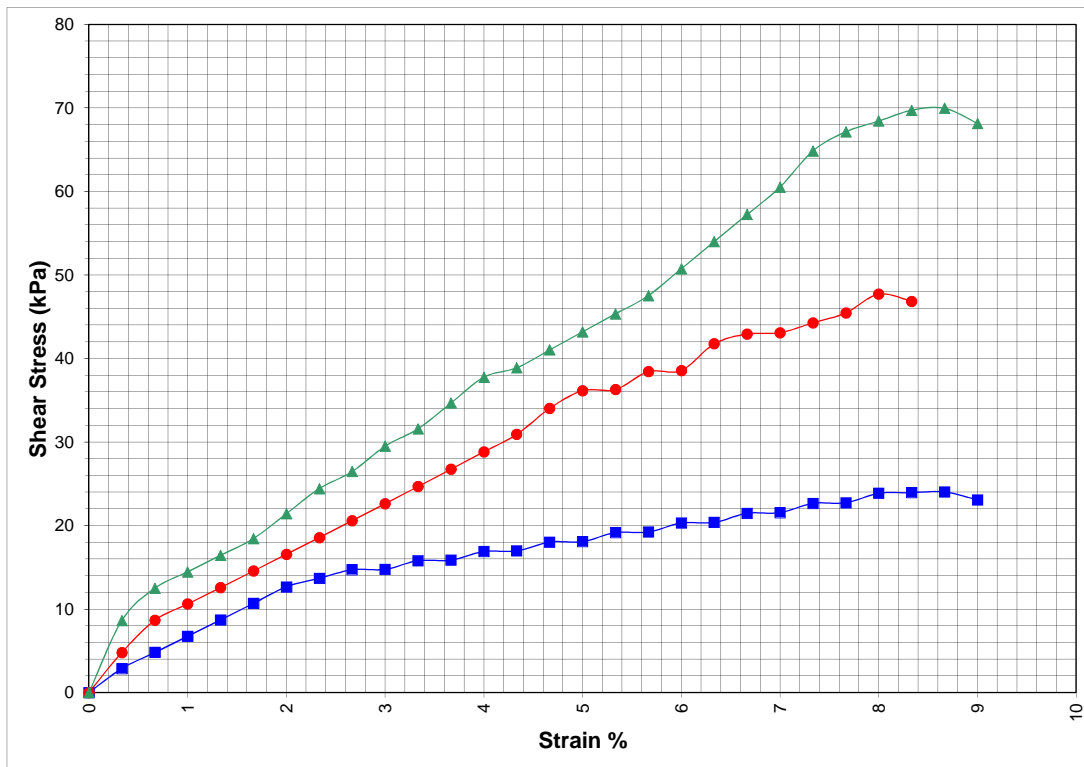
Borehole: LBH-01

Sample Type: SPT-02

Depth: 3.00-3.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	24
●	Stage 2	98	48
▲	Stage 3	147	70

Angle of Friction	25.1 °
Apparent Cohesion	1.28 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

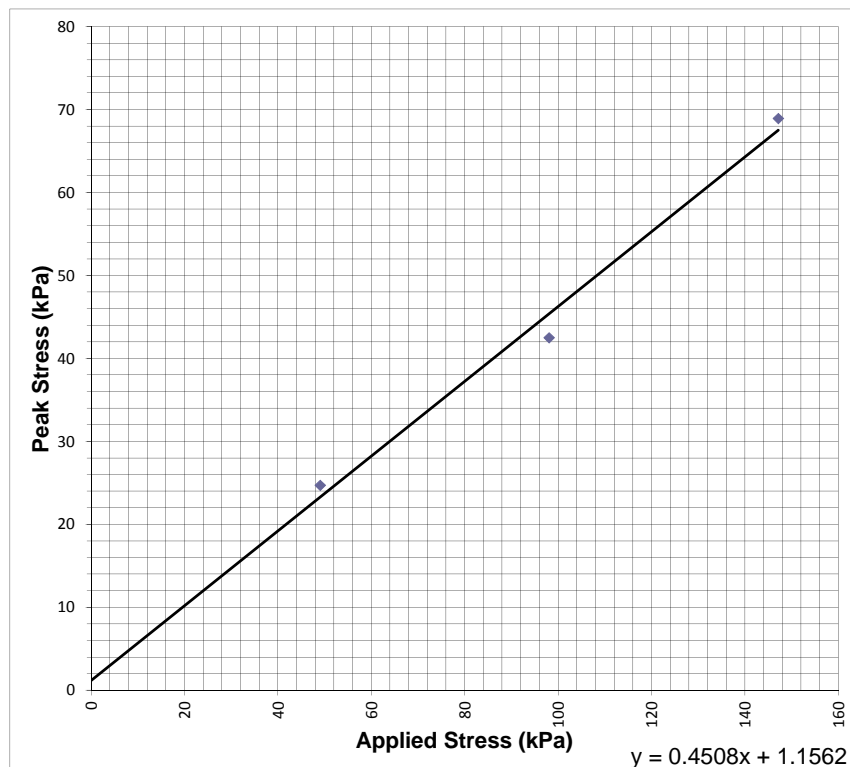
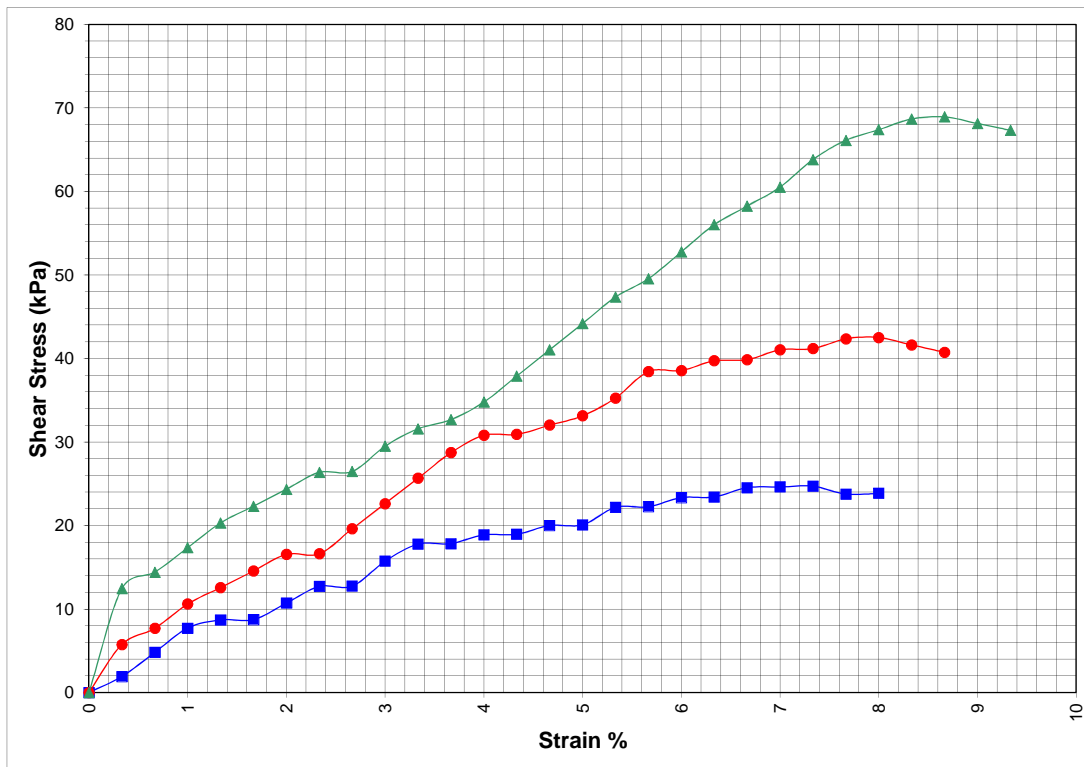
Borehole: LBH-01

Sample Type: SPT-03

Depth: 4.50-4.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	43
▲	Stage 3	147	69

Angle of Friction	24.3 °
Apparent Cohesion	1.16 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

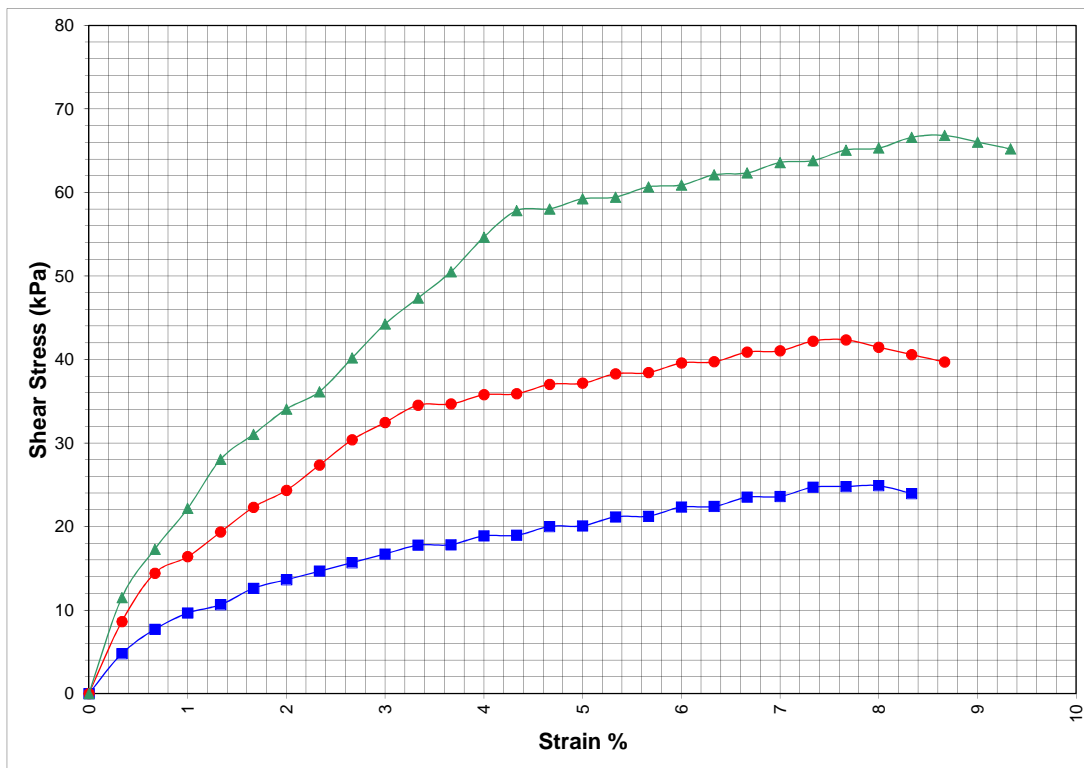
Borehole: LBH-01

Sample Type: SPT-08

Depth: 12.00-12.45 m

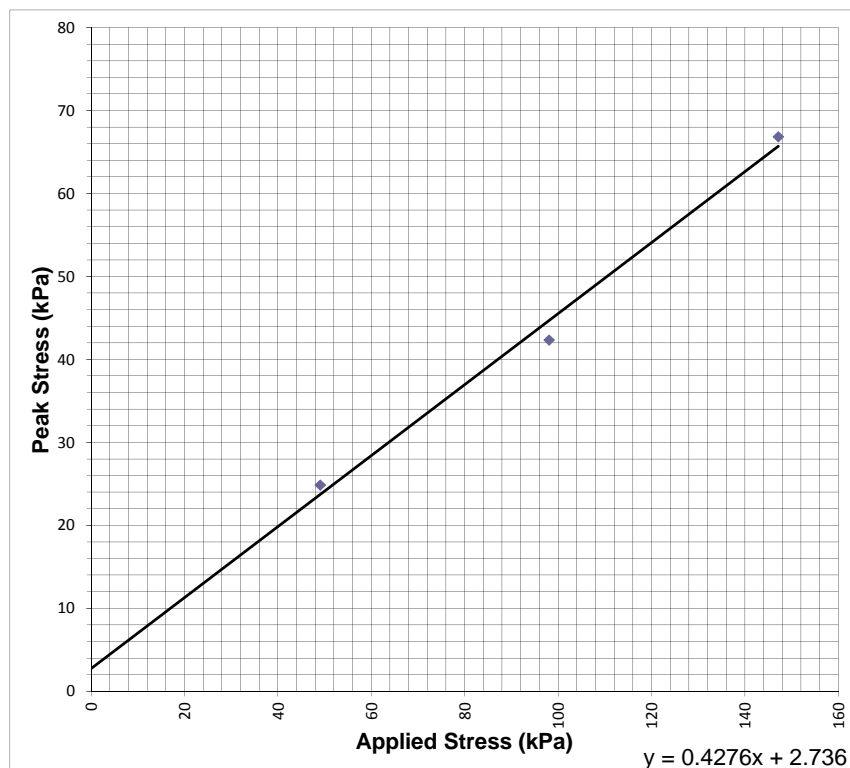
Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	42
▲	Stage 3	147	67

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min



Angle of Friction	23.2 °
Apparent Cohesion	2.74 kPa

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

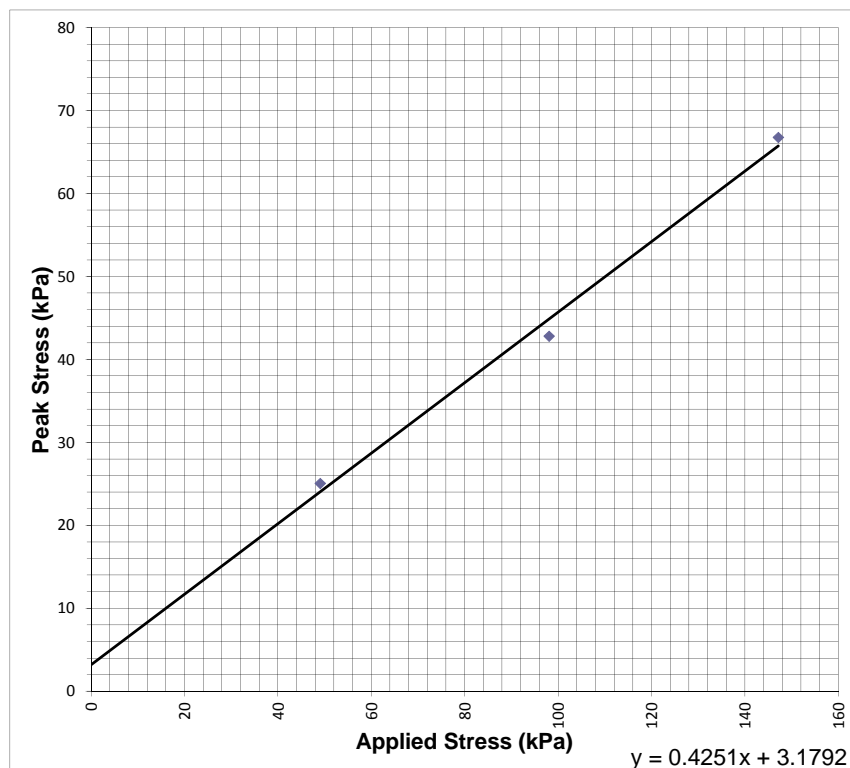
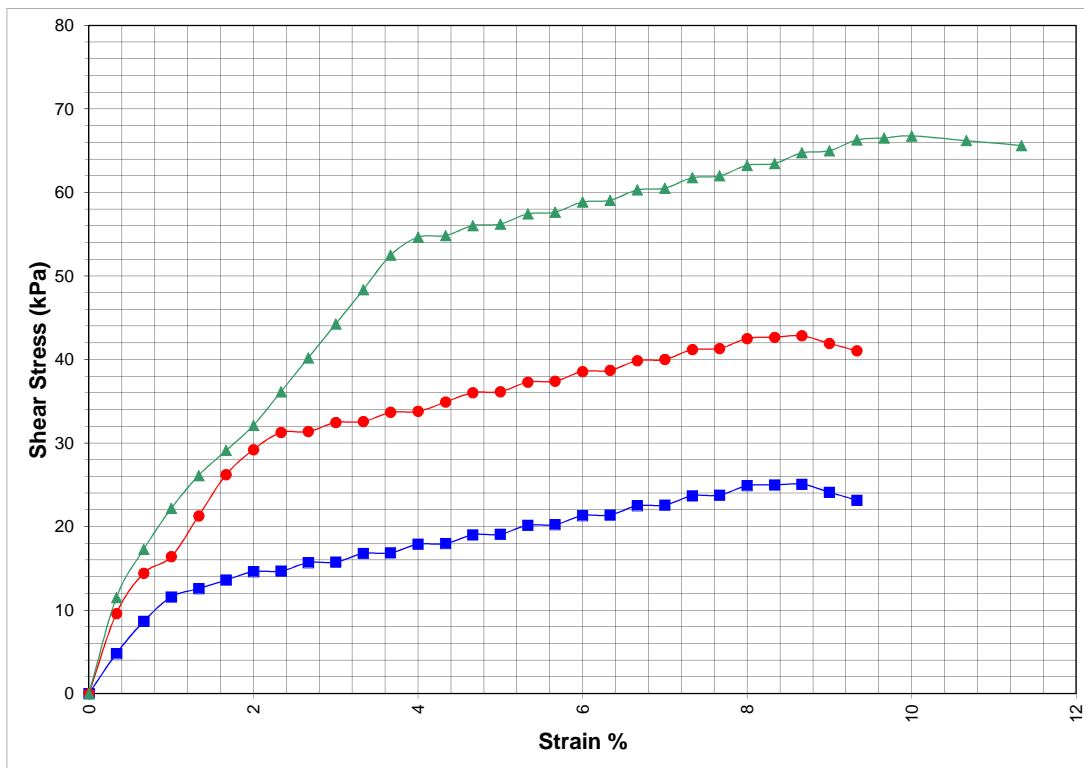
Borehole: LBH-01

Sample Type: SPT-11

Depth: 16.50-16.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	43
▲	Stage 3	147	67

Angle of Friction	23.0 °
Apparent Cohesion	3.17 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

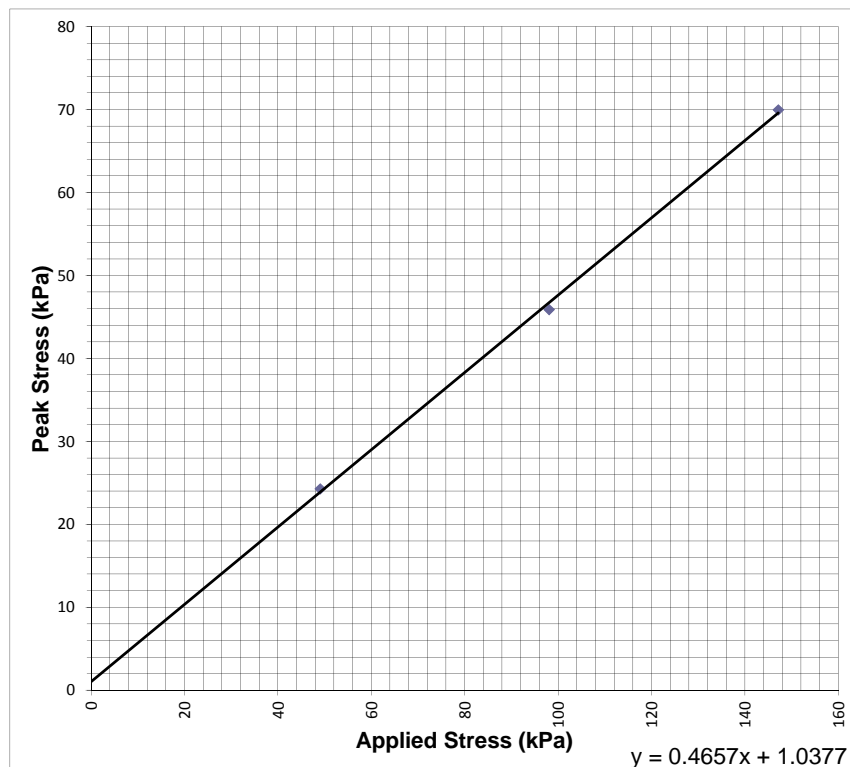
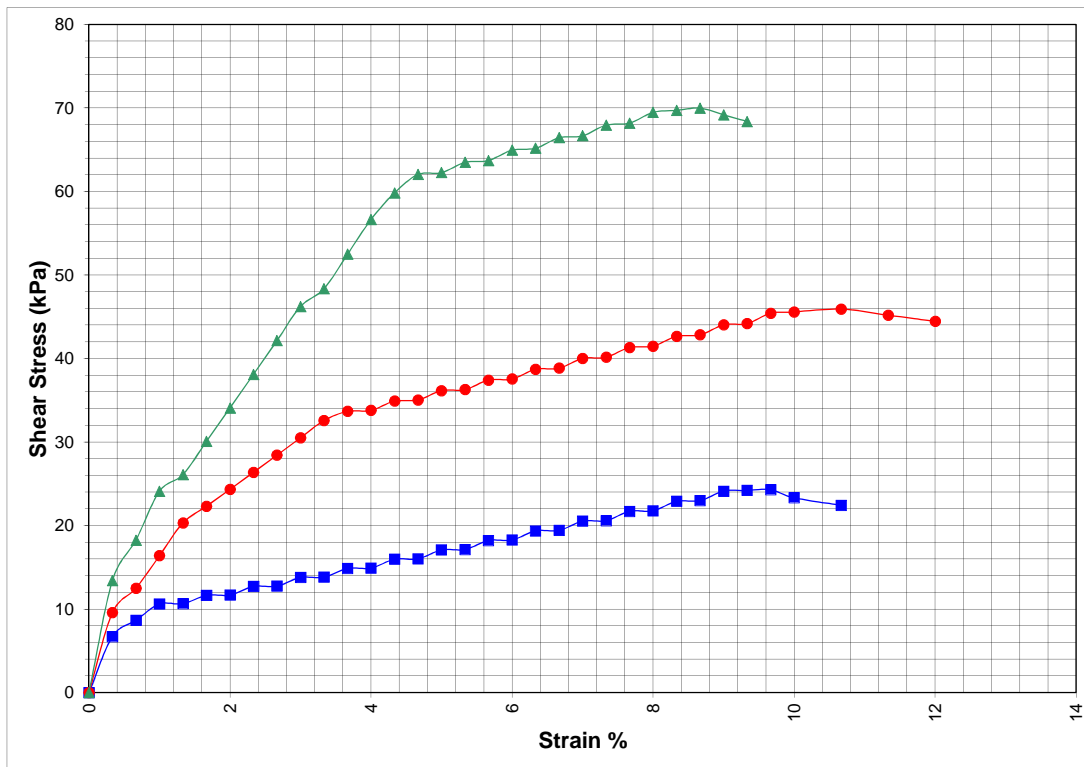
Borehole: LBH-01

Sample Type: SPT-12

Depth: 18.00-18.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	24
●	Stage 2	98	46
▲	Stage 3	147	70

Angle of Friction	25.0 °
Apparent Cohesion	1.04 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

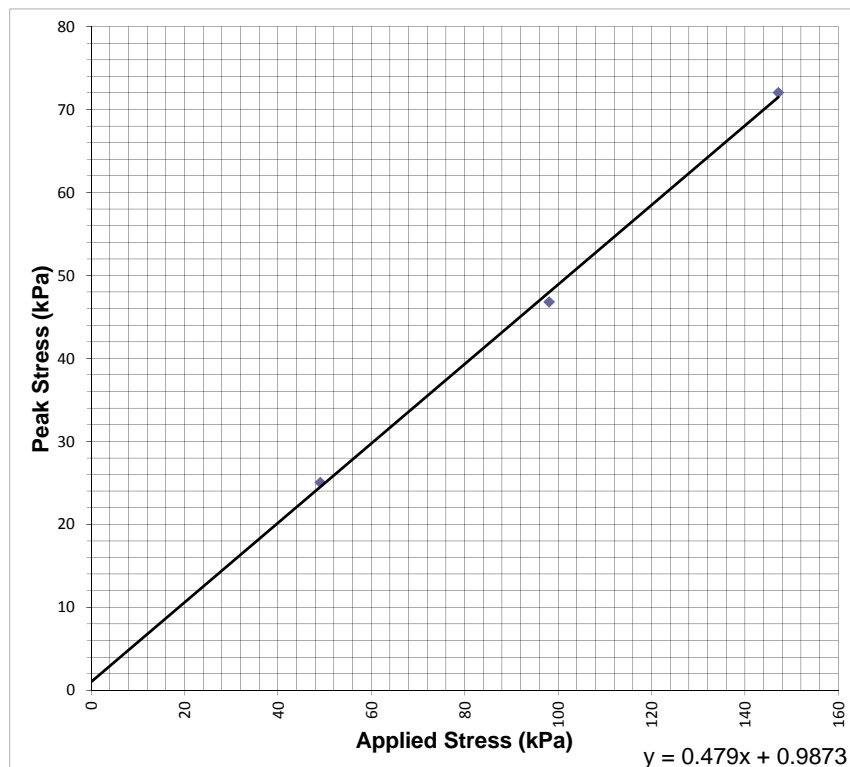
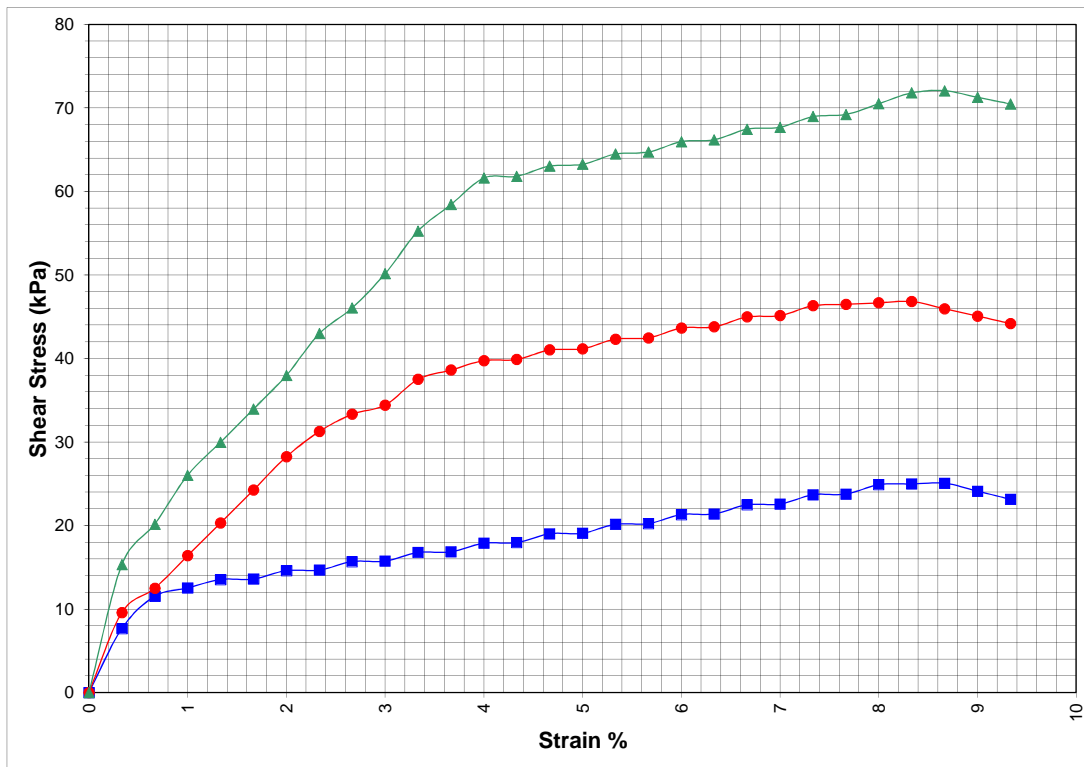
Borehole: LBH-01

Sample Type: SPT-15

Depth: 22.50-22.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	47
▲	Stage 3	147	72

Angle of Friction	25.6 °
Apparent Cohesion	0.99 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

