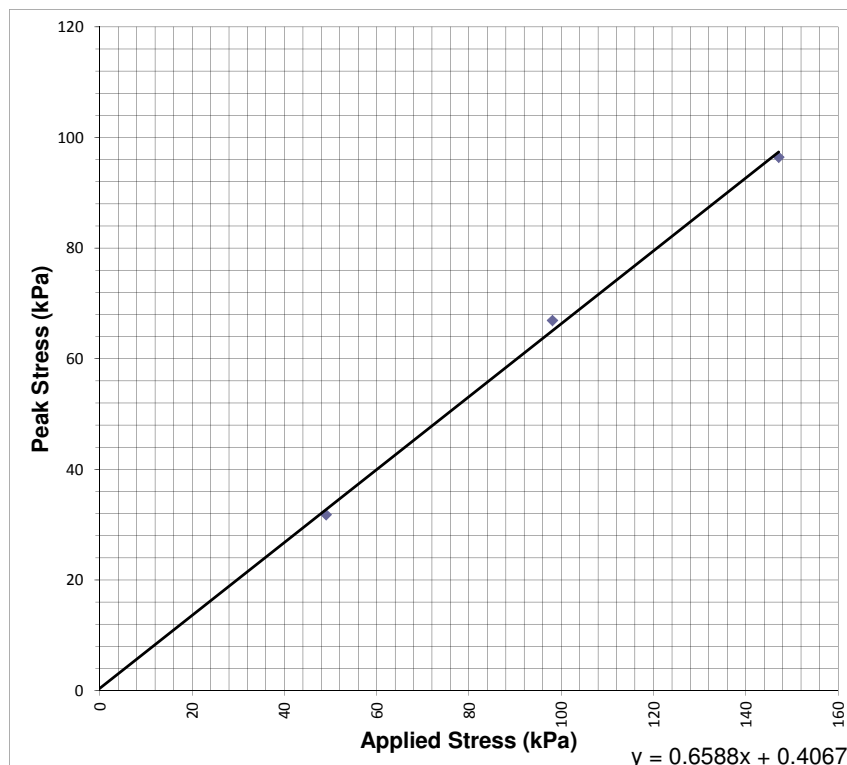
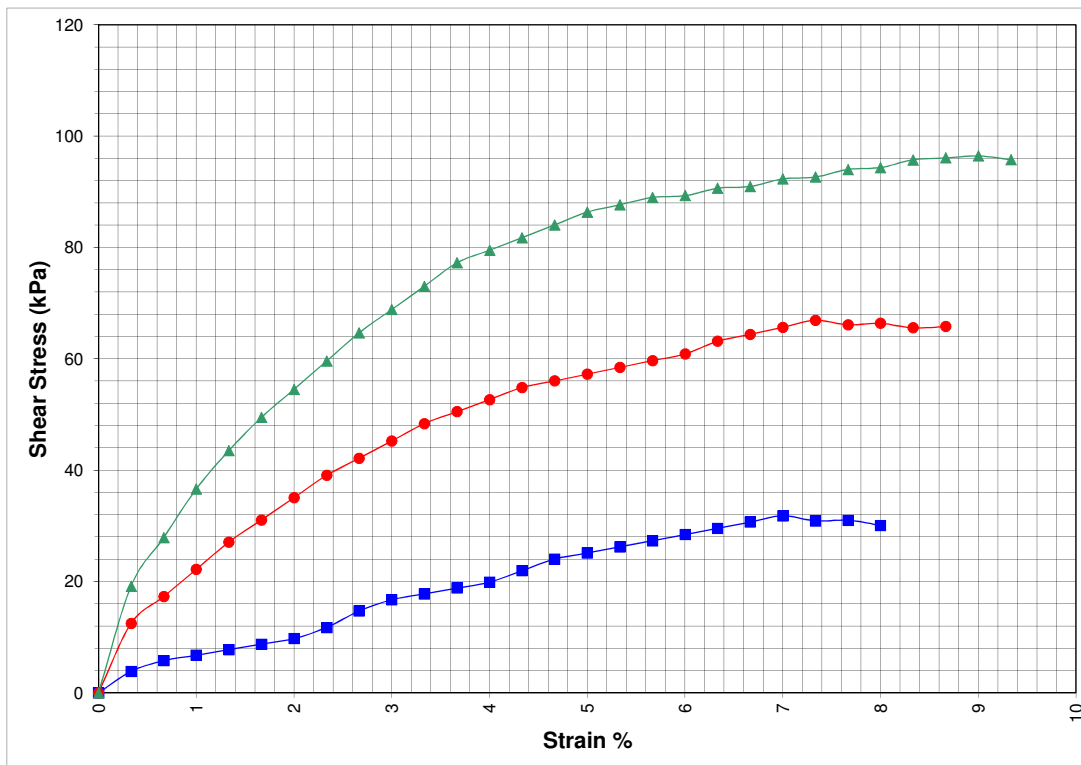


Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	32
●	Stage 2	98	67
▲	Stage 3	147	96

Angle of Friction	33.38 °
Apparent Cohesion	0.41 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.

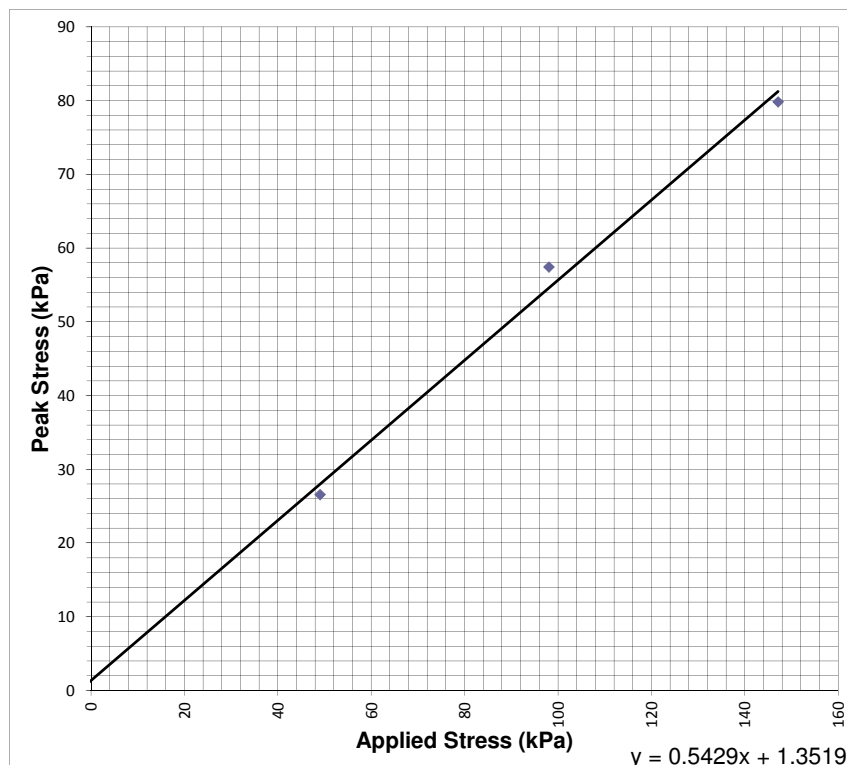
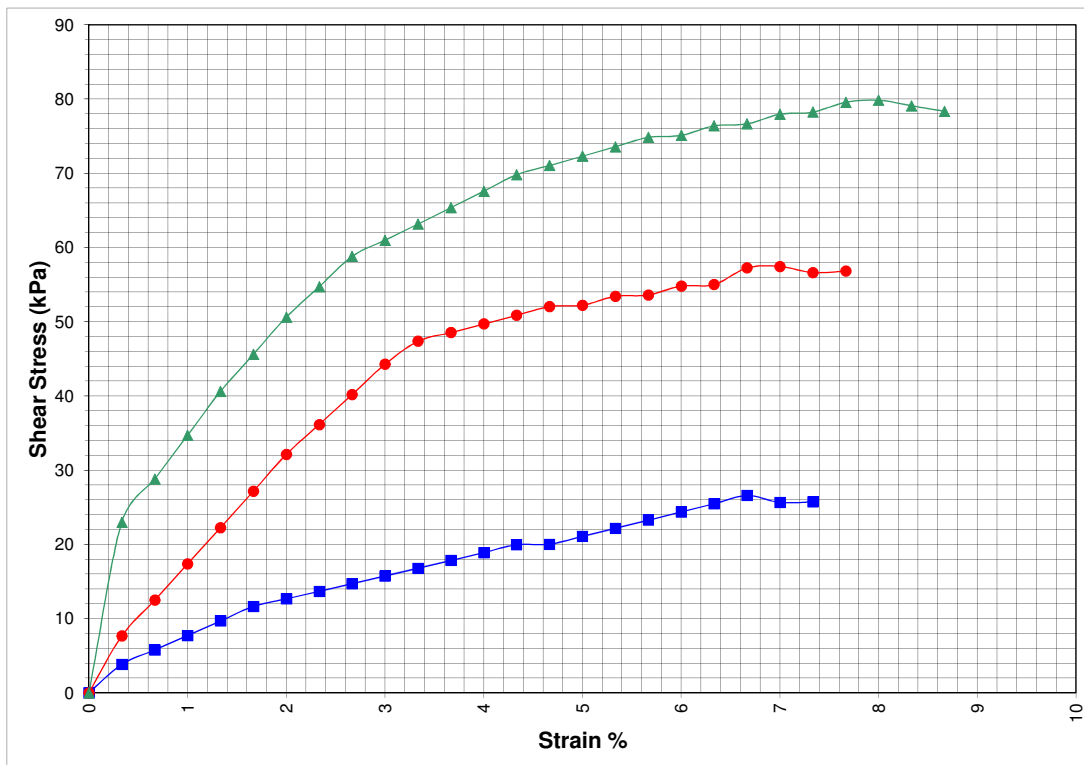
Borehole: MBH-24

Sample Type: SPT-04

Depth: 4.50-4.70 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	27
●	Stage 2	98	57
▲	Stage 3	147	80

Angle of Friction	28.50 °
Apparent Cohesion	1.35 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.

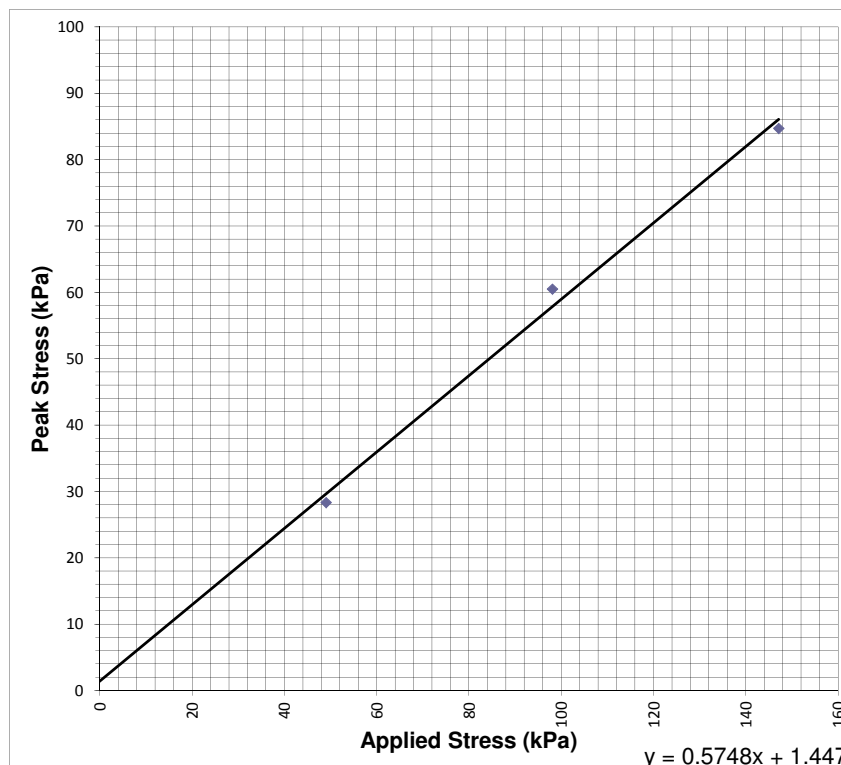
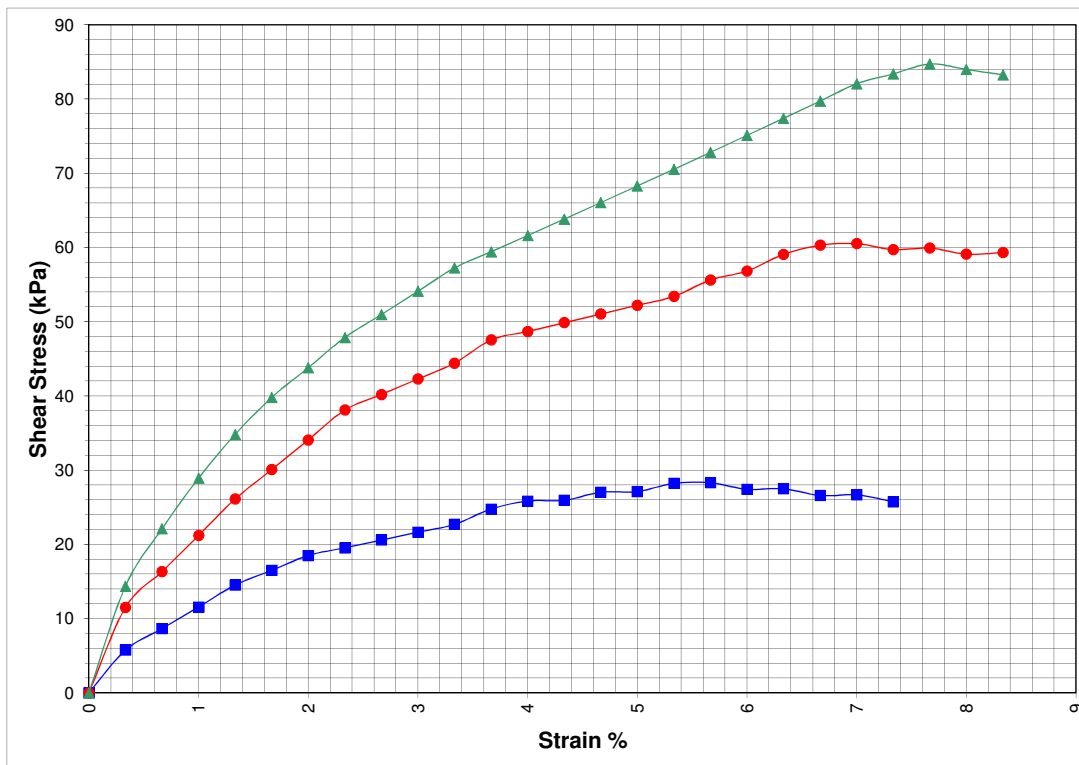
Borehole: MBH-24

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	28
●	Stage 2	98	61
▲	Stage 3	147	85

Angle of Friction	29.89 °
Apparent Cohesion	1.45 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.

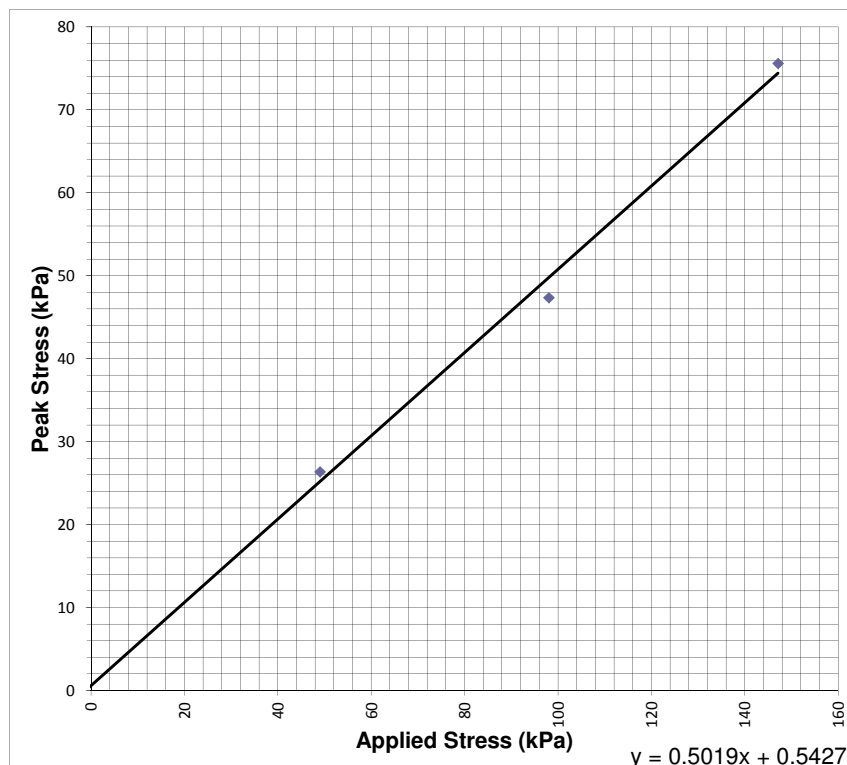
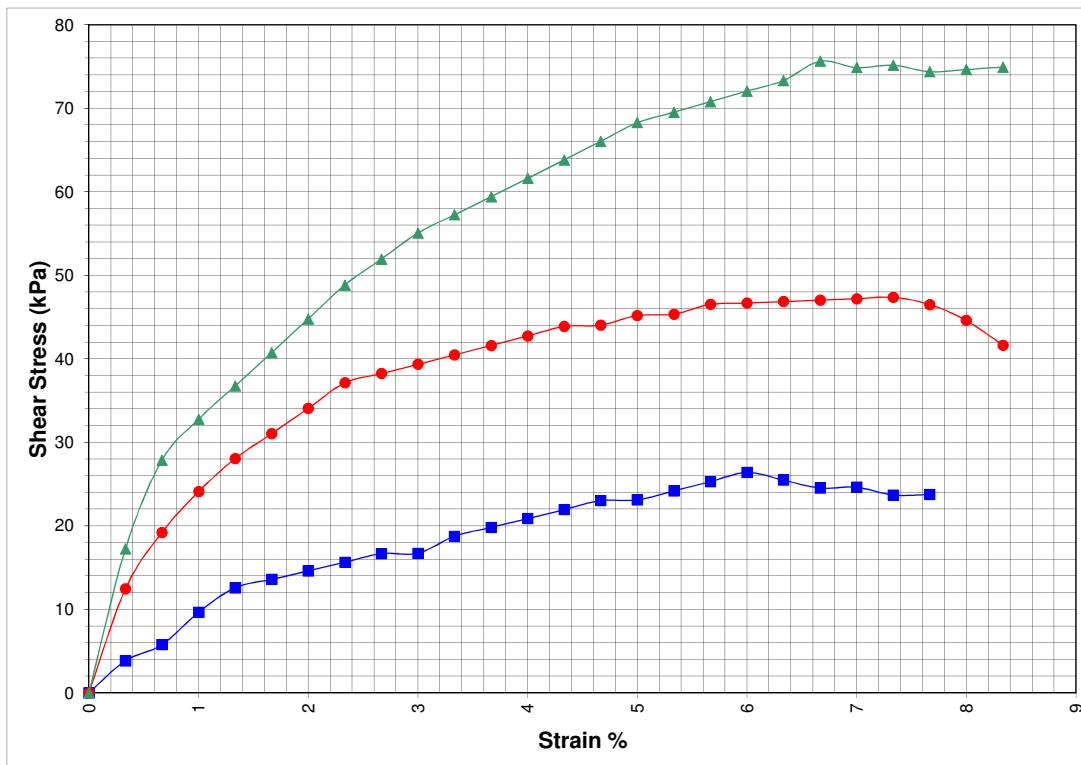
Borehole: MBH-24

Sample Type: SPT-10

Depth: 13.50-13.73 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	47
▲	Stage 3	147	76

Angle of Friction	26.65 °
Apparent Cohesion	0.54 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.

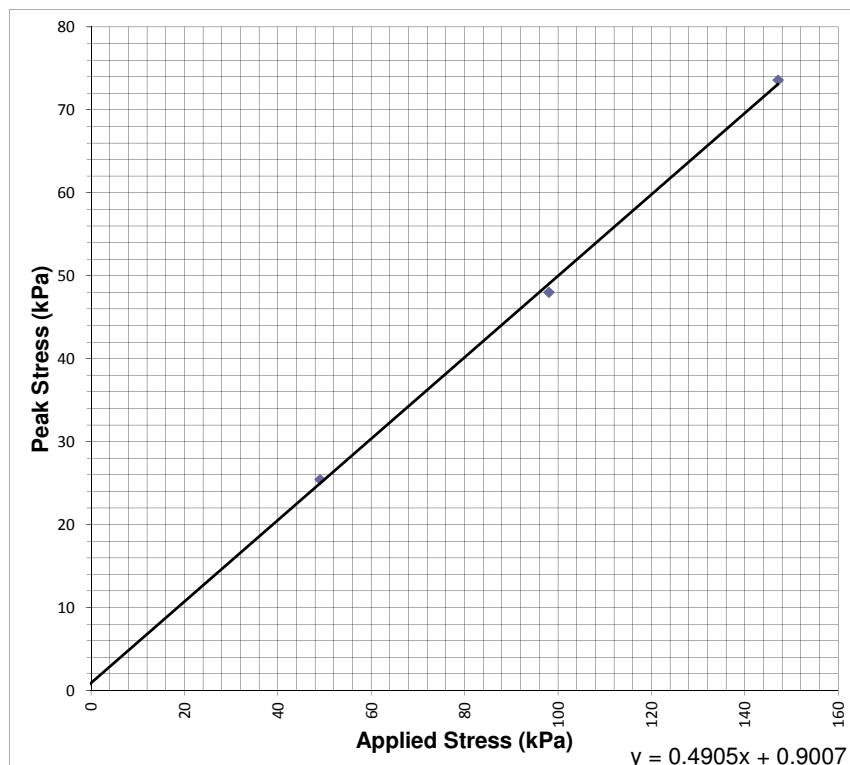
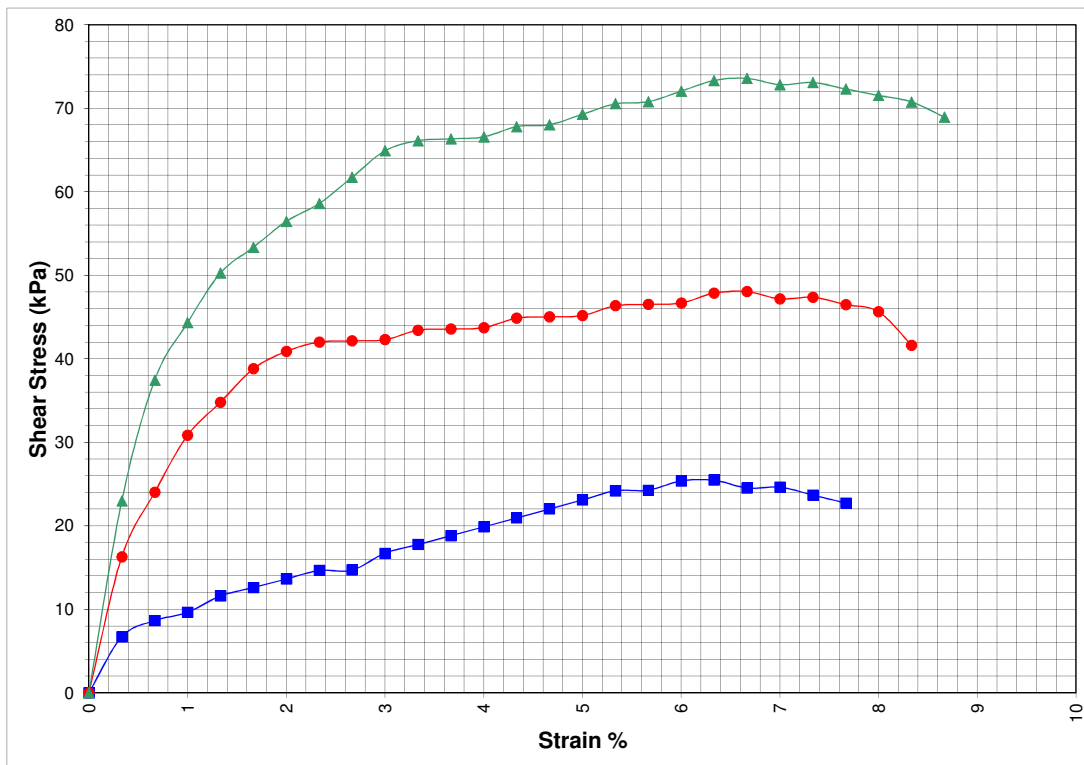
Borehole: MBH-24

Sample Type: SPT-13

Depth: 18.00-18.20 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	48
▲	Stage 3	147	74

Angle of Friction	26.13 °
Apparent Cohesion	0.90 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.