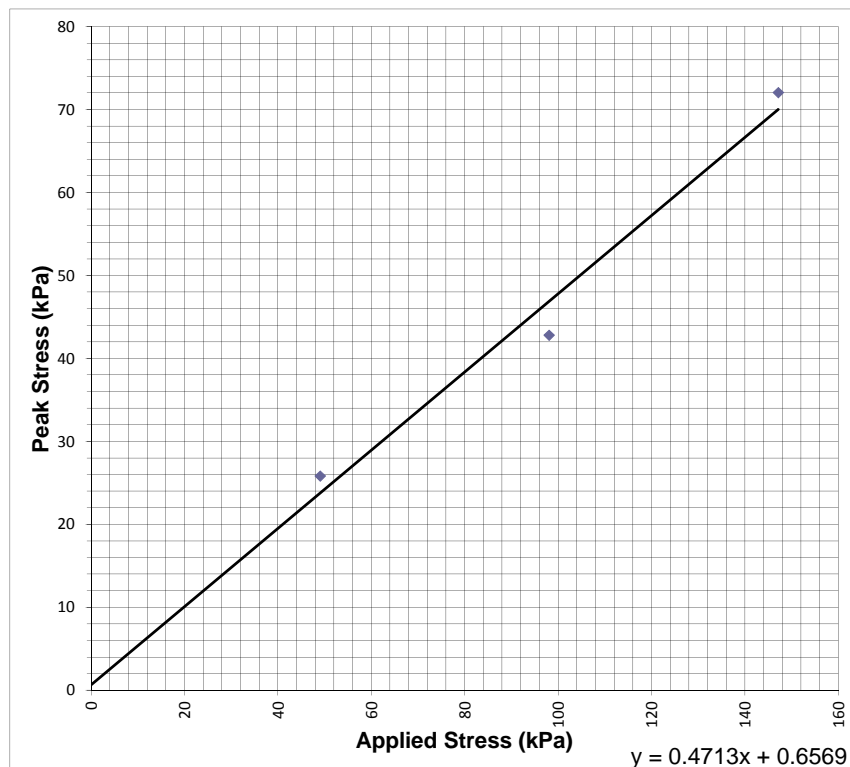
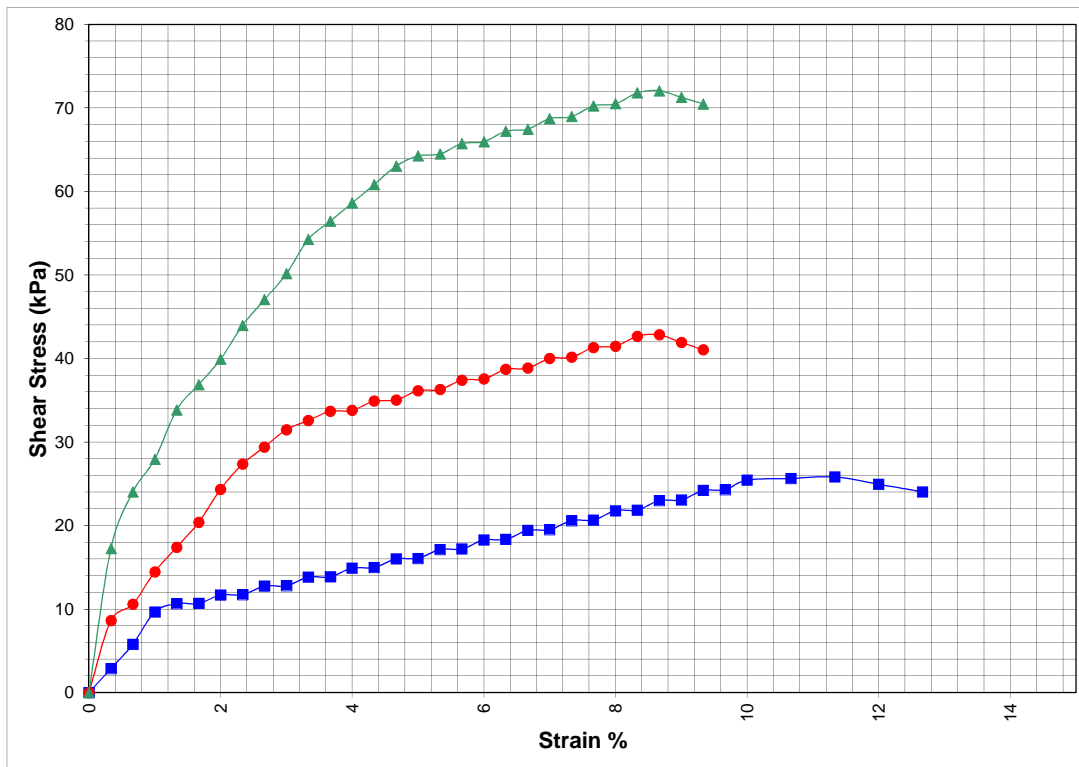
Borehole: LBH-01

Sample Type: SPT-16

Depth: 25.50-25.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	43
▲	Stage 3	147	72

Angle of Friction	25.2 °
Apparent Cohesion	0.66 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

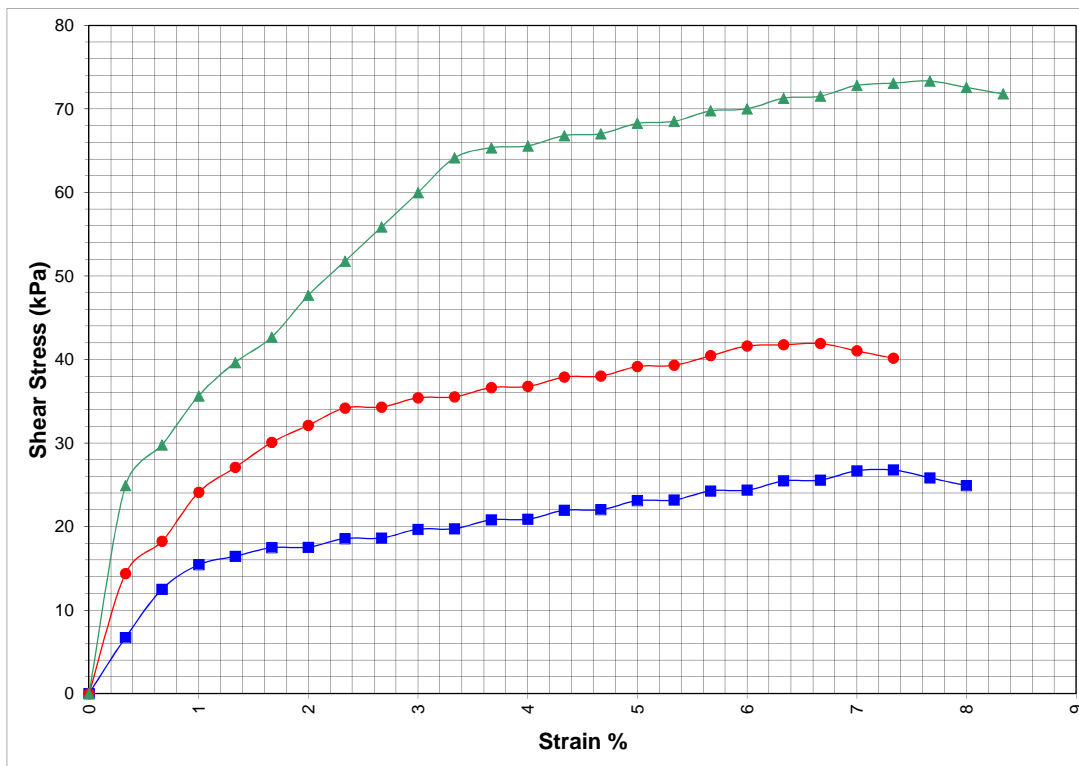
Borehole: LBH-01

Sample Type: SPT-18

Depth: 27.00-27.45 m

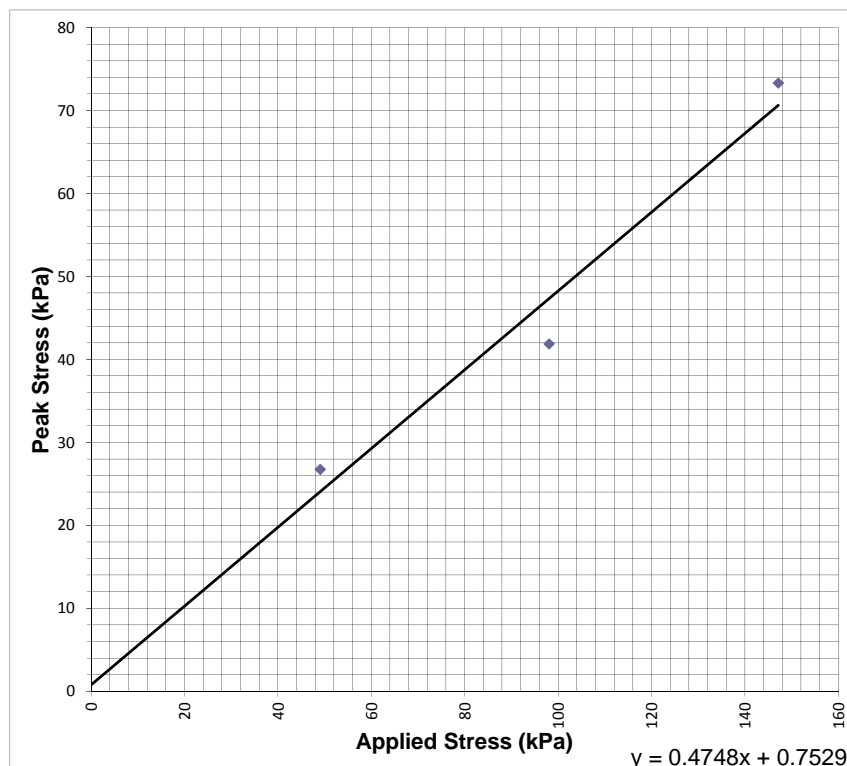
Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	42
▲	Stage 3	147	73

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min



Angle of Friction	25.4 °
Apparent Cohesion	0.75 kPa

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

Borehole: LBH-01

Sample Type: SPT-20

Depth: 30.00-30.45 m

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-02					Date :			30-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	LBH-02	LBH-02	LBH-02	LBH-02											
Depth (m)	1.50-1.95	4.50-4.95	7.50-7.95	9.00-9.45											
Sample Type	SPT-1	SPT-3	SPT-5	SPT-6											
Classification	SP	SP	SP	SP-SM											
Gravel %	0	0	0	0											
Sand %	98	98	98	93											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	2	2	2	7											
D60 mm	0.410	0.360	0.370	0.220											
D30 mm	0.280	0.230	0.240	0.140											
D10 mm	0.170	0.180	0.180	0.081											
Cu	2.41	2.00	2.06	2.72											
Cc	1.12	0.82	0.86	1.10											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By : _____

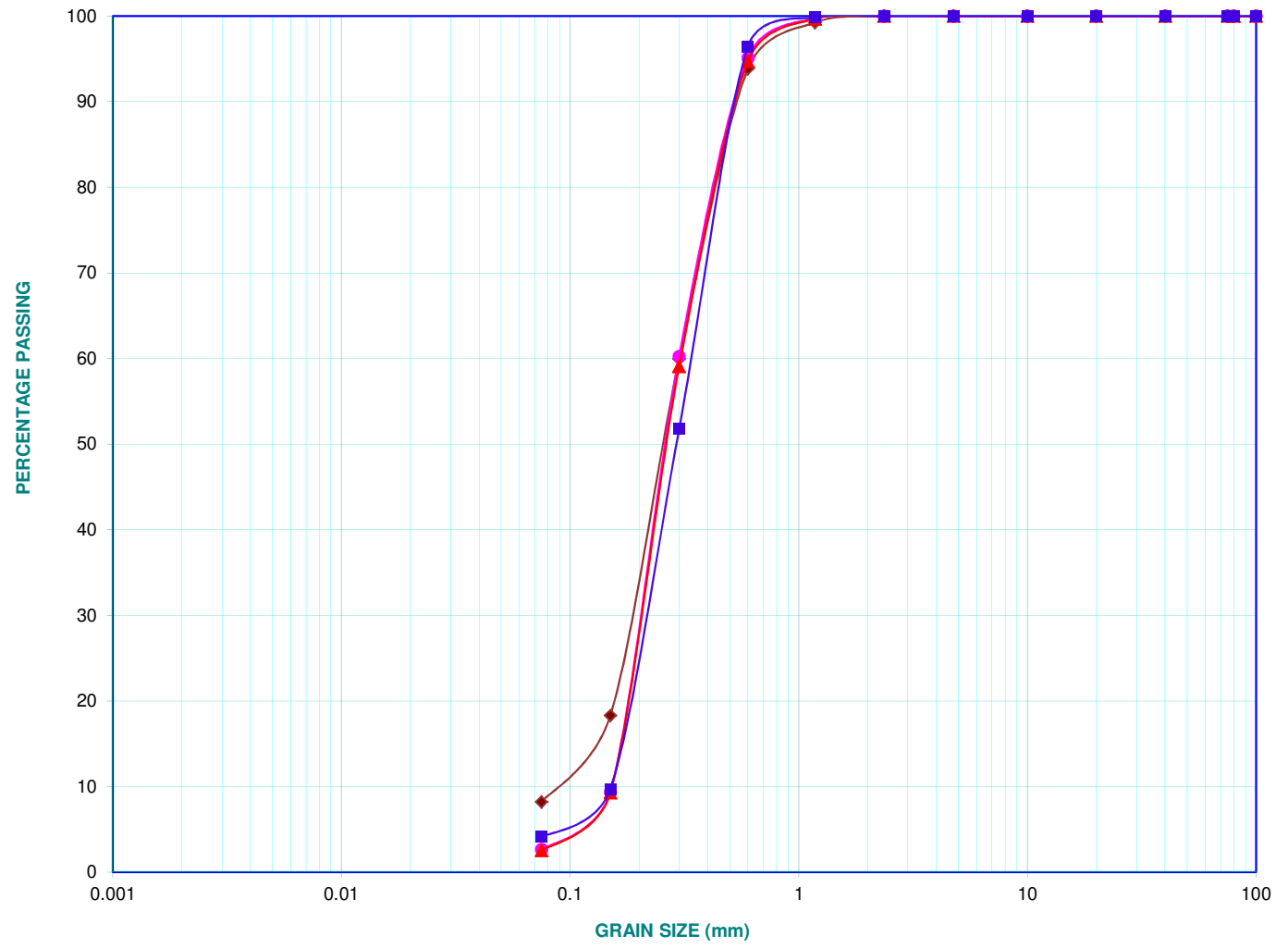
GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-02					Date :			30-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
									F	M	C	F	C		
Bore Hole .	LBH-02	LBH-02	LBH-02	LBH-02											
Depth (m)	12.00-12.45	15.00-15.45	18.00-18.45	19.50-19.95											
Sample Type	SPT-8	SPT-10	SPT-12	SPT-13											
Classification	SP-SM	SP	SP	SP											
Gravel %	0	0	0	0											
Sand %	95	99	99.67	97											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	5	1	0.33	3											
D60 mm	0.320	0.590	0.590	0.380											
D30 mm	0.180	0.400	0.400	0.230											
D10 mm	0.095	0.290	0.290	0.170											
Cu	3.37	2.03	2.03	2.24											
Cc	1.07	0.94	0.94	0.82											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By :

GRAIN SIZE ANALYSIS

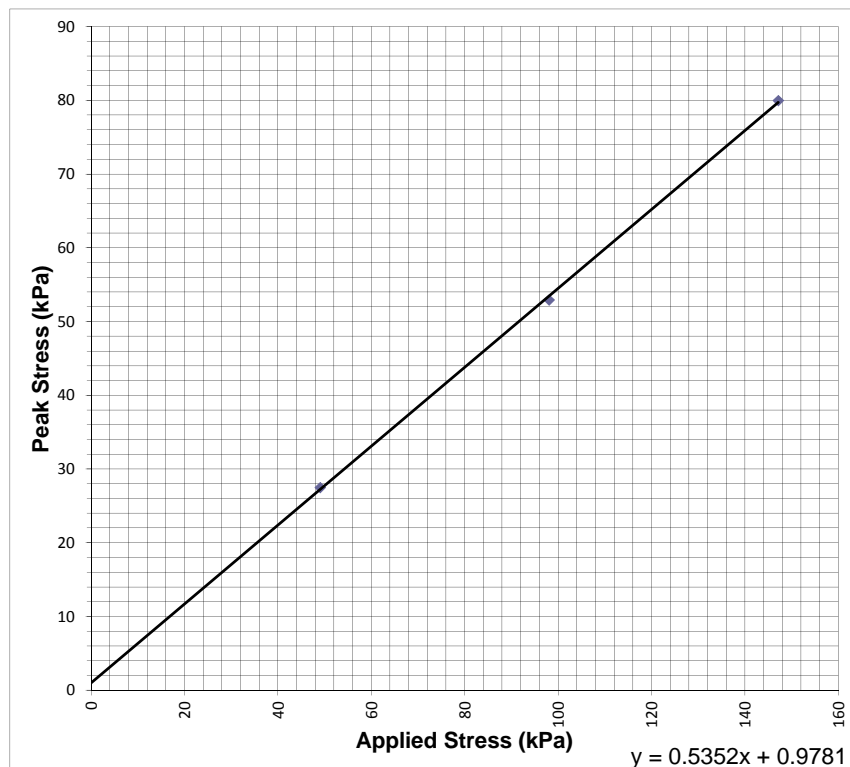
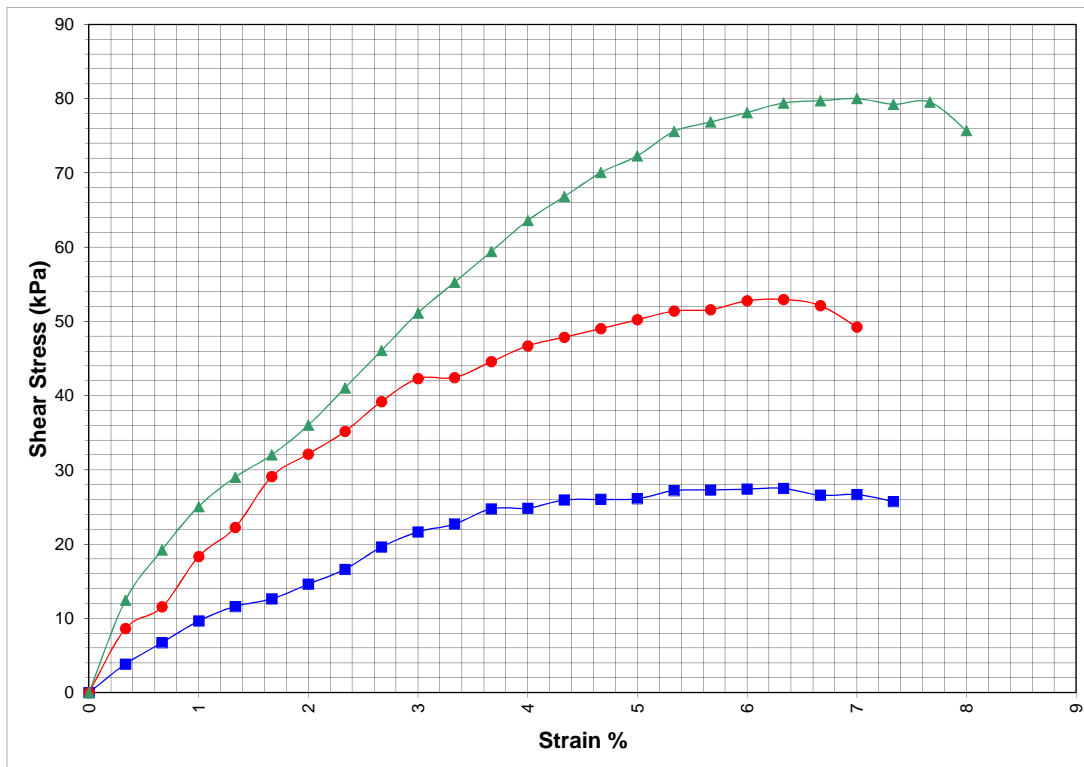
Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-02					Date :		30-May-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	LBH-02	LBH-02	LBH-02	LBH-02											
Depth (m)	22.50-22.95	25.50-25.95	27.00-27.45	30.00-30.45											
Sample Type	SPT-15	SPT-17	SPT-18	SPT-20											
Classification	SP-SM	SP	SP	SP											
Gravel %	0	0	0	0											
Sand %	92	97	97	96											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	8	3	3	4											
D60 mm	0.300	0.300	0.300	0.340											
D30 mm	0.190	0.200	0.200	0.220											
D10 mm	0.090	0.150	0.150	0.150											
Cu	3.33	2.00	2.00	2.27											
Cc	1.34	0.89	0.89	0.95											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											



Checked By : _____

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	53
▲	Stage 3	147	80

Angle of Friction	28.16 °
Apparent Cohesion	0.98 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

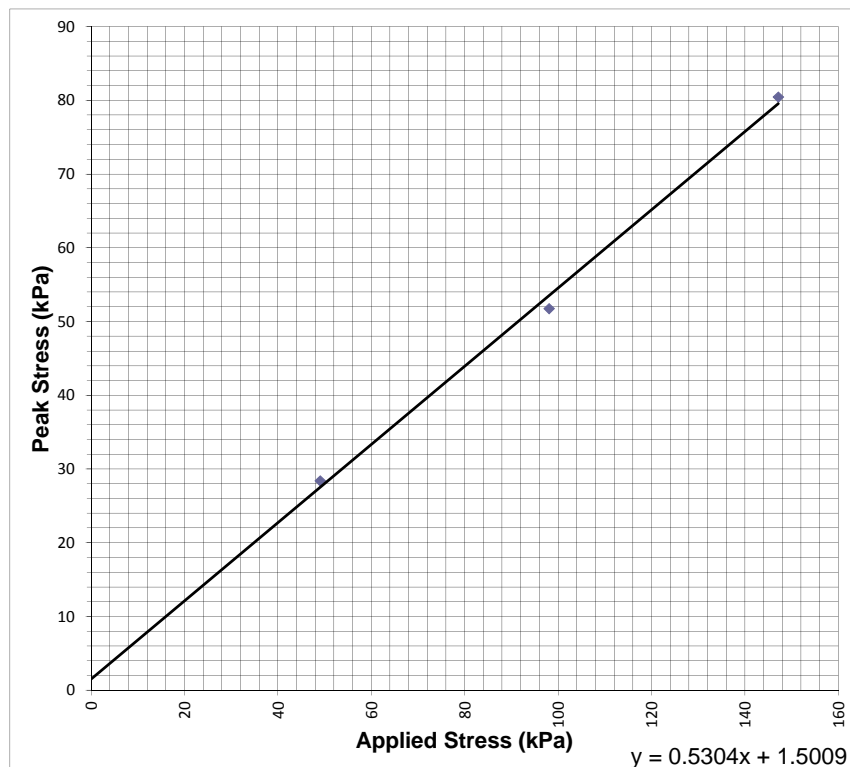
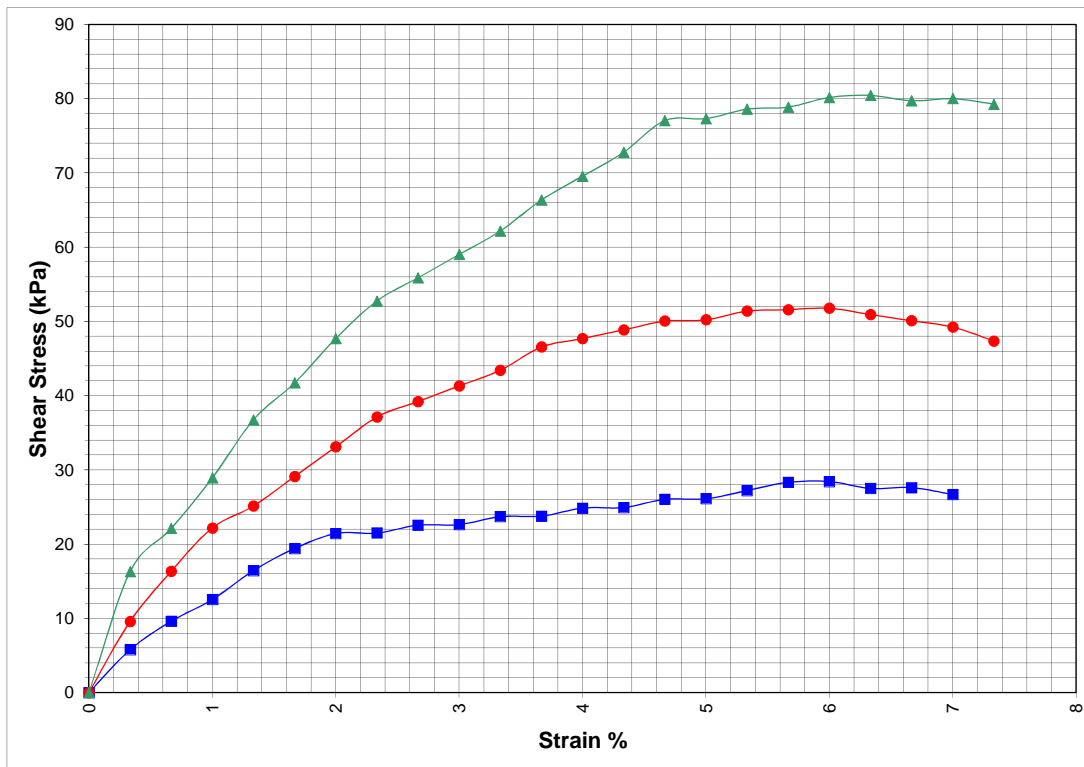
Borehole: LBH-02

Sample Type: SPT-02

Depth: 3.00-3.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	52
▲	Stage 3	147	80

Angle of Friction	27.9 °
Apparent Cohesion	1.50 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

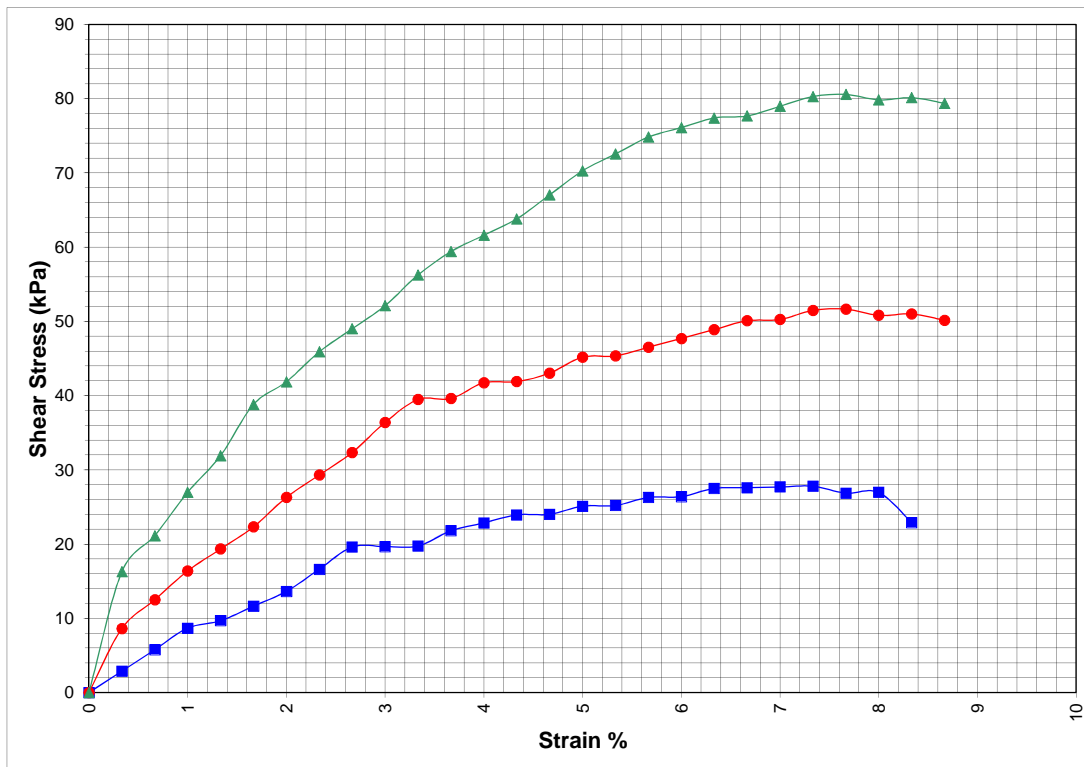
Borehole: LBH-02

Sample Type: SPT-04

Depth: 6.00-6.45 m

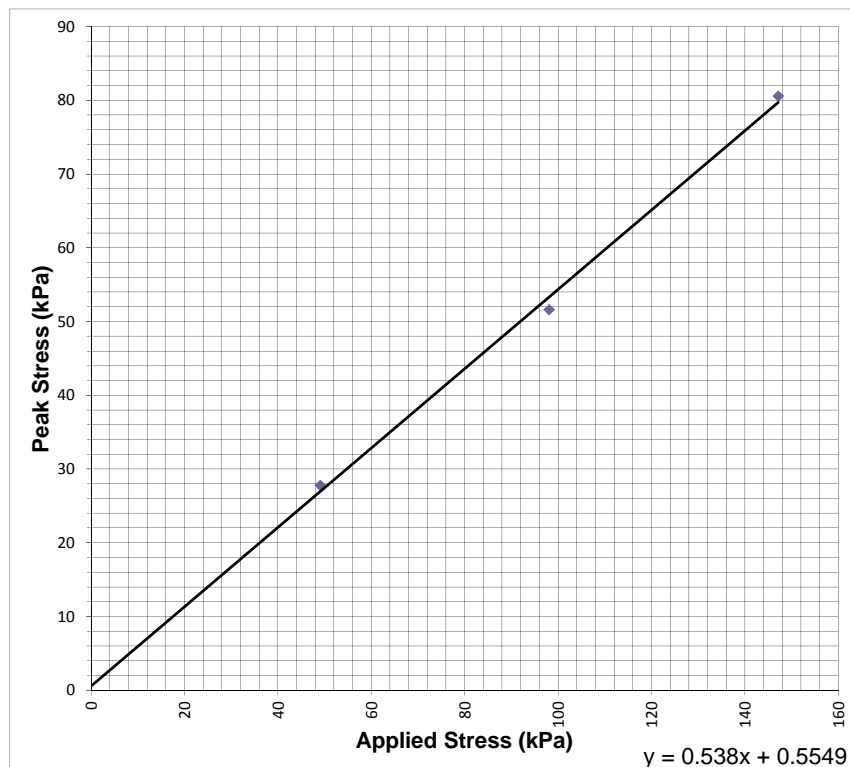
Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	52
▲	Stage 3	147	81

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min



Angle of Friction	28.28 °
Apparent Cohesion	0.55 kPa

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

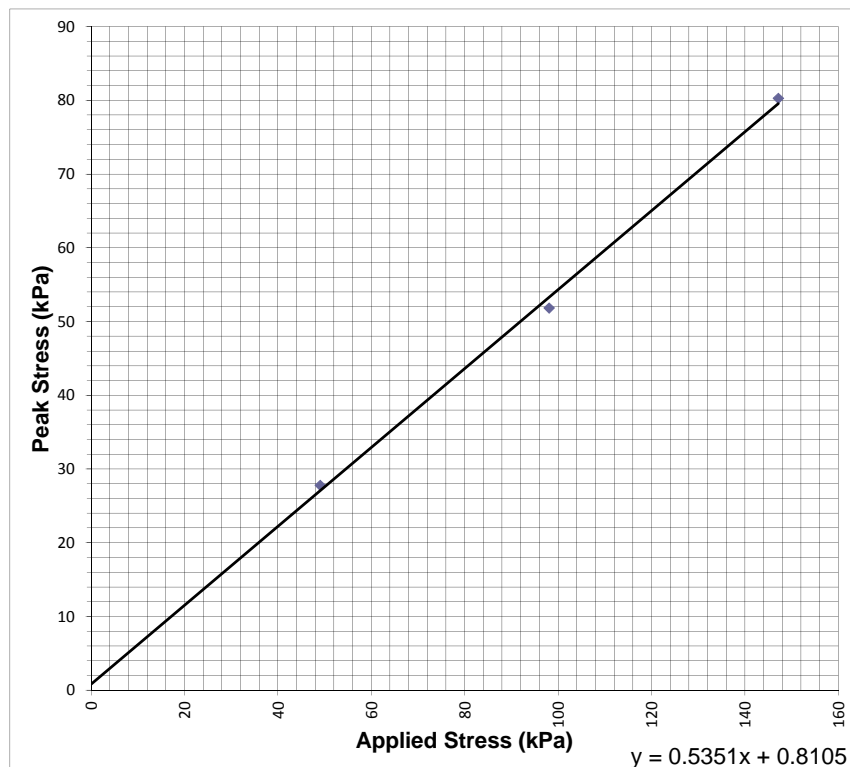
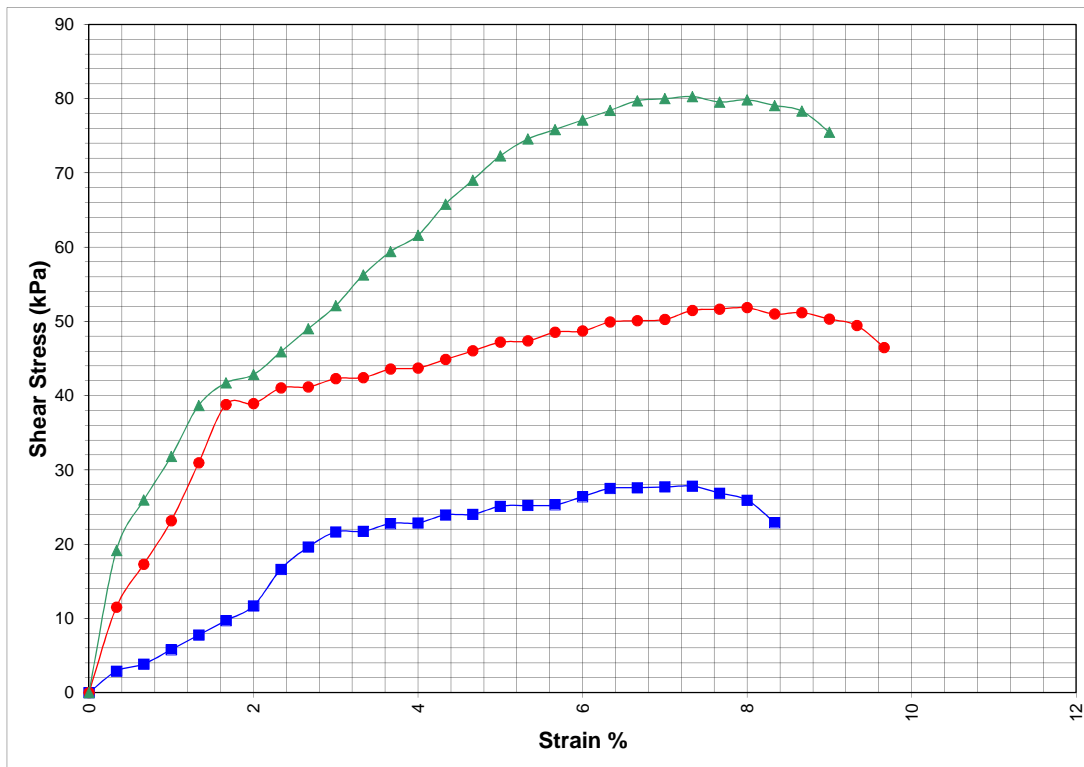
Borehole: LBH-02

Sample Type: SPT-07

Depth: 10.50-10.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	52
▲	Stage 3	147	80

Angle of Friction	28.02 °
Apparent Cohesion	0.81 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

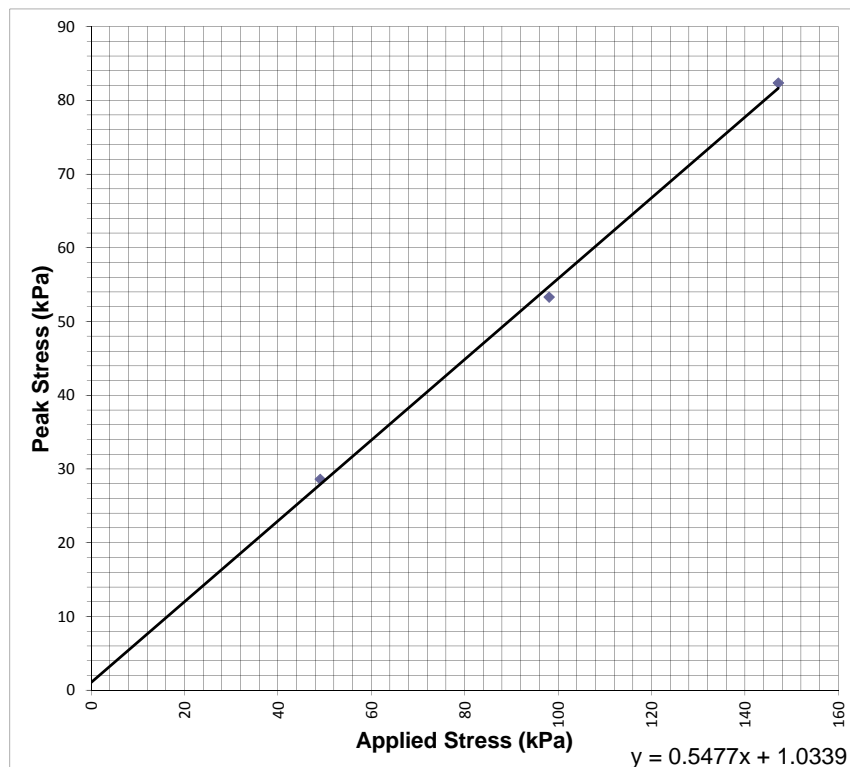
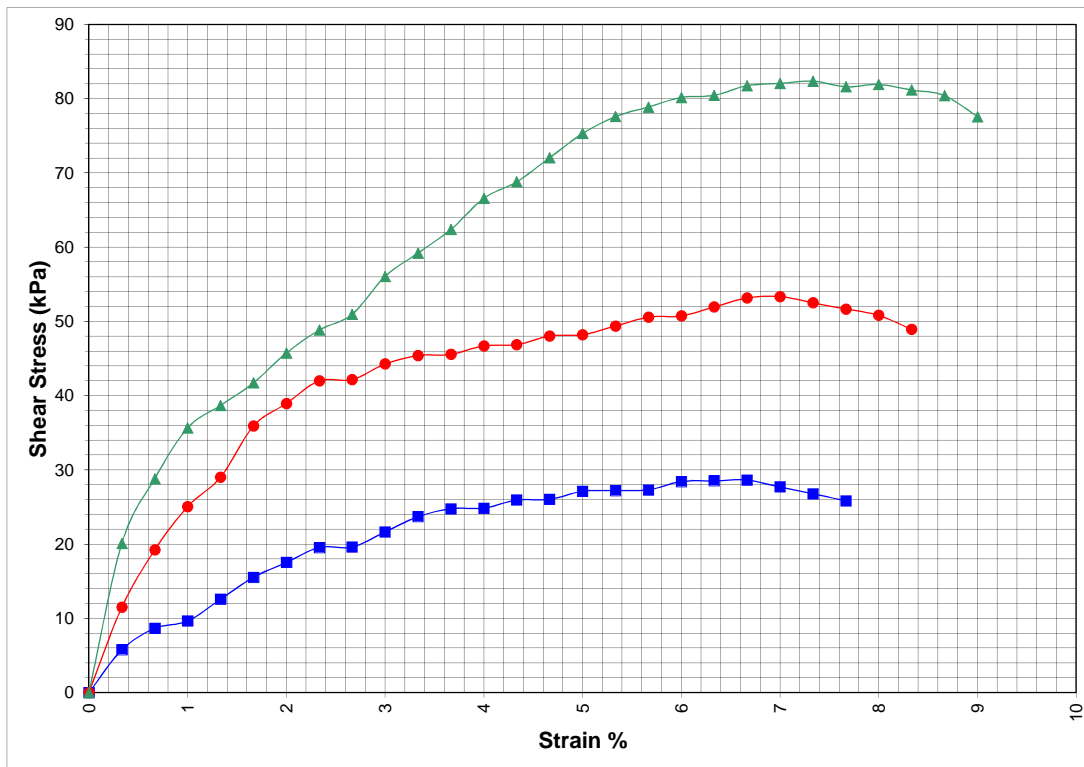
Borehole: LBH-02

Sample Type: SPT-09

Depth: 13.50-13.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	29
●	Stage 2	98	53
▲	Stage 3	147	82

Angle of Friction	28.71 °
Apparent Cohesion	1.03 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

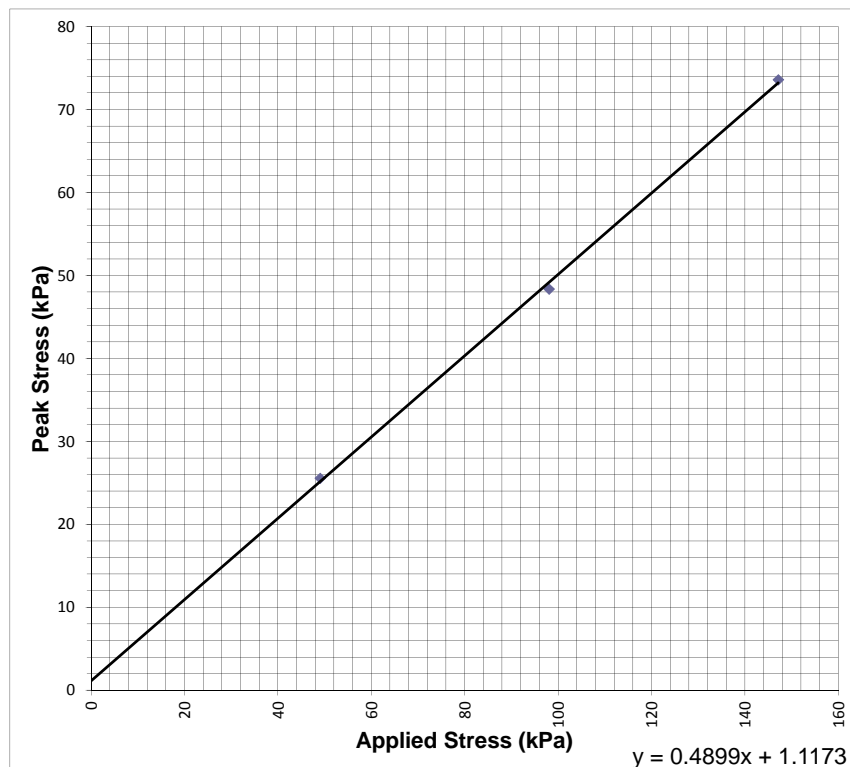
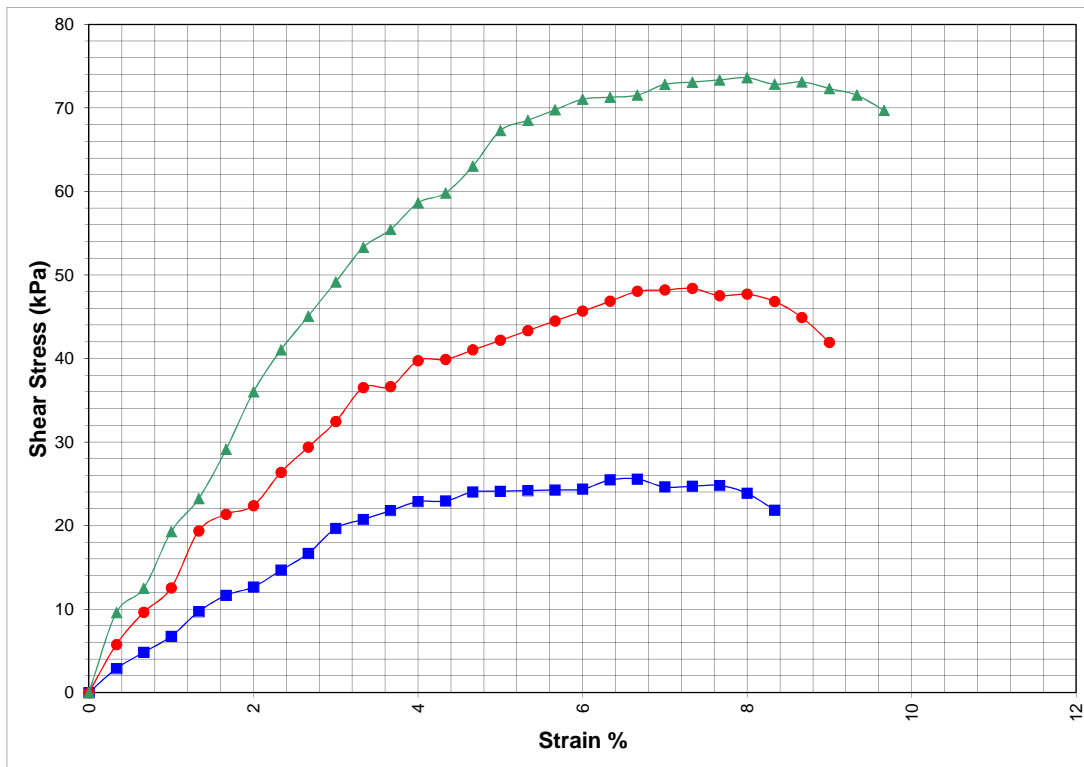
Borehole: LBH-02

Sample Type: SPT-11

Depth: 16.50-16.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	74

Angle of Friction	26.10 °
Apparent Cohesion	1.12 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

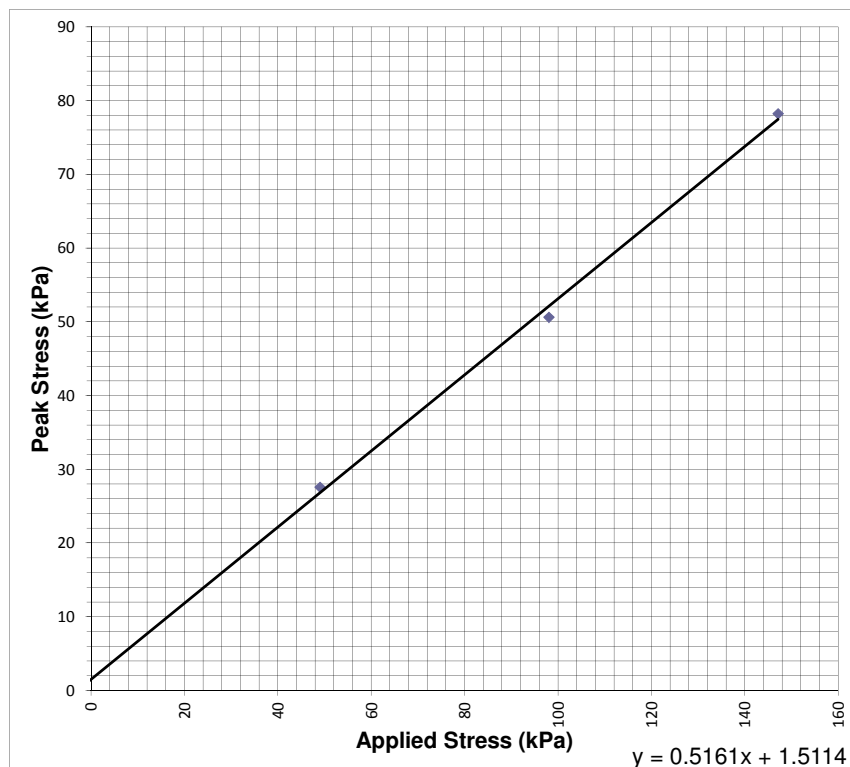
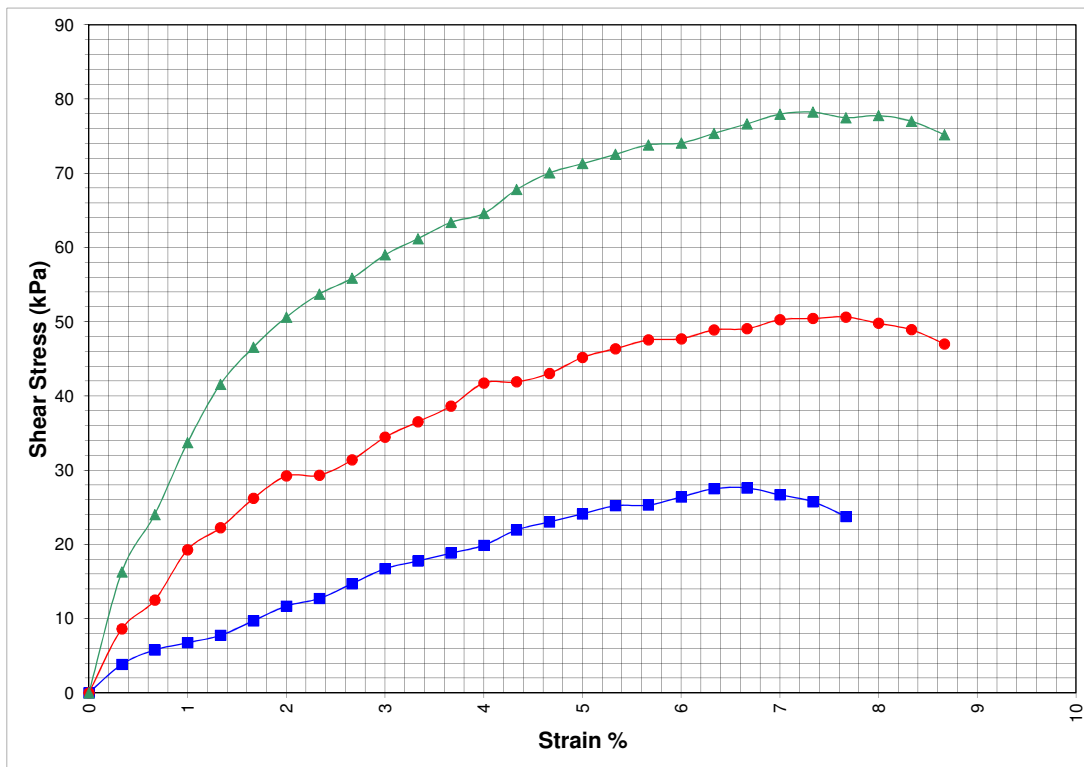
Borehole: LBH-02

Sample Type: SPT-14

Depth: 21.00-21.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	51
▲	Stage 3	147	78

Angle of Friction	27.30 °
Apparent Cohesion	1.51 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

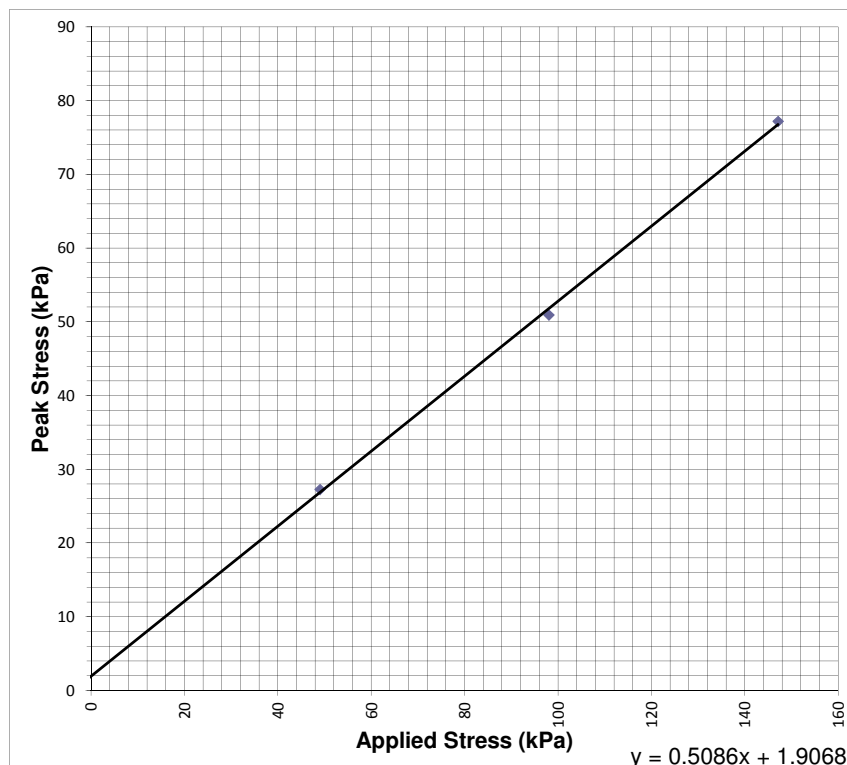
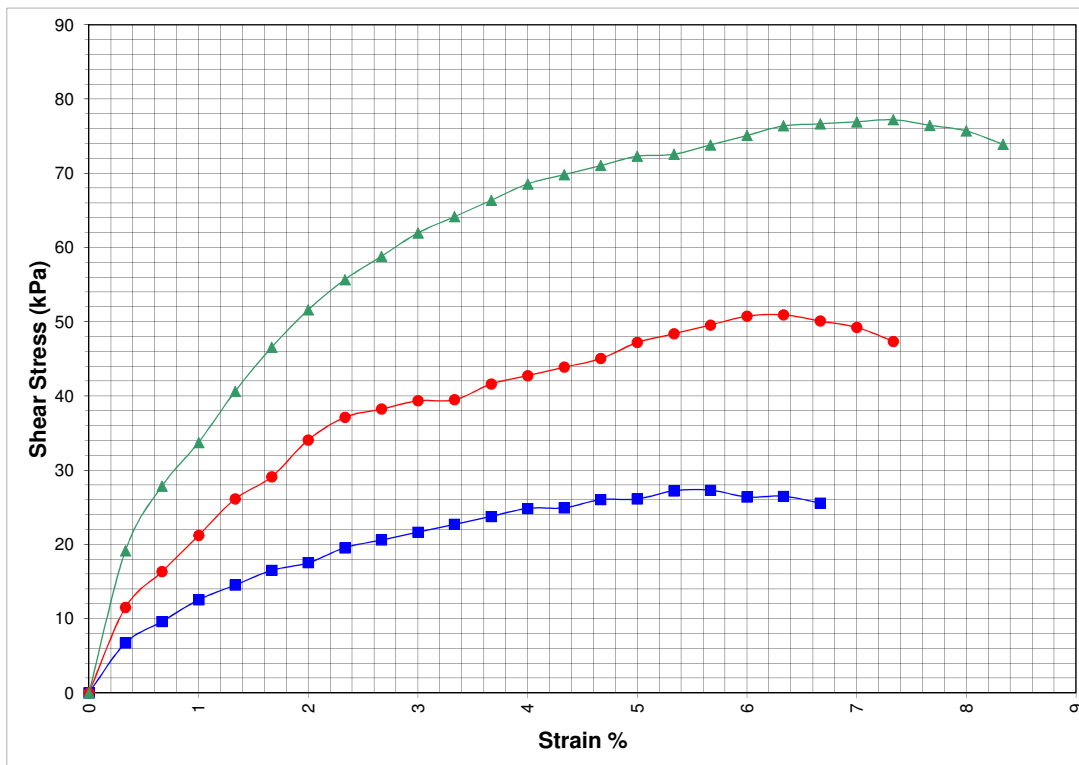
Borehole: LBH-02

Sample Type: SPT-16

Depth: 24.00-24.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	51
▲	Stage 3	147	77

Angle of Friction	27.0 °
Apparent Cohesion	1.91 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

Borehole: LBH-02

Sample Type: SPT-19

Depth: 28.50-28.95 m

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-03					Date :			: 31-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	LBH-03	LBH-03	LBH-03	LBH-03											
Depth (m)	3.00-3.45	7.50-7.95	10.50-10.95	12.00-12.45											
Sample Type	SPT-2	SPT-5	SPT-7	SPT-8											
Classification	SP	SP	SP	SP-SM											
Gravel %	0	0	0	0											
Sand %	98	99	99	95											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	2	1	1	5											
D60 mm	0.280	0.400	0.990	0.310											
D30 mm	0.200	0.260	0.400	0.180											
D10 mm	0.160	0.170	0.180	0.095											
Cu	1.75	2.35	5.50	3.26											
Cc	0.89	0.99	0.90	1.10											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By :

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-03					Date :			: 31-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
							F	M	C	F	C				
Bore Hole .	LBH-03	LBH-03	LBH-03	LBH-03											
Depth (m)	13.50-13.95	15.00-15.45	16.50-17.00	19.50-19.95											
Sample Type	SPT-9	SPT-10	UDS-1	SPT-12											
Classification	SP-SM	SC	SC	SP-SM											
Gravel %	0	0	0	0											
Sand %	91	63	60	89											
Silt %	<---->	18	17	<---->											
Clay %	<---->	19	23	<---->											
Fines % (Silt+Clay)	9	37	40	11											
D60 mm	0.230														
D30 mm	0.140														
D10 mm	0.080														
Cu	2.88														
Cc	1.07														
Liquid Limit %	---	33.8	31.8	---											
Plastic Limit %	---	16.3	15.6	---											
Plasticity Index	---	17.5	16.2	---											

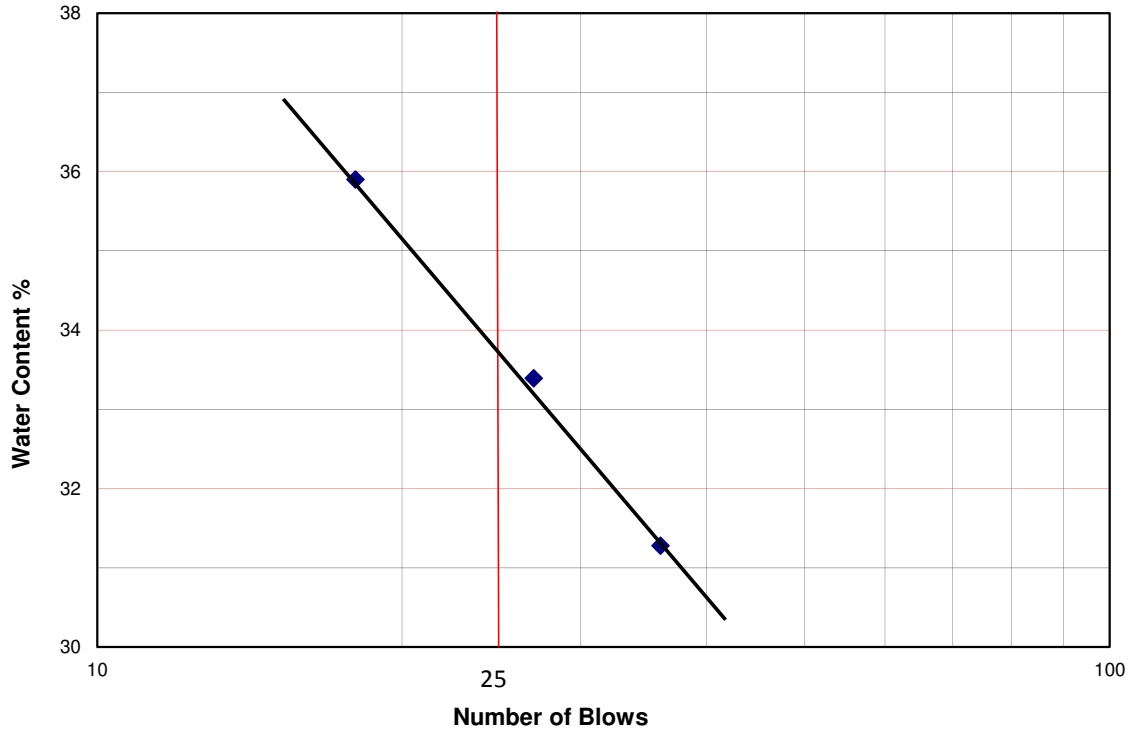
Checked By :