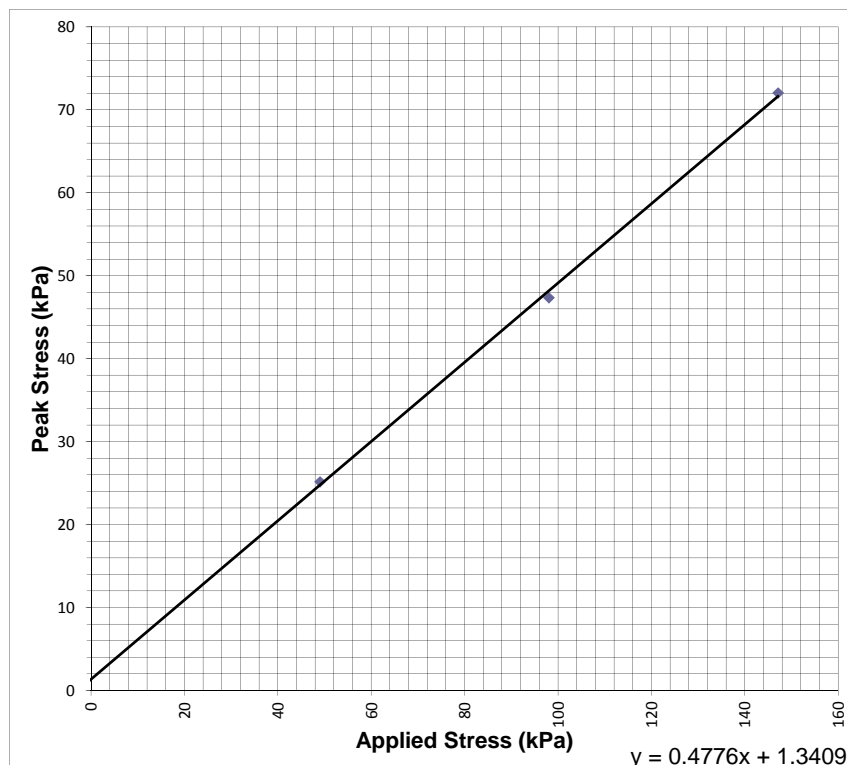
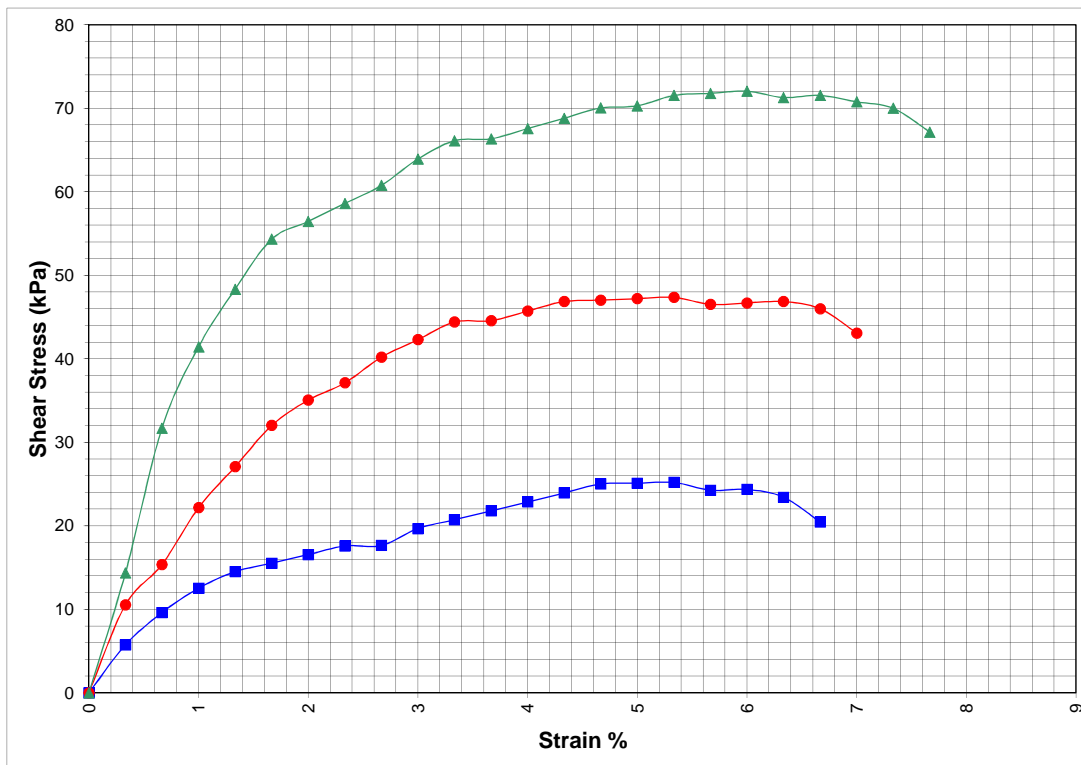
Borehole: MBH-24

Sample Type: SPT-16

Depth: 22.50-22.73 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	25.53 °
Apparent Cohesion	1.34 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.

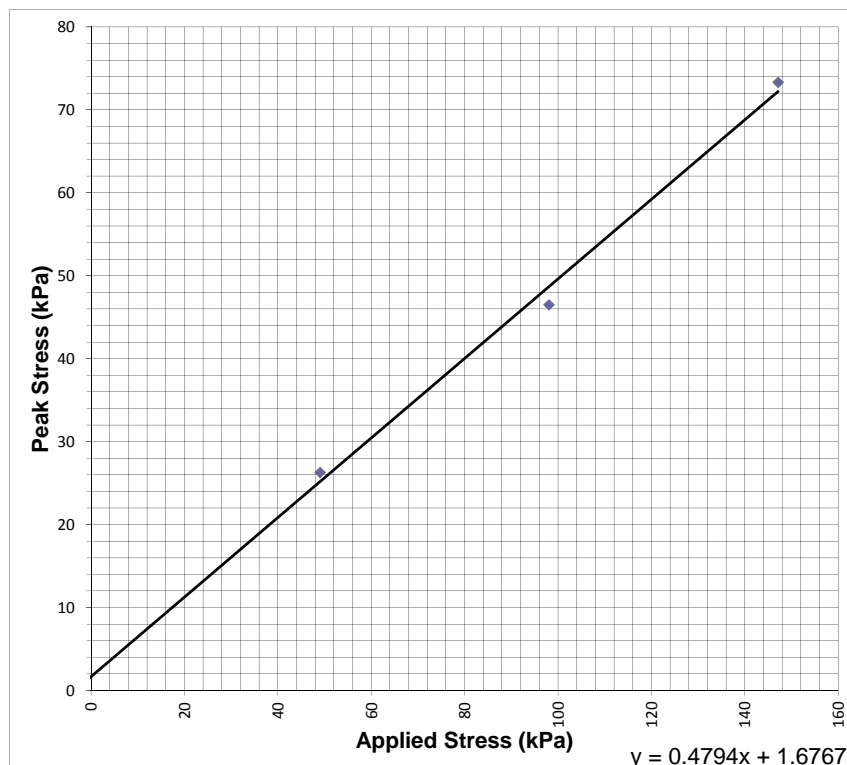
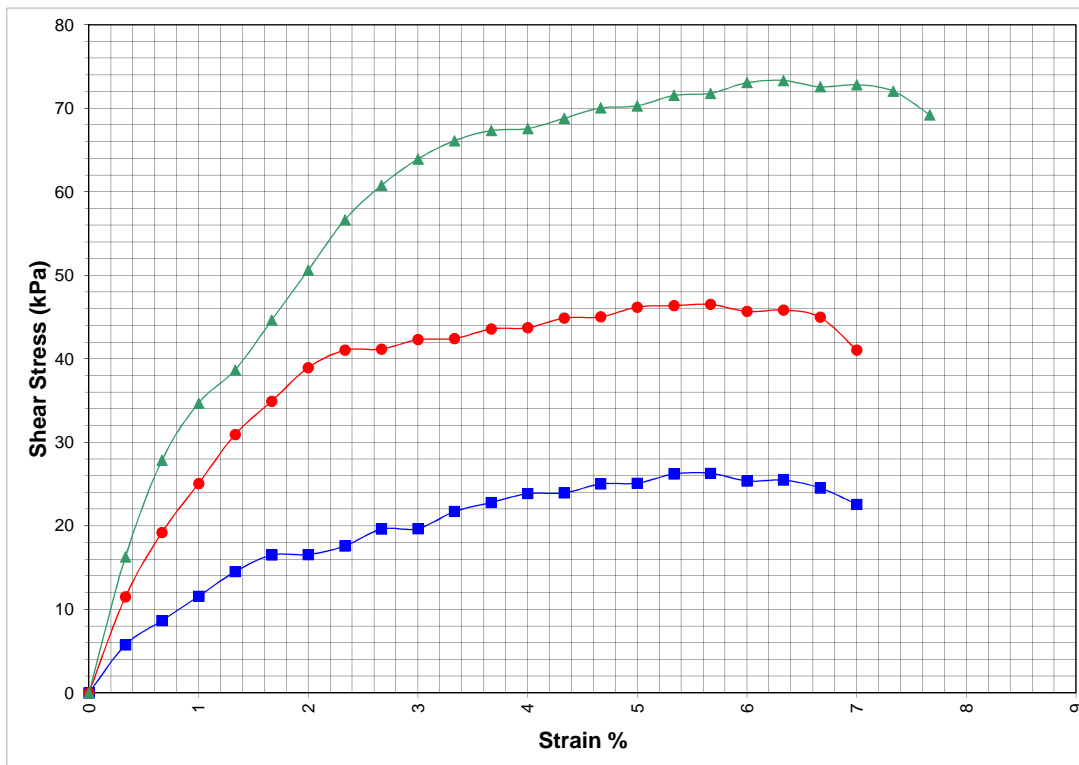
Borehole: MBH-24

Sample Type: SPT-20

Depth: 28.50-28.72 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	26
●	Stage 2	98	47
▲	Stage 3	147	73

Angle of Friction	25.61 °
Apparent Cohesion	1.68 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.

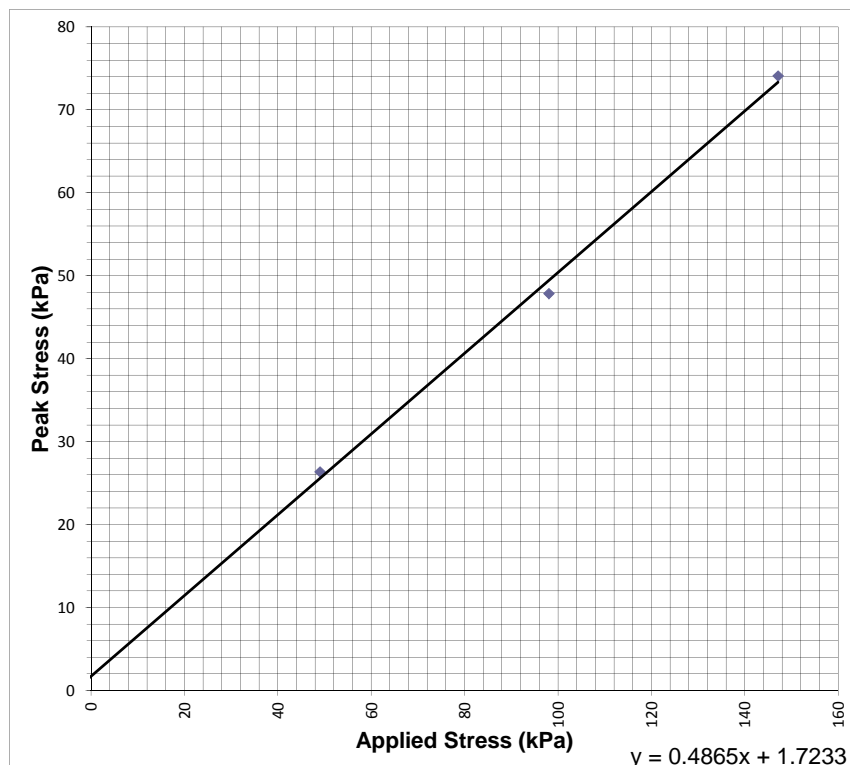
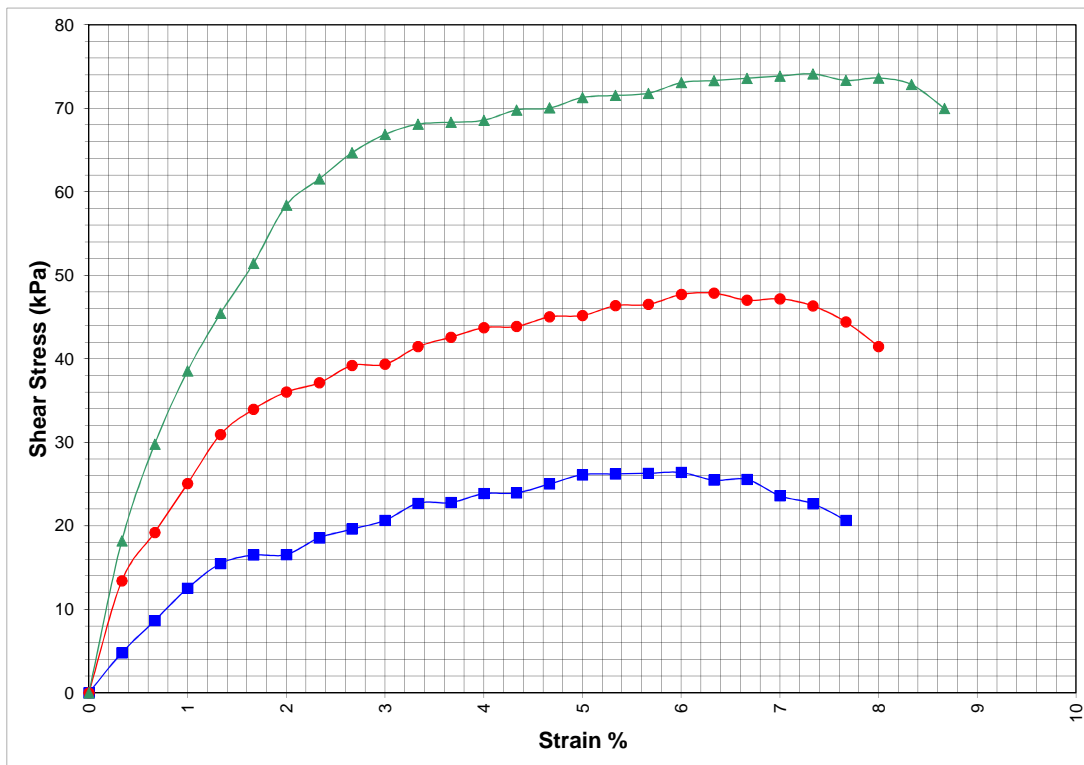
Borehole: MBH-24

Sample Type: SPT-24

Depth: 34.50-34.77 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	1.72 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: MBH-24

Sample Type: SPT-27

Depth: 40.00-40.22 m

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-25					Date :		15-Jun-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL		
							F	M	C	F	C				
Bore Hole .	MBH-25	MBH-25	MBH-25	MBH-25											
Depth (m)	3.00-3.20	6.00-6.20	9.00-9.24	15.00-15.20											
Sample Type	SPT-03	SPT-05	SPT-07	SPT-11											
Classification	SP-SM	SP	SP	SM/SC											
Gravel %	0	0	0	0											
Sand %	93	97	97	85											
Silt %	<---->	<---->	<---->	<---->											
Clay %	<---->	<---->	<---->	<---->											
Fines % (Silt+Clay)	7	3	3	15											
D60 mm	0.320	0.500	0.330												
D30 mm	0.200	0.300	0.200												
D10 mm	0.100	0.170	0.140												
Cu	3.20	2.94	2.36	---											
Cc	1.25	1.06	0.87	---											
Liquid Limit %	---	---	---	---											
Plastic Limit %	---	---	---	---											
Plasticity Index	---	---	---	---											

Checked By : _____

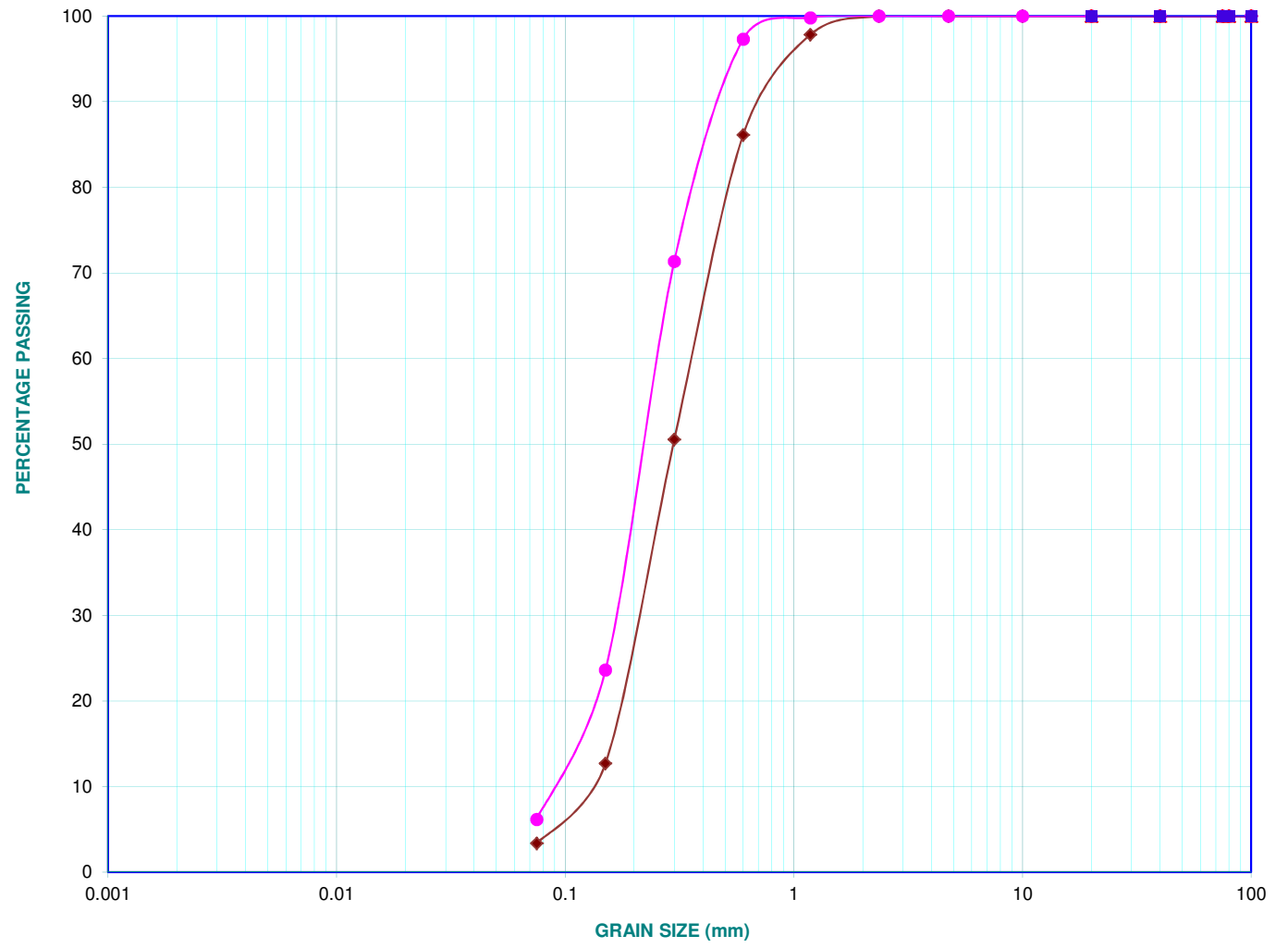
GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.													
Job No.	: CM 19 01 03			Borehole No. : MBH-25					Date :		15-Jun-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND			GRAVEL	
							F	M	C	F	C			
Bore Hole .	MBH-25	MBH-25	MBH-25	MBH-25										
Depth (m)	21.00-21.20	24.00-24.23	25.50-25.68	33.00-33.22										
Sample Type	SPT-15	SPT-17	SPT-18	SPT-23										
Classification	SP-SM	SP-SM	SP-SM	SP										
Gravel %	0	0	0	0										
Sand %	91	92	95	97										
Silt %	<---->	<---->	<---->	<---->										
Clay %	<---->	<---->	<---->	<---->										
Fines % (Silt+Clay)	9	8	5	3										
D60 mm	0.250	0.270	0.290	0.380										
D30 mm	0.170	0.180	0.190	0.210										
D10 mm	0.080	0.085	0.110	0.150										
Cu	3.13	3.18	2.64	2.53										
Cc	1.45	1.41	1.13	0.77										
Liquid Limit %	---		---	---										
Plastic Limit %	---		---	---										
Plasticity Index	---	---	---	---										

Checked By : _____

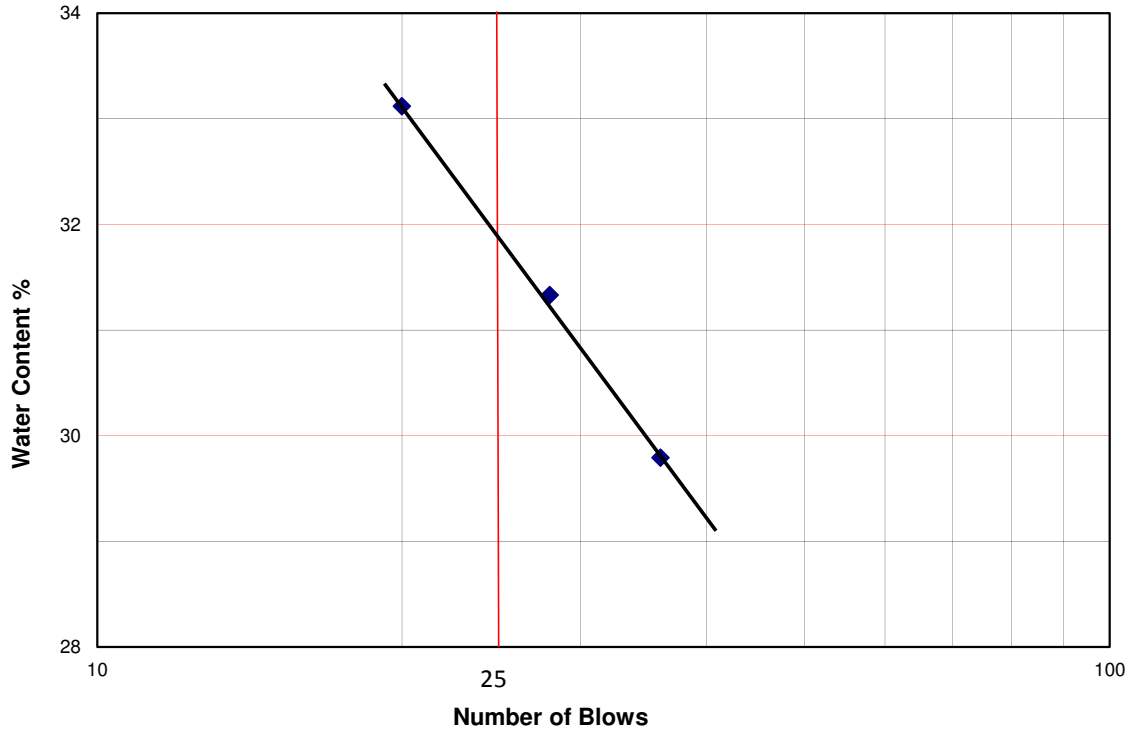
GRAIN SIZE ANALYSIS

Project	: Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, Dist Jagatsinghpur, Odisha.											
Job No.	: CM 19 01 03		Borehole No. : MBH-25				Date :		15-Jun-19			
Symbol	—◆—	—●—	—▲—	—■—	Particle size mm	CLAY	SILT			SAND	GRAVEL	
							F	M	C	F	C	
Bore Hole .	MBH-25	MBH-25										
Depth (m)	34.50-34.68	40.50-40.70										
Sample Type	SPT-24	SPT-28										
Classification	SP	SP-SM										
Gravel %	0	0										
Sand %	97	94										
Silt %	<---->	<---->										
Clay %	<---->	<---->										
Fines % (Silt+Clay)	3	6										
D60 mm	0.360	0.240										
D30 mm	0.200	0.180										
D10 mm	0.140	0.090										
Cu	2.57	2.67										
Cc	0.79	1.50										
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)	32.64	43.74	41.65		
Dry Weight + Can (g)	27.34	36.65	34.50		
Can Weight (g)	9.55	14.02	12.91		
Water Content, %	29.8	31.3	33.1		
Number of Blows	36	28	20		

Plastic Limit %

Wet Weight + Can (g)	17.37	13.82	16.91
Dry Weight + Can (g)	16.86	13.26	16.44
Can Weight (g)	13.15	9.20	13.07
Water Content, %	13.7	13.8	13.9

Liquid Limit % 31.9
 Plastic Limit % 13.8
 Plasticity Index % 18.1

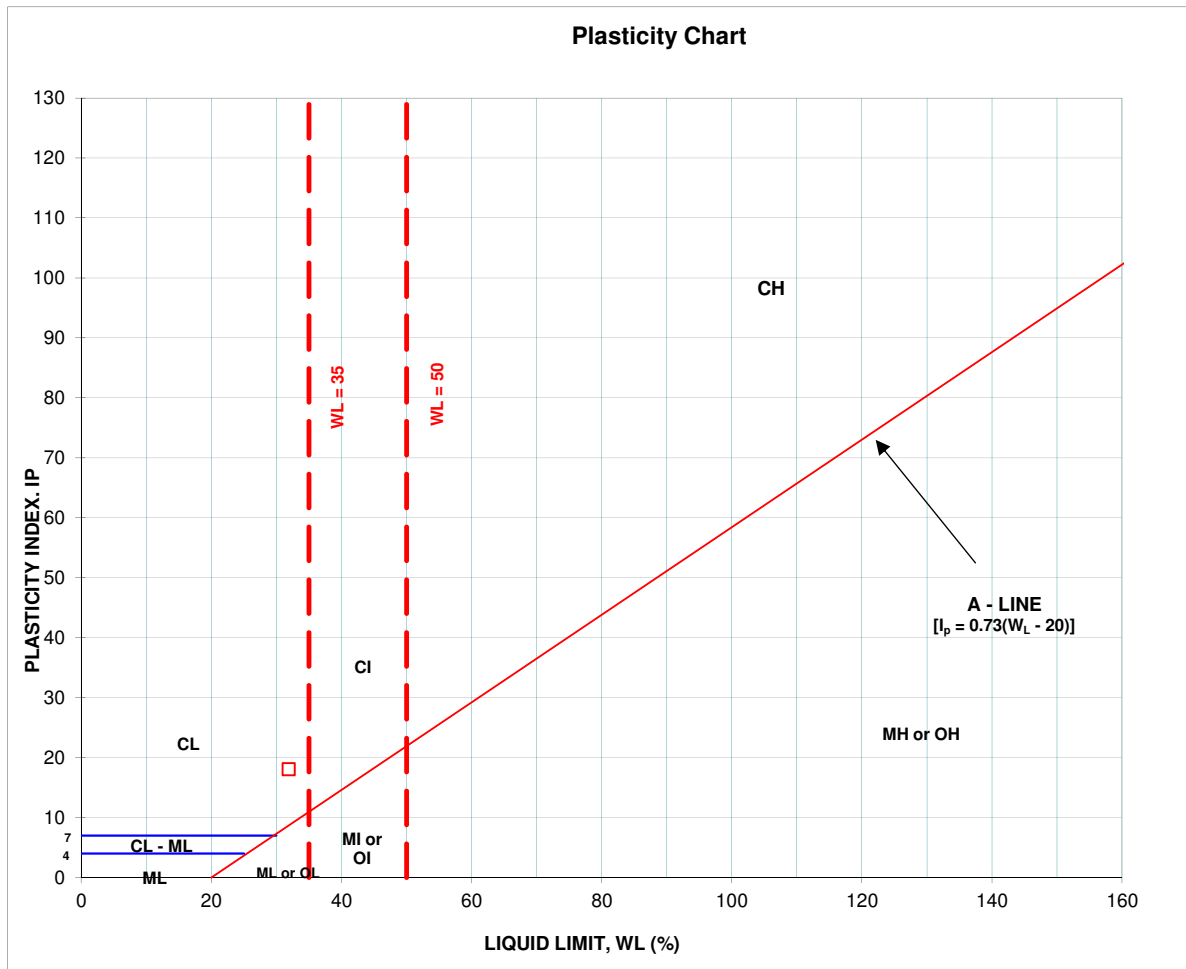
Preparation of Sample :
 Dry State

Sample Type: SPT-02

Borehole no.: MBH-25

Depth :16.50-16.80

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-12	16.50-16.80	31.9	13.8	18.1	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

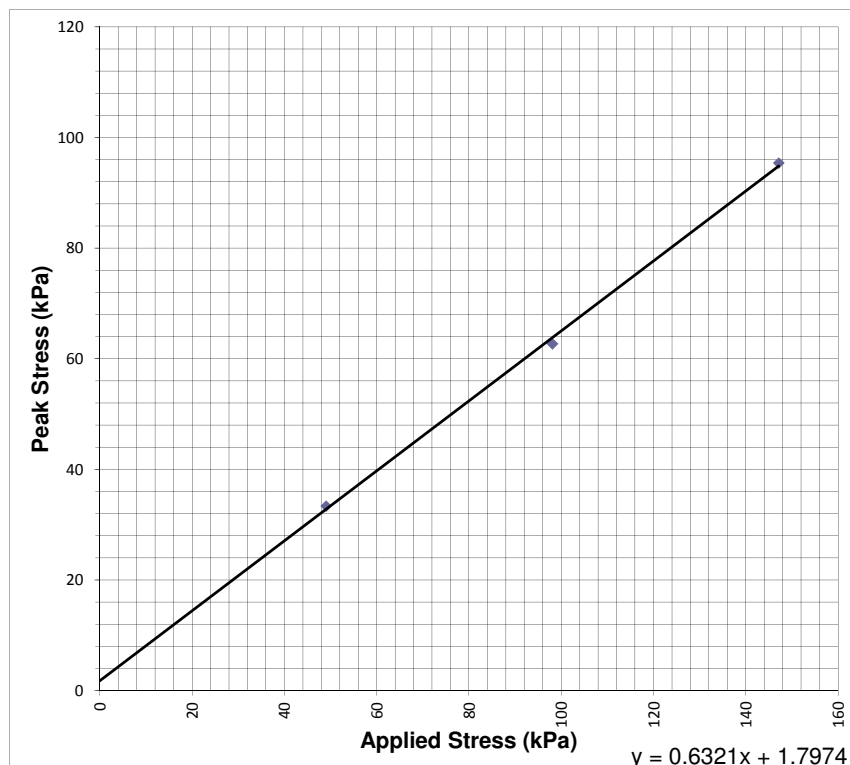
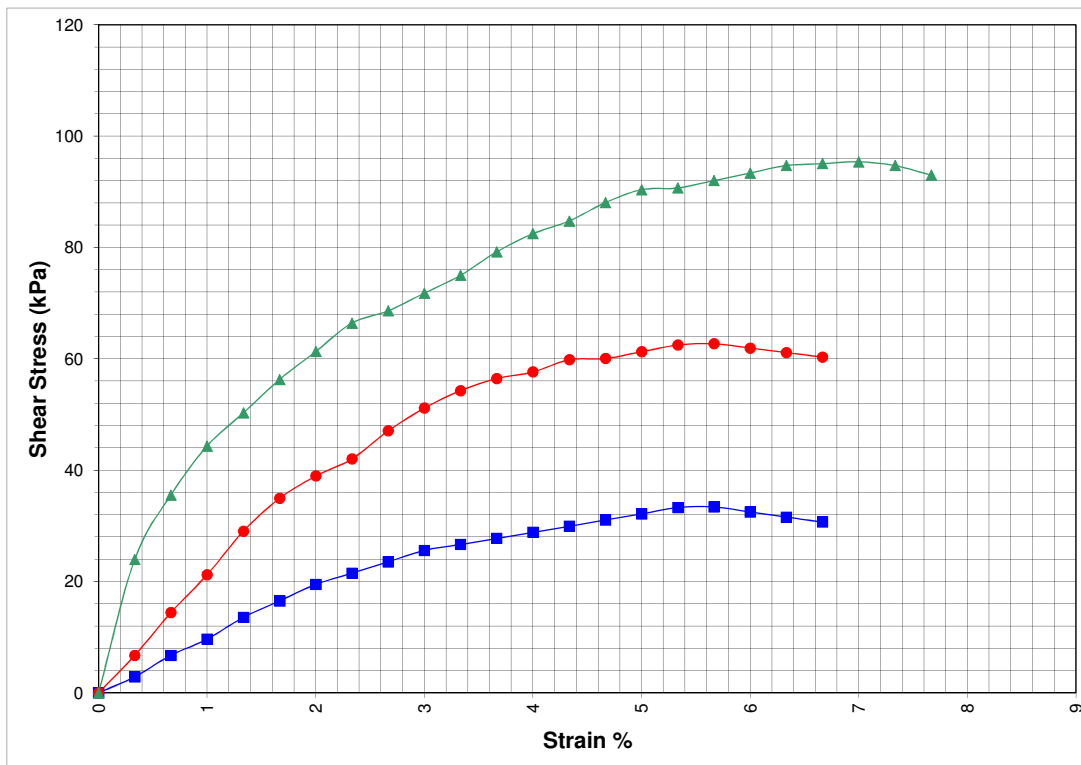
PLASTICITY CHART (IS : 1498 - 1987)

BOREHOLE NAME : MBH-25

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	33
●	Stage 2	98	63
▲	Stage 3	147	95

Angle of Friction	32.30 °
Apparent Cohesion	1.80 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.

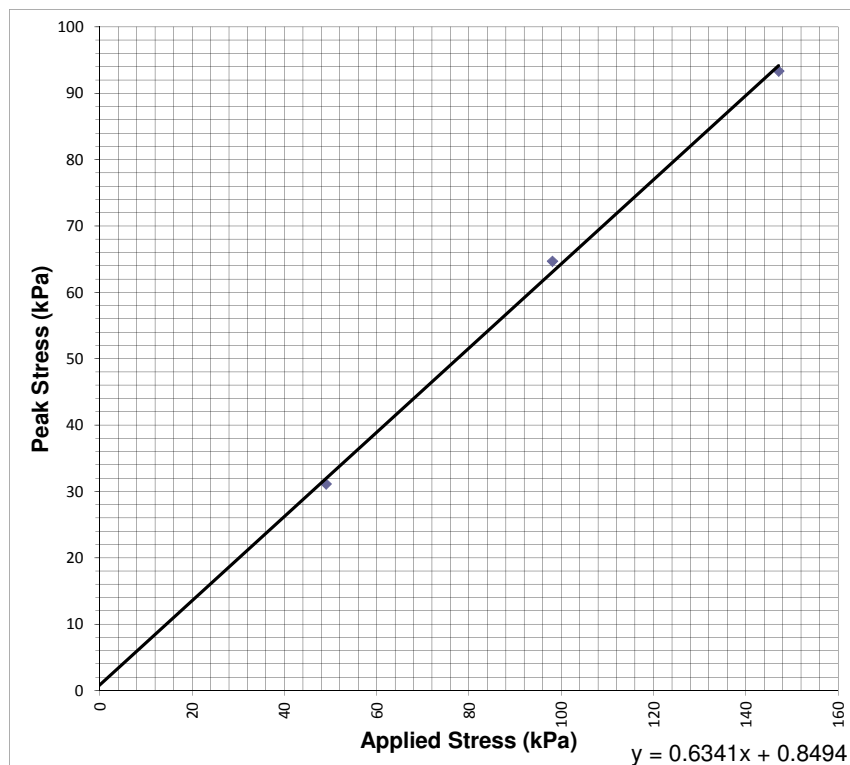
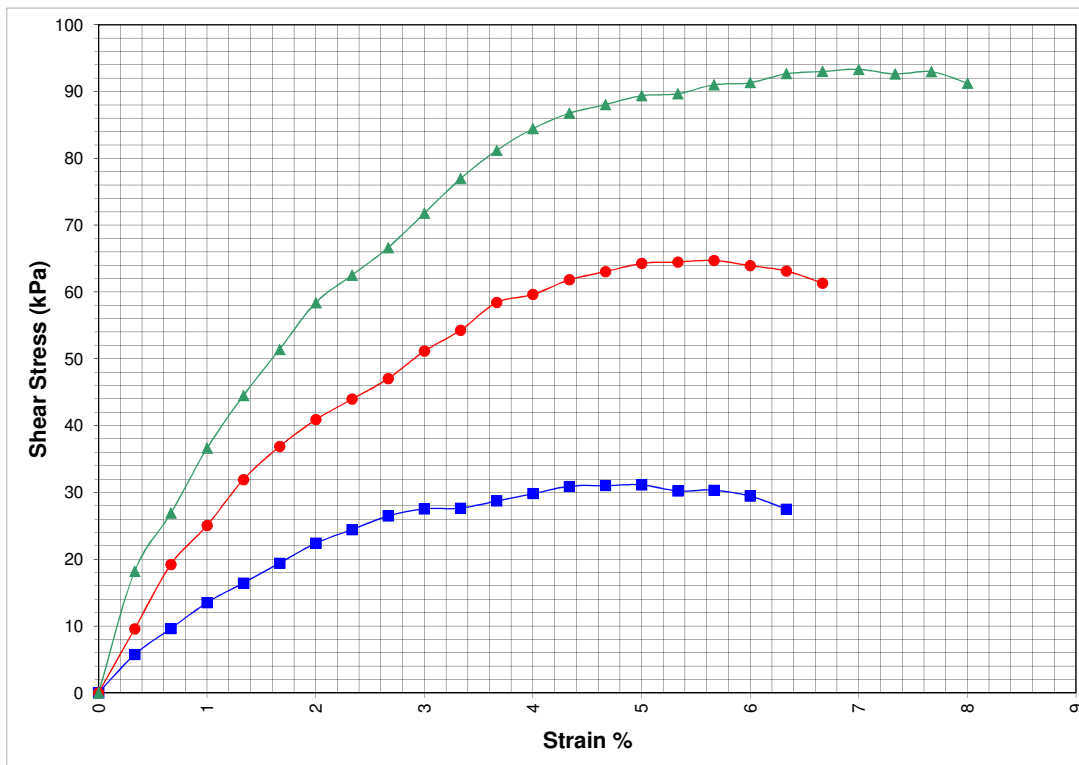
Borehole: MBH-25

Sample Type: SPT-02

Depth: 1.50-1.70 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	31
●	Stage 2	98	65
▲	Stage 3	147	93

Angle of Friction	32.38 °
Apparent Cohesion	0.85 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.

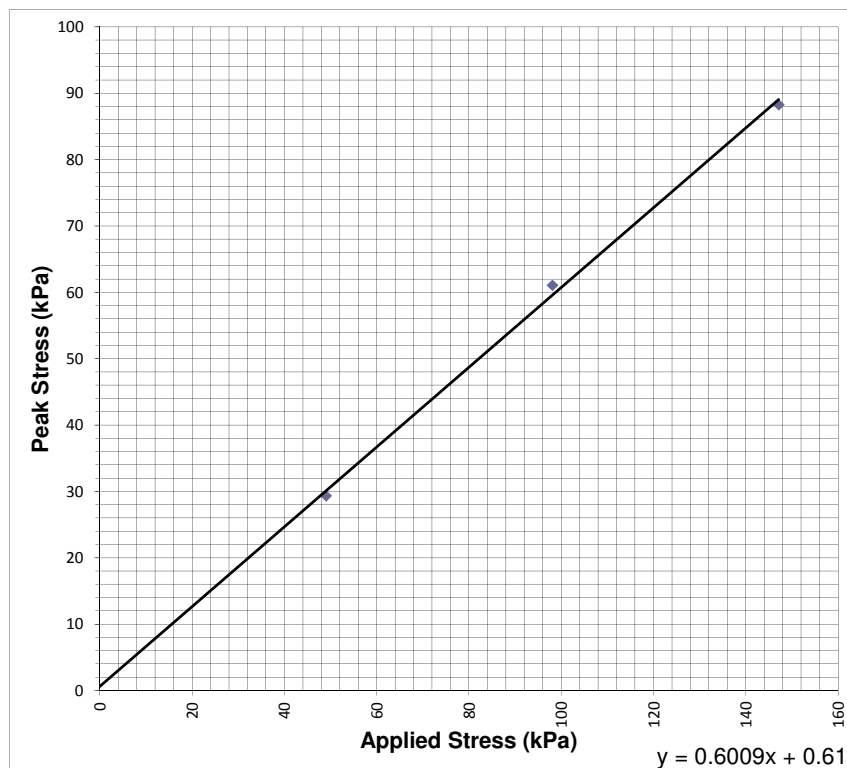
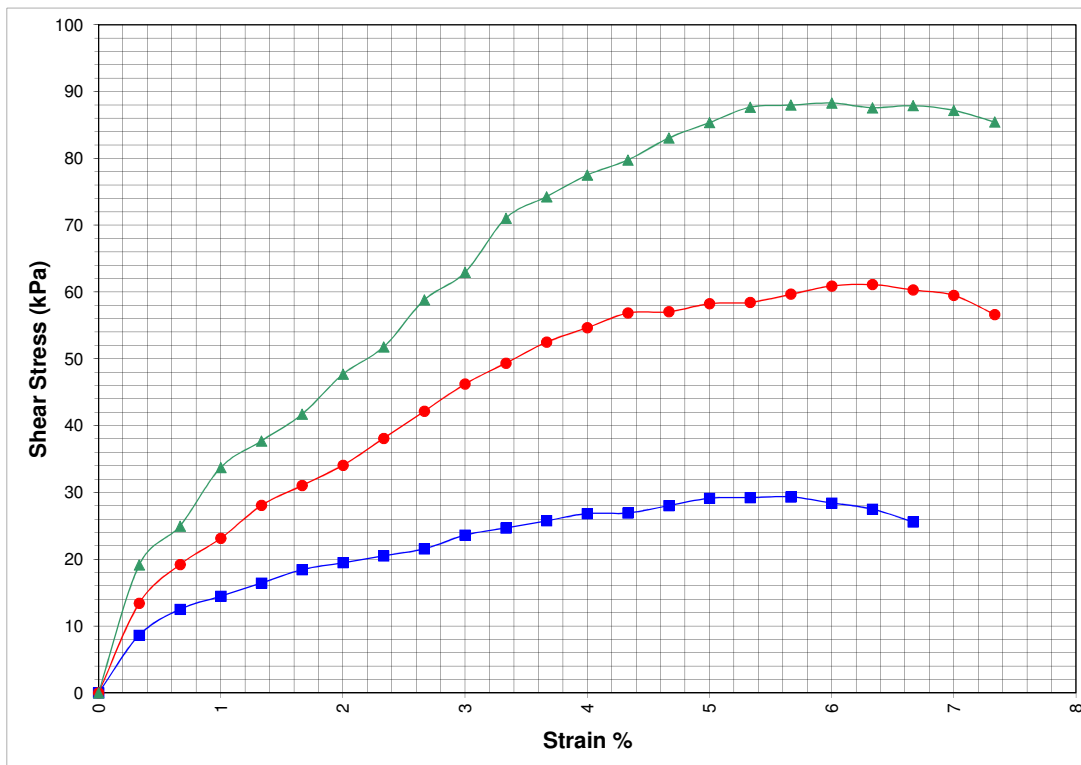
Borehole: MBH-25

Sample Type: SPT-04

Depth: 4.50-4.72 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	29
●	Stage 2	98	61
▲	Stage 3	147	88

Angle of Friction	31.00 °
Apparent Cohesion	0.94 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.

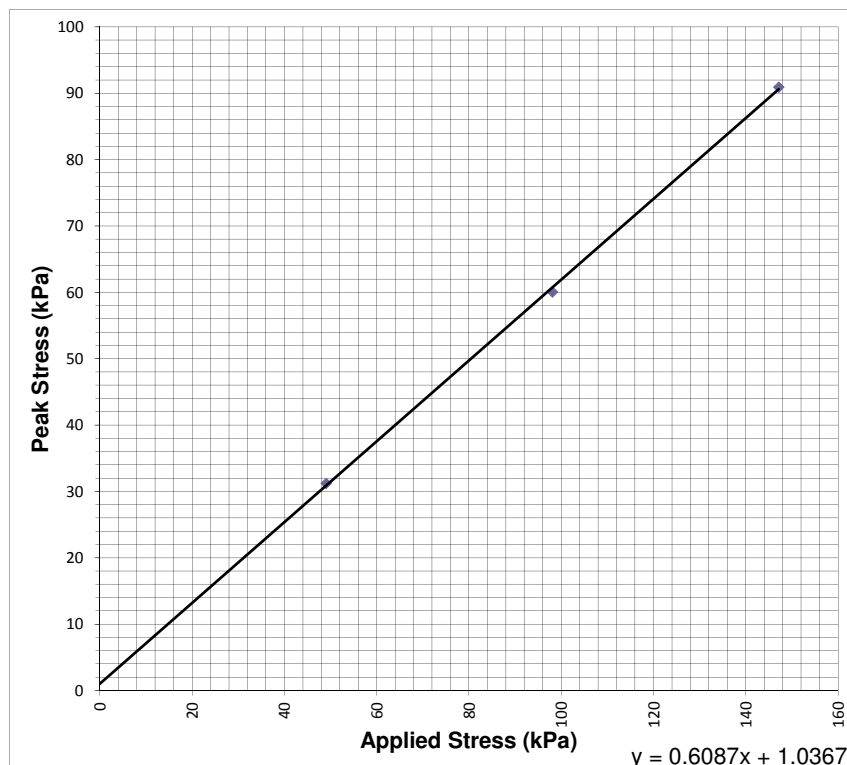
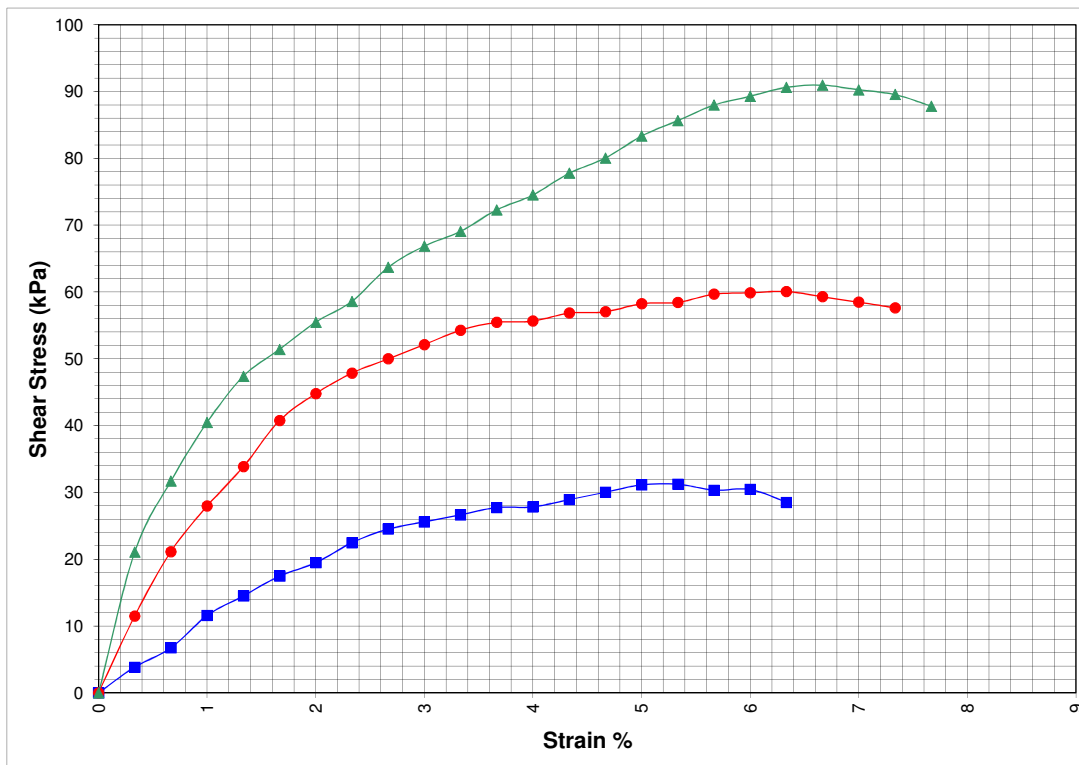
Borehole: MBH-25

Sample Type: SPT-06

Depth: 7.50-7.80 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	31
●	Stage 2	98	60
▲	Stage 3	147	91

Angle of Friction	31.33 °
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.