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha															
Job No.	: CM 19 01 03				Borehole No. : LBH-03					Date :			31-May-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL			
									F	M	C	F	C			
Bore Hole .	LBH-03	LBH-03	LBH-03	LBH-03												
Depth (m)	21.00-21.45	22.50-22.95	25.50-25.95	28.50-28.95												
Sample Type	SPT-13	SPT-14	SPT-16	SPT-18												
Classification	SP-SM	SP-SM	SP	SP												
Gravel %	0	0	1	1												
Sand %	91	92	96	97												
Silt %	<---->	<---->	<---->	<---->												
Clay %	<---->	<---->	<---->	<---->												
Fines % (Silt+Clay)	9	8	3	2												
D60 mm	0.330	0.300	0.400	0.400												
D30 mm	0.190	0.170	0.250	0.250												
D10 mm	0.080	0.080	0.160	0.170												
Cu	4.13	3.75	2.50	2.35												
Cc	1.37	1.20	0.98	0.92												
Liquid Limit %	---	---	---	---												
Plastic Limit %	---	---	---	---												
Plasticity Index	---	---	---	---												

Checked By :

LL, PL & PI of Soils - IS : 2720 (part-5) & ASTM D 4318 - 1998



Liquid Limit %

Wet Weight + Can (g)	32.37	35.52	37.34		
Dry Weight + Can (g)	26.94	29.63	29.92		
Can Weight (g)	9.58	11.99	9.25		
Water Content, %	31.3	33.4	35.9		
Number of Blows	36	27	18		

Plastic Limit %

Wet Weight + Can (g)	17.25	19.33	18.99
Dry Weight + Can (g)	16.18	18.63	18.01
Can Weight (g)	9.52	14.37	12.01
Water Content, %	16.1	16.4	16.3

Liquid Limit % 33.8
 Plastic Limit % 16.3
 Plasticity Index % 17.5

Preparation of Sample :
 Dry State

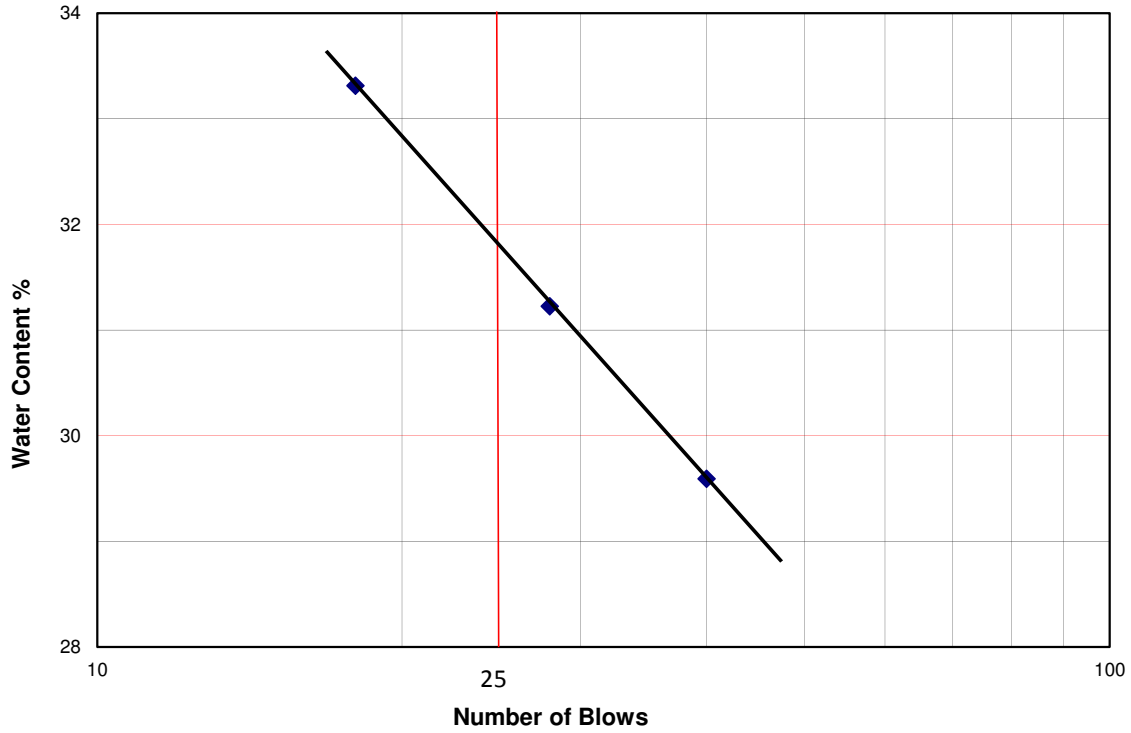
Sample Type: SPT-10

Borehole no.: LBH-03

Depth :15.00-15.45

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

LL, PL & PI of Soils - IS : 2720 (part-5) & ASTM D 4318 - 1998



Liquid Limit %

Wet Weight + Can (g)	37.41	35.33	29.58		
Dry Weight + Can (g)	31.74	30.00	24.58		
Can Weight (g)	12.58	12.93	9.57		
Water Content, %	29.6	31.2	33.3		
Number of Blows	40	28	18		

Plastic Limit %

Wet Weight + Can (g)	23.29	19.59	16.71
Dry Weight + Can (g)	21.93	18.22	15.65
Can Weight (g)	13.16	9.51	8.84
Water Content, %	15.5	15.7	15.6

Liquid Limit % 31.8
 Plastic Limit % 15.6
 Plasticity Index % 16.2

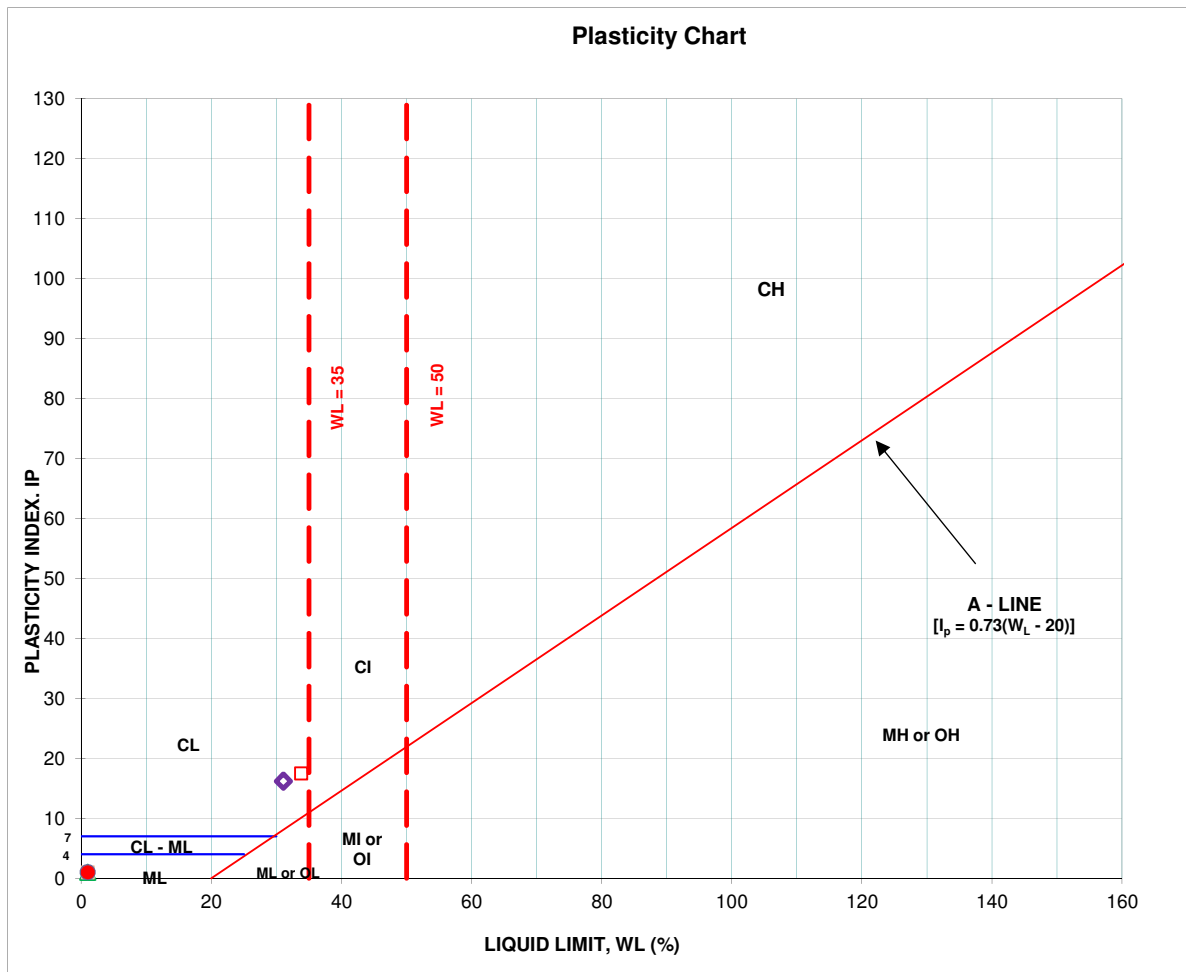
Preparation of Sample :
 Dry State

Sample Type: UDS-01

Borehole no.: LBH-03

Depth :16.50-17.00

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.



	Sample Type	Depth (m)	W_L	W_P	I_p	Remarks
□	SPT-10	15.00-15.45	33.8	16.3	17.5	CL: Inorganic clays of low to medium plasticity.
◇	UDS-01	16.50-17.00	31.1	15.2	16.2	CL: Inorganic clays of low to medium plasticity.

ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	MH	Inorganic silts, or diatomaceous fine sands or silts, elastic silts
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	CH	Inorganic clays of high plasticity, fat clays
OL	Organic silts and organic silty clays of low plasticity	OH	Organic silts and organic clays of medium to high plasticity
CI	Clays with Intermediate plasticity	MI	Silt with intermediate plasticity

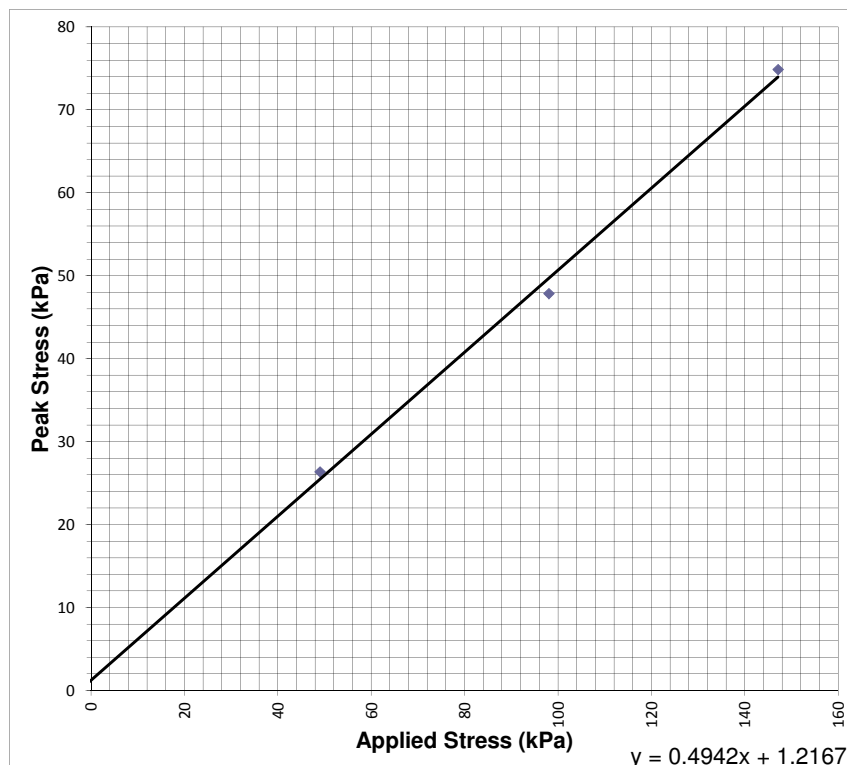
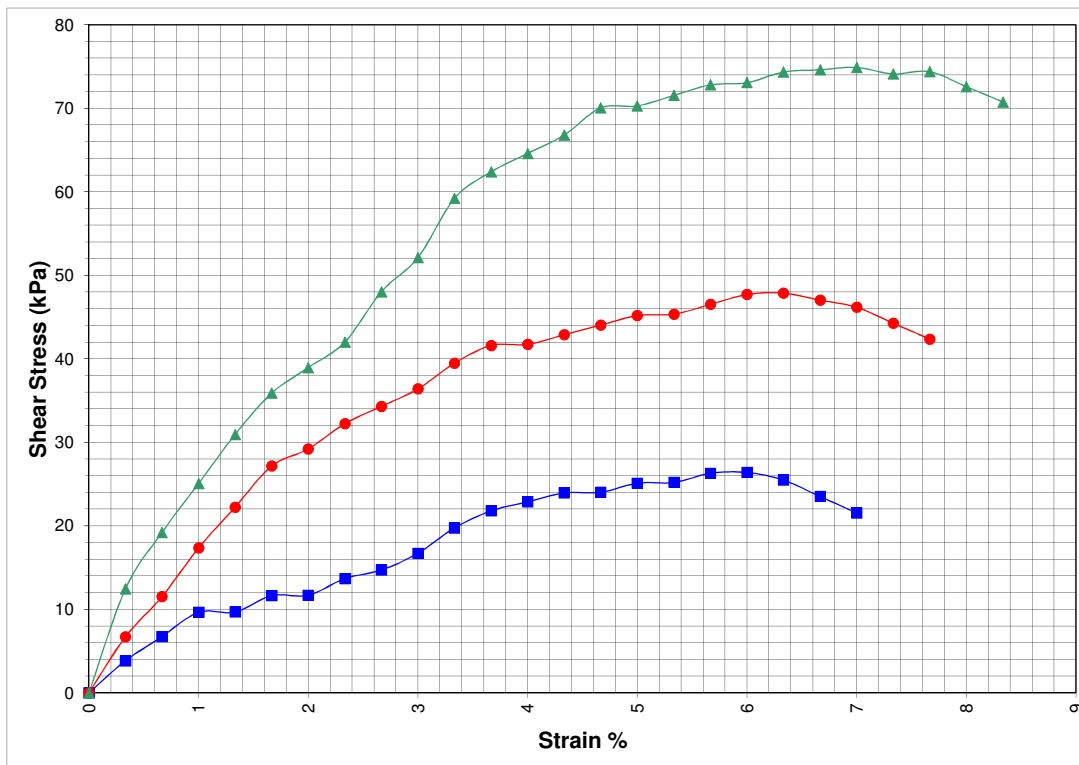
PLASTICITY CHART (IS : 1498 - 1987)

BOREHOLE NAME : LBH-03

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	75

Angle of Friction	26.30 °
Apparent Cohesion	1.22 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

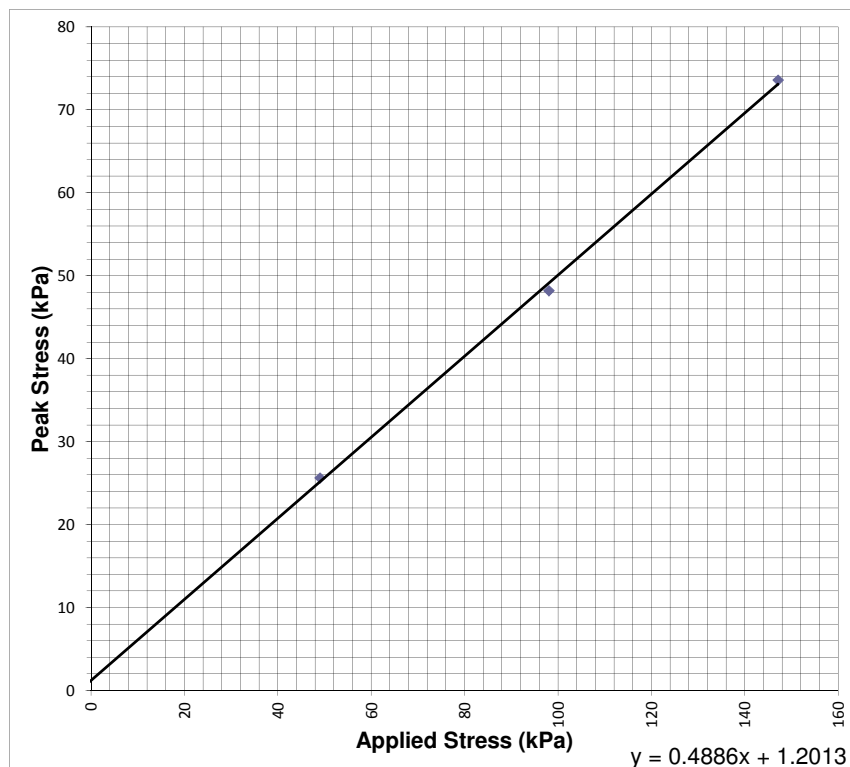
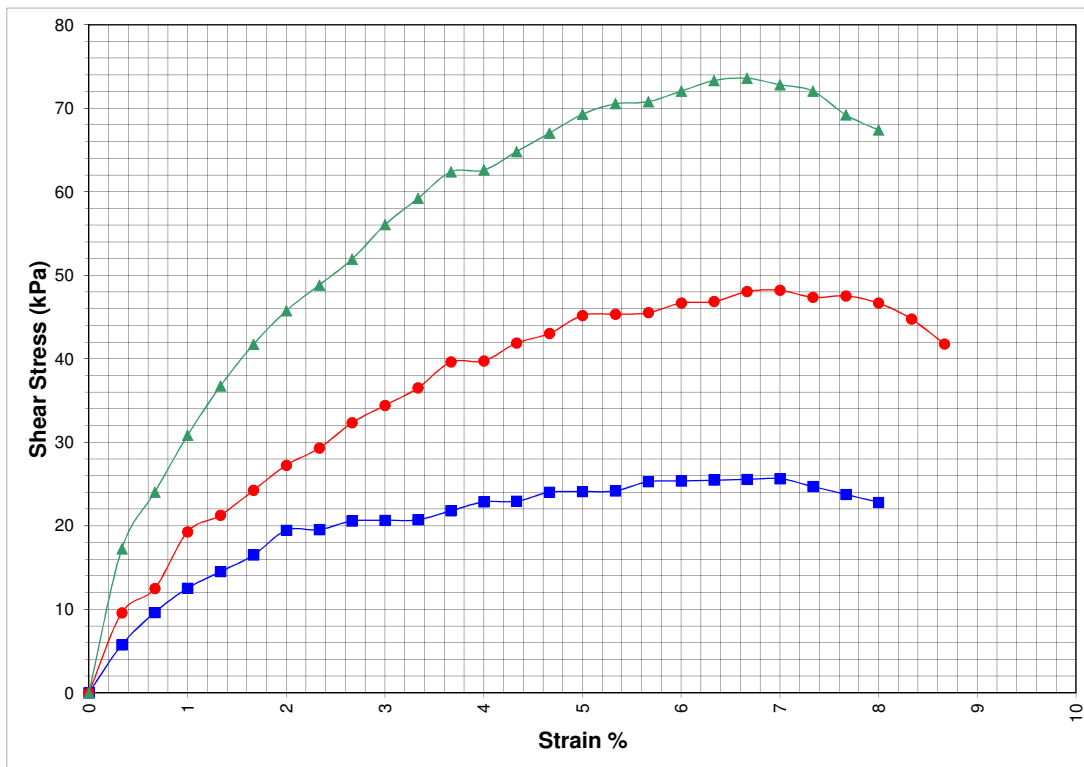
Borehole: LBH-03

Sample Type: SPT-01

Depth: 1.50-1.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	74

Angle of Friction	26.04 °
Apparent Cohesion	1.08 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

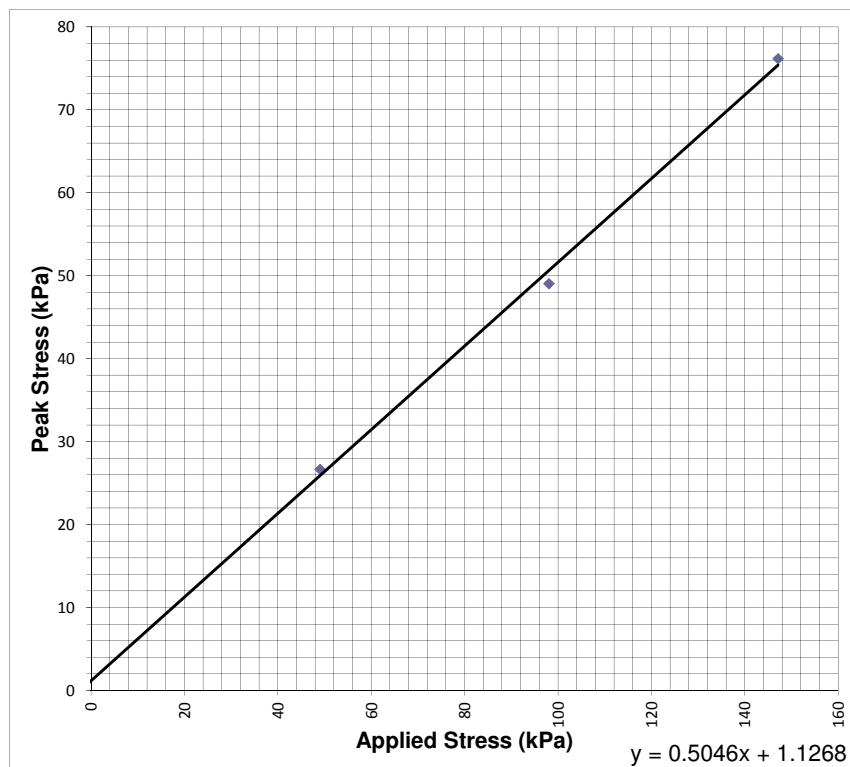
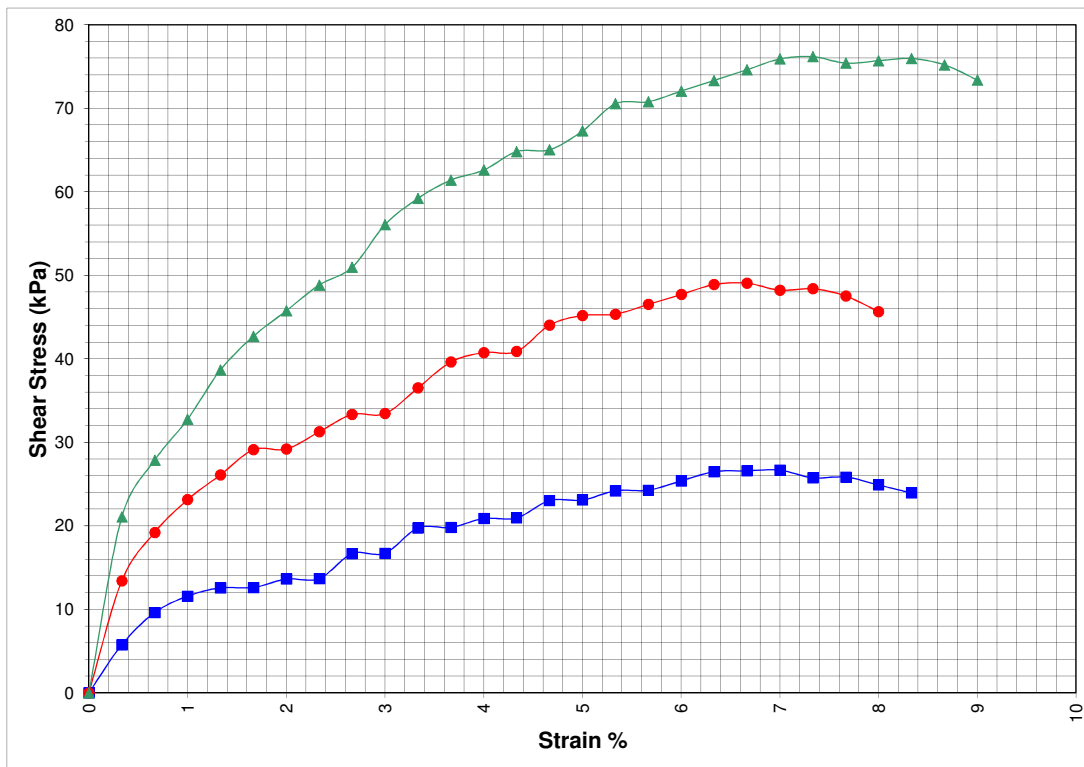
Borehole: LBH-03

Sample Type: SPT-03

Depth: 4.50-4.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	49
▲	Stage 3	147	76

Angle of Friction	26.78 °
Apparent Cohesion	1.13 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

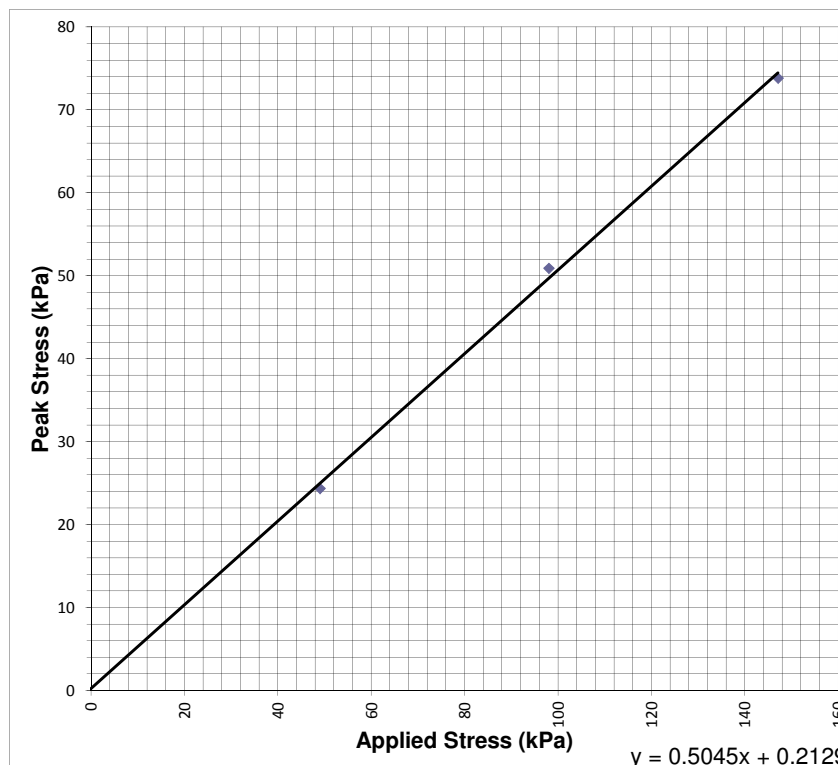
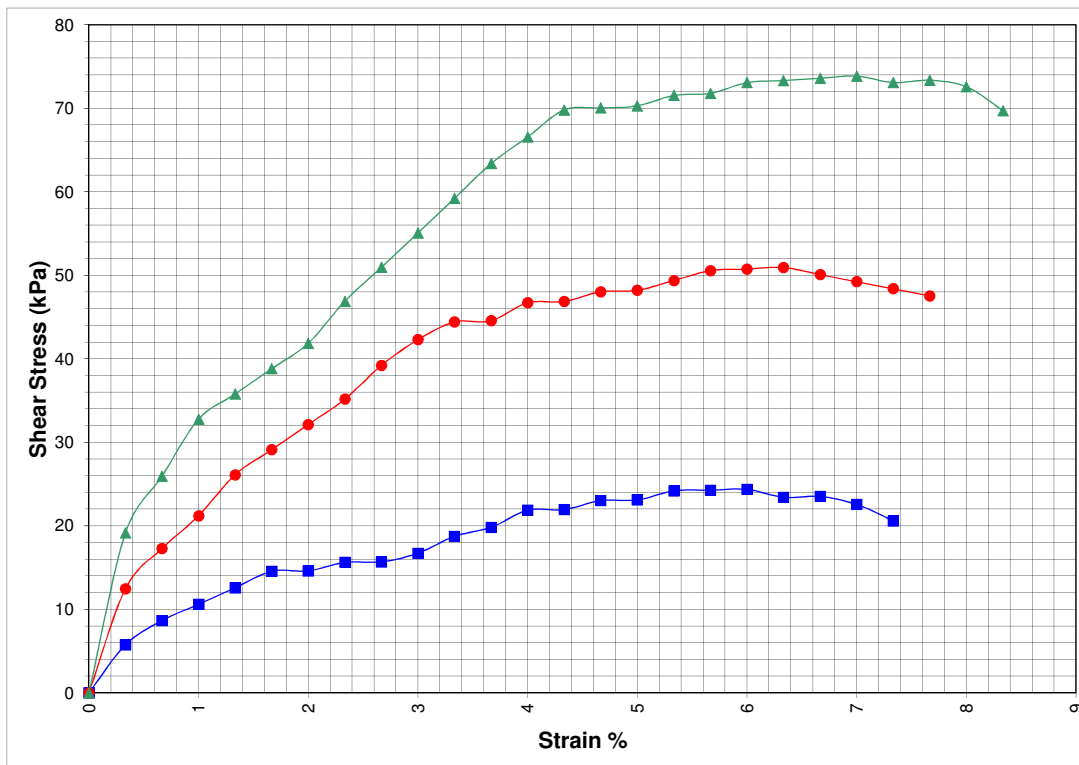
Borehole: LBH-03

Sample Type: SPT-04

Depth: 6.00-6.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	24
●	Stage 2	98	51
▲	Stage 3	147	74

Angle of Friction	26.77 °
Apparent Cohesion	0.21 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