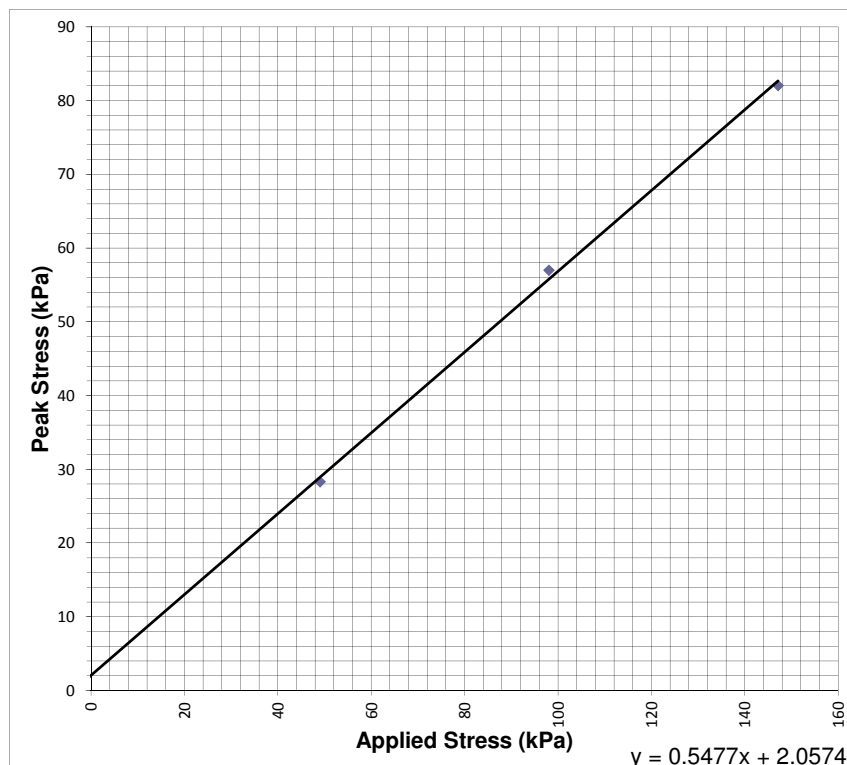
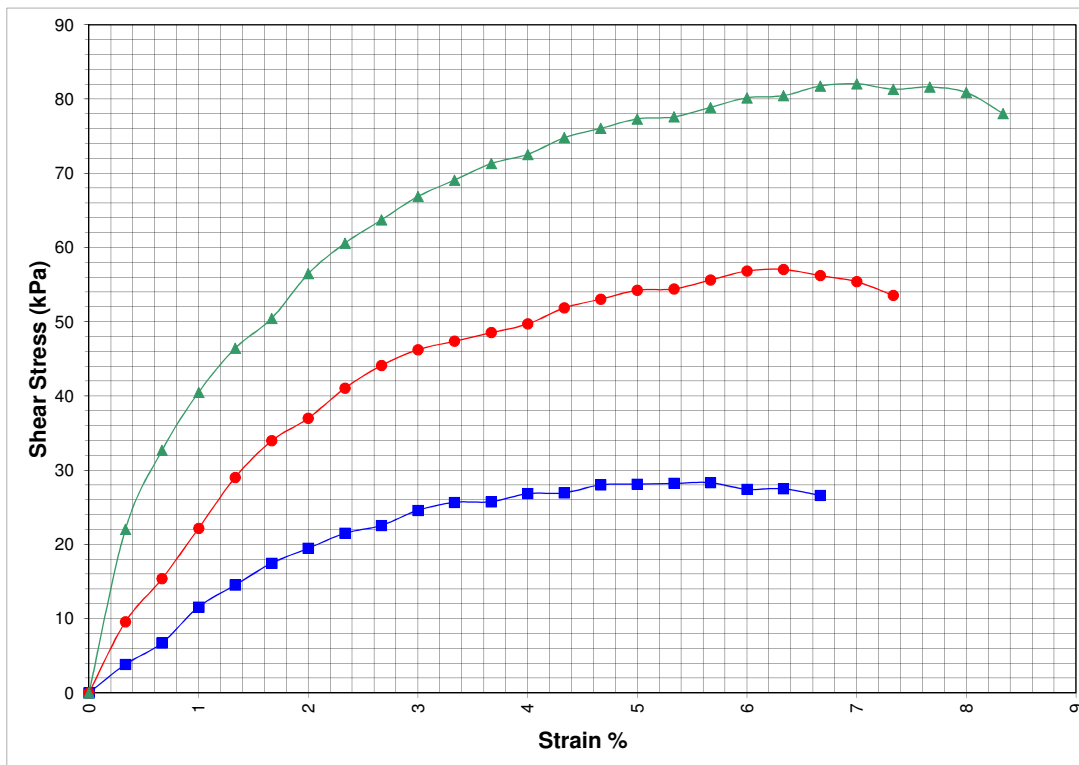
Borehole: MBH-25

Sample Type: SPT-08

Depth: 10.50-10.75 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	28
●	Stage 2	98	57
▲	Stage 3	147	82

Angle of Friction	28.71 °
Apparent Cohesion	2.06 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.

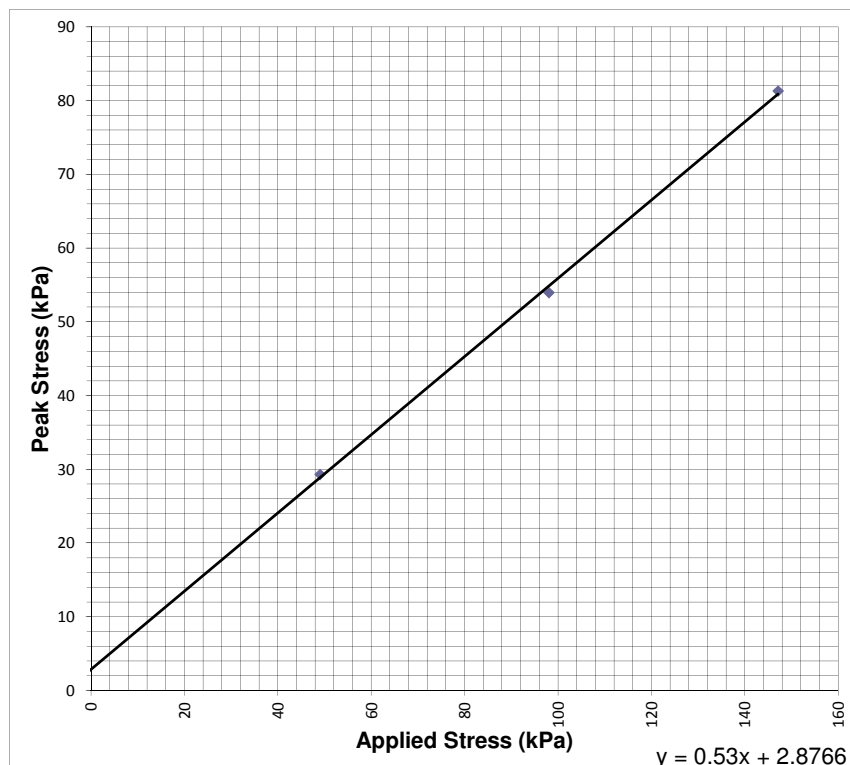
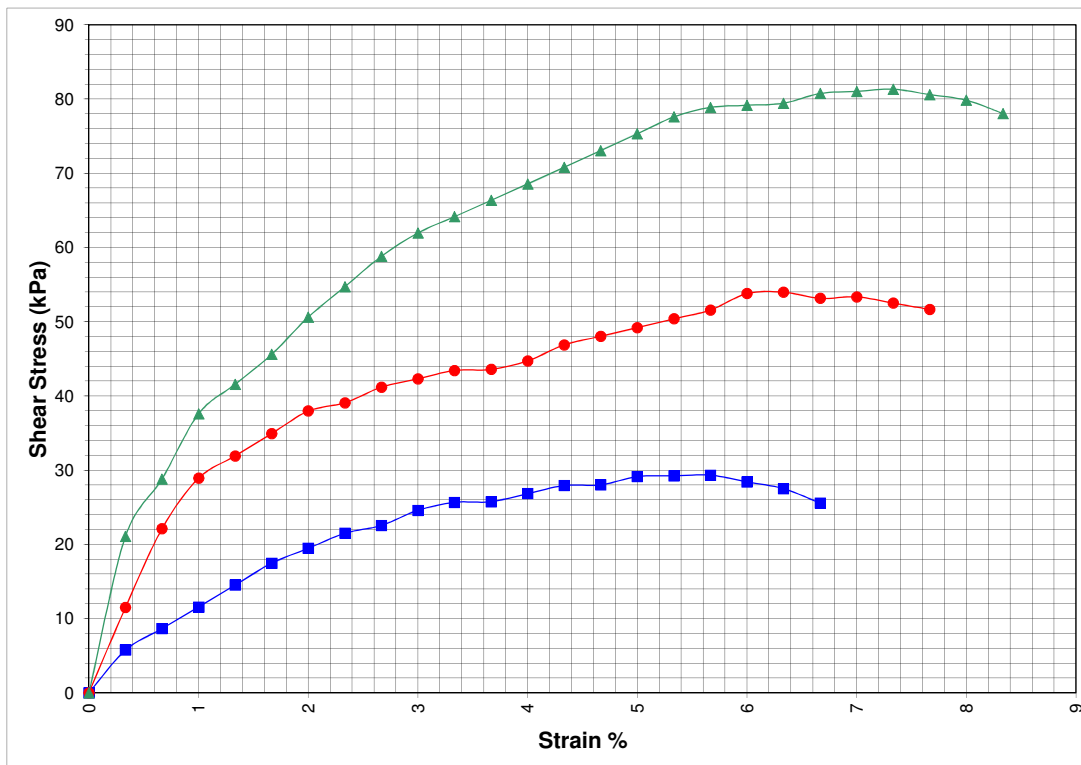
Borehole: MBH-25

Sample Type: SPT-10

Depth: 13.50-13.73 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	29
●	Stage 2	98	54
▲	Stage 3	147	81

Angle of Friction	27.92 °
Apparent Cohesion	2.88 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.

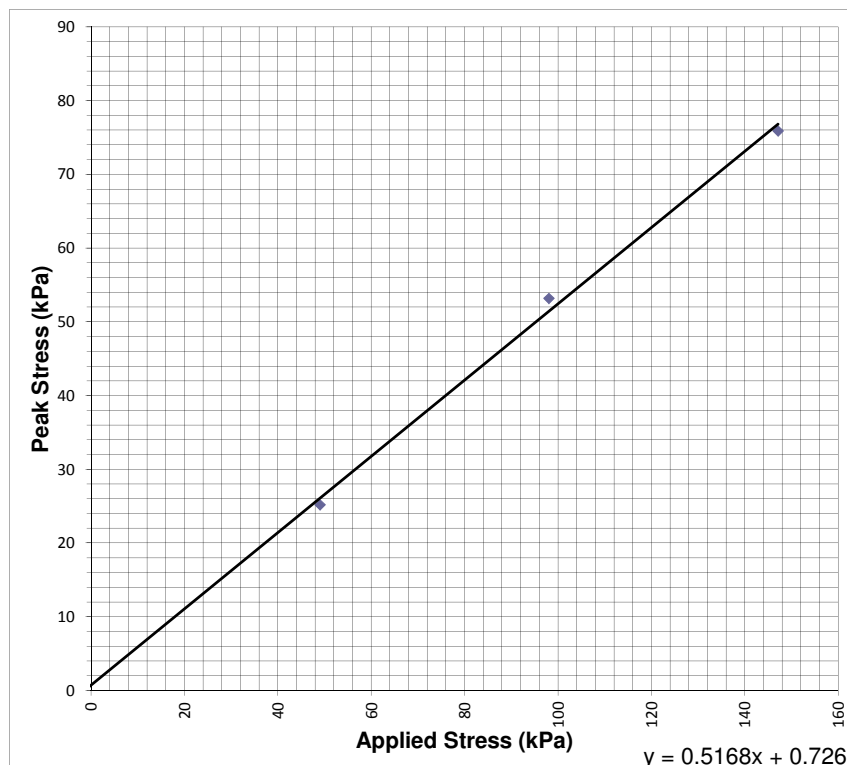
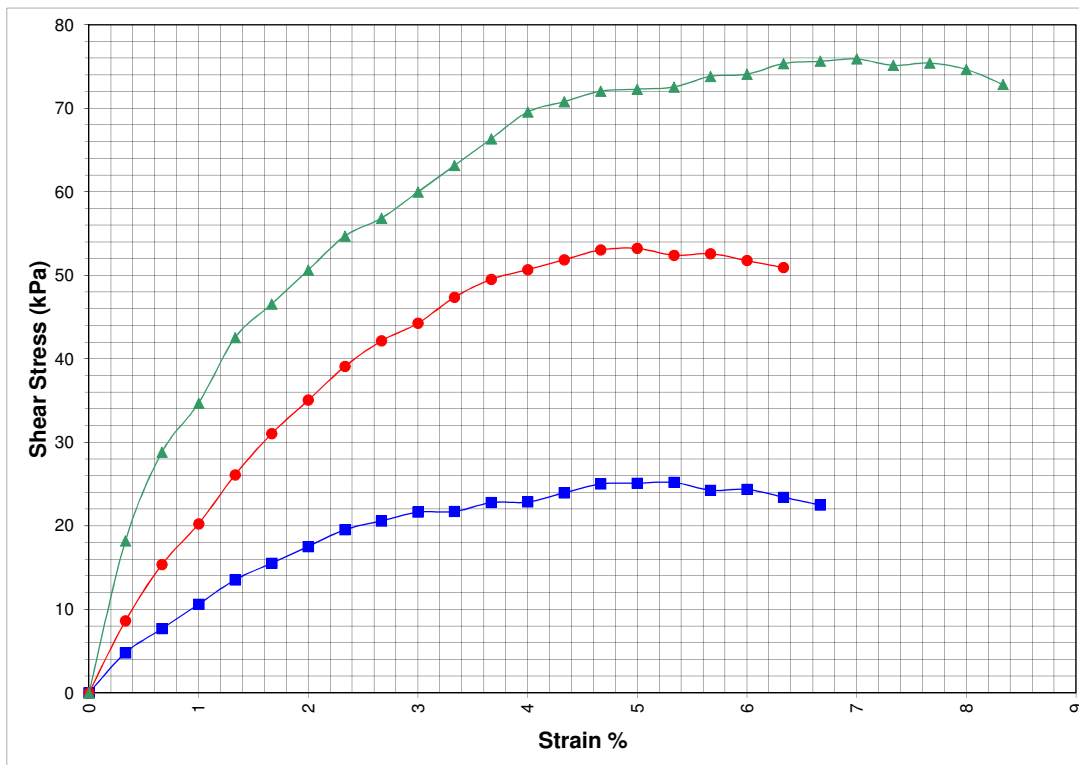
Borehole: MBH-25

Sample Type: SPT-14

Depth: 19.50-19.72 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	25
●	Stage 2	98	53
▲	Stage 3	147	76

Angle of Friction	27.33 °
Apparent Cohesion	0.73 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.

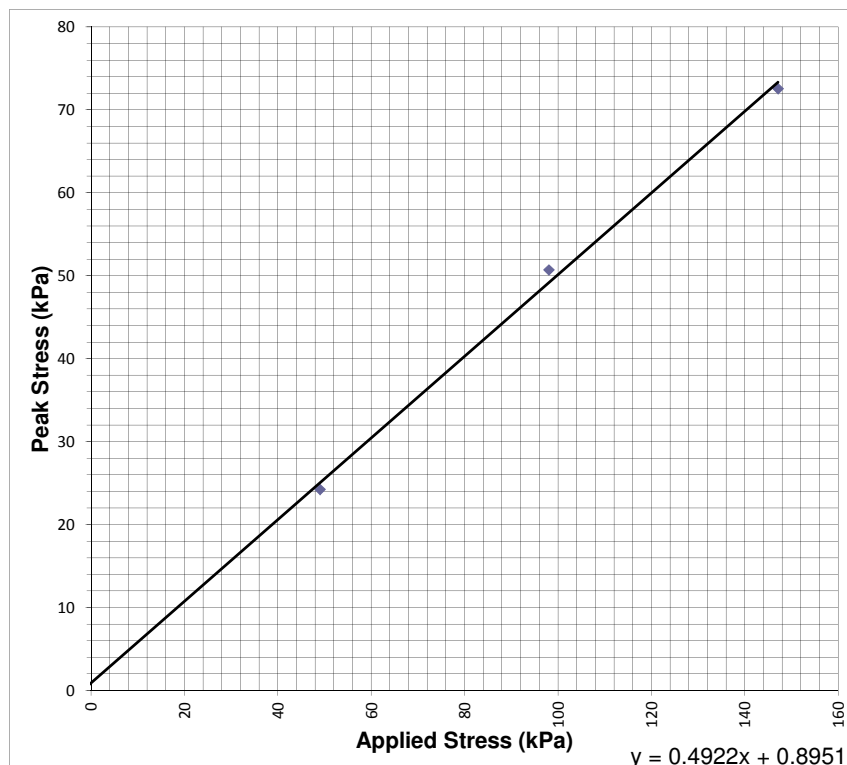
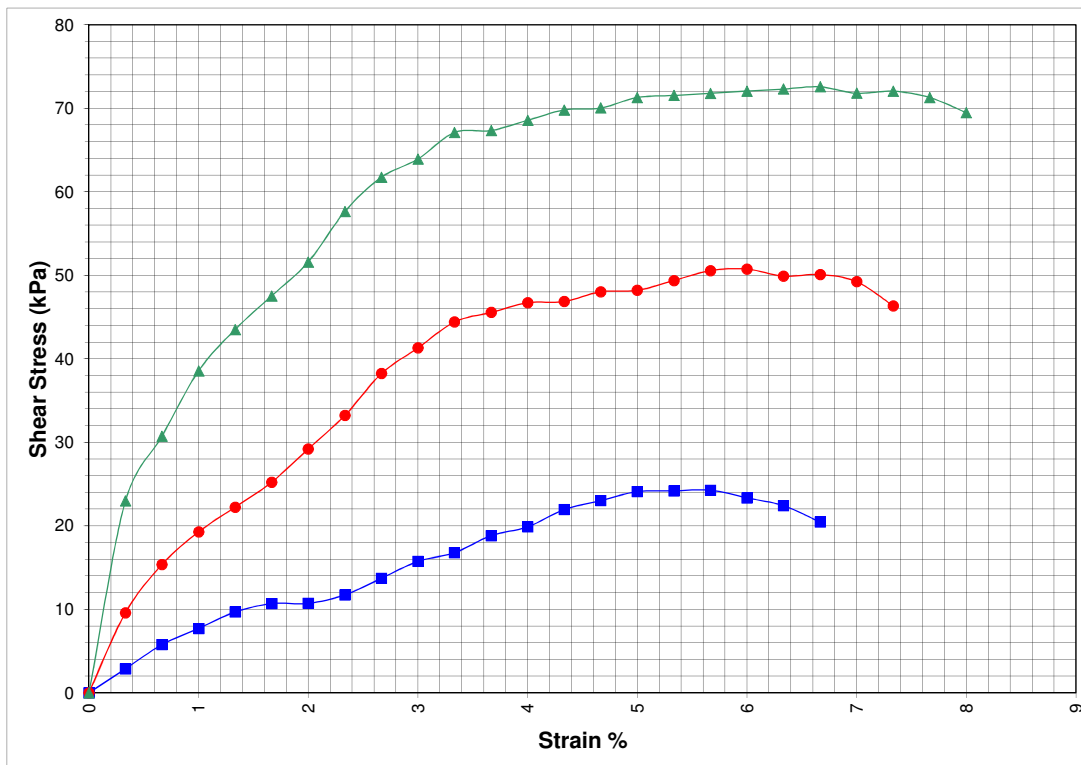
Borehole: MBH-25

Sample Type: SPT-16

Depth: 22.50-22.70 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	73

Angle of Friction	26.21 °
Apparent Cohesion	0.90 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.

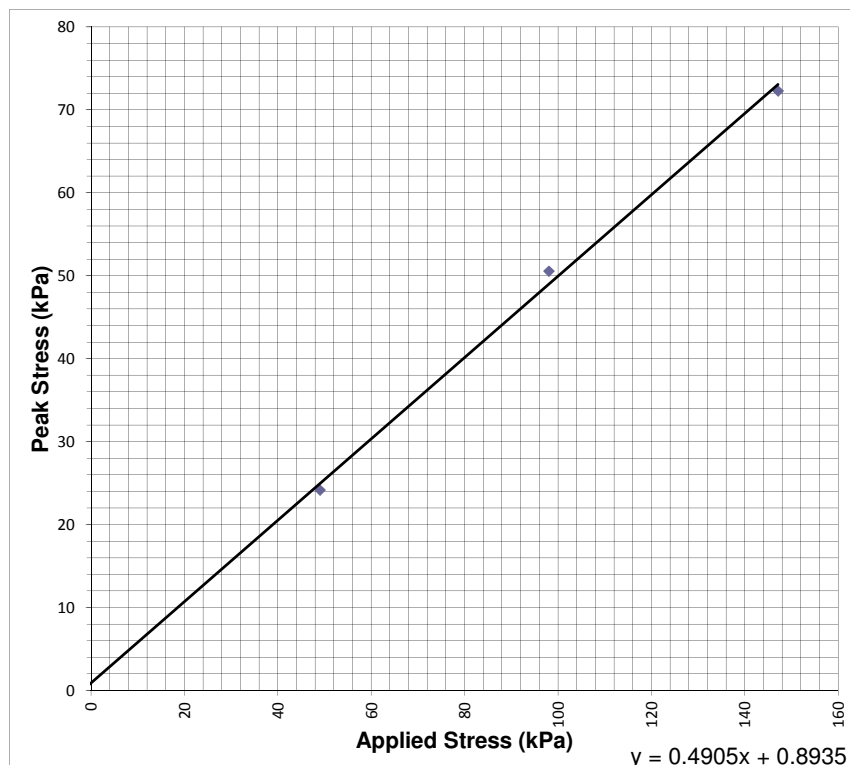
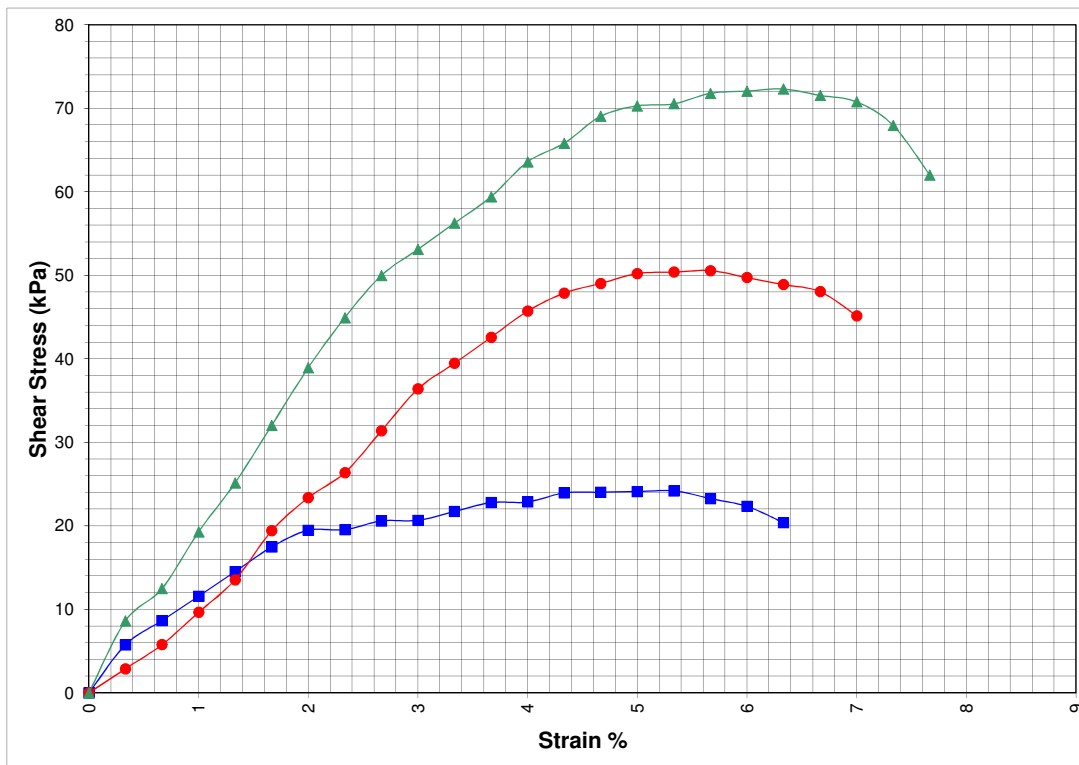
Borehole: MBH-25

Sample Type: SPT-19

Depth: 27.00-27.27 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	72

Angle of Friction	26.13 °
Apparent Cohesion	0.89 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.