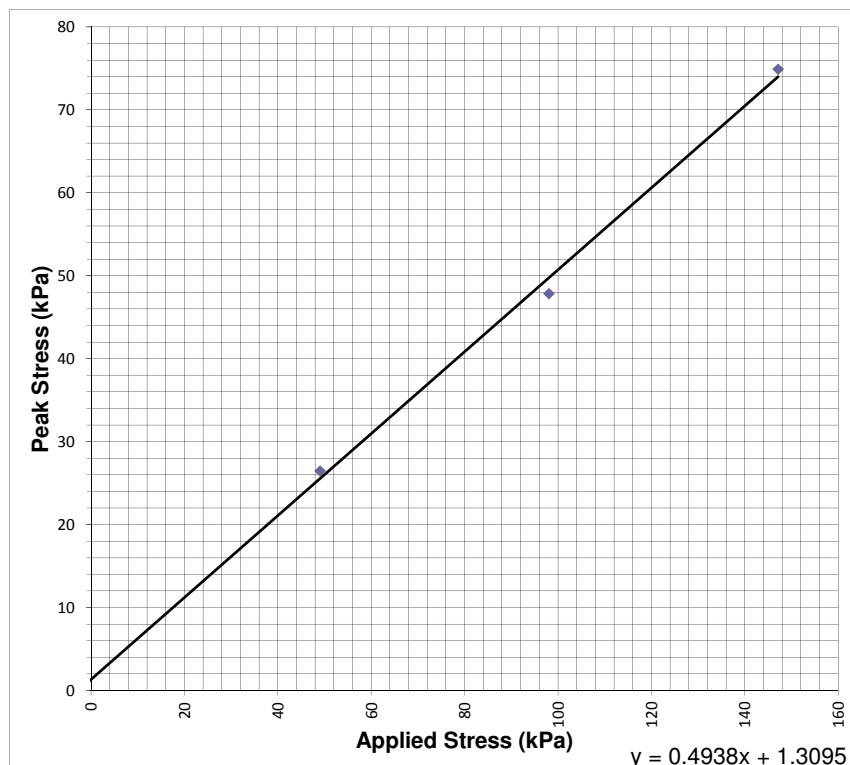
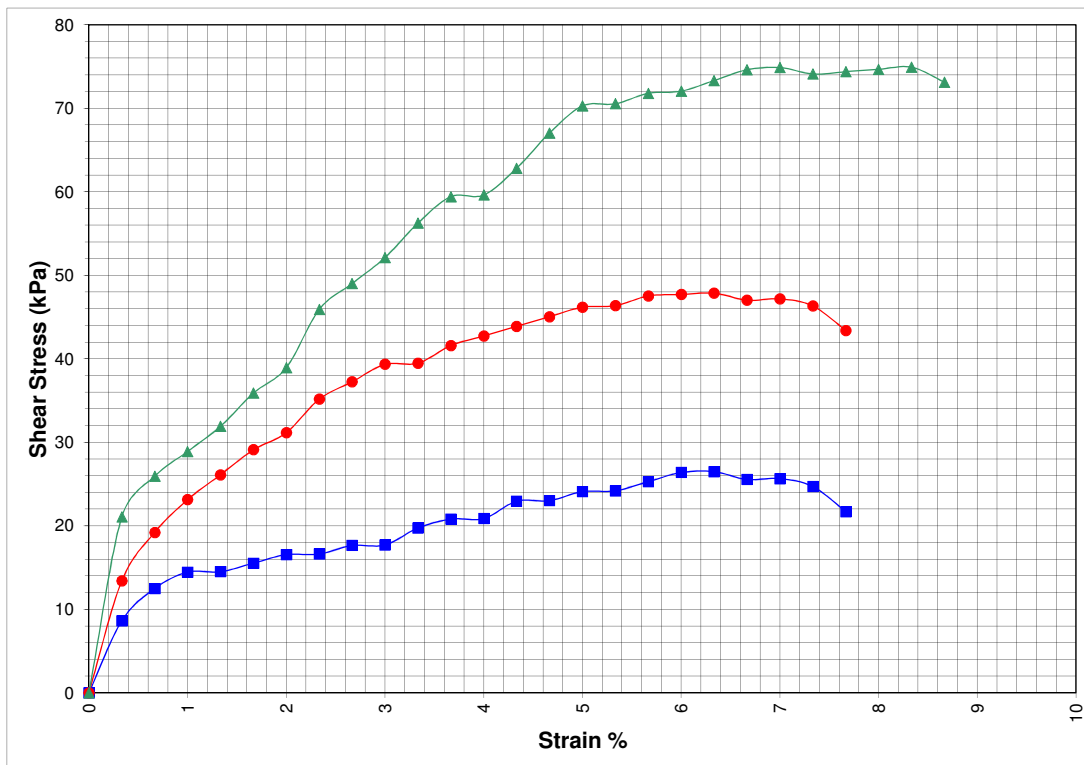
Borehole: LBH-03

Sample Type: SPT-06

Depth: 9.00-9.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	75

Angle of Friction	26.28 °
Apparent Cohesion	1.31 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

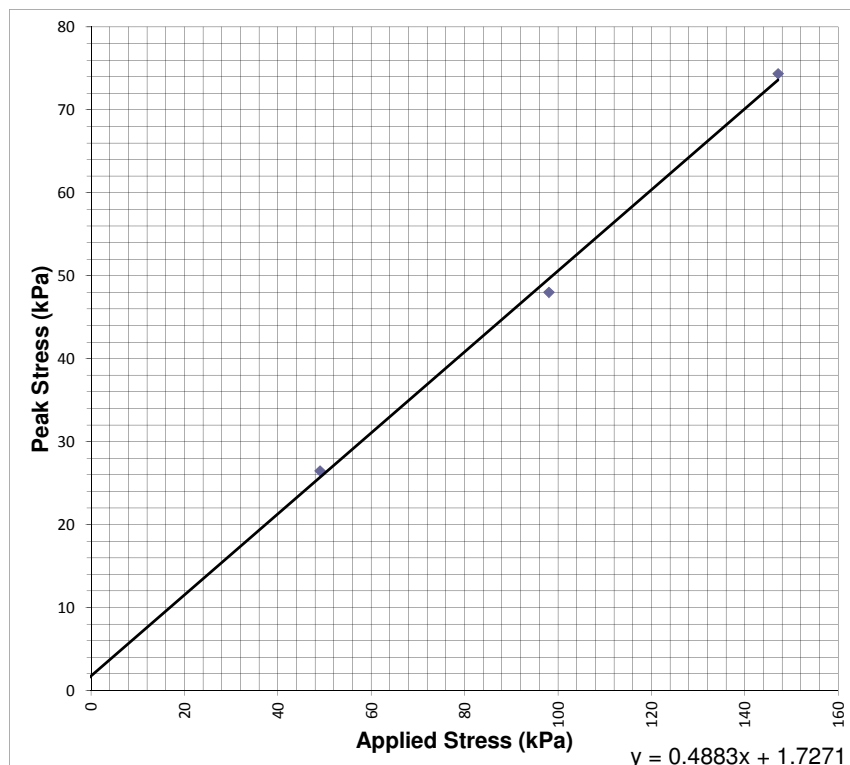
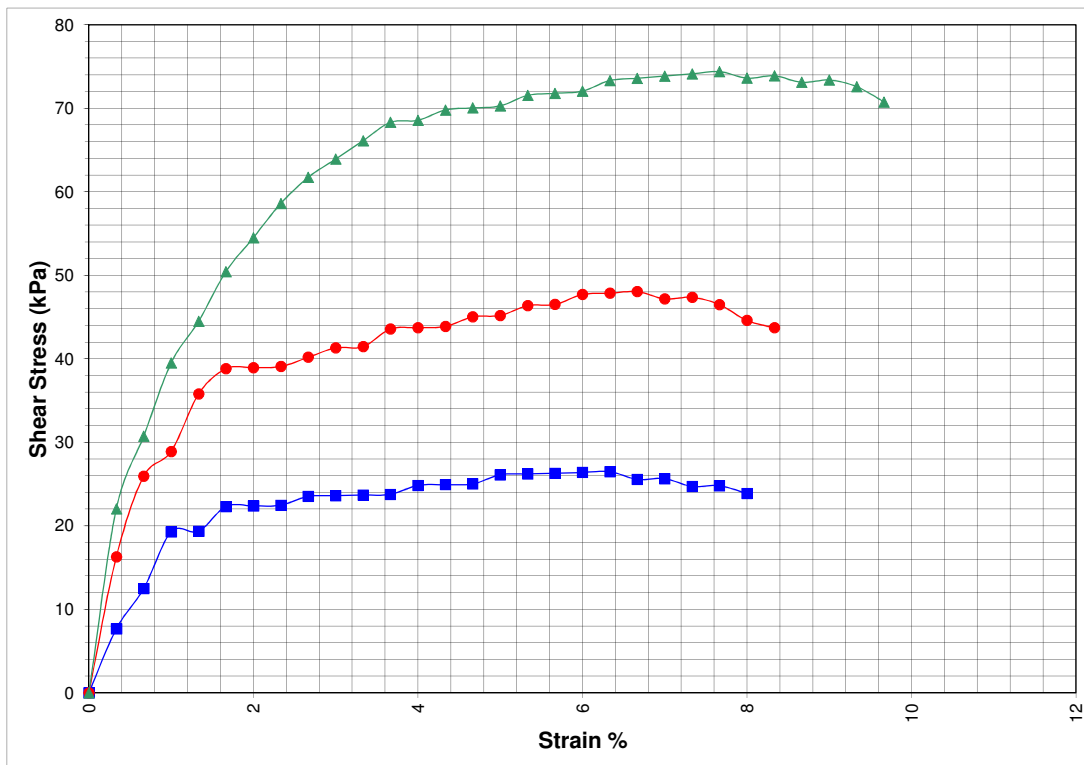
Borehole: LBH-03

Sample Type: SPT-11

Depth: 18.00-18.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	74

Angle of Friction	26.03 °
Apparent Cohesion	1.73 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

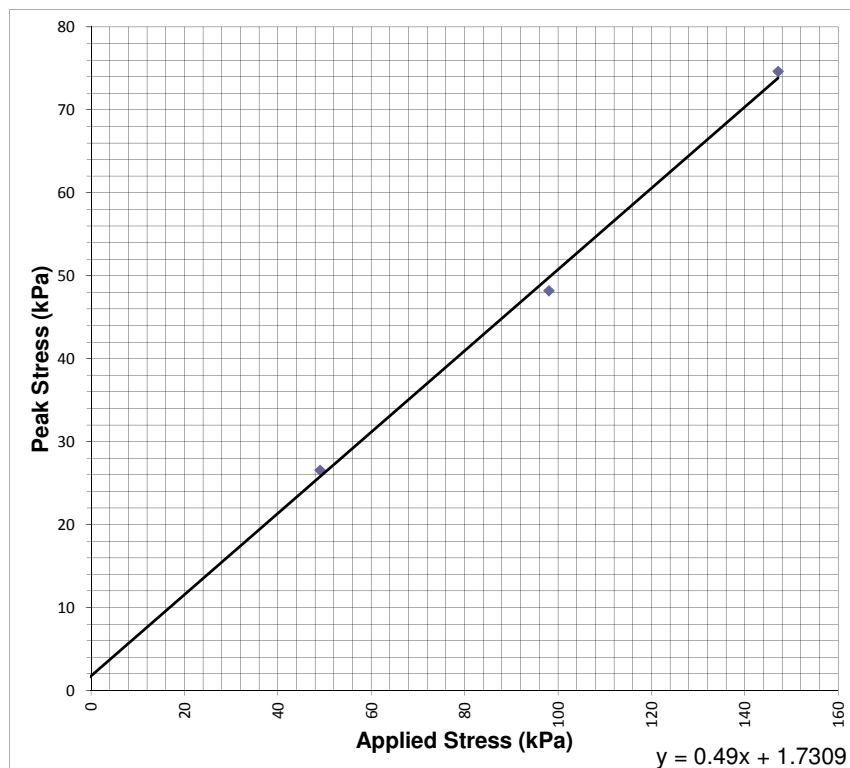
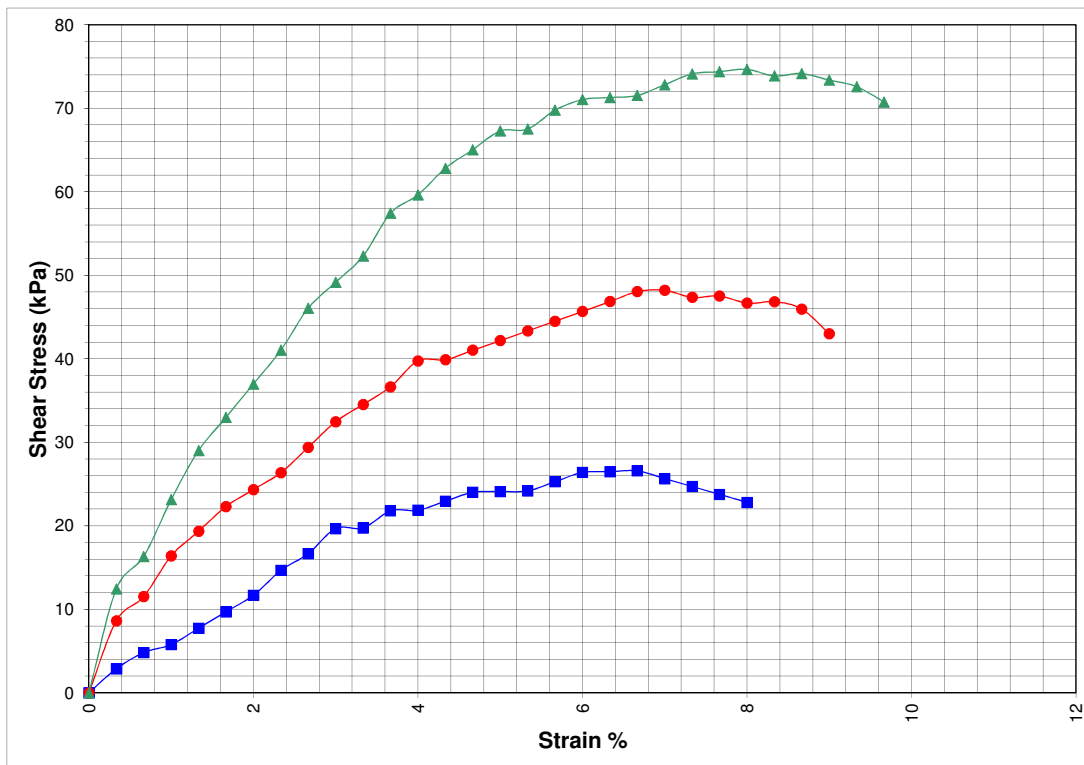
Borehole: LBH-03

Sample Type: SPT-15

Depth: 24.00-24.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	48
▲	Stage 3	147	75

Angle of Friction	26.10 °
Apparent Cohesion	1.73 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

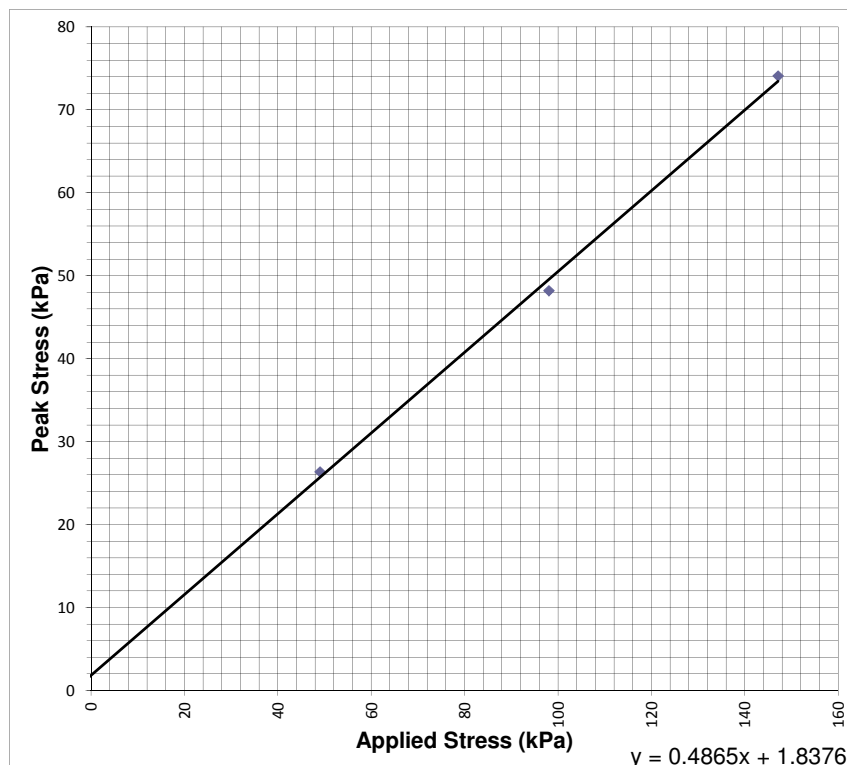
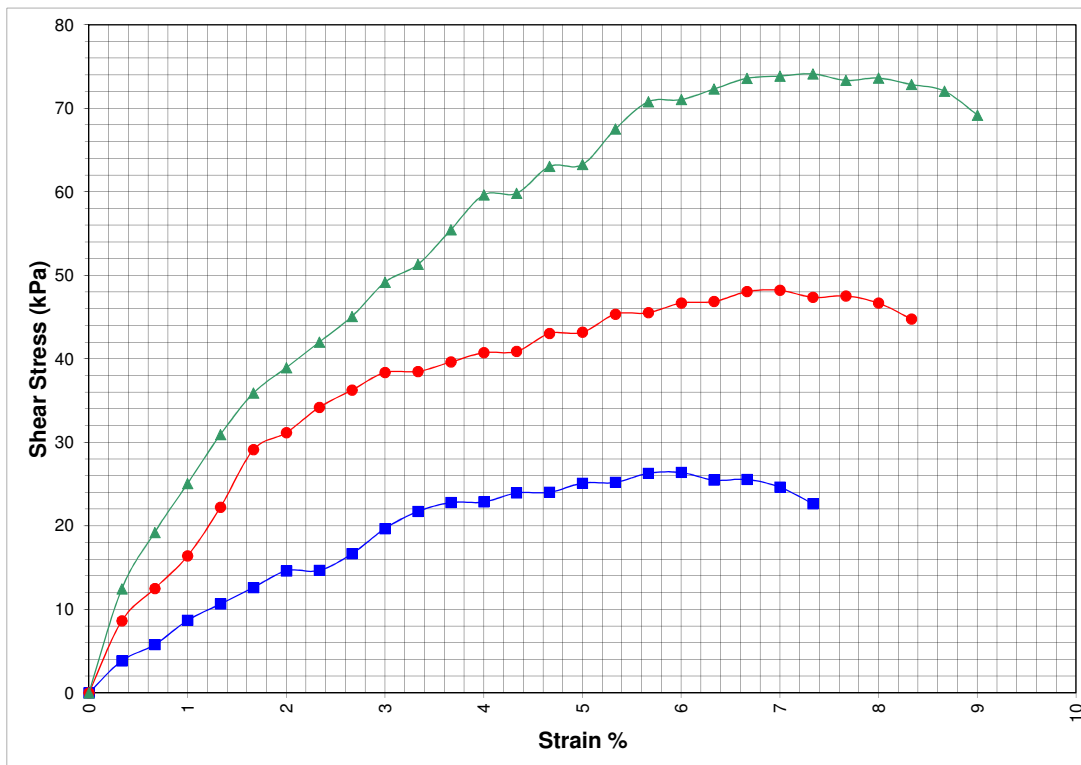
Borehole: LBH-03

Sample Type: SPT-17

Depth: 27.00-27.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	74

Angle of Friction	25.94 °
Apparent Cohesion	1.84 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

Borehole: LBH-03

Sample Type: SPT-19

Depth: 30.00-30.45 m

CONSOLIDATION TEST

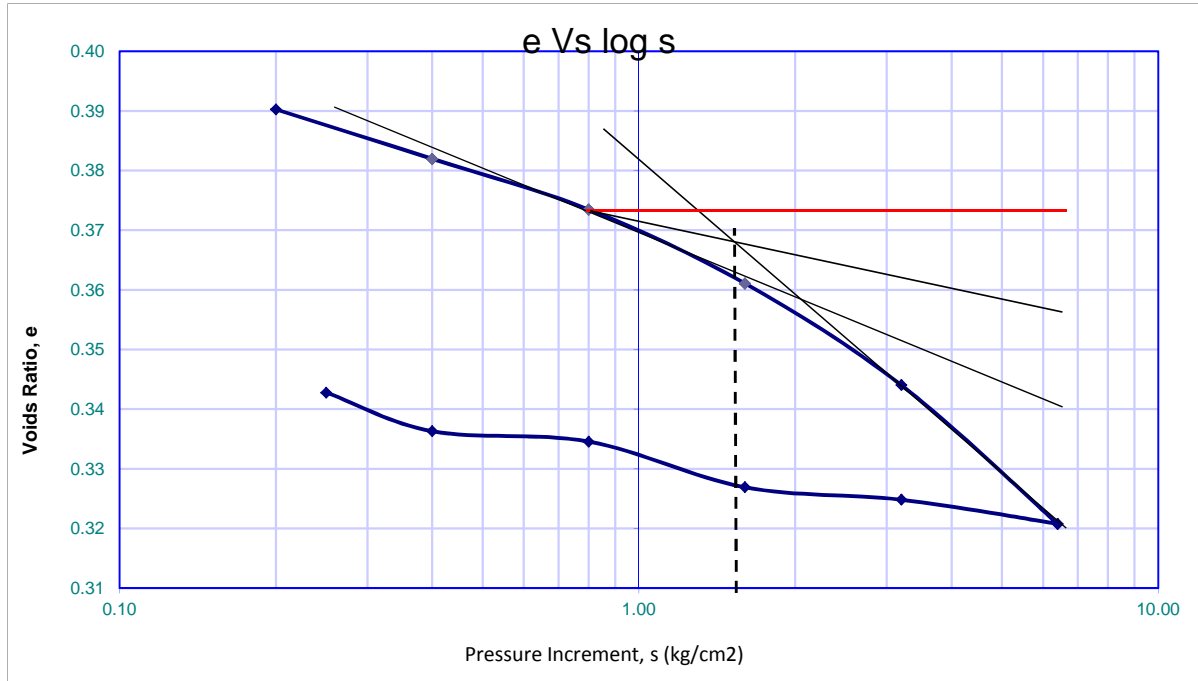
PROJECT: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha

Bore Hole No.:	LBH-03	Date:	31-May-2019
Depth (m):	16.50-17.00	Job No.:	CM 19 01 03
Location:	Odisha	Sample Type:	UDS-1

	<i>Before Test</i>	<i>After Test</i>			
Bulk Density (gm/cc):	2.13	2.17	Height of specimen (cm):	2.0	
NMC (%):	15.22	13.32	Diameter of specimen (cm):	6.0	
Dry Density (gm/cc):	1.85	1.92	Cross-sectional area (cm ²):	28.29	
Specific Gravity:	2.57		Degree of saturation (%):	100	

Applied Pressure (kg/cm ²)		Change in length (cm)	H (cm)	Voids Ratio e	t ₉₀ (min)	Cc	Coeff. Of compressibility av (cm ² /kg)	Coeff. of volume change, mv (cm ² /kg)	Coeff. Of consolidation cv (cm ² /min)
From	To								
0.0	0.00	0	2.0000	0.3918					
0.0	0.2	0.0023	1.9977	0.3902	1.21	0.0016	0.0080	0.0057	0.7000
0.2	0.40	0.0119	1.9858	0.3820	67.24	0.0275	0.0414	0.0298	0.0125
0.4	0.80	0.0122	1.9736	0.3735	2.25	0.0282	0.0212	0.0154	0.3693
0.8	1.60	0.0178	1.9558	0.3611	16.00	0.0411	0.0155	0.0113	0.0511
1.6	3.20	0.0245	1.9313	0.3440	1.21	0.0566	0.0107	0.0078	0.6618
3.2	6.40	0.0334	1.8979	0.3208	1.00	0.0772	0.0073	0.0054	0.7771
--	--	--	1.8979	--	--	--	--	--	--
--	3.20	0.0058	1.9037	0.3248					
3.2	1.60	0.003	1.9067	0.3269					
1.6	0.80	0.011	1.9177	0.3346					
0.8	0.40	0.0025	1.9202	0.3363					
0.4	0.2	0.0093	1.9295	0.3428					
0.2	0.00	--	--	--					

LBH-03
16.50-17.00



Preconsolidation Pressure (kg/cm²): 1.60 156.91 Kpa

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.													
Job No.	: CM 19 01 03				Borehole No. : MBH-04					Date :			7-Jun-19	
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SAND			GRAVEL				
							F	M	C	F	C			
Bore Hole .	MBH-04	MBH-04	MBH-04	MBH-04										
Depth (m)	0.00-0.25	1.50-1.72	4.50-4.65	7.50-7.80										
Sample Type	SPT-1	SPT-2	SPT-4	SPT-6										
Classification	SP-SM	SP-SM	SP-SM	SP										
Gravel %	0	0	0	0										
Sand %	94	93	89	96										
Silt %	<---->	<---->	<---->	<---->										
Clay %	<---->	<---->	<---->	<---->										
Fines % (Silt+Clay)	6	7	11	4										
D60 mm	0.260	0.480	0.290	0.280										
D30 mm	0.180	0.250	0.180	0.180										
D10 mm	0.100	0.120	0.150	0.110										
Cu	2.60	4.00	1.93	2.55										
Cc	1.25	1.09	0.74	1.05										
Liquid Limit %	---	---	---	---										
Plastic Limit %	---	---	---	---										
Plasticity Index	---	---	---	---										

Checked By : _____

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.														
Job No.	: CM 19 01 03				Borehole No. : MBH-04					Date :		7-Jun-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
									F	M	C	F	C		
Bore Hole .	MBH-04	MBH-04	MBH-04	MBH-04											
Depth (m)	10.50-10.75	13.50-13.70	15.00-15.20	18.00-18.30											
Sample Type	SPT-8	SPT-10	SPT-11	SPT-13											
Classification	SP		SP-SM	SP-SM											
Gravel %	0	0	0	0											
Sand %	96	42	90	95											
Silt %	<---->	46	<---->	<---->											
Clay %	<---->	12	<---->	<---->											
Fines % (Silt+Clay)	4	58	10	5											
D60 mm	0.280	0.080	0.150	0.400											
D30 mm	0.180	0.060	0.170	0.230											
D10 mm	0.120	0.001	0.075	0.140											
Cu	2.33	61.54	2.00	2.86											
Cc	0.96	34.62	2.57	0.94											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By :

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.														
Job No.	: CM 19 01 03				Borehole No. : MBH-04					Date :			7-Jun-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	MBH-04	MBH-04	MBH-04	MBH-04	<p style="text-align: center;">PERCENTAGE PASSING</p> <p style="text-align: center;">GRAIN SIZE (mm)</p>										
Depth (m)	22.50-22.80	24.00-24.25	27.00-27.30	30.00-30.30											
Sample Type	SPT-16	SPT-17	SPT-19	SPT-21											
Classification	SP-SM	SP	SP	SP											
Gravel %	0	0	0	0											
Sand %	95	96	97	96											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	5	4	3	4											
D60 mm	0.270	0.280	0.410	0.300											
D30 mm	0.190	0.180	0.250	0.190											
D10 mm	0.120	0.120	0.160	0.120											
Cu	2.25	2.33	2.56	2.50											
Cc	1.11	0.96	0.95	1.00											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By : _____

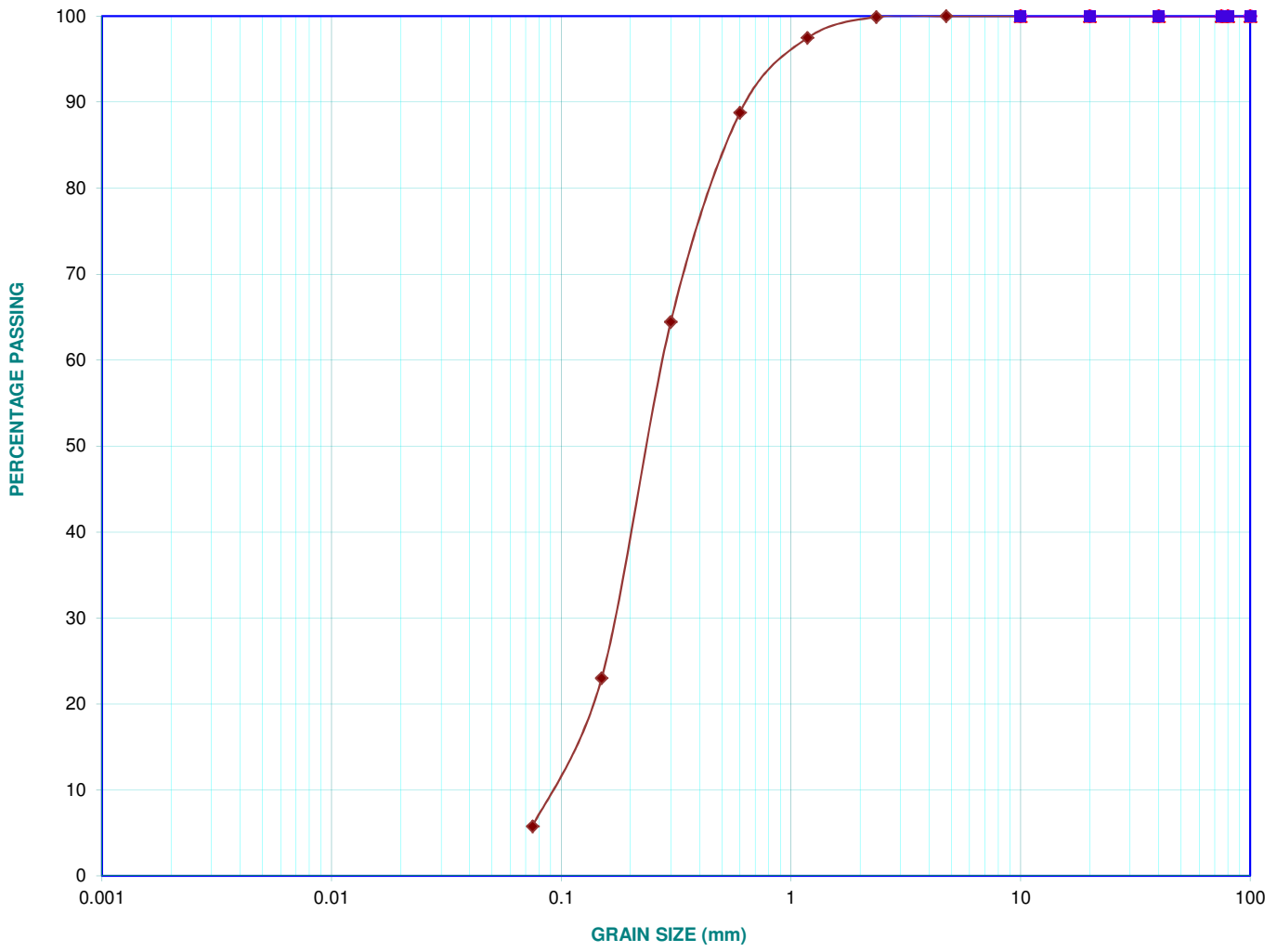
GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.														
Job No.	: CM 19 01 03				Borehole No. : MBH-04					Date :			7-Jun-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	MBH-04	MBH-04	MBH-04	MBH-04											
Depth (m)	34.50-34.70	37.50-37.75	39.00-39.30	42.00-42.20											
Sample Type	SPT-24	SPT-26	SPT-27	SPT-29											
Classification	SP	SP-SM	SP-SM	SP											
Gravel %	0	0	0	0											
Sand %	97	93	95	97											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	3	7	5	3											
D60 mm	0.350	0.250	0.250	0.280											
D30 mm	0.200	0.160	0.160	0.190											
D10 mm	0.130	0.089	0.081	0.120											
Cu	2.69	2.81	3.09	2.33											
Cc	0.88	1.15	1.26	1.07											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By : _____

GRAIN SIZE ANALYSIS

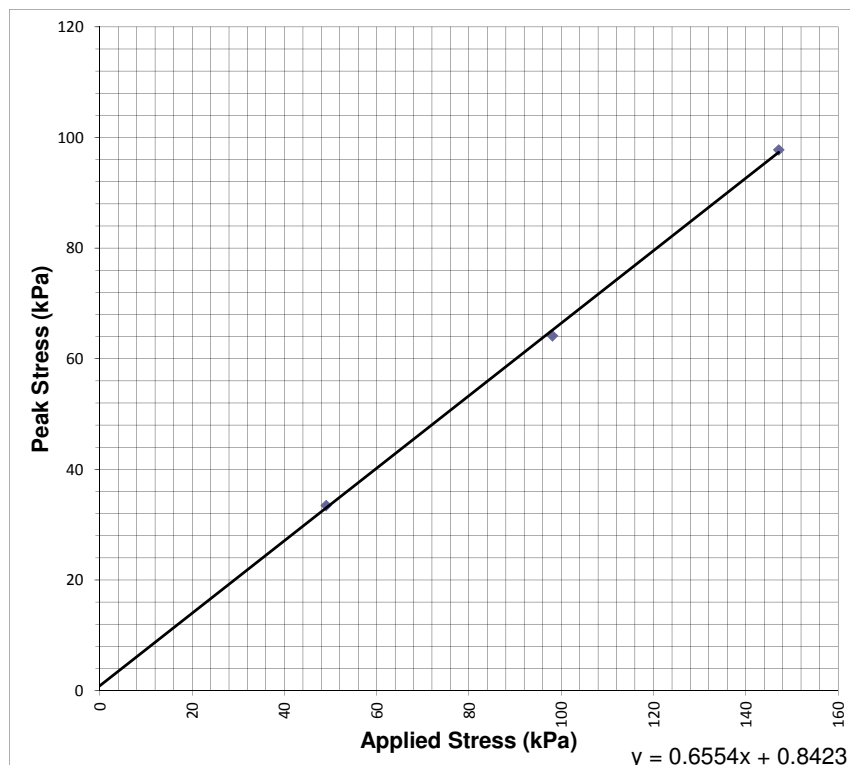
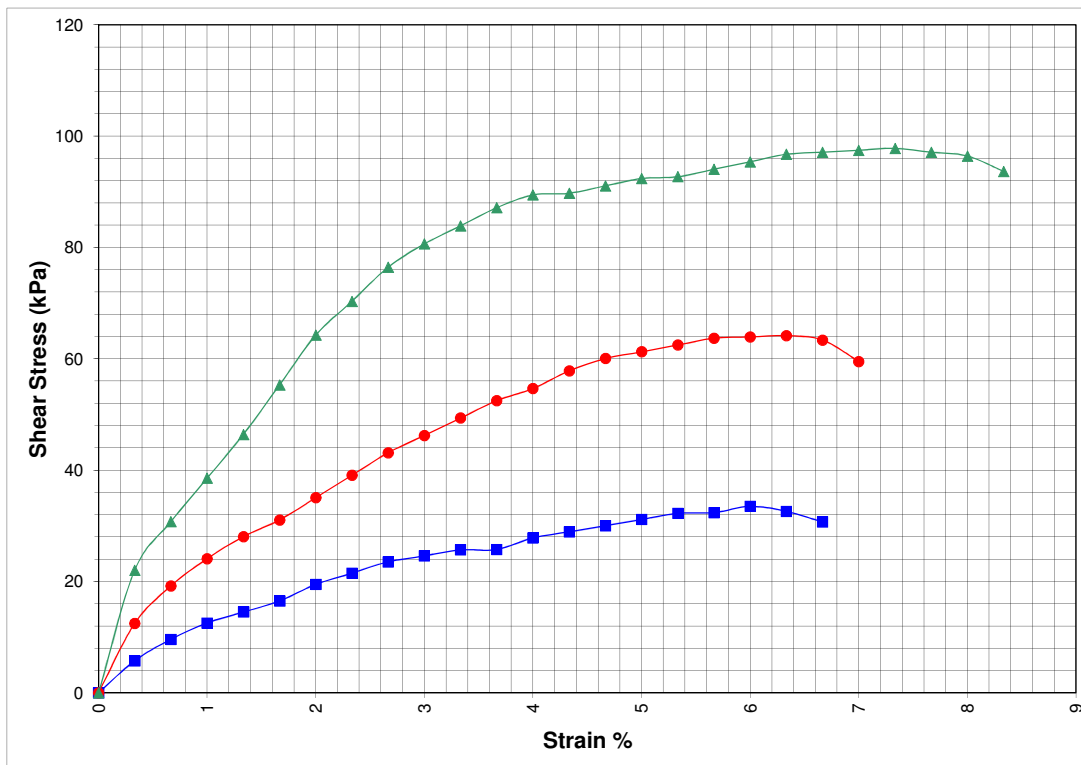
Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.										
Job No.	: CM 19 01 03		Borehole No. : MBH-04				Date :		7-Jun-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			GRAVEL	
							F	M	C	F	C
Bore Hole .	MBH-04										
Depth (m)	43.50-43.70										
Sample Type	SPT-30										
Classification	SP-SM										
Gravel %	0										
Sand %	94										
Silt %	<---->										
Clay %	<---->										
Fines % (Silt+Clay)	6										
D60 mm	0.280										
D30 mm	0.180										
D10 mm	0.091										
Cu	3.08										
Cc	1.27										
Liquid Limit %	---										
Plastic Limit %	---										
Plasticity Index	---										



Checked By :

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	33
●	Stage 2	98	64
▲	Stage 3	147	98

Angle of Friction	33.24 °
Apparent Cohesion	0.84 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

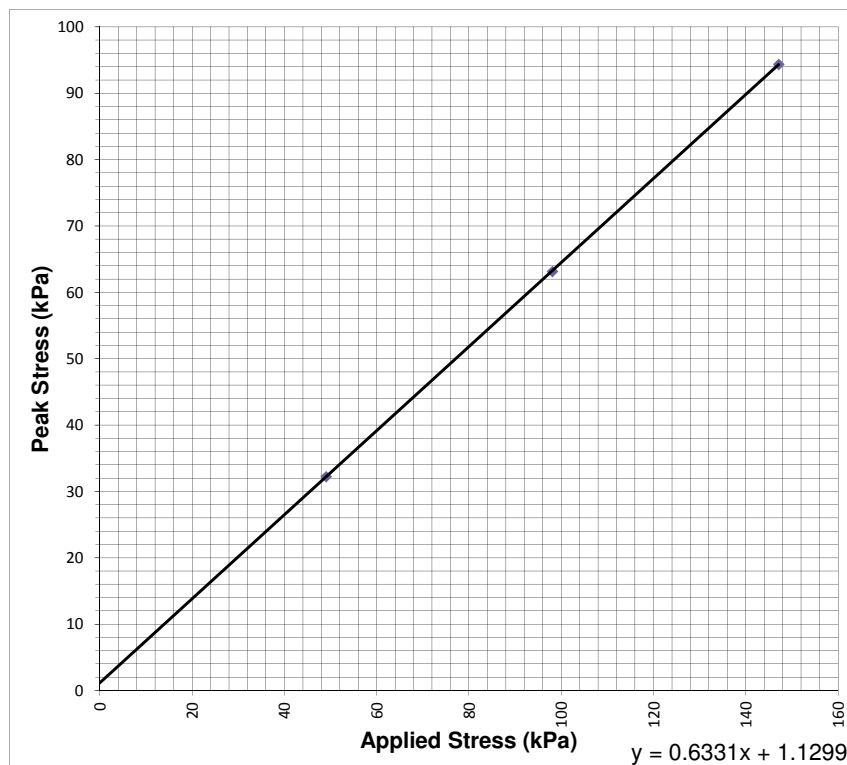
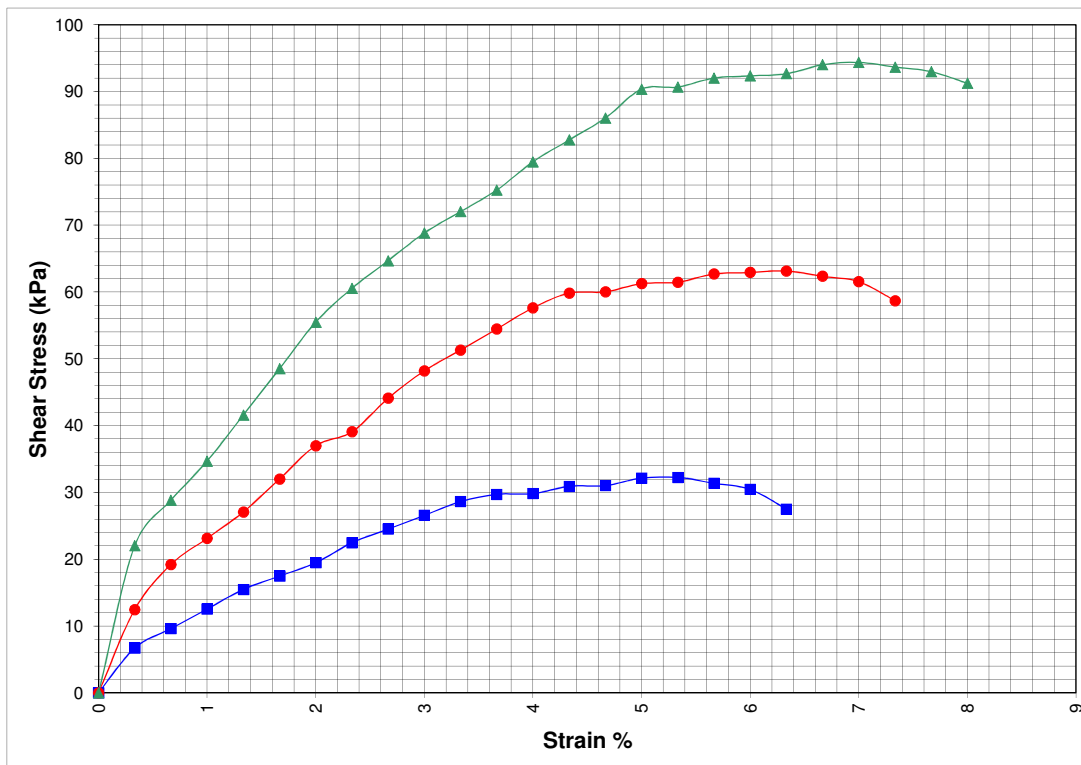
Borehole: MBH-04

Sample Type: SPT-02

Depth: 1.50-1.72 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	32
●	Stage 2	98	63
▲	Stage 3	147	94

Angle of Friction	32.3 °
Apparent Cohesion	1.13 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

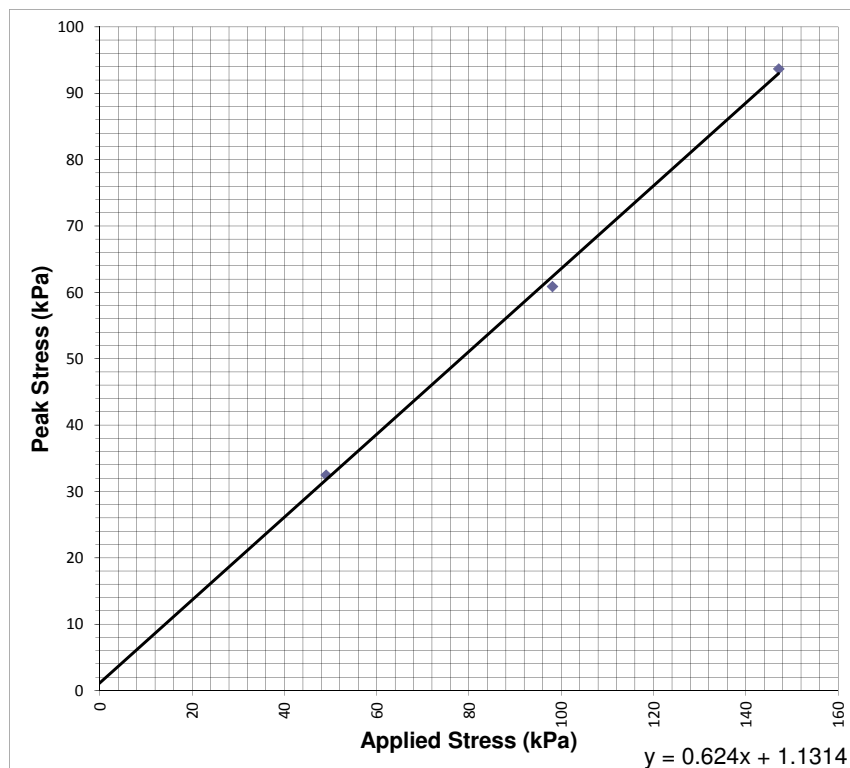
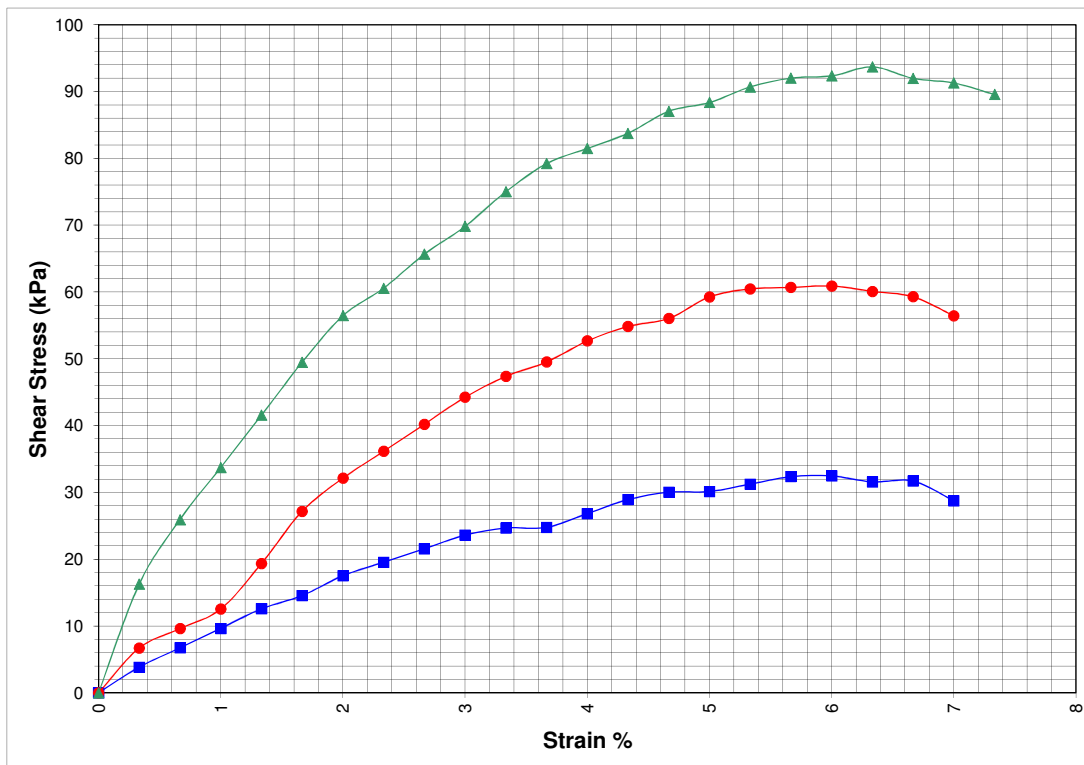
Borehole: MBH-04

Sample Type: SPT-05

Depth: 6.00-6.25 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	32
●	Stage 2	98	61
▲	Stage 3	147	94

Angle of Friction	32.0 °
Apparent Cohesion	1.13 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

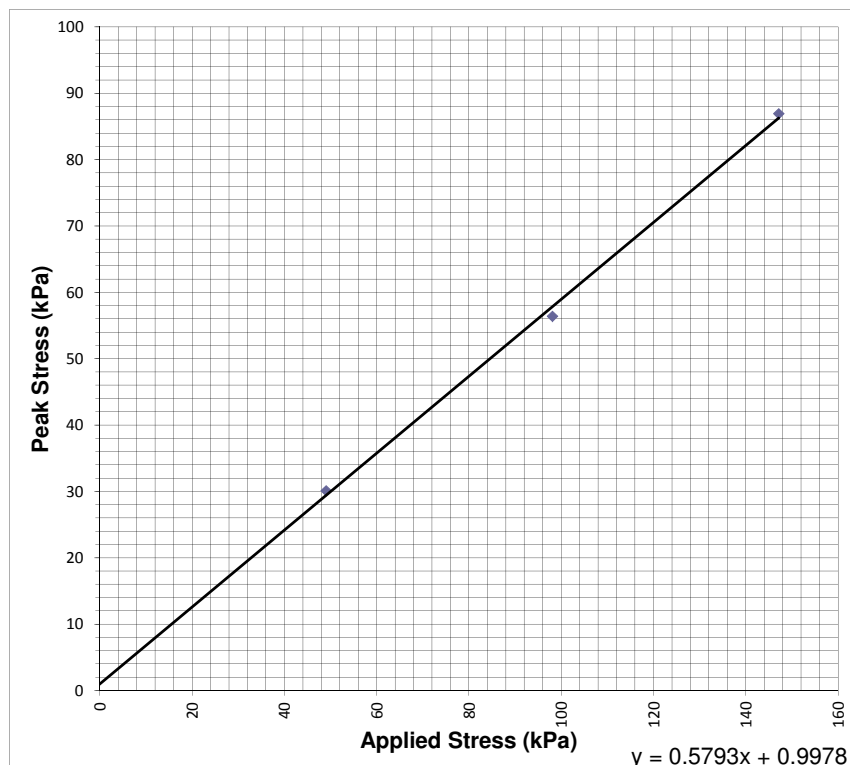
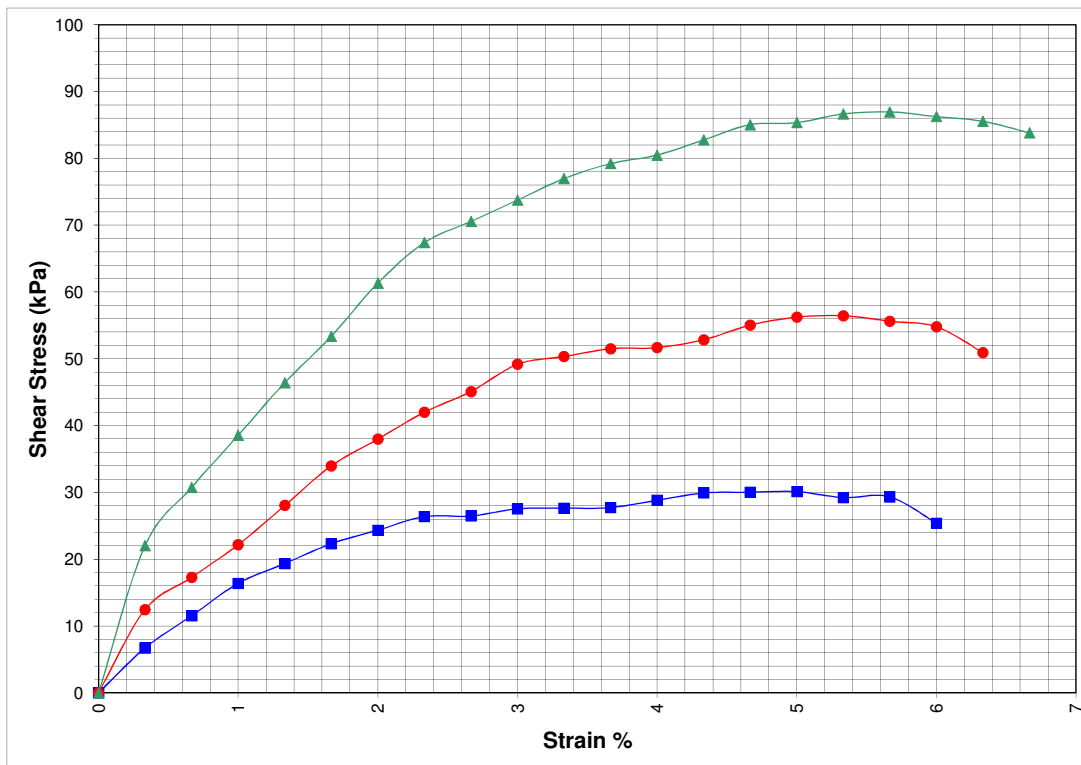
Borehole: MBH-04

Sample Type: SPT-07

Depth: 9.00-9.20 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	30
●	Stage 2	98	56
▲	Stage 3	147	87

Angle of Friction	30.1 °
Apparent Cohesion	1.00 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

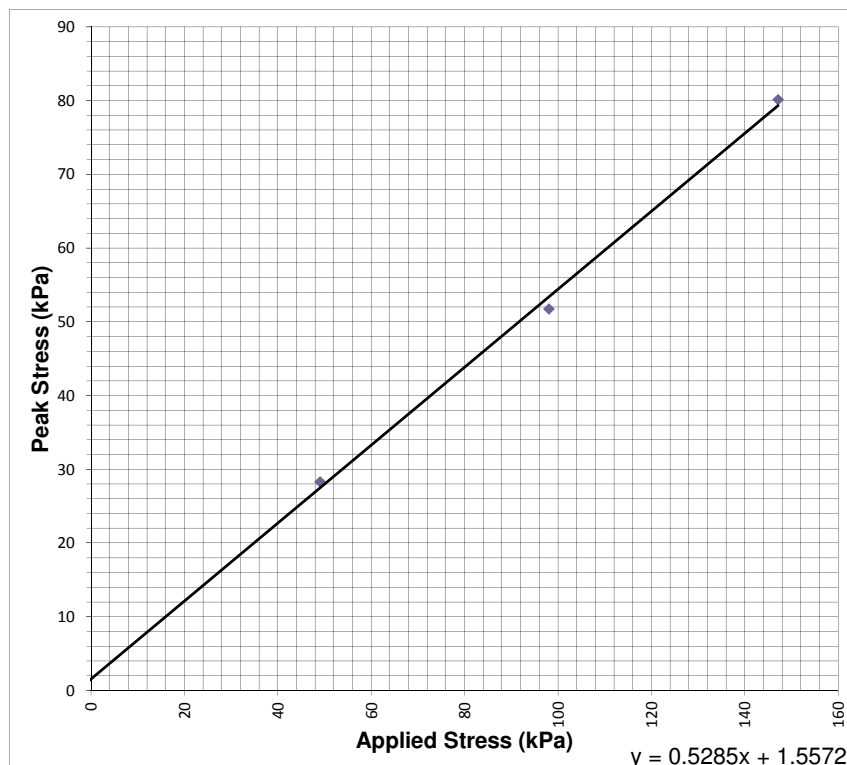
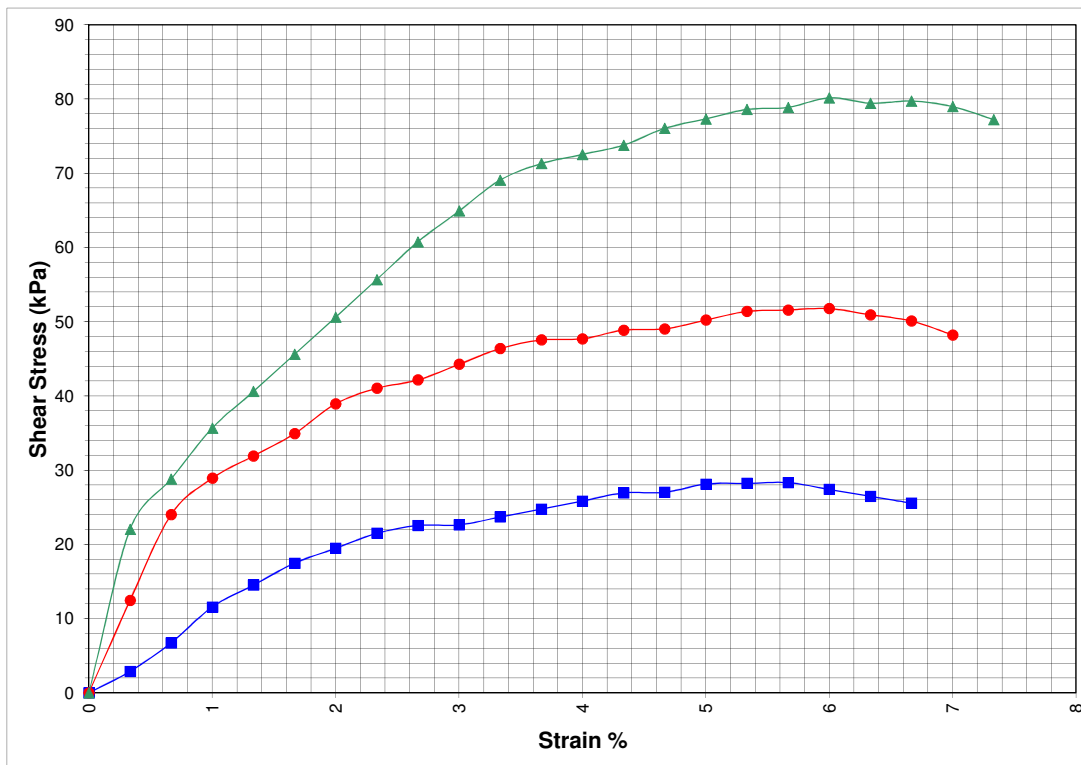
Borehole: MBH-04

Sample Type: SPT-09

Depth: 12.00-12.20 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	52
▲	Stage 3	147	80

Angle of Friction	27.9 °
Apparent Cohesion	1.56 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