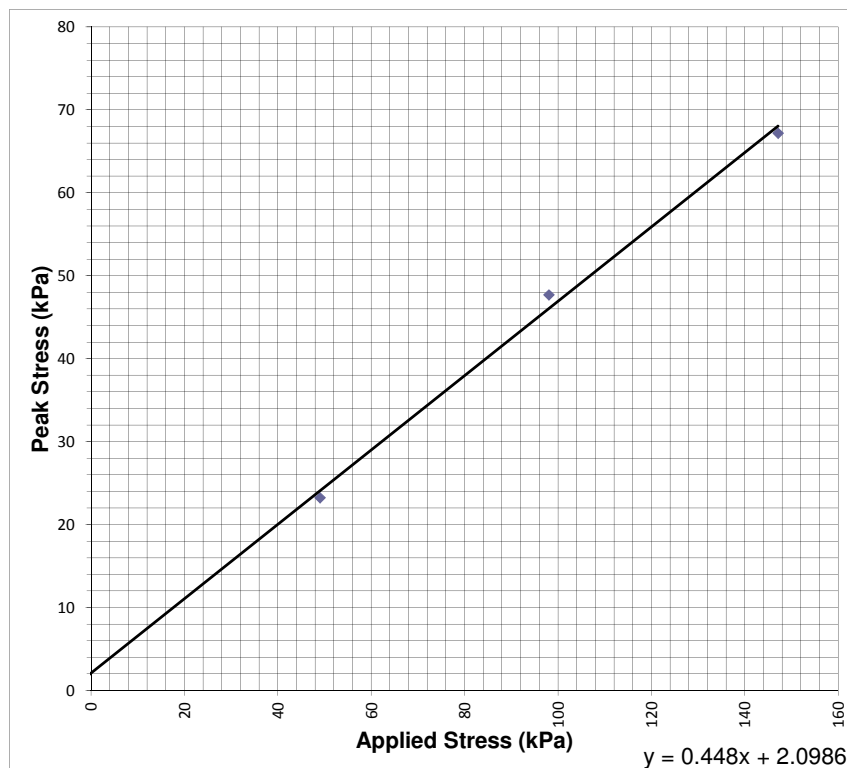
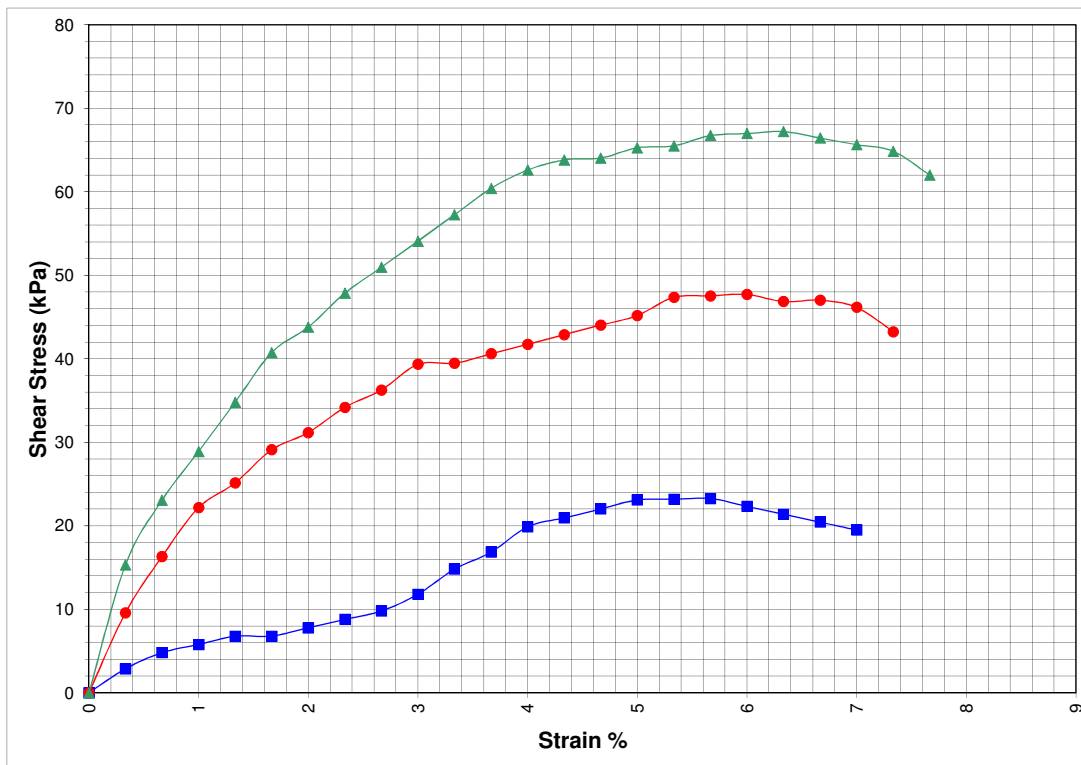
Borehole: MBH-25

Sample Type: SPT-21

Depth: 30.00-30.20 m

Direct Shear Test Results

Stress - Strain Curves



Legend	Stage No	Applied Stress (kPa)	Peak Stress (kPa)
■	Stage 1	49	23
●	Stage 2	98	48
▲	Stage 3	147	67

Angle of Friction	24.13 °
Apparent Cohesion	2.10 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-25

Sample Type: SPT-26

Depth: 37.50-37.78 m

CHEMICAL ANALYSIS OF WATER SAMPLE

**Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan,
Dist: Jagatsinghpur, Odisha.**

Project Code: CM 19 01 03

Sr. No.	Borehole No.	pH (IS:3025, P-11)	Sulphate (IS:3025, P-24) (Mg/l)	Chloride (IS:3025, P-32) (Mg/l)
1	LBH-01	7.38	130.03	87.97
2	LBH-02	8.32	146.49	159.95
3	LBH-03	7.52	125.10	21.99
4	MBH-04	8.21	2311.81	1431.56
5	LBH-05A	7.54	165.42	125.96
6	LBH-06A	8.30	2668.17	827.74
7	LBH-07 Opt.1	7.52	187.64	51.98
8	LBH-08	7.42	120.57	89.97
9	MBH-09	7.88	2467.35	1333.59
10	MBH-10	7.69	2584.22	967.70
11	MBH-11	8.24	2576.81	1367.58
12	MBH-12	7.49	2588.34	1311.59
13	MBH-13	8.38	2266.54	1203.63
14	LBH-14	7.24	134.56	79.98
15	MBH-15	8.45	2271.07	703.78
16	MBH-16	7.92	2245.14	685.79
17	MBH-17	7.83	2190.00	1119.65
18	MBH-18	8.23	2338.97	747.77
19	MBH-19	8.46	2228.68	1093.66
20	MBH-20	7.82	2354.60	1153.64
21	MBH-21	8.52	2312.22	725.77
22	MBH-22	7.93	2553.36	1527.53
23	MBH-23	8.10	2009.77	1325.59
24	MBH-24	7.99	2535.66	1071.67
25	MBH-25	8.33	2560.35	1385.57

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

Stratigraphy of borehole

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-01	0.00	4.50	4.50	Loose sandy soil
	4.50	13.50	9.00	Loose to medium dense sand
	13.50	16.50	3.00	Medium dense sand
	16.50	24.00	7.50	Loose to medium dense sand
	24.00	30.45	6.45	Medium dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-02	0.00	10.50	10.50	Loose to medium dense sand
	10.50	13.50	3.00	Medium dense sand
	13.50	19.50	6.00	Medium dense sand
	19.50	30.45	10.95	Medium dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-03	0.00	9.00	9.00	Loose to medium dense sand
	9.00	14.00	5.00	Medium dense sand
	14.00	18.00	4.00	Medium clayey silt
	18.00	30.45	12.45	Medium dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-04	0.00	7.50	7.50	Medium dense to dense sand
	7.50	12.50	5.00	Medium dense sand
	12.50	15.00	2.50	Medium clayey silt
	15.00	30.00	15.00	Medium dense sand
	30.00	45.00	15.00	Medium dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-05	0.00	7.50	7.50	Loose to medium dense sand
	7.50	10.50	3.00	Medium dense sand
	10.50	27.45	16.95	Medium dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-06	0.00	3.00	3.00	Medium dense sand
	3.00	9.00	6.00	Medium dense sand
	9.00	11.00	2.00	Medium dense sand
	11.00	30.45	19.45	Medium dense sand

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

Stratigraphy of borehole

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-07	0.00	4.00	4.00	Loose sandy soil
	4.00	9.00	5.00	medium dense sand
	9.00	17.00	8.00	Medium dense sand
	17.00	22.00	5.00	Hard clay
	22.00	30.45	8.45	Medium dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-08	0.00	3.45	3.45	Very Loose to Loose, Silty Fine SAND.
	3.45	9.45	6.00	Loose, Silty Fine SAND.
	9.45	24.45	15.00	Medium Dense, Silty Fine SAND
	24.45	30.45	6.00	Dense, Silty Fine SAND

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-09	0.00	0.45	0.45	Loose, Silty Fine SAND with traces of shell fragments.
	0.45	9.45	9.00	Medium Dense to dense, silty Fine SAND.
	12.45	13.50	1.05	Firm clayey sand/ sandy clay
	13.50	15.45	1.95	Firm to Stiff, Sandy CLAY with traces of shell fragments.
	15.45	25.95	10.5	Medium Dense to dense, silty Fine SAND
	25.95	40.45	14.5	Dense to very dense, Silty Fine SAND

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-10	0.00	0.45	0.45	Loose, Silty Fine SAND with traces of shell fragments.
	0.45	9.50	9.05	Medium Dense, Fine to Medium SAND.
	9.50	12.45	2.95	Medium Dense, Silty Clayey SAND/ Sandy CLAY.
	12.45	25.95	13.50	Medium Dense, silty Fine SAND
	25.95	40.45	14.50	Dense to very dense, Silty Fine SAND

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-11	0.00	7.95	7.95	Medium Dense to Dense, Fine to Medium SAND.
	7.95	10.95	3.00	Dense, Silty Fine SAND
	10.95	15.45	4.50	Medium Dense, Silty Clayey SAND or Sandy CLAY.
	15.45	40.45	25.00	Dense to very dense, Silty Fine SAND

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

Stratigraphy of borehole

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-12	0.00	0.45	0.45	Very Loose to Loose, Silty Fine SAND.
	0.45	7.95	7.50	Loose, Silty Fine SAND.
	7.95	30.45	22.50	Medium dense, Silty Fine SAND.

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-13	0.00	1.50	1.50	Loose to medium dense sand
	1.50	9.50	8.00	Dense sand
	9.50	14.00	4.50	Stiff to very stiff clay
	14.00	18.00	4.00	Medium dense sand
	18.00	23.00	5.00	Medium dense sand
	23.00	26.95	3.95	Stiff clay

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
LBH-14	0.00	0.45	0.45	Very Loose, Silty Fine SAND.
	0.45	4.95	4.50	Loose, Silty Fine SAND.
	4.95	9.45	4.50	Loose to medium dense, Silty Fine SAND.
	9.45	25.95	16.50	Medium Dense, Silty Fine SAND
	25.95	30.45	4.50	Dense, Silty Fine SAND

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-15	0.00	3.00	3.00	Medium dense to dense sand
	3.00	6.00	3.00	Medium dense to dense sand
	6.00	10.00	4.00	Medium dense to dense sand
	10.00	14.00	4.00	Stiff to very stiff clay
	14.00	22.00	8.00	Medium dense sand
	22.00	27.45	5.45	Stiff to very stiff clay

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-16	0.00	4.50	4.50	medium dense to dense sand
	4.50	10.70	6.20	Stiff clay
	10.70	14.00	3.30	Medium dense sand
	14.00	21.45	7.45	Stiff to very stiff clay

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

Stratigraphy of borehole

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-17	0.00	1.95	1.95	Loose to Medium Dense, Silty Fine SAND.
	1.95	6.45	4.50	Soft to Very stiff, Sandy Silty CLAY, sand pockets and gravels.
	6.45	12.45	6.00	Medium Dense to Dense, Silty Fine SAND
	12.45	15.45	3.00	Stiff, Sandy SILT / Sandy CLAY with traces of fine Gravels.
	15.45	17.05	1.60	Medium Dense, Silty SAND / Sandy SILT.

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-18	0.00	3.00	3.00	Very soft clay
	3.00	9.00	6.00	Medium dense sand
	9.00	14.00	5.00	Medium dense sand
	14.00	15.50	1.50	Stiff clay
	15.50	16.95	1.45	Dense sand

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-19	0.00	1.00	1.00	Loose, Silty Fine SAND.
	1.00	1.95	0.95	Medium Dense, Clayey Silty SAND.
	1.95	4.95	3.00	Very Stiff, Fine Sandy Silty CLAY.
	4.95	13.95	9.00	Medium Dense to Dense, Silty Fine SAND
	13.95	15.80	1.85	Very Stiff, Silty CLAY.

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-20	0.00	1.10	1.10	Loose, Silty Fine SAND with traces of shell fragments and clay pockets.
	1.10	5.65	4.55	Soft to Very Stiff, Silty CLAY with traces of shell fragments and Fine SAND.
	5.65	13.45	7.80	Medium Dense to Dense, Fine to Medium Silty SAND.
	13.45	14.95	1.50	Hard, Silty Clay

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-21	0.00	1.00	1.00	Very Soft to Soft, Sandy CLAY with few shell fragments.
	1.00	1.95	0.95	Loose, Clayey SAND with traces of shell fragments.
	1.95	3.45	1.50	Very Stiff, Sandy Silty CLAY.
	3.45	9.45	6.00	Medium Dense to Dense, Silty Fine SAND
	9.45	14.15	4.70	Dense to Very Dense, Silty fine SAND with few of Clay pockets.

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

Stratigraphy of borehole

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-22	0.00	3.45	3.45	Medium Dense, Fine to Medium Silty SAND with traces of shell fragments.
	3.45	15.45	12.00	Medium Dense to Dense, Fine to Medium SAND with traces of shell fragments and clay pockets
	15.45	16.95	1.50	Firm to Stiff, Sandy Silty CLAY/ Clayey SAND.
	16.95	21.45	4.50	Medium Dense, Silty Fine SAND
	21.45	34.95	13.50	Dense, Fine to medium Silty SAND
	34.95	45.45	10.50	Dense to very dense, Silty Fine SAND

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-23	0.00	1.95	1.95	Very Loose, Silty Fine SAND with traces of shell fragments.
	1.95	10.95	9.00	Medium Dense, Silty Fine SAND with trace of shell fragments.
	10.95	13.95	3.00	Medium Dense, Silty Fine SAND with trace of Clay pockets.
	13.95	31.95	18.00	Medium Dense, Silty Fine SAND
	31.95	45.45	13.50	Dense to very dense, Silty Fine SAND

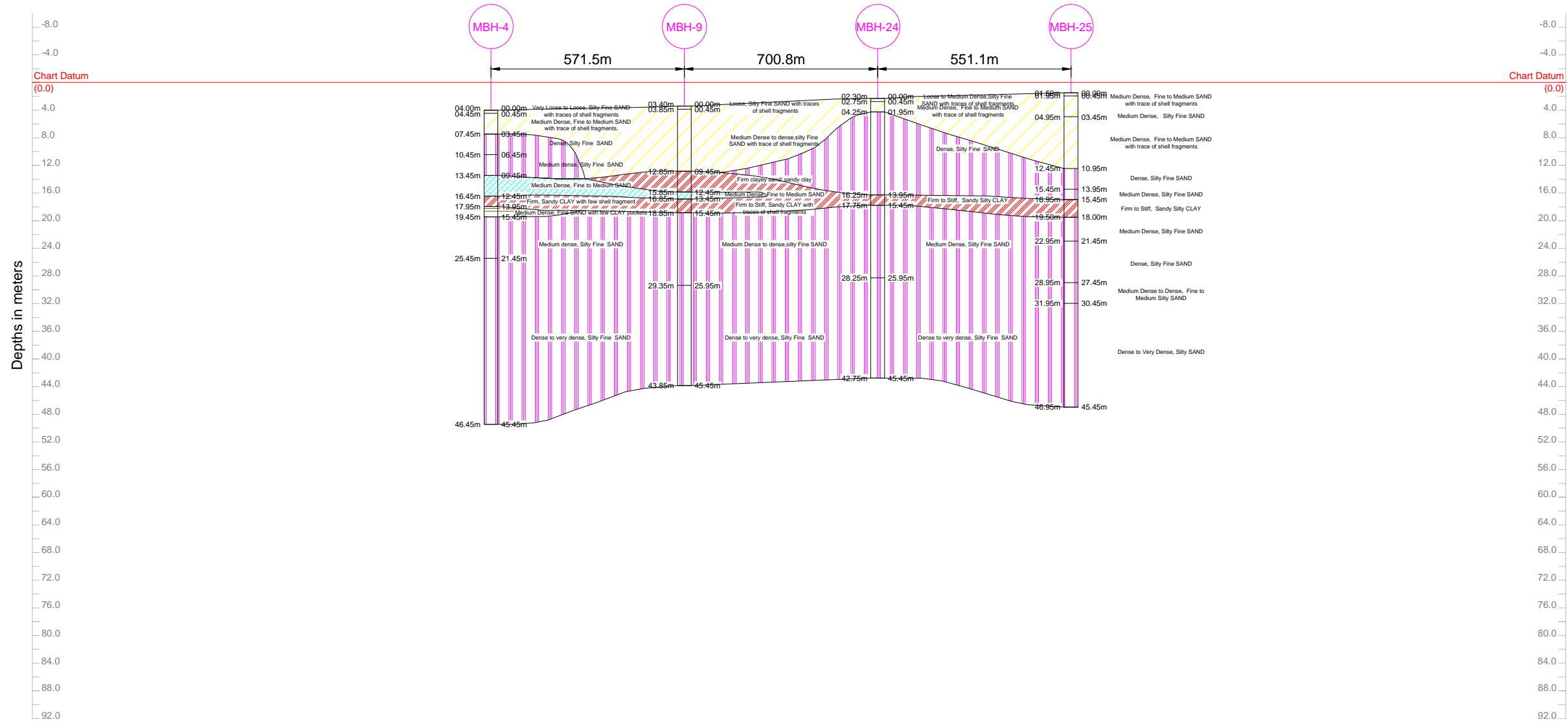
BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-24	0.00	0.45	0.45	Loose to Medium Dense, Silty Fine SAND with traces of shell fragments.
	0.45	1.95	1.50	Medium Dense, Fine to Medium SAND with trace of shell fragments.
	1.95	13.95	12.00	Dense, Silty Fine SAND
	13.95	15.45	1.50	Firm to Stiff, Sandy Silty CLAY.
	15.45	25.95	10.50	Medium Dense, Silty Fine SAND
	25.95	40.45	14.50	Dense to very dense, Silty Fine SAND

BH.No	FROM	TO	LAYER THICKNESS	DESCRIPTION OF STRATA
MBH-25	0.00	10.00	10.00	Medium dense sand
	10.00	21.00	11.00	Medium dense sand
	21.00	27.00	6.00	Medium dense sand
	27.00	45.45	18.45	Medium dense sand

SOUTH-WEST ←

SUBSURFACE SOIL PROFILE FOR MARINE BOREHOLES

→ NORTH-EAST



- NOTES :**
- 1) All dimensions are in meters.
 - 2) Depth mentioned are w.r.t. Chart Datum and MSL
 - 3) The generalised sub soil profile shown in a diagrammatical illustration of the information obtained from borehole logs. It is not necessarily representative of conditions at the site as a whole.

LEGEND

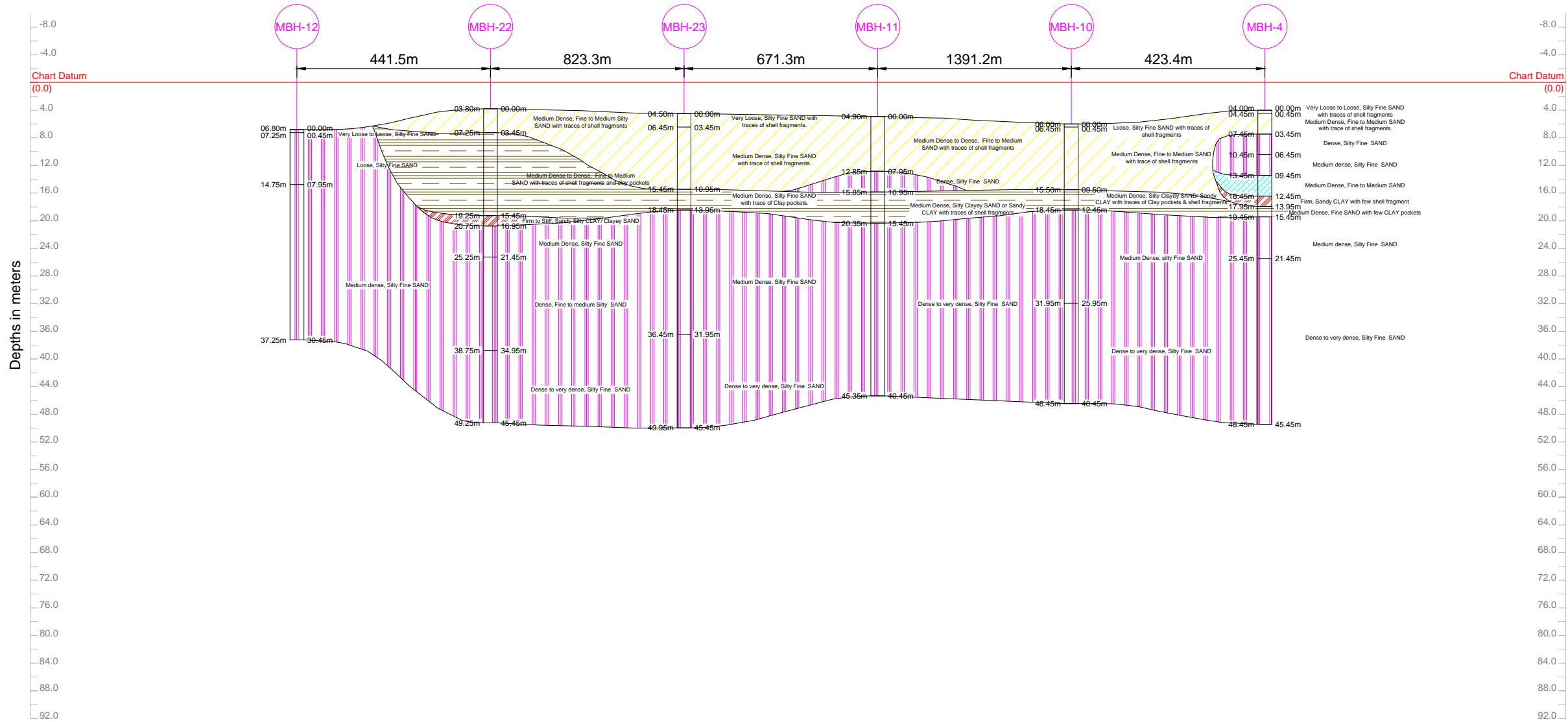
- Medium dense, Silty Fine SAND/ Dense to very dense, Silty Fine SAND
- Medium Dense, Fine to Medium Silty SAND with traces of shell fragments
- Medium Dense, Silty Fine SAND with trace of Clay pockets.
- Medium Dense, Fine to Medium SAND
- Firm to Stiff, Sandy Silty CLAY/ Clayey SAND

Owner		JSW Utkal Steel Ltd.													
Geotechnical Contractor		Coastal Marine Construction & Engineering Ltd.													
Project Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.															
Drawing Title Sub Surface Soil Profile for Marine MBH 04, MBH 09, MBH 24 & MBH 25															
Scale Not to Scale															
Drawing Number															
Project Code	Job Code	Type	Date	Sheet No.	Rev.	PC	DPC	DPG	A-HDP	HDOC	DATE				
CM	19 01 03	G T	0 1	D R	--	2	0F	2	A	VP	JKS	---	---	HSP	27/06/2019

SOUTH-WEST ←

SUBSURFACE SOIL PROFILE FOR MARINE BOREHOLES

→ NORTH-EAST



NOTES :

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LEGEND

- Medium dense, Silty Fine SAND/ Dense to very dense, Silty Fine SAND
- Medium Dense, Fine to Medium Silty SAND with traces of shell fragments
- Medium Dense, Silty Fine SAND with trace of Clay pockets.
- Medium Dense, Fine to Medium SAND
- Firm to Stiff, Sandy Silty CLAY/ Clayey SAND

Owner JSW Utkal Steel Ltd.

Geotechnical Contractor Coastal Marine Construction & Engineering Ltd.

Project Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

Drawing Title Sub Surface Soil Profile for Marine MBH 12, MBH 22, MBH 23, MBH 11, MBH 10 & MBH 04

Scale Not to Scale

Drawing Number							PC	DPC	DPG	A-HDP	HDQC	DATE		
Project Code	Job Code	Type	File	Sheet No.	Rev.									
CM	19 01 03	G T	0 0 1	D R	--	1	OF	2	A	VP	JKS	---	HSP	27/06/2019

NORTH-WEST ←






SUBSURFACE SOIL PROFILE FOR MARINE BOREHOLES

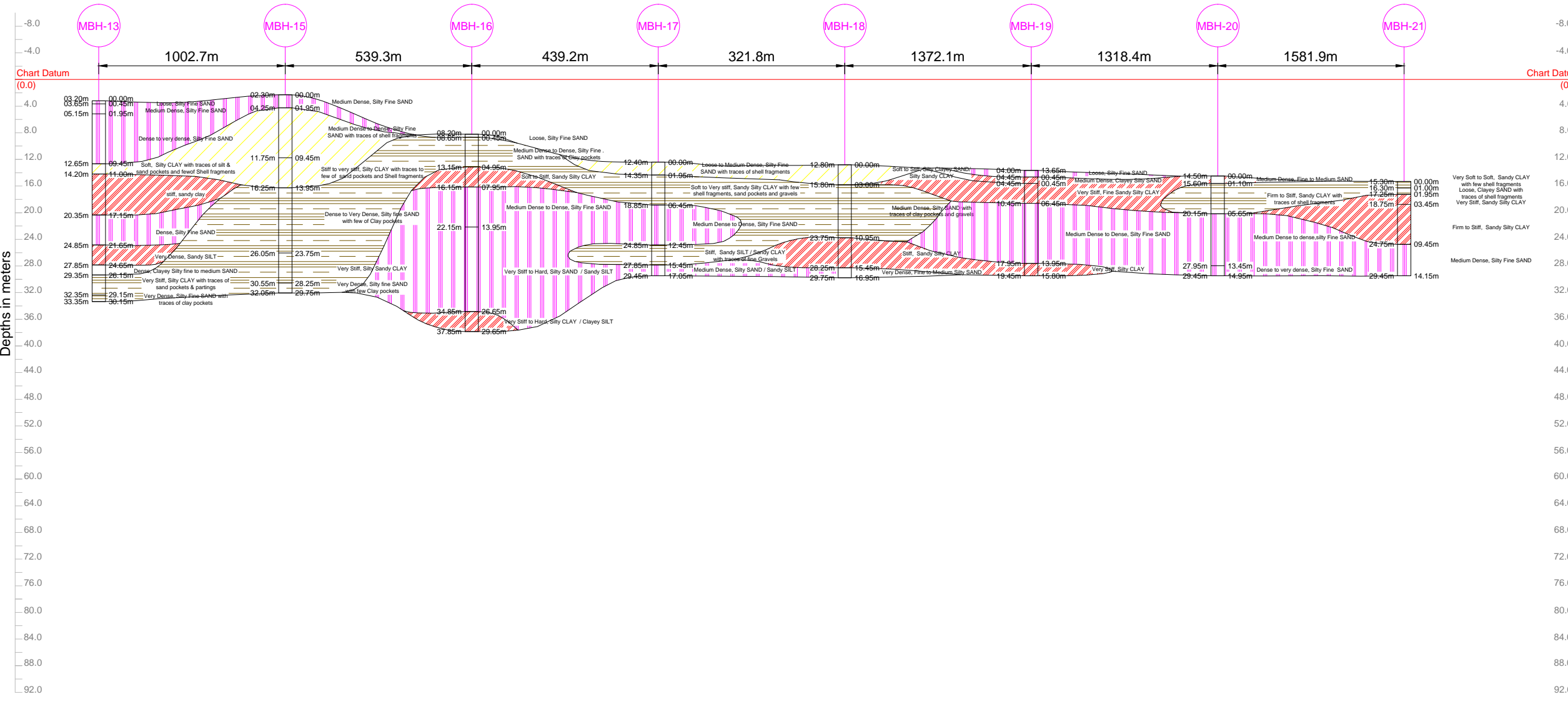
→ SOUTH-EAST



NOTES :

- 1) All dimensions are in meters.
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- 3) The generalised sub soil profile shown in a diagrammatical illustration of the information obtained from borehole logs. It is not necessarily representative of conditions at the site as a whole.

LEGEND

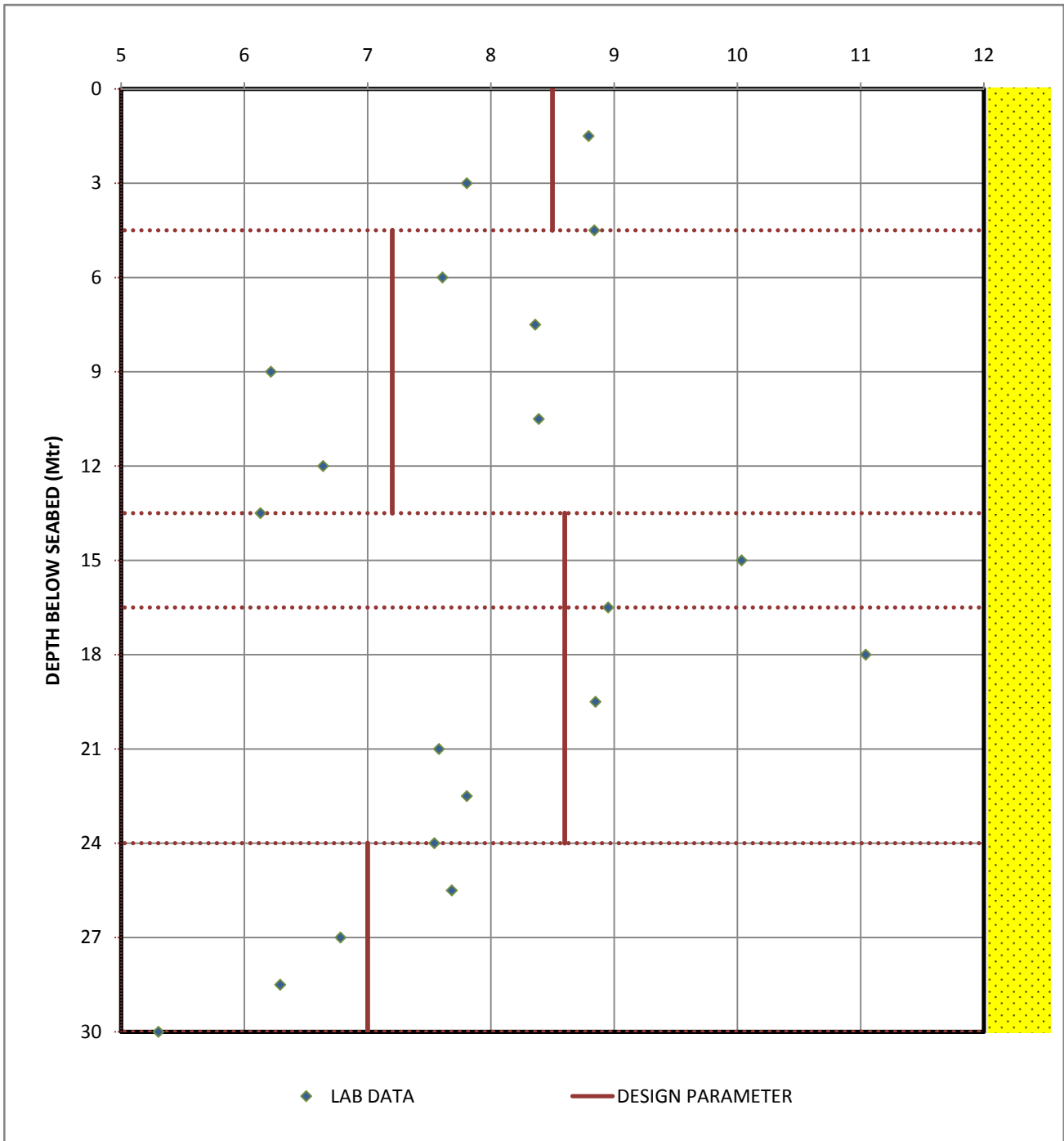
-  Medium dense, Silty Fine SAND/ Dense to very dense, Silty Fine SAND
-  Medium Dense, Fine to Medium Silty SAND with traces of shell fragments
-  Medium Dense, Silty Fine SAND with trace of Clay pockets.
-  Medium Dense, Fine to Medium SAND
-  Firm to Stiff, Sandy Silty CLAY/ Clayey SAND



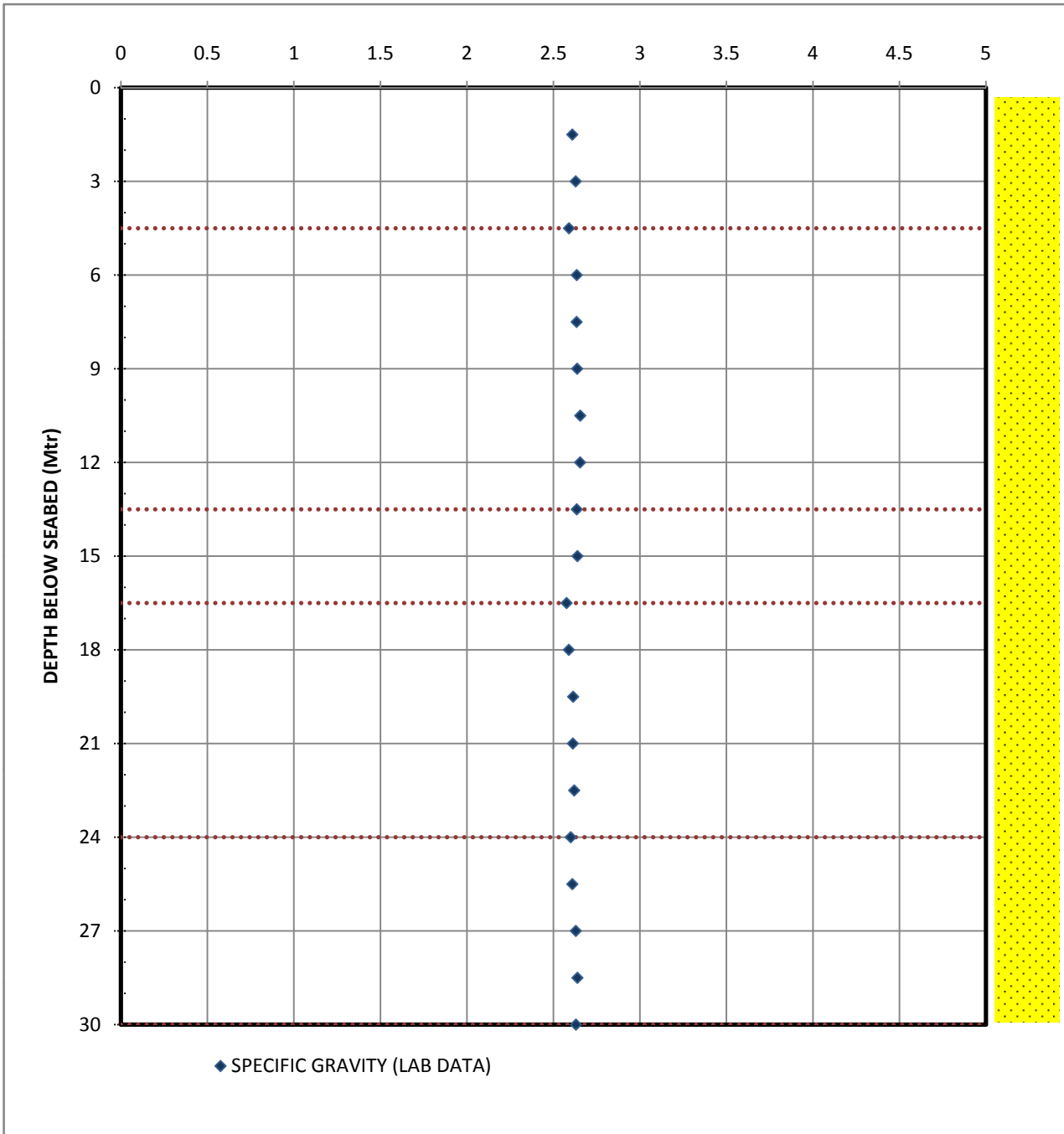
Owner		 JSW Utkal Steel Ltd.	
Geotechnical Contractor		 Coastal Marine Construction & Engineering Ltd. 	
Project Geotechnical Investigation for development of Captive Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.			
Drawing Title Sub Surface Soil Profile for Marine MBH 13, MBH 15, MBH 16, MBH 17, MBH 18, MBH 19, MBH 20 & MBH 21			
Scale Not to Scale			
Drawing Number			
Project Code	Job Code	Type	Date
CM 19 01 03	G T 0 0 1	D R	-- -- 1 OF 1
PC	DPC	DPG	A-HDP
VP	JKS	---	HSP
			27/06/2019

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

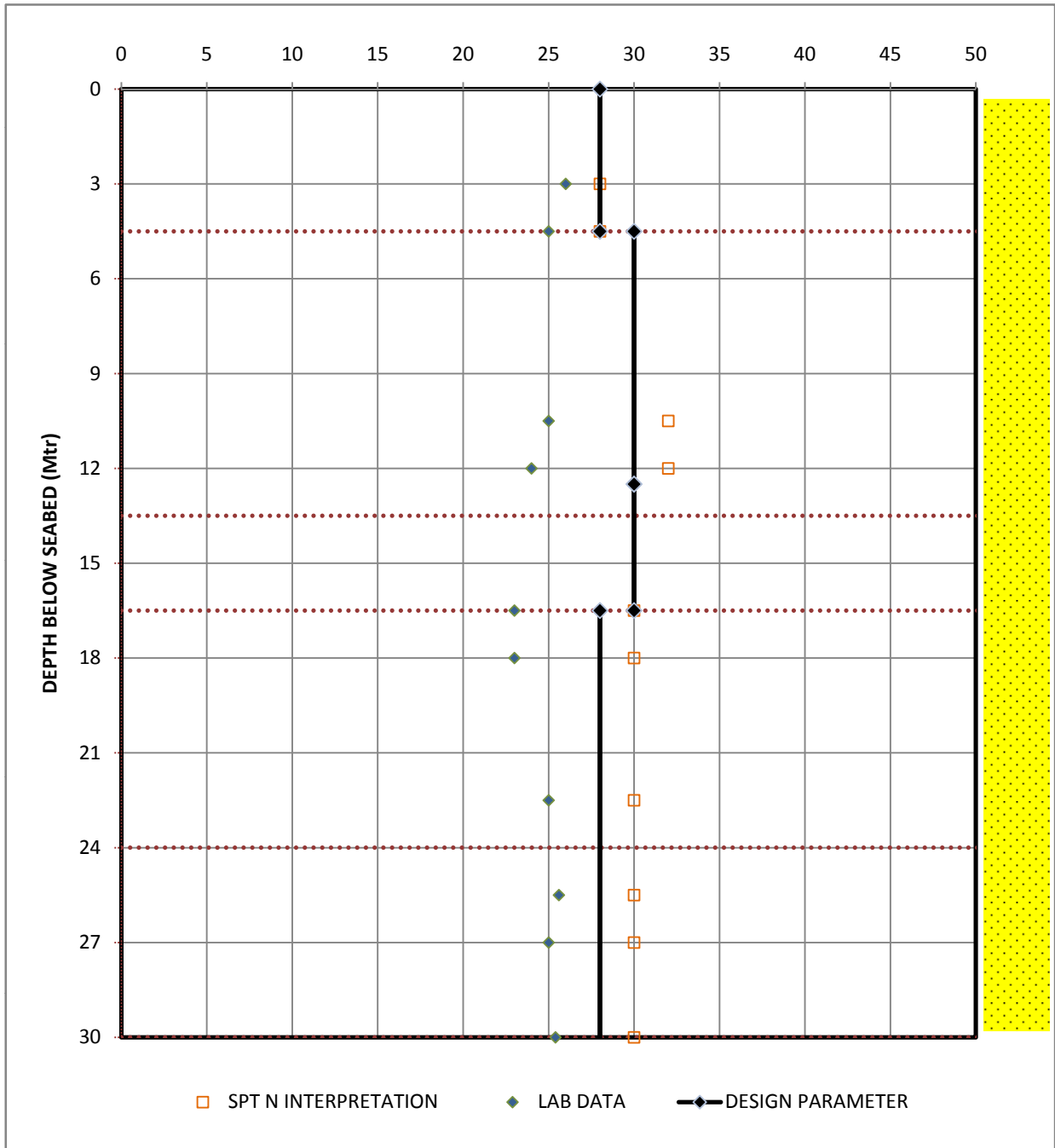
SUBMERGED UNIT WEIGHT KN/M³



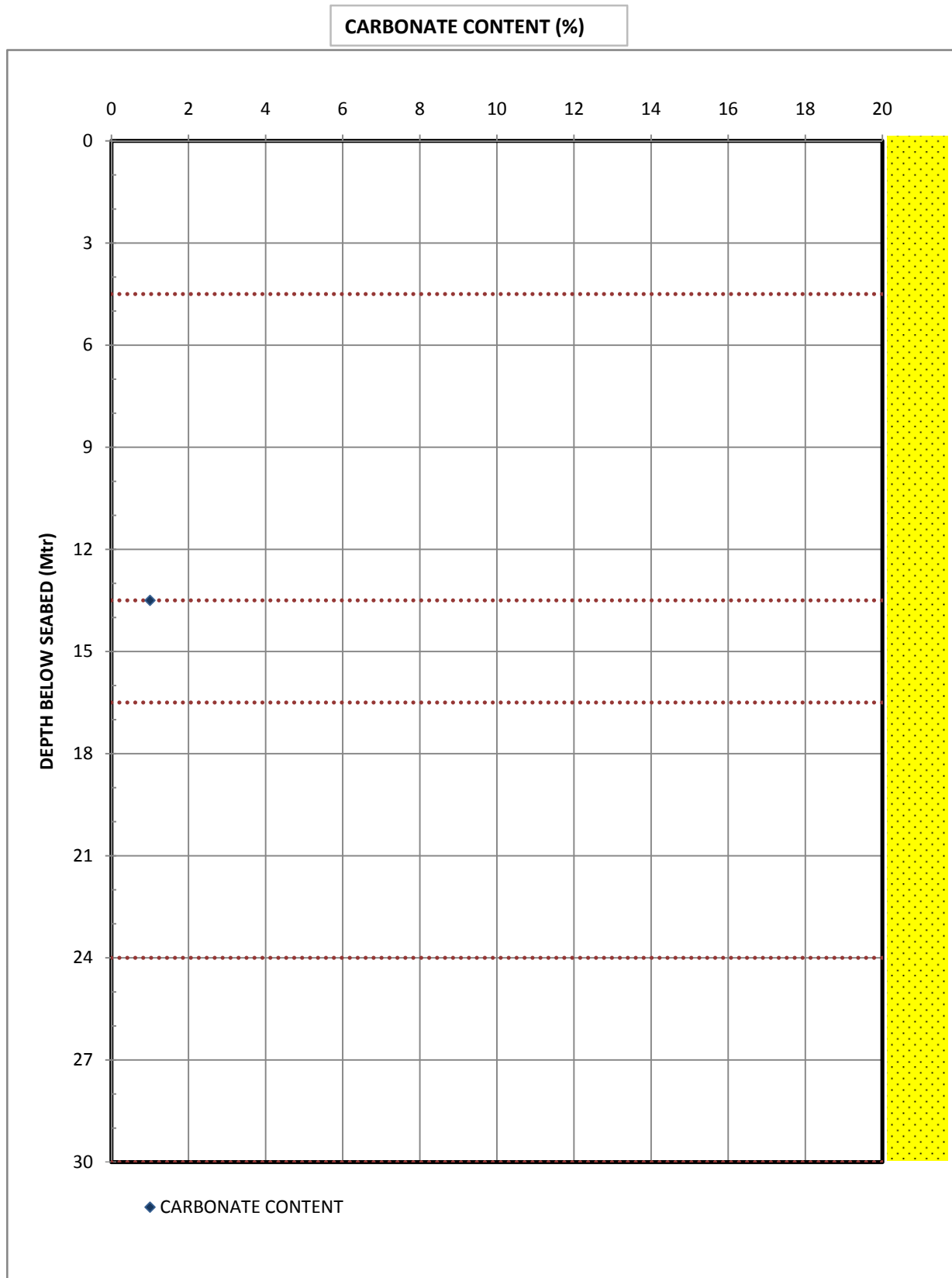
SPECIFIC GRAVITY



ANGLE OF INTERNAL FRICTION-PHI (DEGREE)