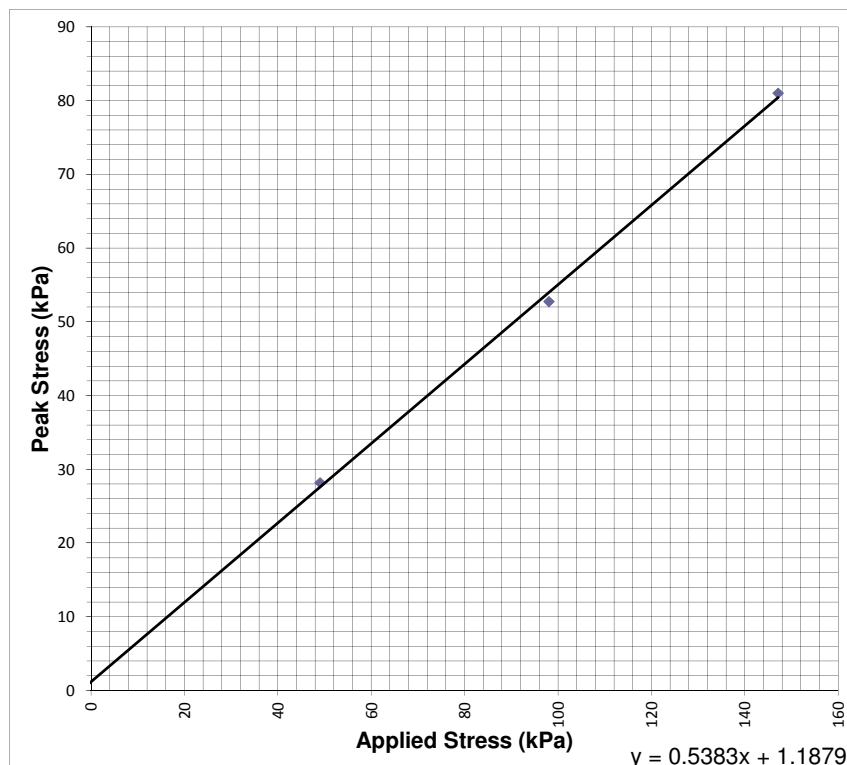
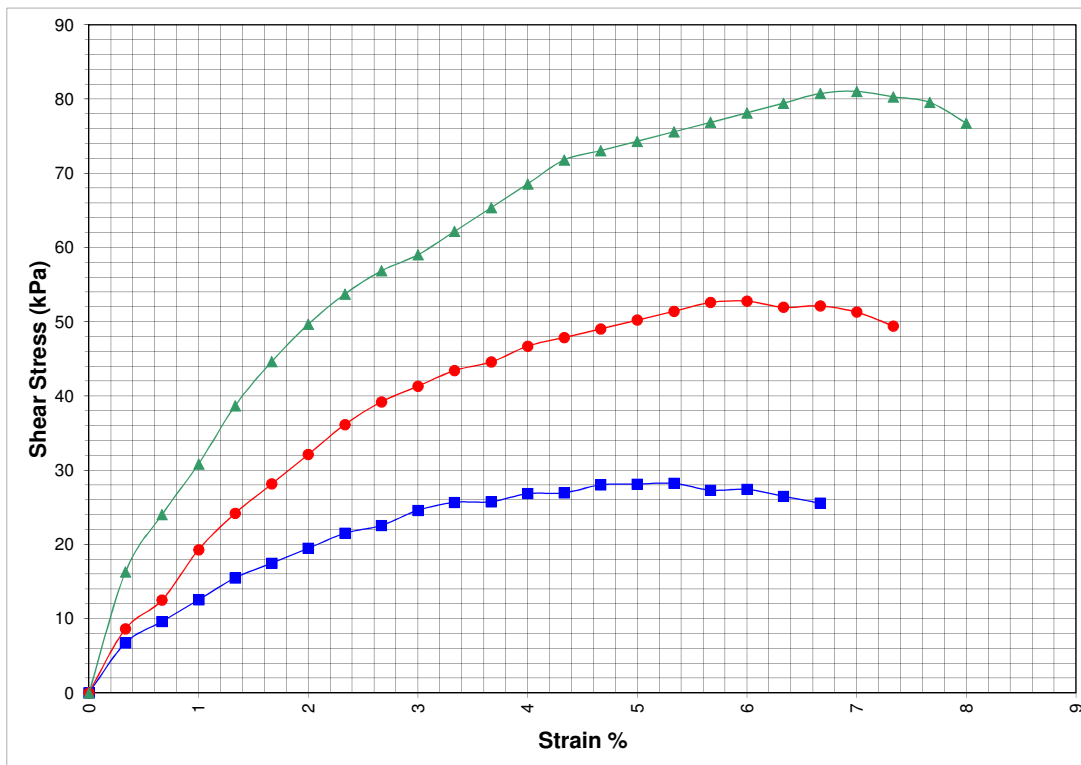
Borehole: MBH-04

Sample Type: SPT-12

Depth: 16.50-16.72 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	53
▲	Stage 3	147	81

Angle of Friction	28.3 °
Apparent Cohesion	1.19 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

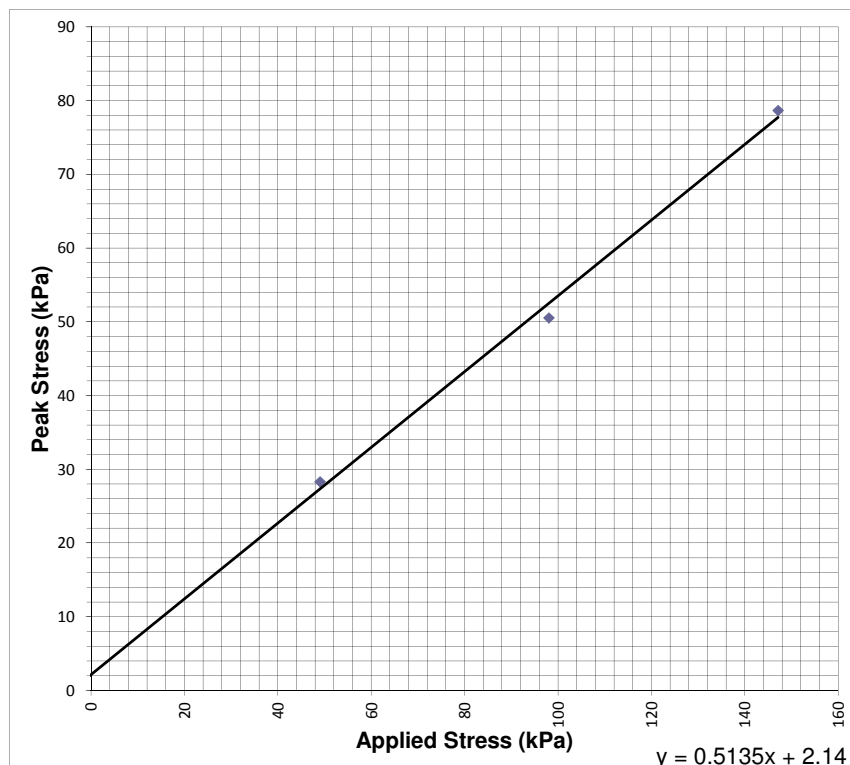
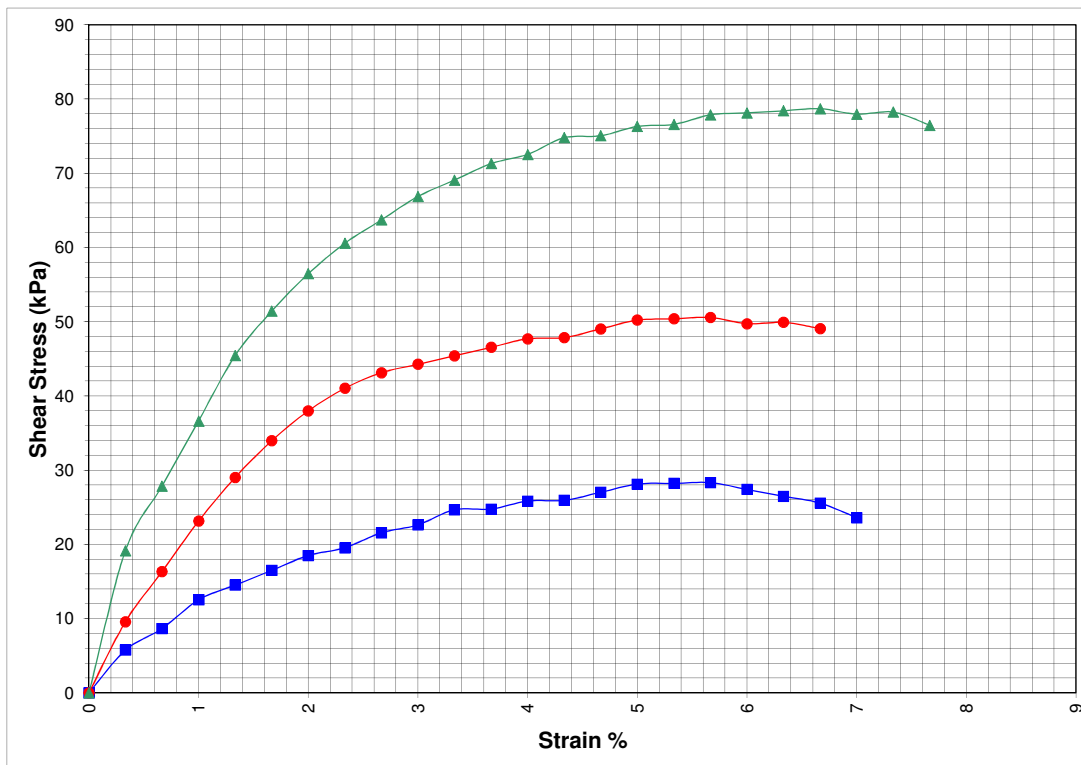
Borehole: MBH-04

Sample Type: SPT-15

Depth: 21.00-21.30 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	51
▲	Stage 3	147	79

Angle of Friction	27.2 °
Apparent Cohesion	2.14 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

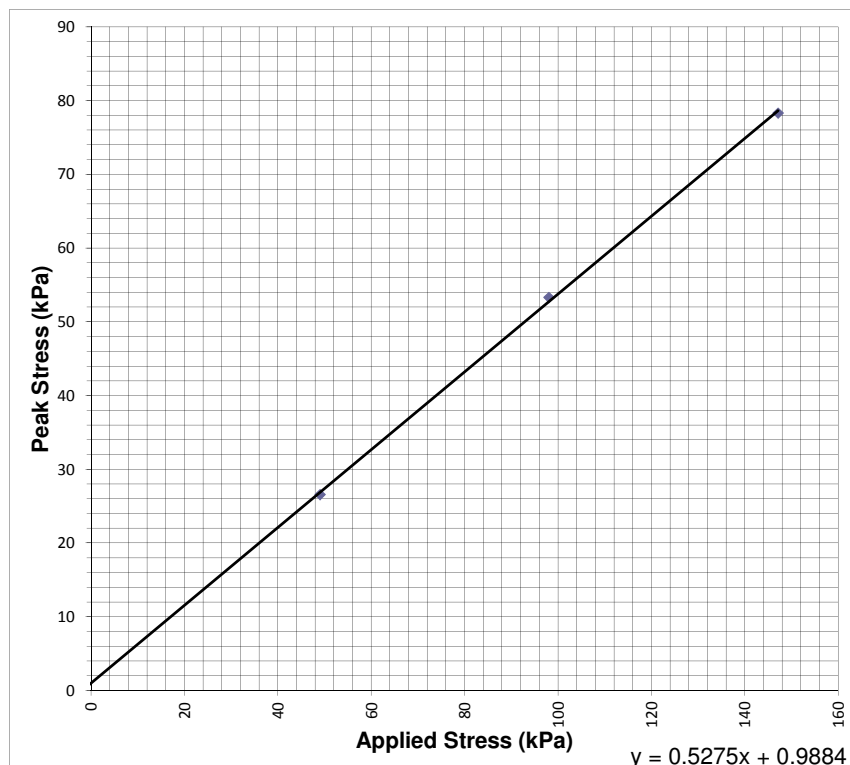
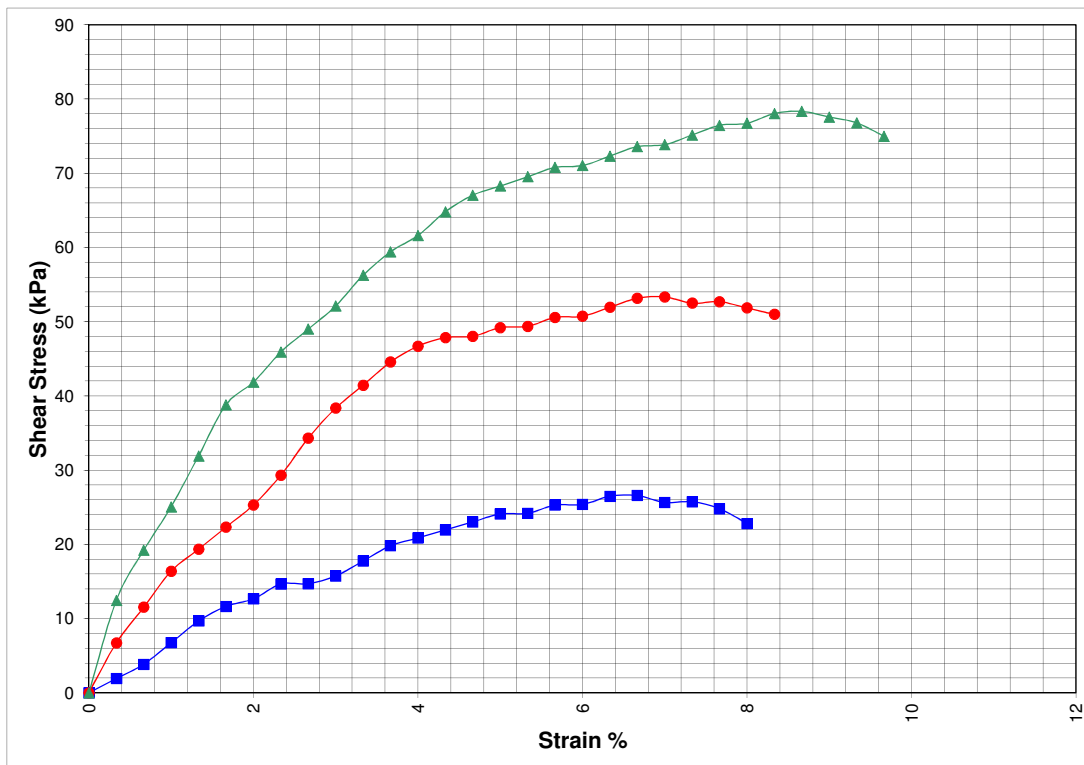
Borehole: MBH-04

Sample Type: SPT-18

Depth: 25.50-25.80 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	53
▲	Stage 3	147	78

Angle of Friction	27.8 °
Apparent Cohesion	0.99 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

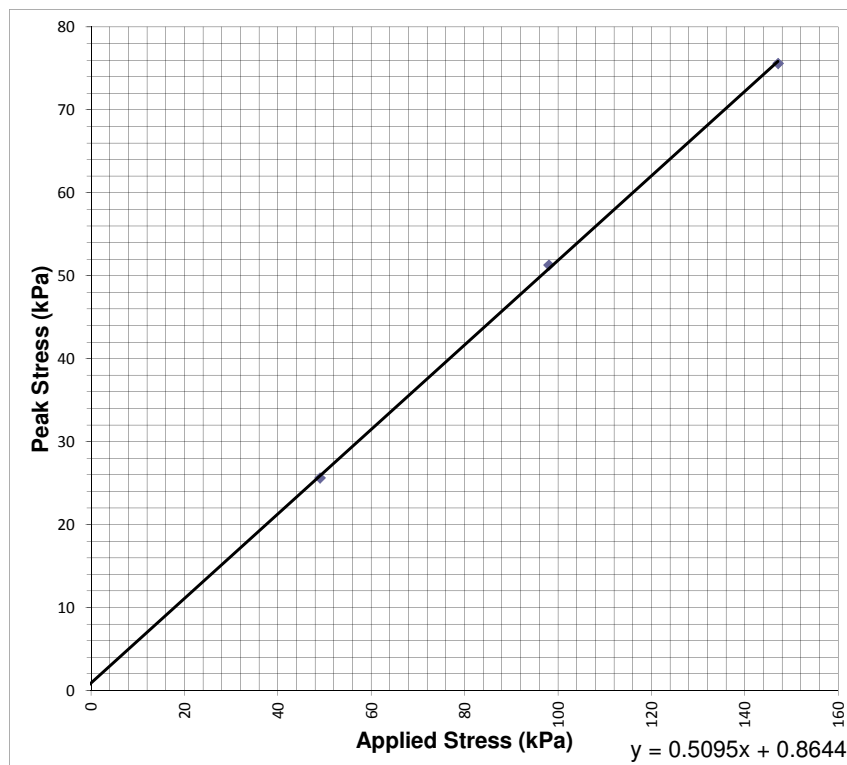
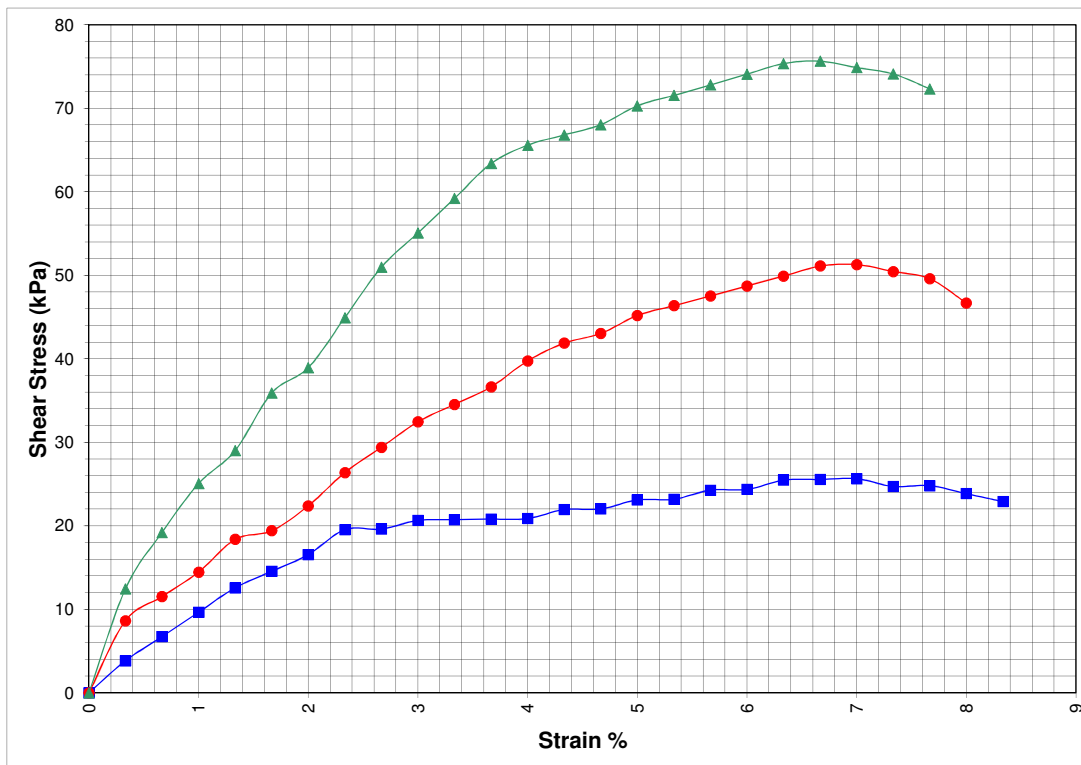
Borehole: MBH-04

Sample Type: SPT-20

Depth: 28.50-28.75 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	51
▲	Stage 3	147	76

Angle of Friction	27.0 °
Apparent Cohesion	0.86 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

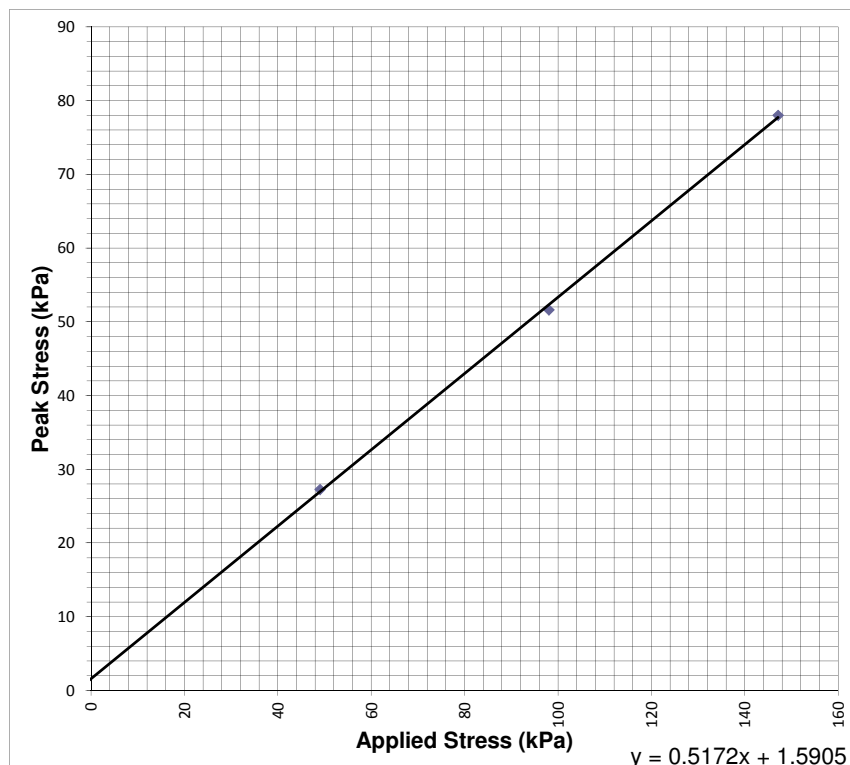
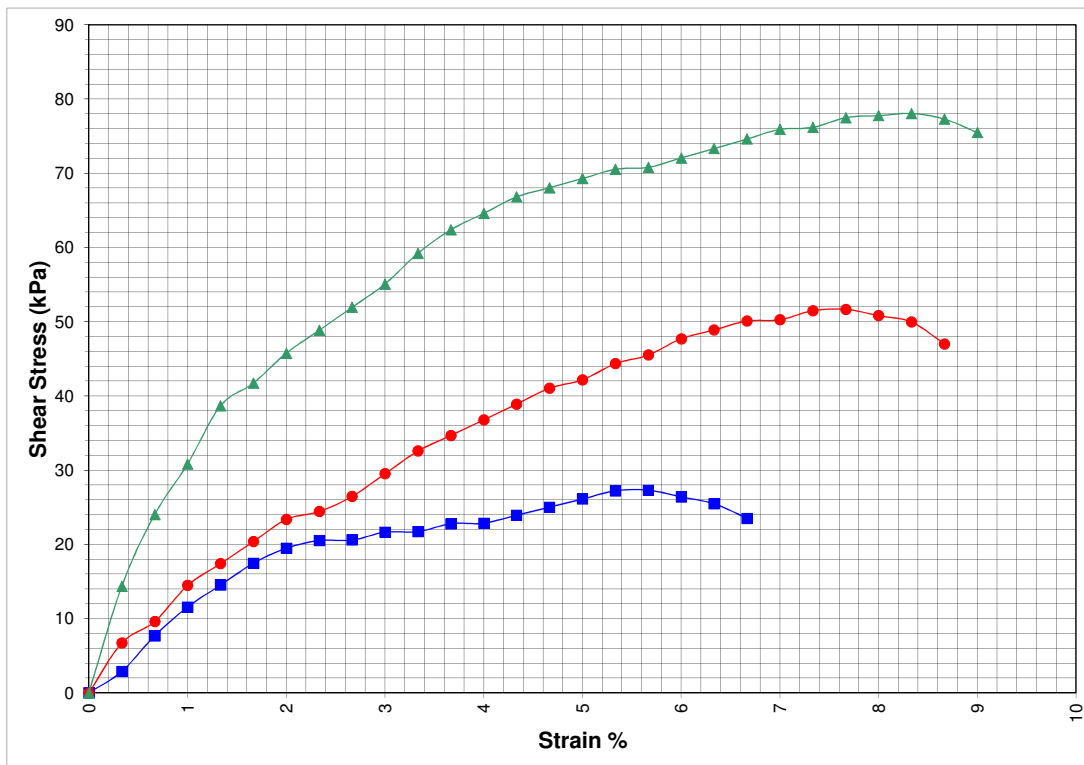
Borehole: MBH-04

Sample Type: SPT-23

Depth: 33.00-33.30 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	52
▲	Stage 3	147	78

Angle of Friction	27.35 °
Apparent Cohesion	3.24 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

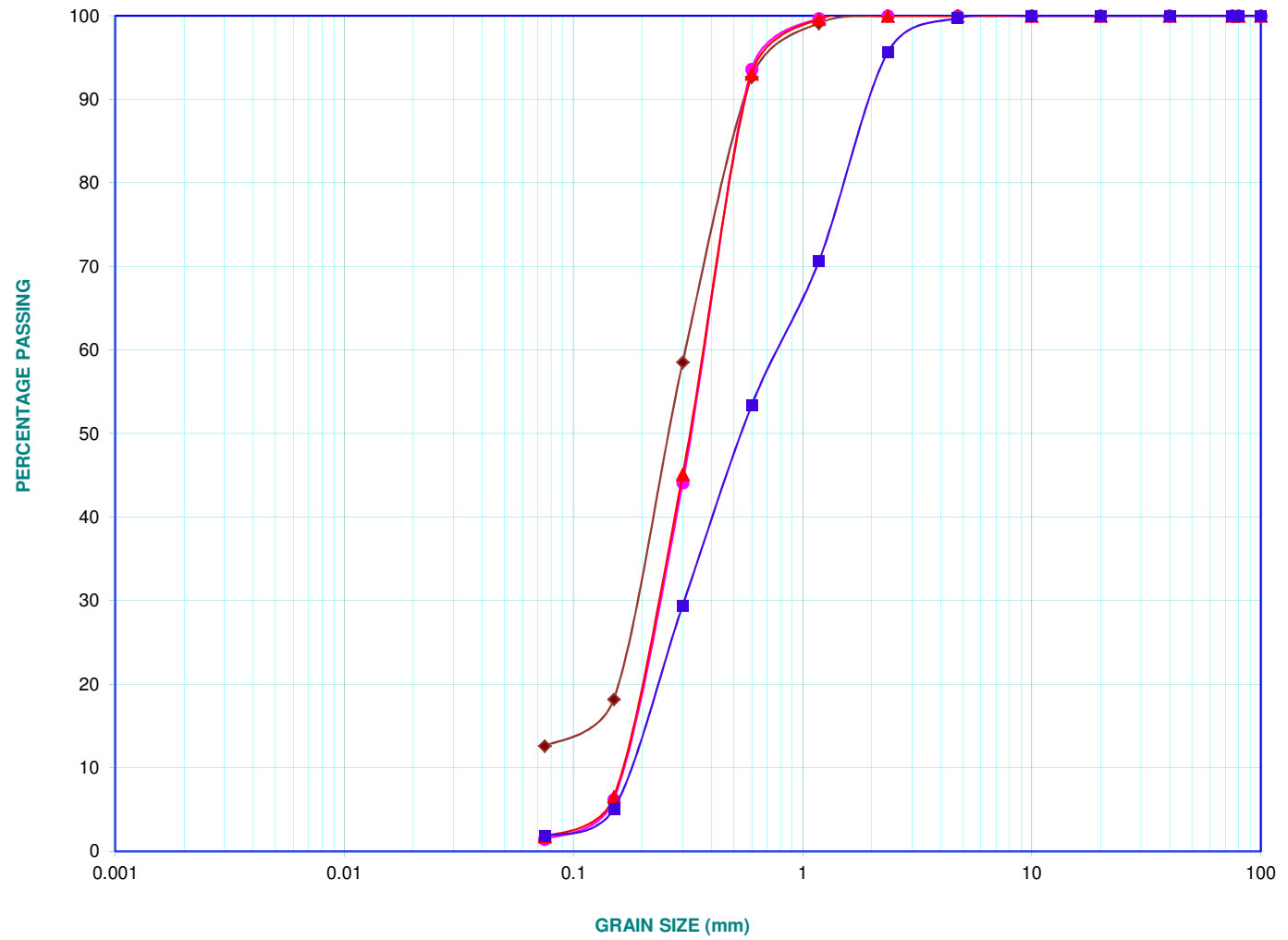
Borehole: MBH-04

Sample Type: SPT-28

Depth: 40.50-40.75 m

GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha													
Job No.	: CM 19 01 03				Borehole No. : LBH-05A					Date :			30-May-19	
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL	
								F	M	C	F	C		
Bore Hole .	LBH-05A	LBH-05A	LBH-05A	LBH-05A										
Depth (m)	0.00-0.50	3.00-3.45	7.50-7.95	10.50-10.95										
Sample Type	DS	SPT-1	SPT-5	SPT-7										
Classification		SP	SP	SP										
Gravel %	0	0	0	0										
Sand %	87	99	98	98										
Silt %	<---->	<---->	<---->	<---->										
Clay %	<---->	<---->	<---->	<---->										
Fines % (Silt+Clay)	13	1	2	2										
D60 mm		0.380	0.370	0.790										
D30 mm		0.250	0.250	0.300										
D10 mm		0.170	0.170	0.190										
Cu		2.24	2.18	4.16										
Cc		0.97	0.99	0.60										
Liquid Limit %	---	---	---	---										
Plastic Limit %	---	---	---	---										
Plasticity Index	---	---	---	---										