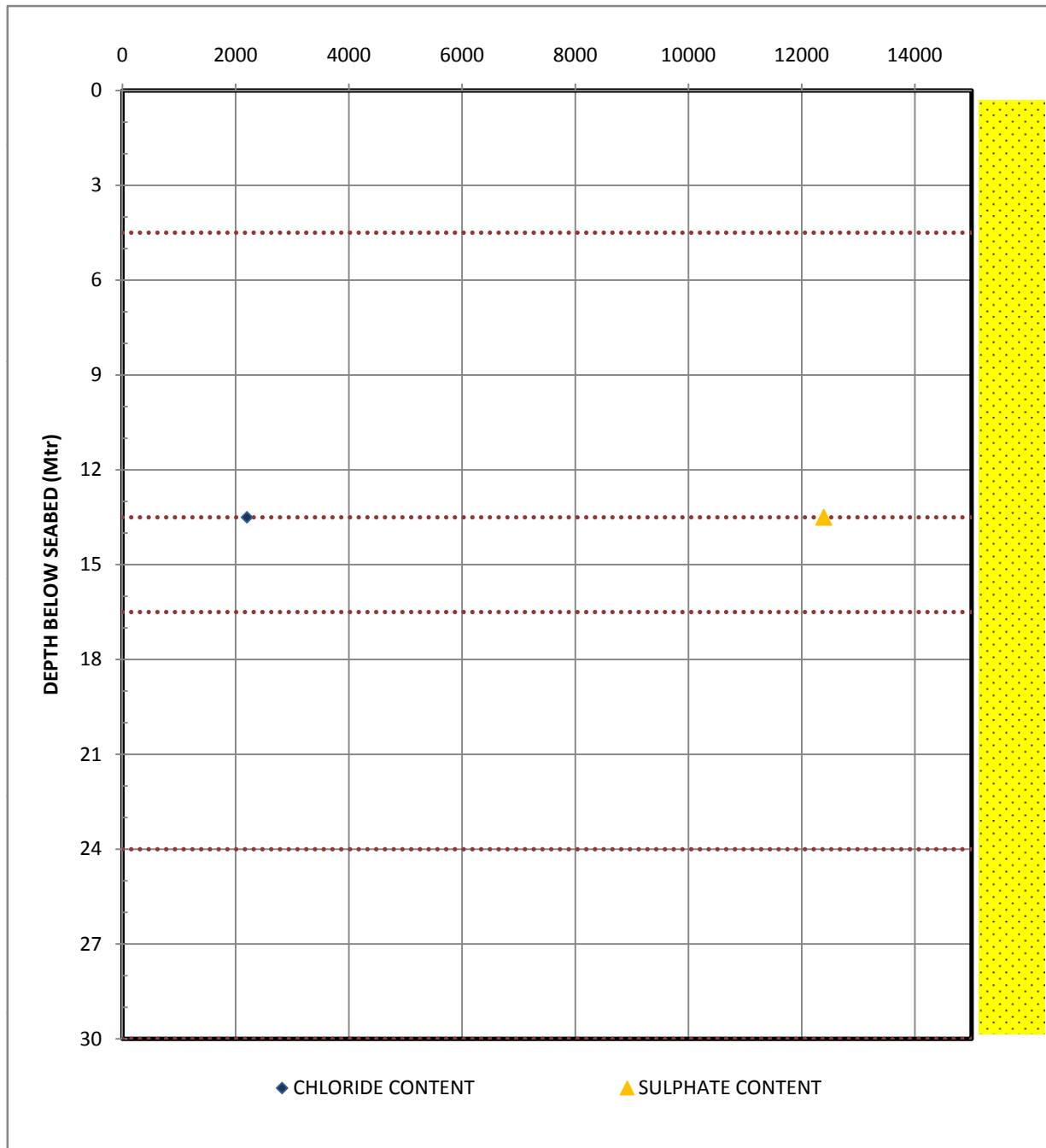


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

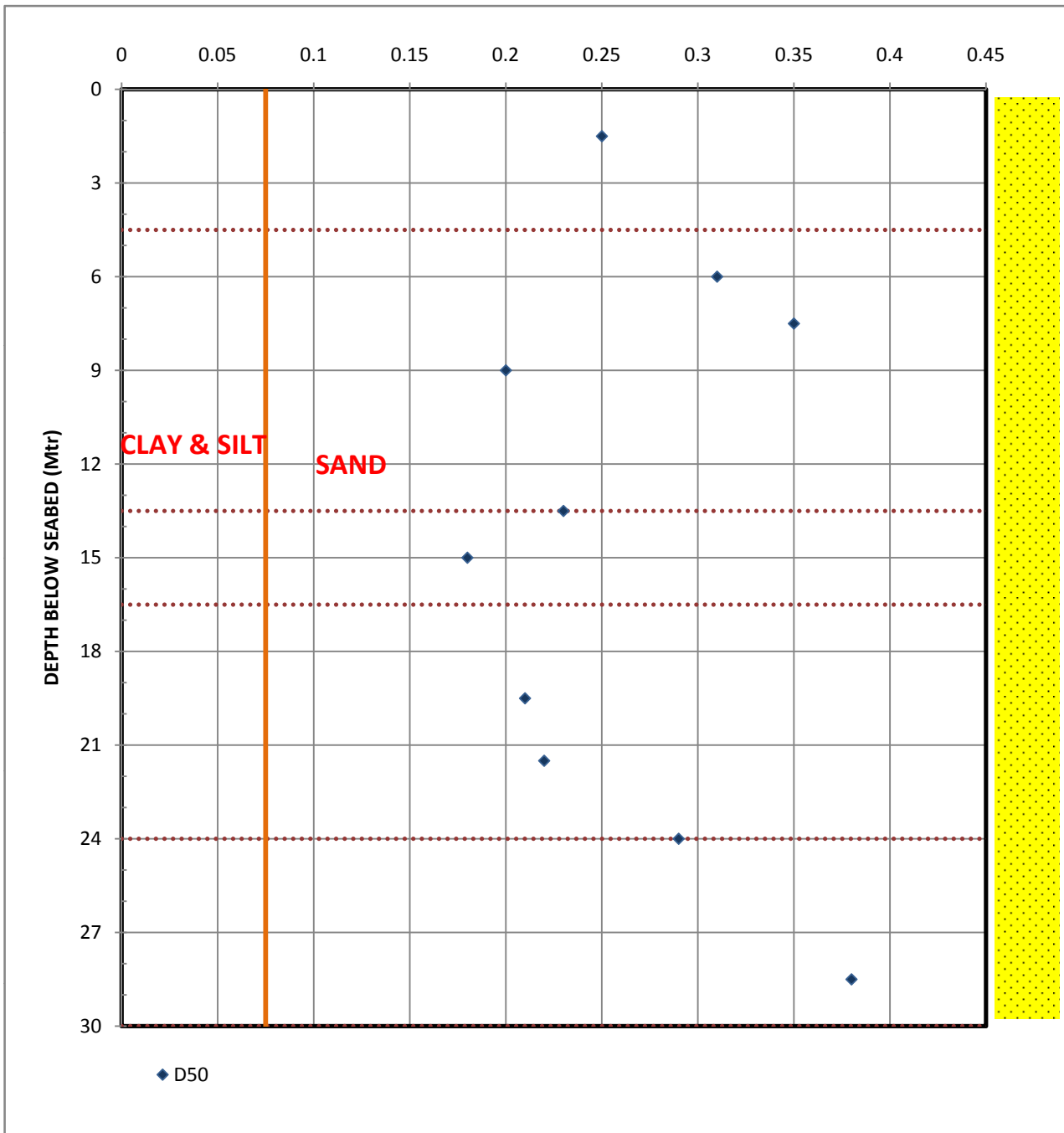


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

CHEMICAL CONTENTS in PPM

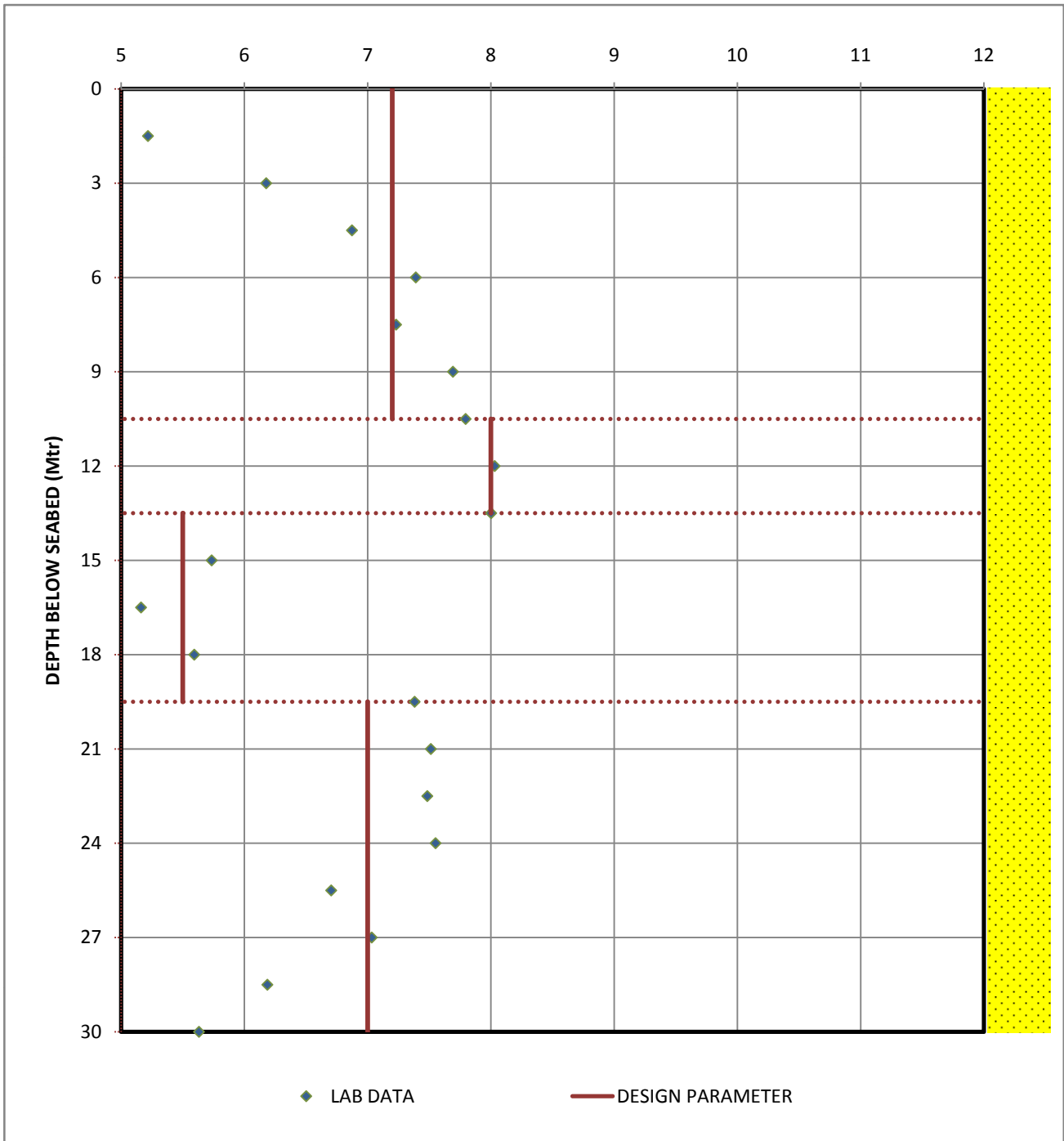


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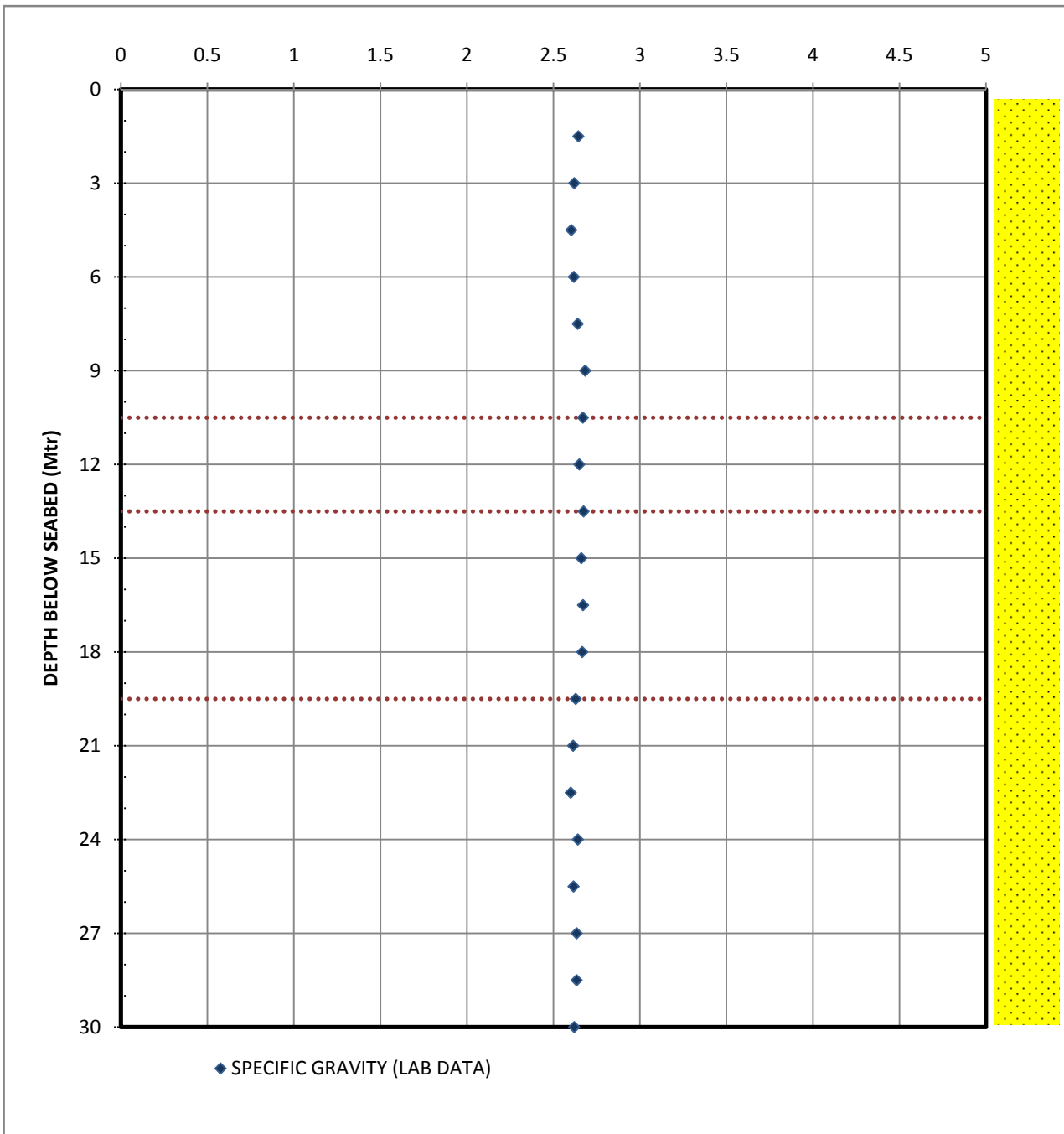


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

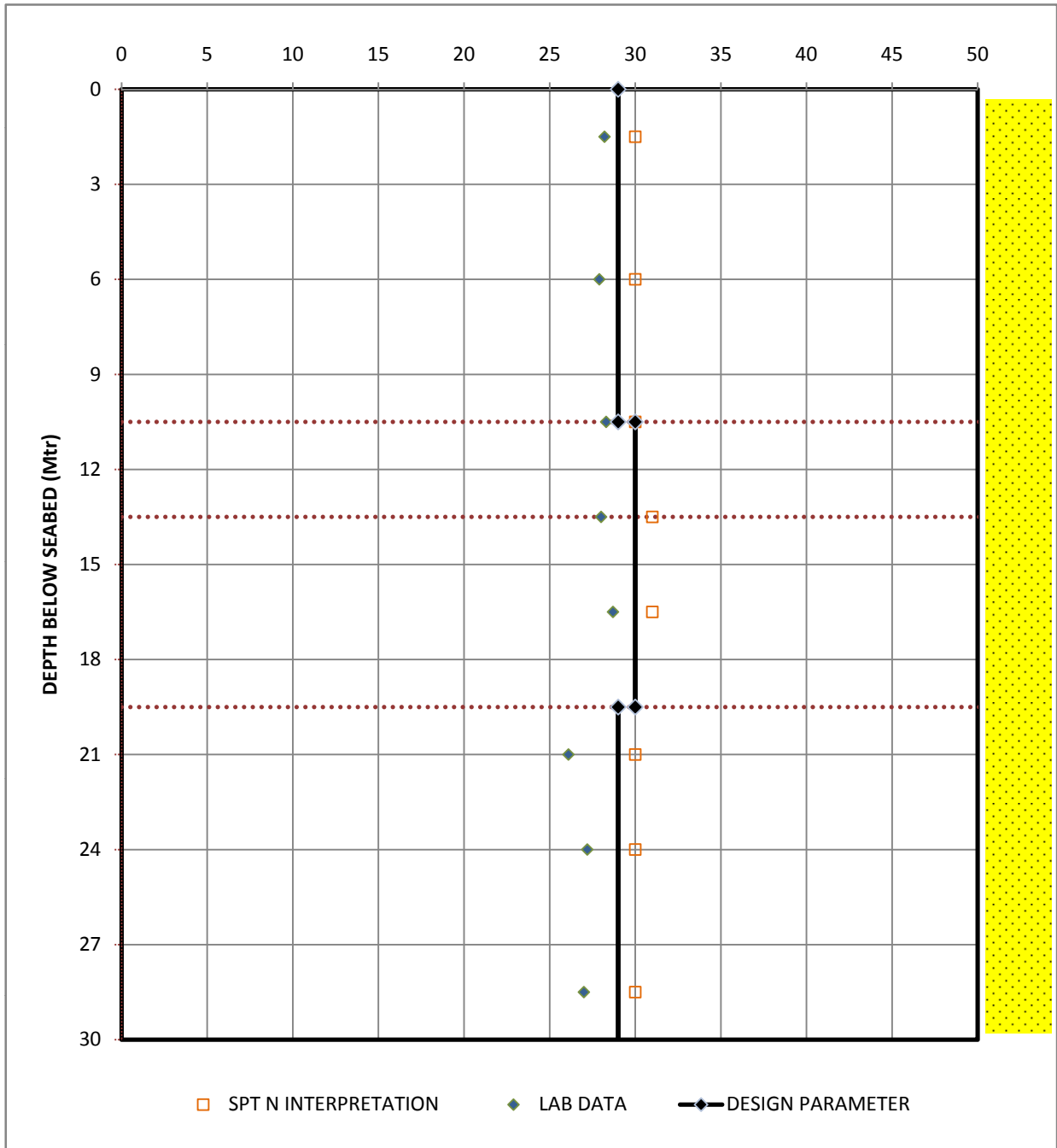
SUBMERGED UNIT WEIGHT KN/M³



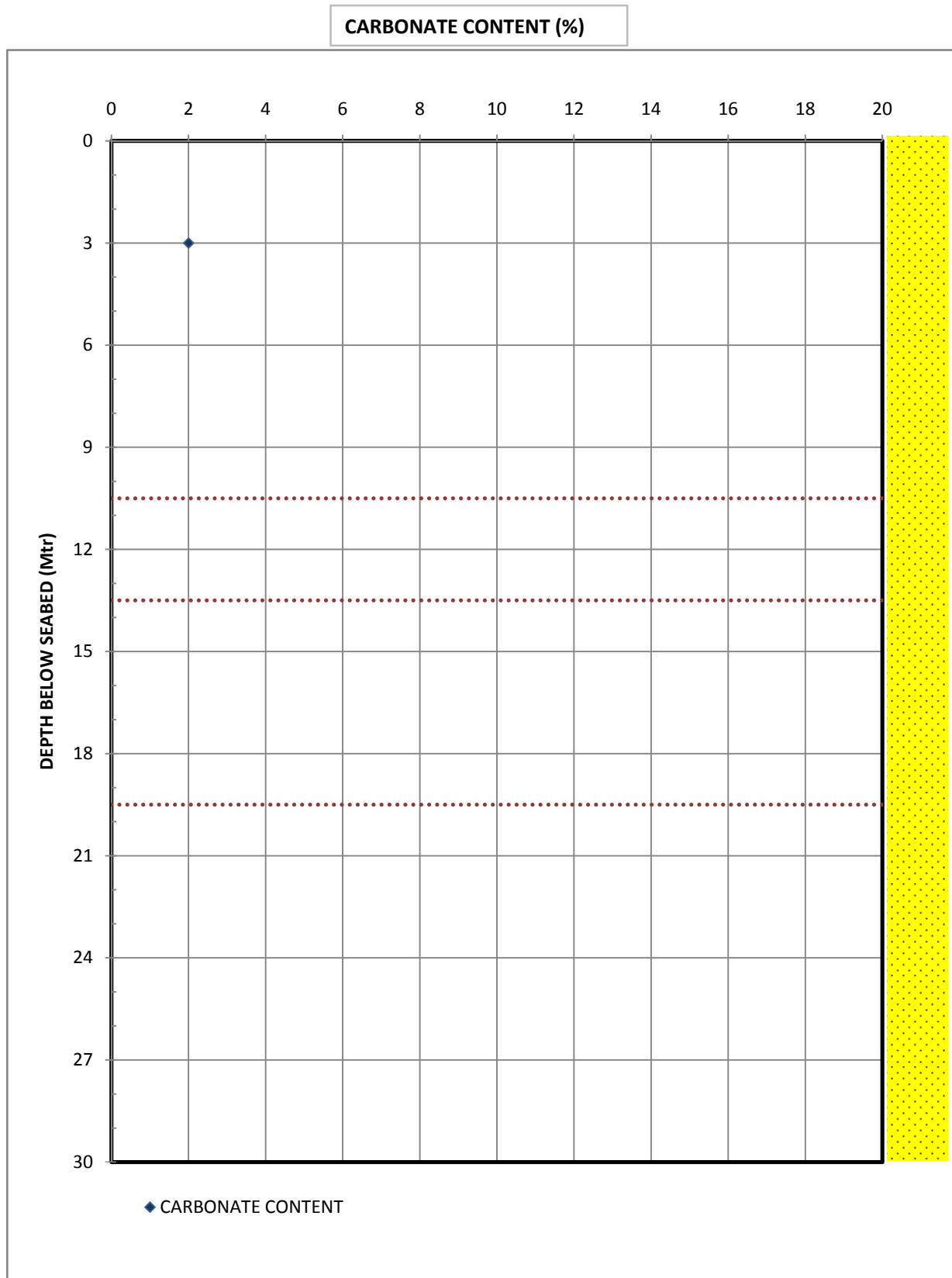
SPECIFIC GRAVITY



ANGLE OF INTERNAL FRICTION-PHI (DEGREE)