Checked By : _____

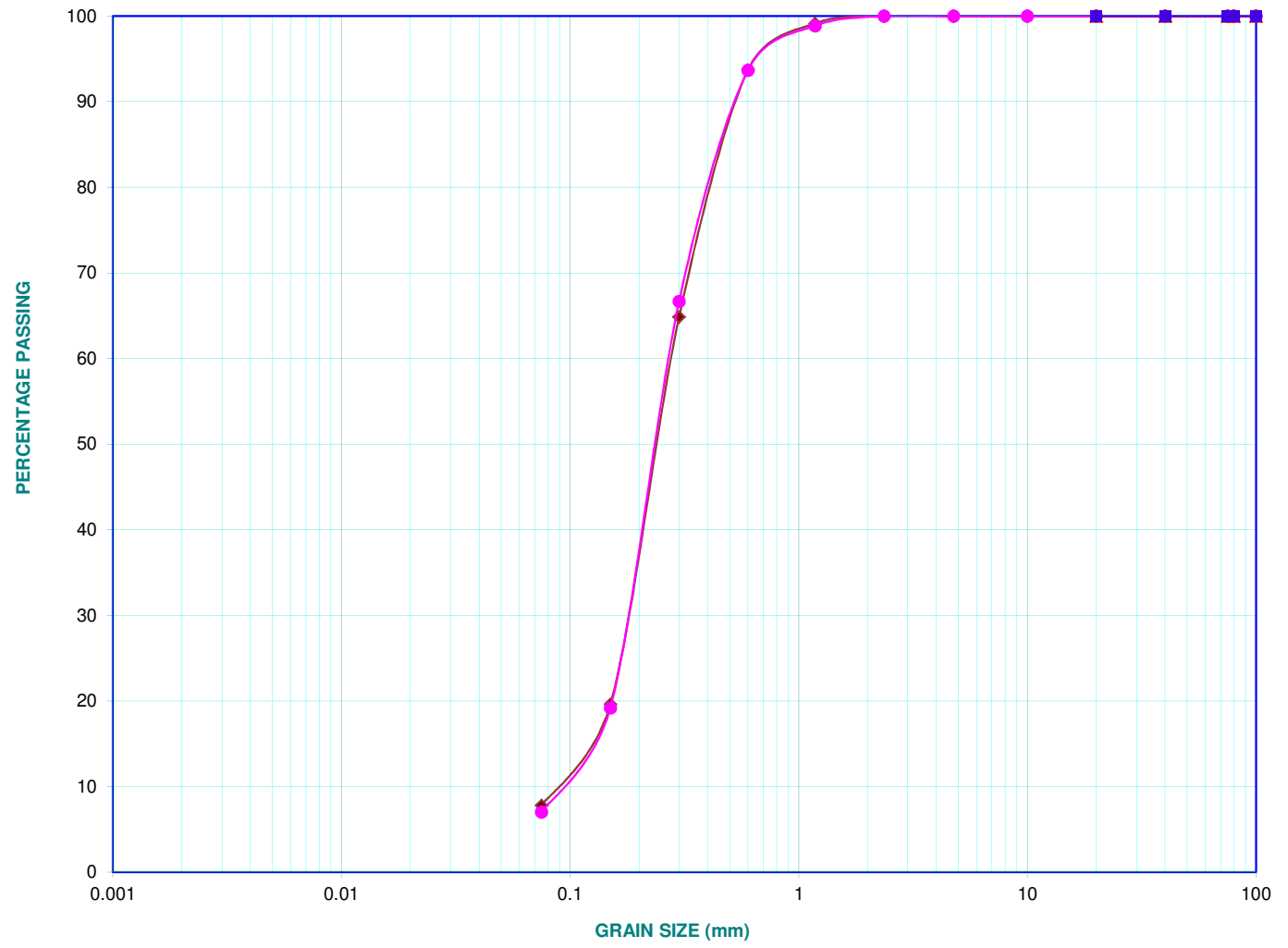
GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha														
Job No.	: CM 19 01 03				Borehole No. : LBH-05A					Date :			30-May-19		
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
								F	M	C	F	C			
Bore Hole .	LBH-05A	LBH-05A	LBH-05A	LBH-05A											
Depth (m)	13.50-13.95	16.50-16.95	19.50-19.95	21.00-21.45											
Sample Type	SPT-9	SPT-11	SPT-13	SPT-14											
Classification	SP		SP-SM	SP-SM											
Gravel %	0	0	0	0											
Sand %	96	87	88	91											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	4	13	12	9											
D60 mm	0.250			0.280											
D30 mm	0.180			0.190											
D10 mm	0.100			0.088											
Cu	2.50			3.18											
Cc	1.30			1.47											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By : _____

GRAIN SIZE ANALYSIS

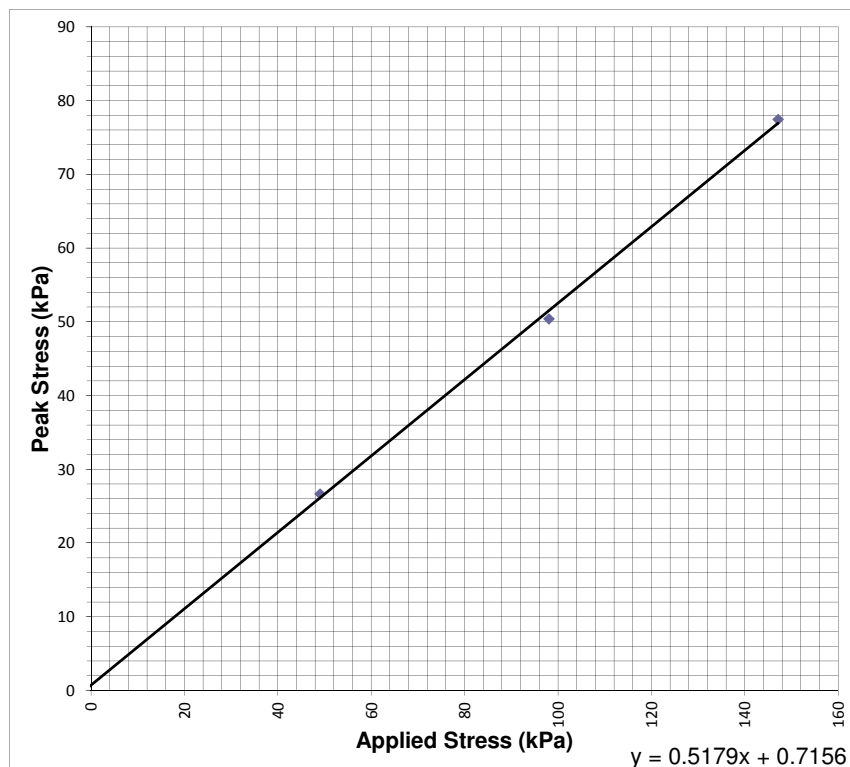
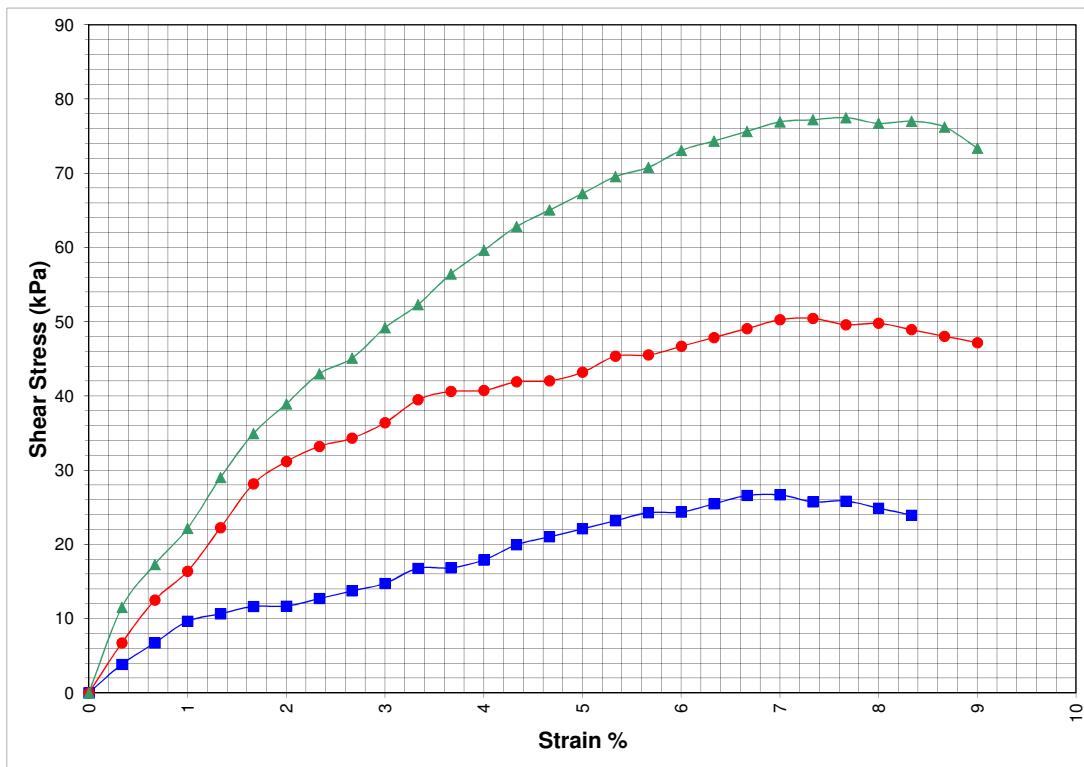
Project	: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist Jagatsinghpur, Odisha																
Job No.	: CM 19 01 03		Borehole No. : LBH-05A				Date :		30-May-19								
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			F	M	C	GRAVEL		F	C	
Bore Hole	LBH-05A	LBH-05A															
Depth (m)	22.50-22.95	25.50-25.95															
Sample Type	SPT-15	SPT-17															
Classification	SP-SM	SP-SM															
Gravel %	0	0															
Sand %	92	93															
Silt %	<---->	<---->															
Clay %	<---->	<---->															
Fines % (Silt+Clay)	8	7															
D60 mm	0.290	0.280															
D30 mm	0.190	0.190															
D10 mm	0.090	0.095															
Cu	3.22	2.95															
Cc	1.38	1.36															
Liquid Limit %	---	---															
Plastic Limit %	---	---															
Plasticity Index	---	---															



Checked By :

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	50
▲	Stage 3	147	77

Angle of Friction	27.38 °
Apparent Cohesion	0.72 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

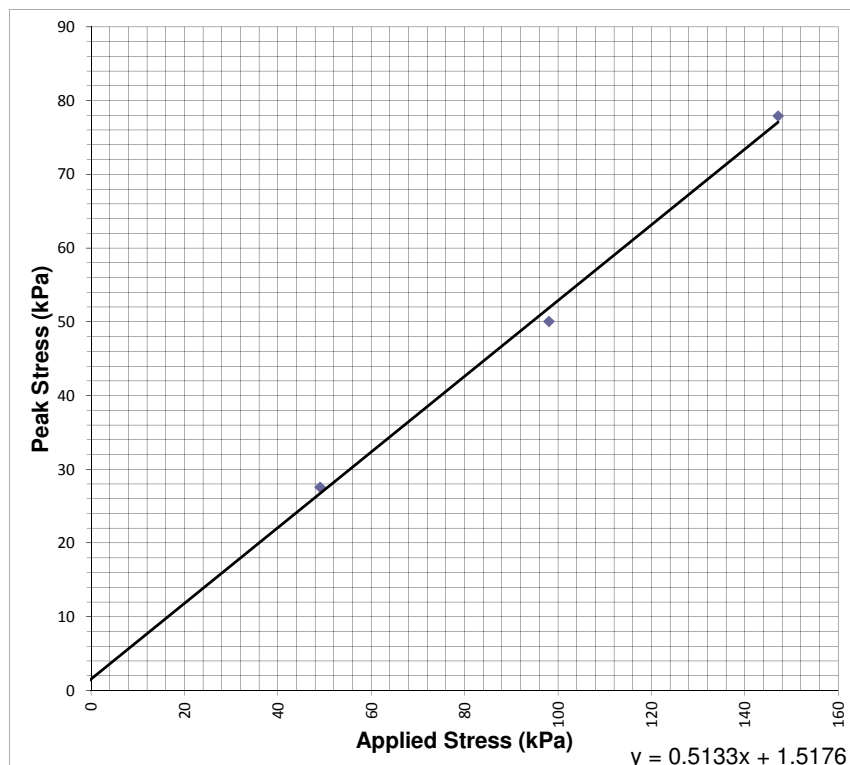
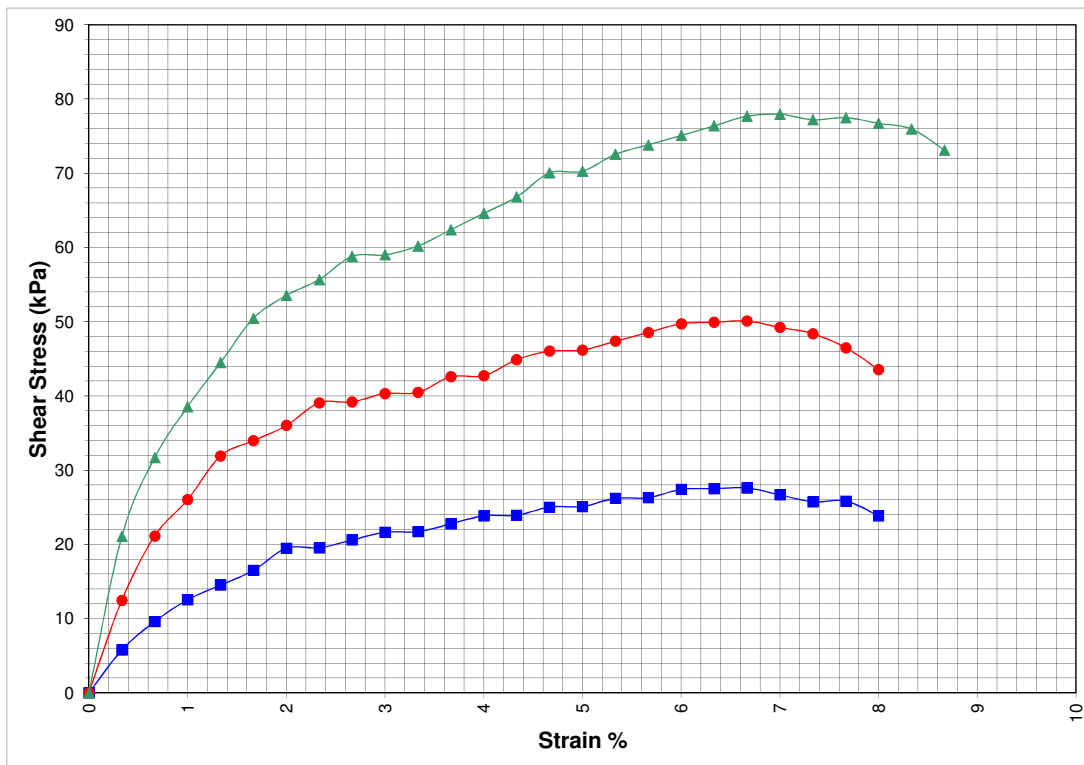
Borehole: LBH-05A

Sample Type: SPT-01

Depth: 1.50-1.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	50
▲	Stage 3	147	78

Angle of Friction	27.17 °
Apparent Cohesion	1.52 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

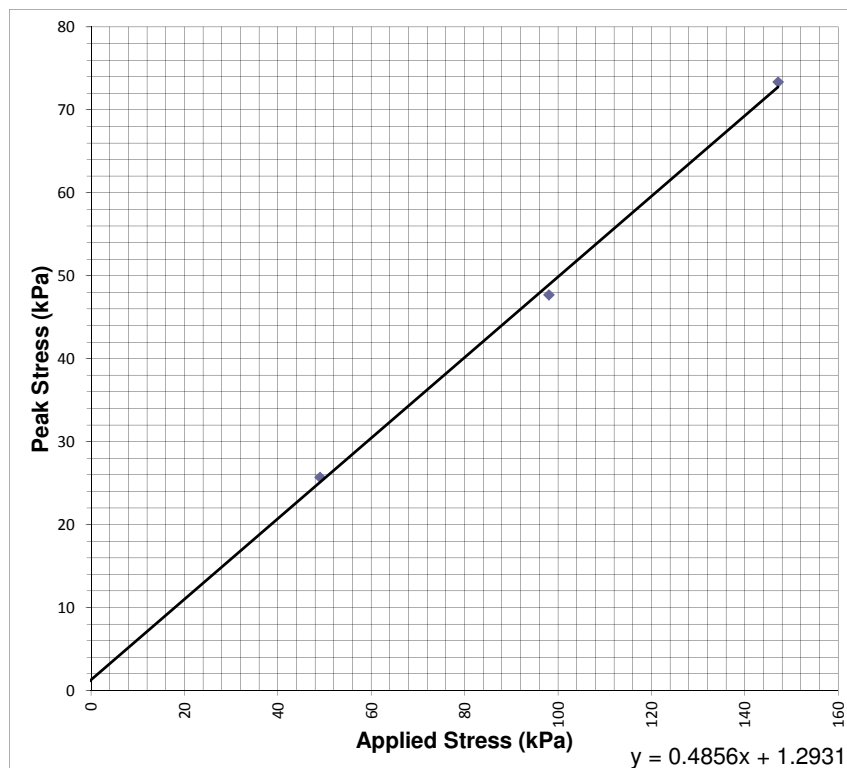
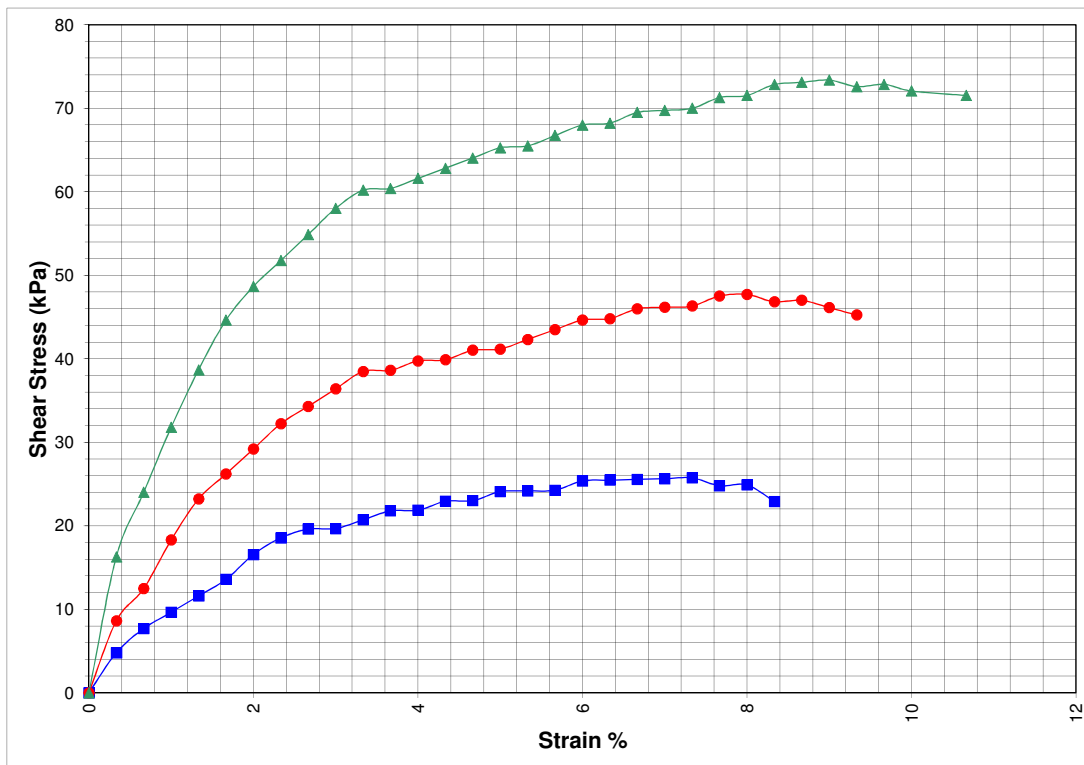
Borehole: LBH-05A

Sample Type: SPT-013

Depth: 4.50-4.95 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	48
▲	Stage 3	147	73

Angle of Friction	25.90 °
Apparent Cohesion	1.29 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

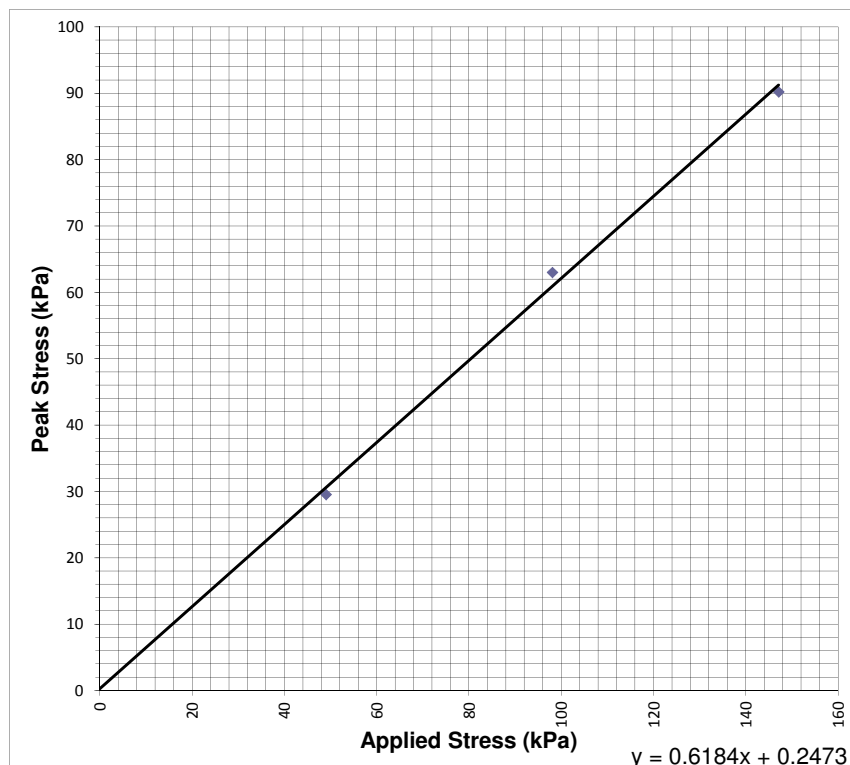
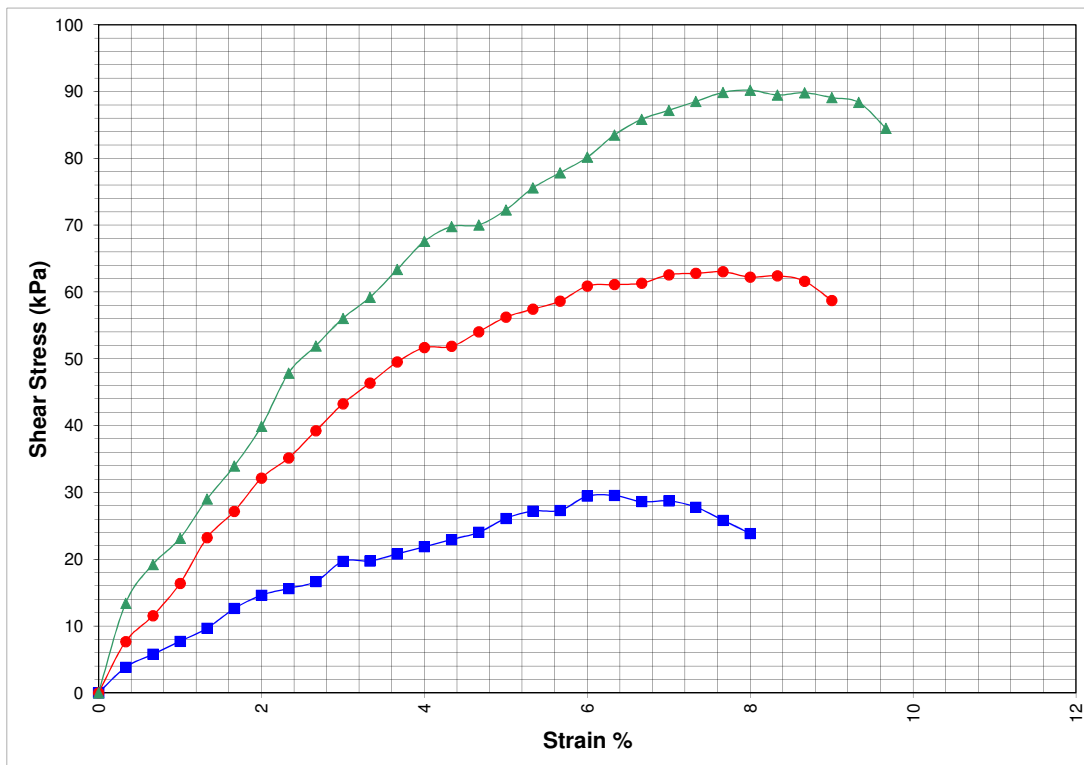
Borehole: LBH-05A

Sample Type: SPT-04

Depth: 6.00-6.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	30
●	Stage 2	98	63
▲	Stage 3	147	90

Angle of Friction	31.73 °
Apparent Cohesion	0.25 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

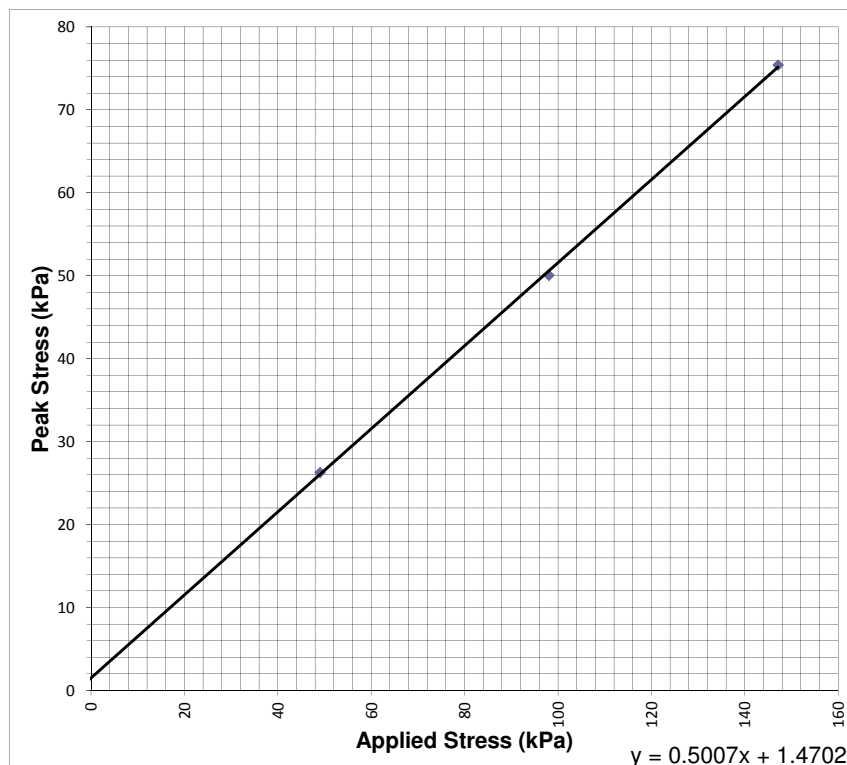
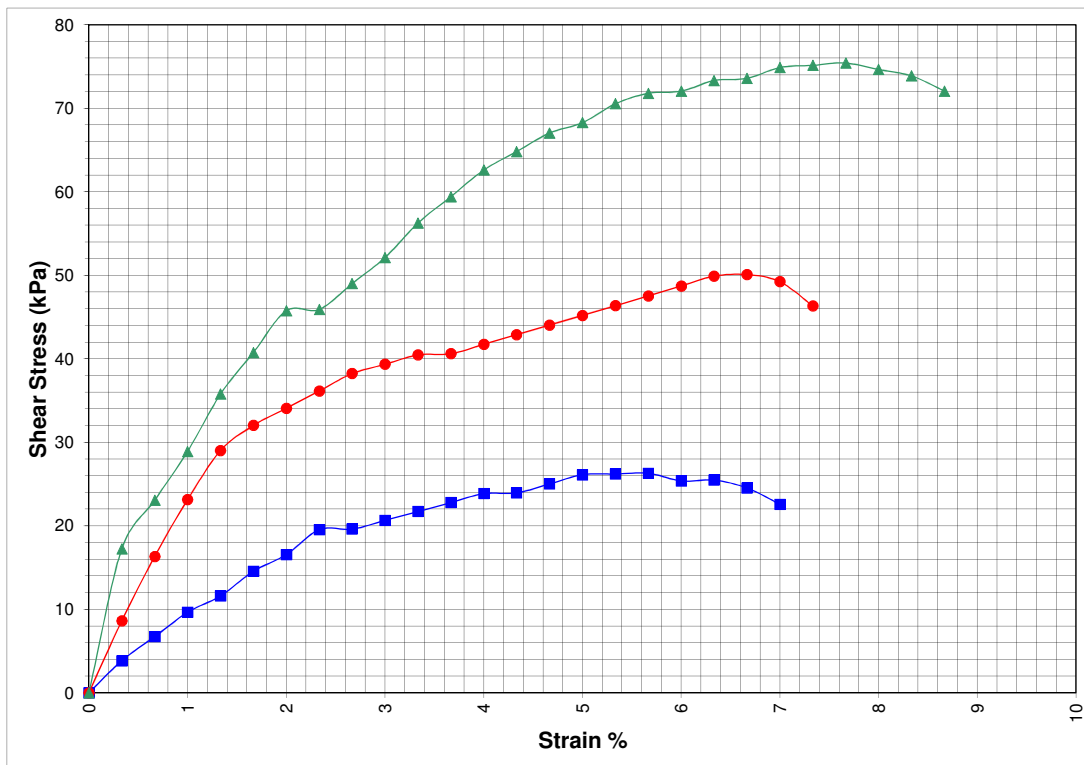
Borehole: LBH-05A

Sample Type: SPT-06

Depth: 9.00-9.45 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	50
▲	Stage 3	147	75

Angle of Friction	26.60 °
Apparent Cohesion	1.47 kPa

Area of the specimen = 3600 mm²
 Height of the specimen = 25.4 mm
 Rate of Displacement = 1.25 mm/min

Project: Geotechnical Investigation For Capive Jetty at Jatadharmuhan, Near Paradip, Dist. Jagatsinghpur, Odisha.

Borehole: LBH-05A

Sample Type: SPT-08

Depth: 12.00-12.45 m