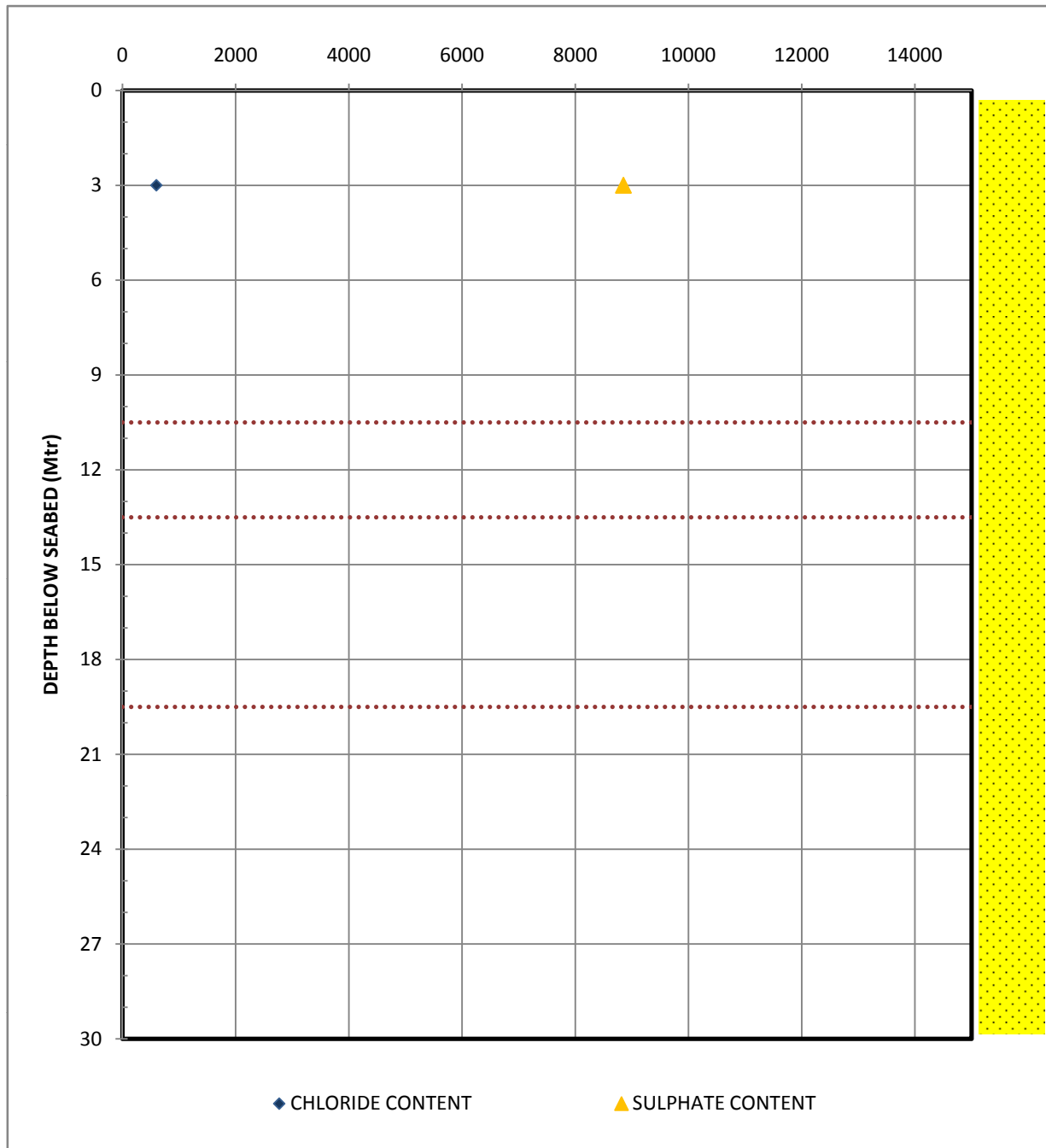


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

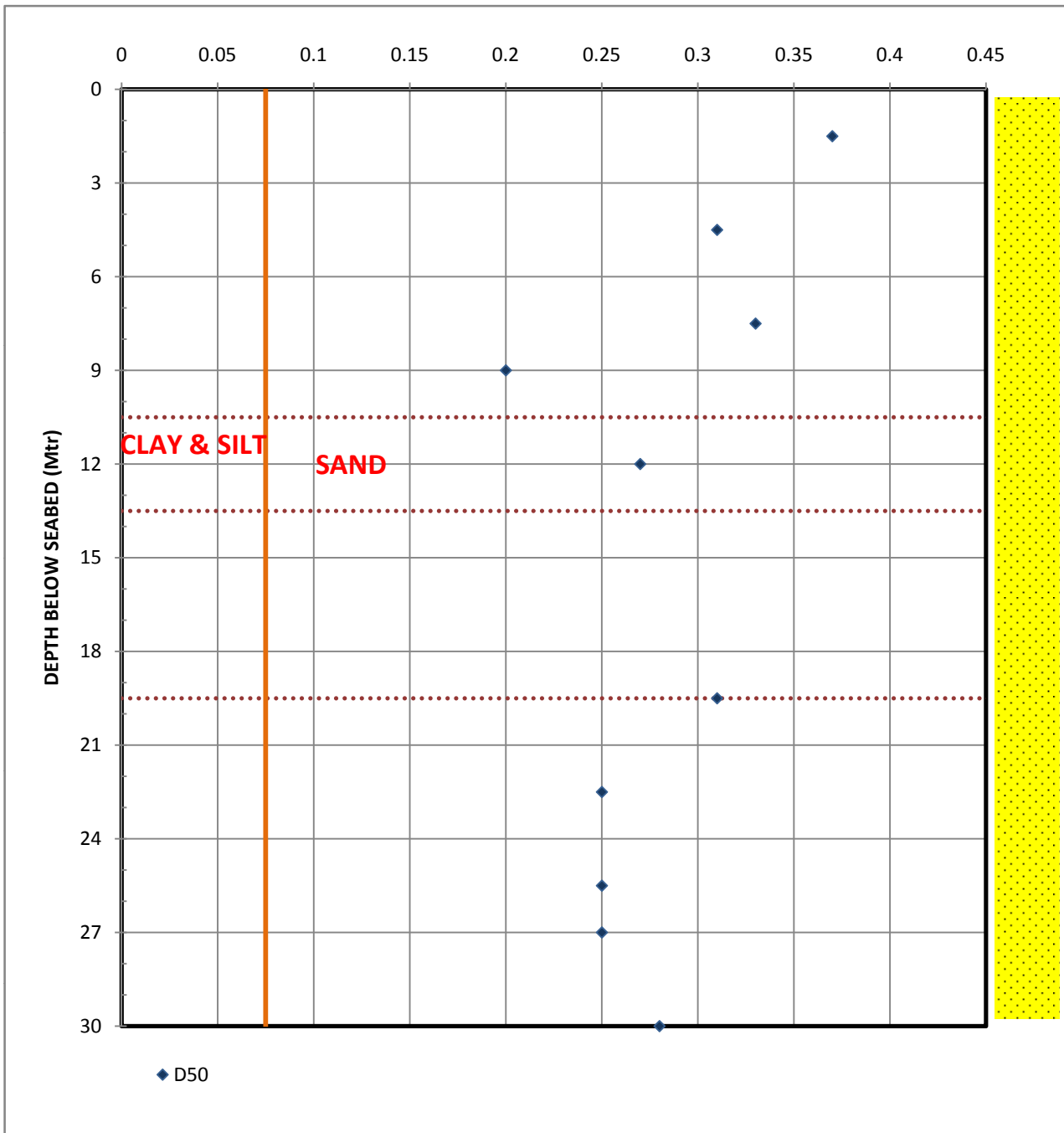


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

CHEMICAL CONTENTS in PPM

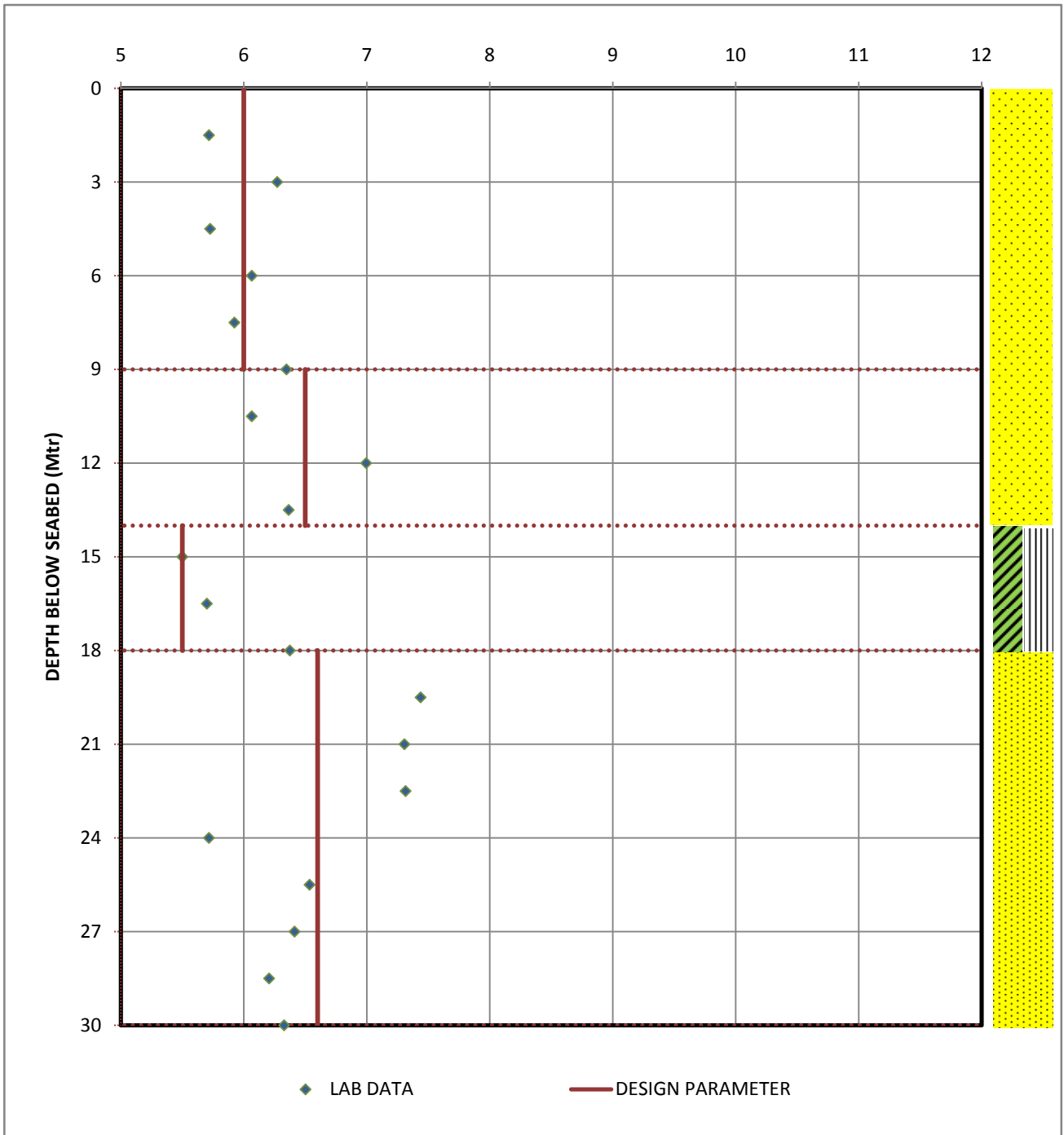


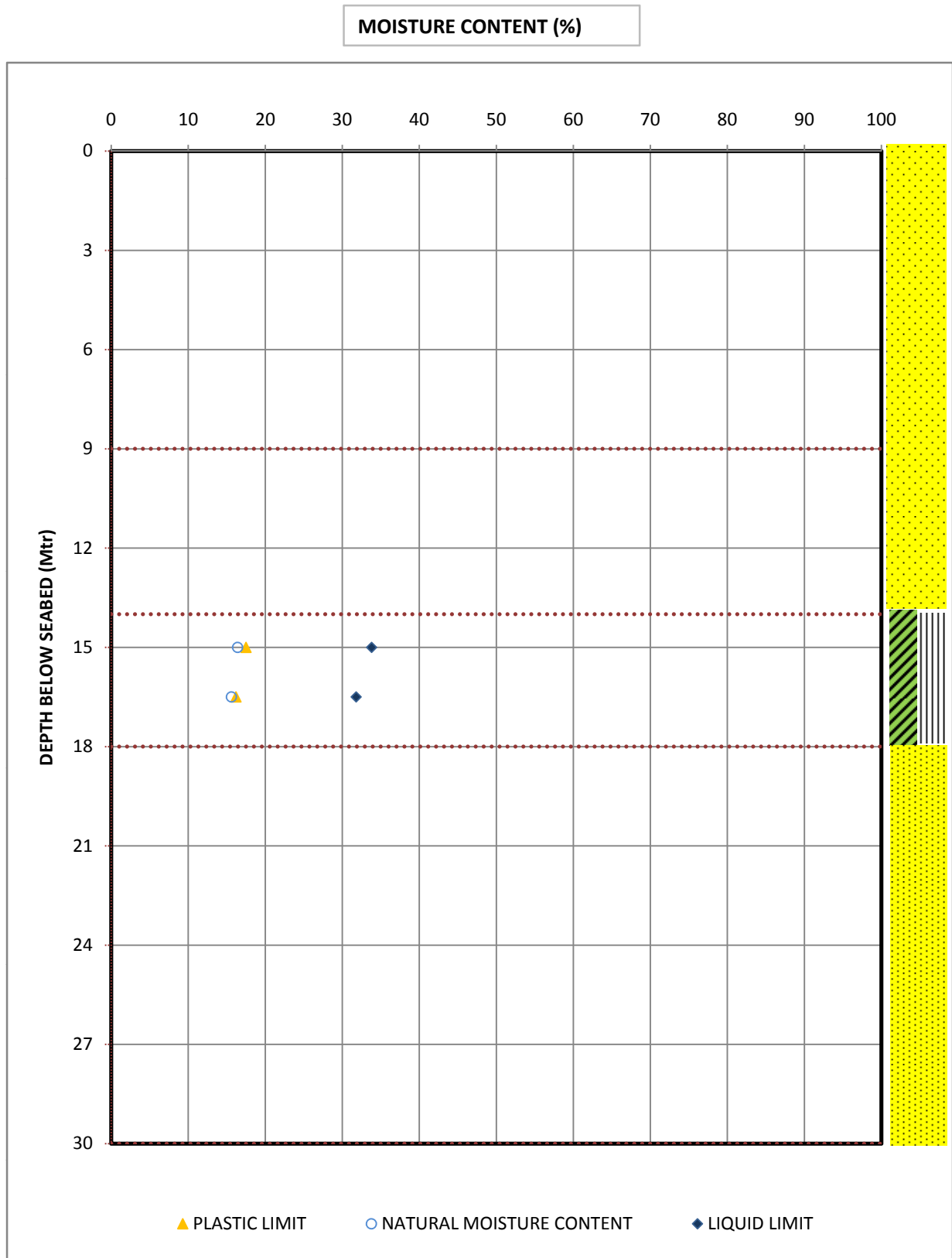
D50



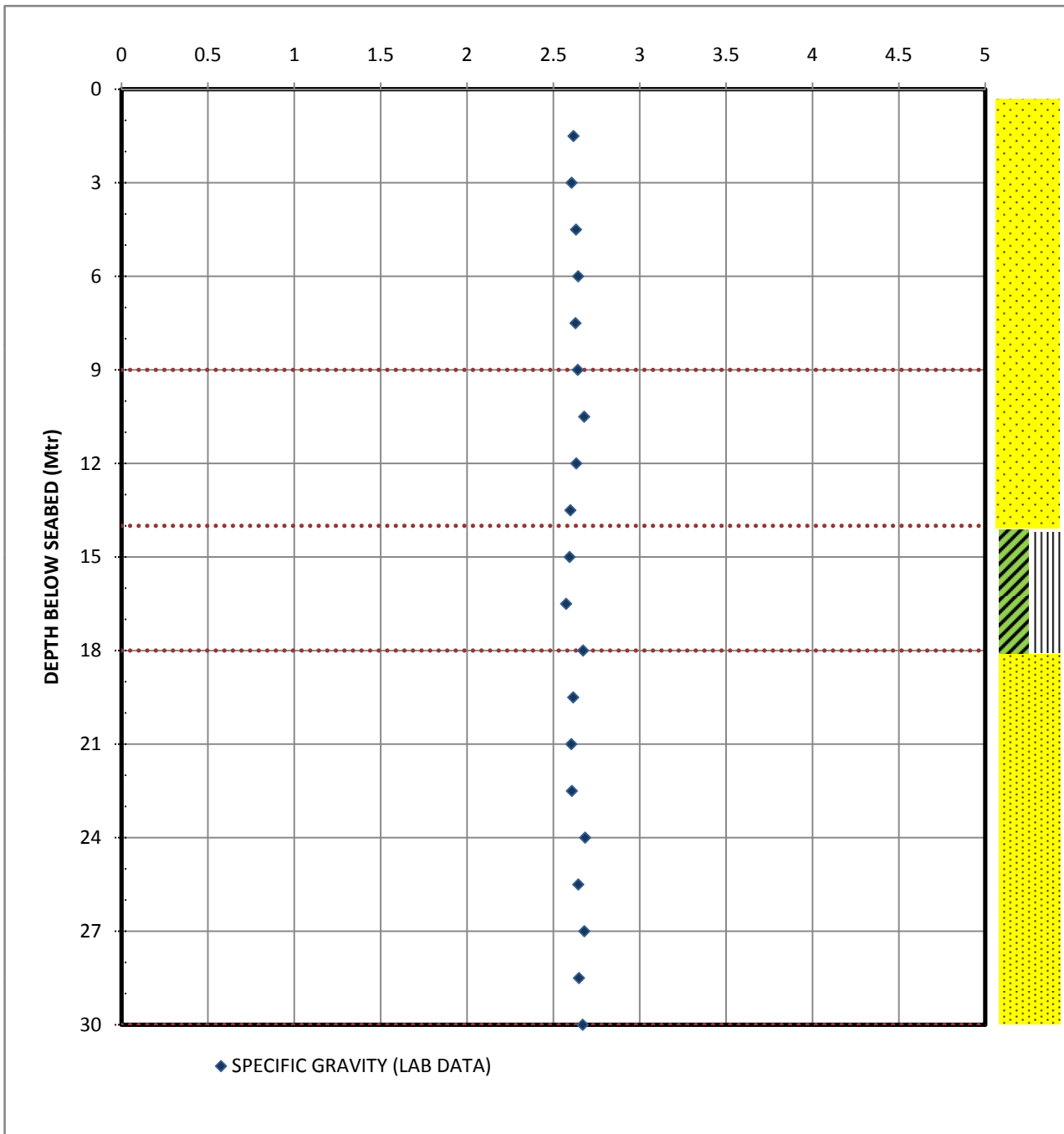
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

SUBMERGED UNIT WEIGHT KN/M³



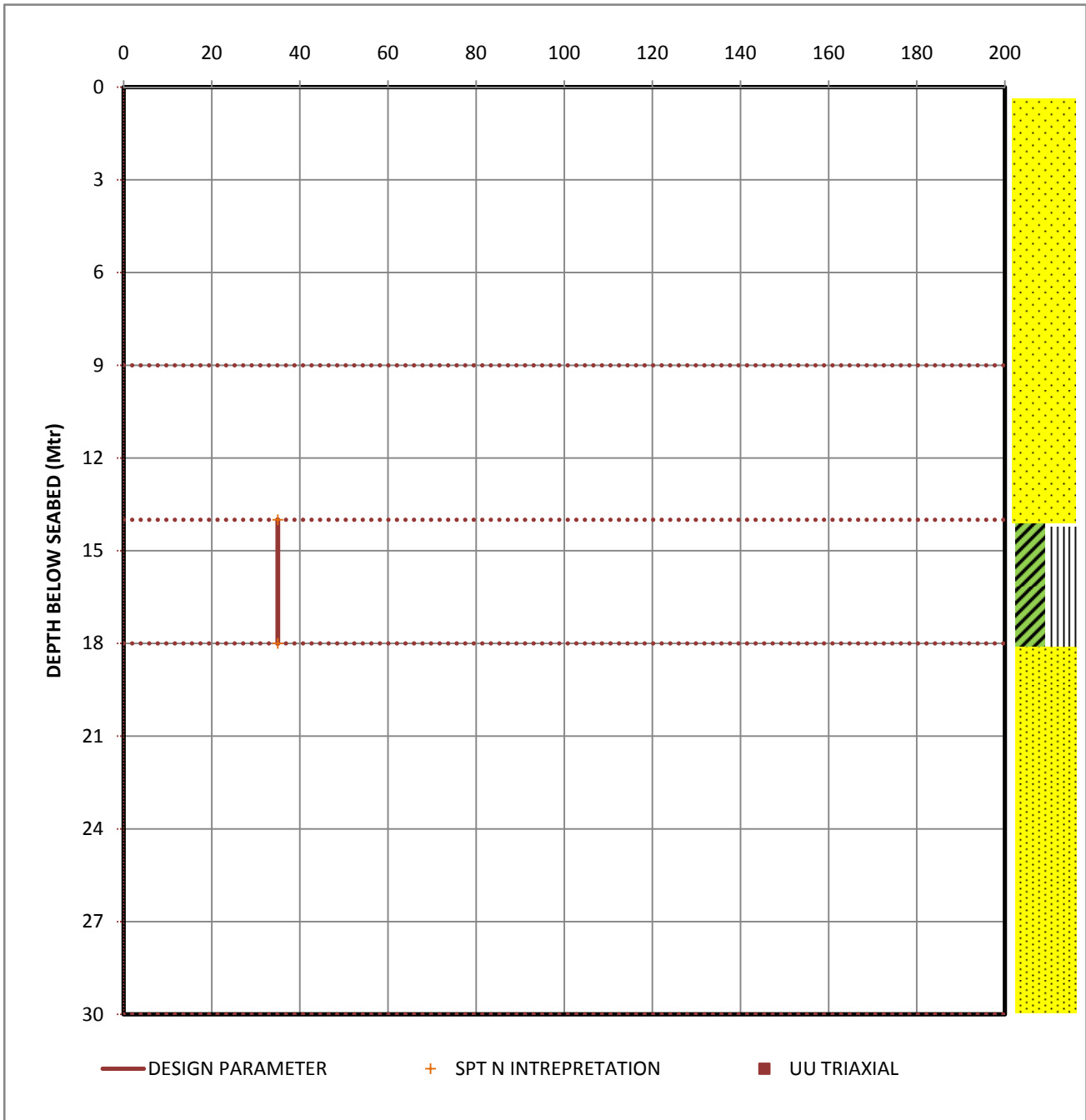


SPECIFIC GRAVITY

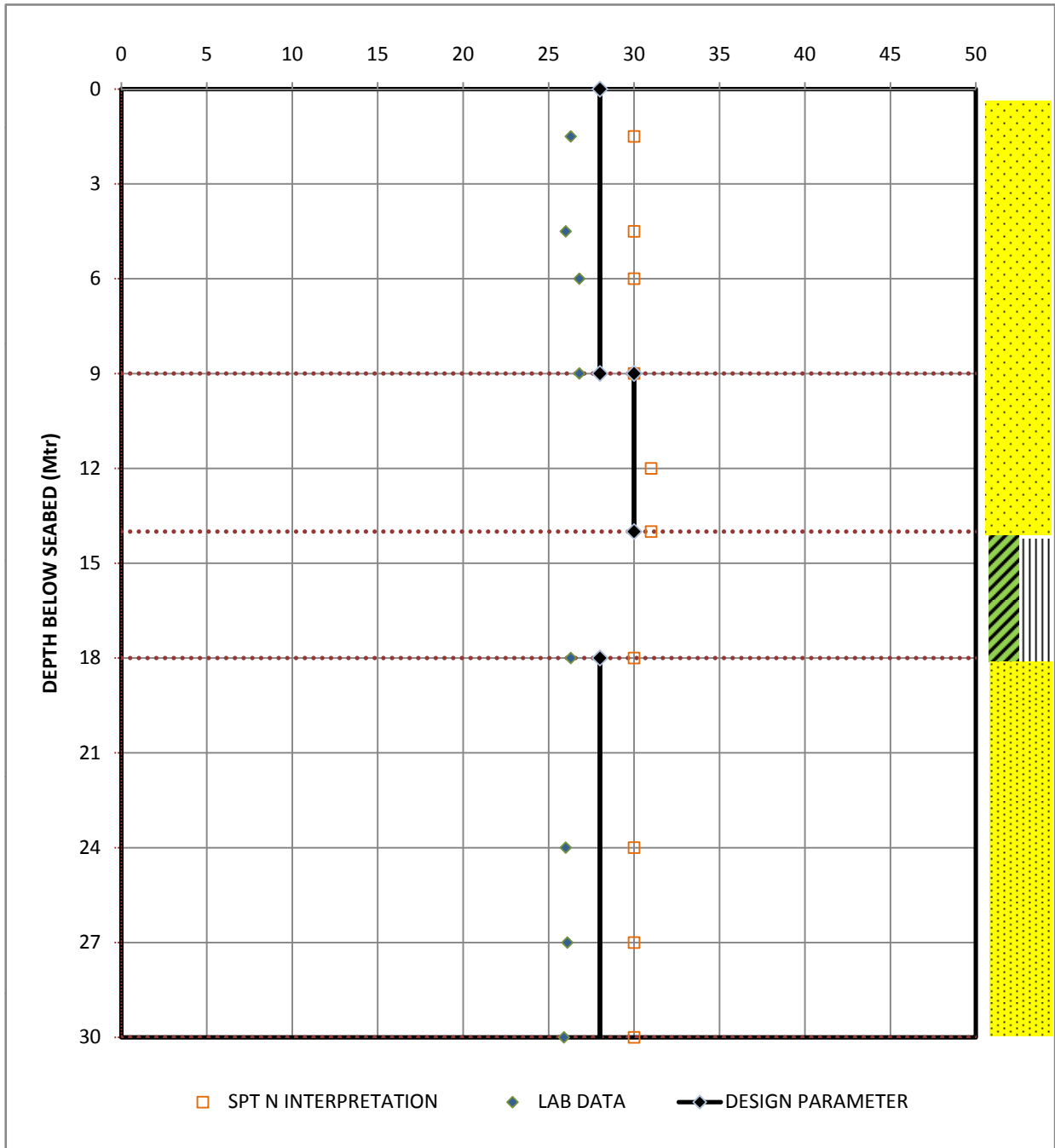


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

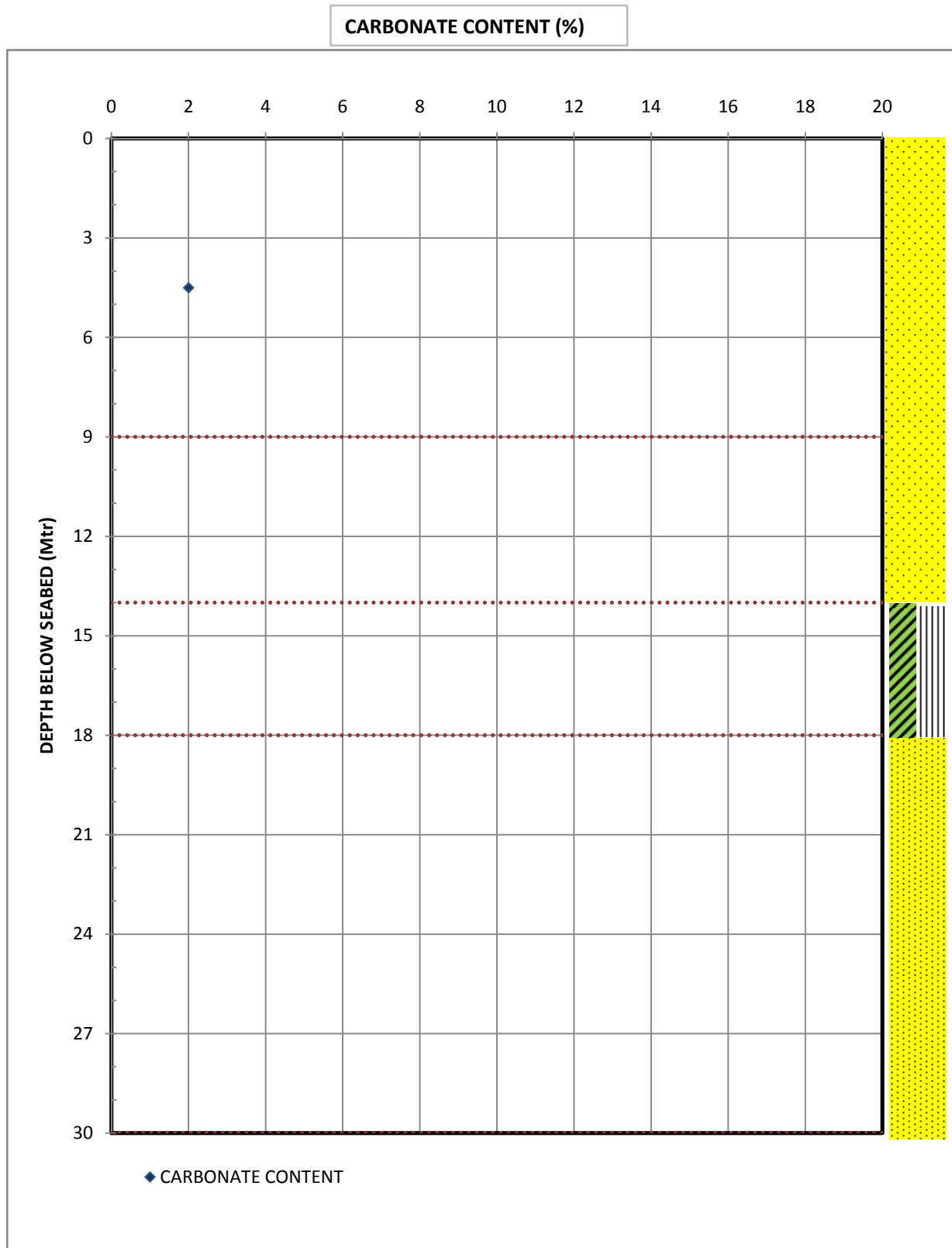
SHEAR STRENGTH (IN kPa)



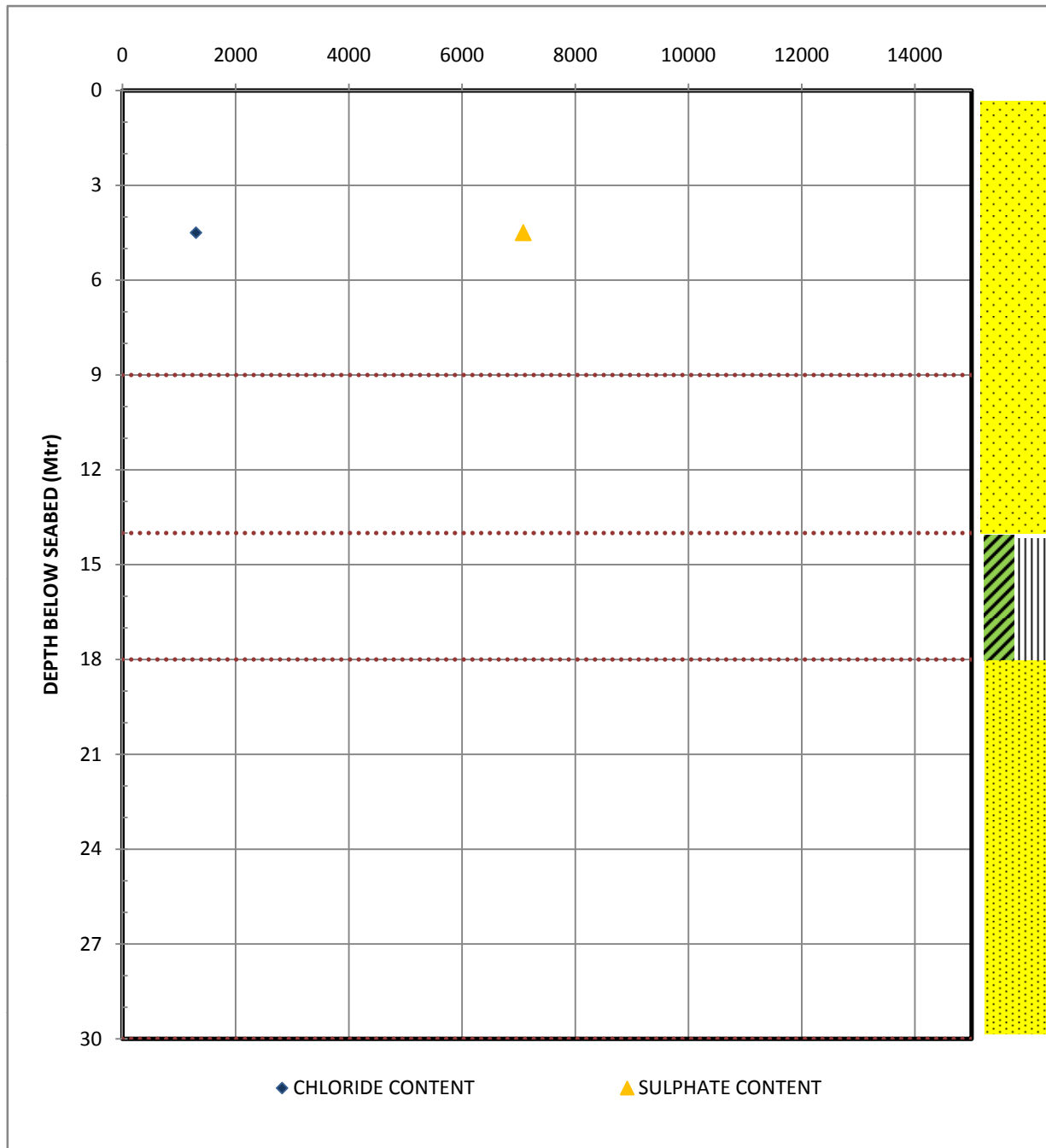
ANGLE OF INTERNAL FRICTION-PHI (DEGREE)



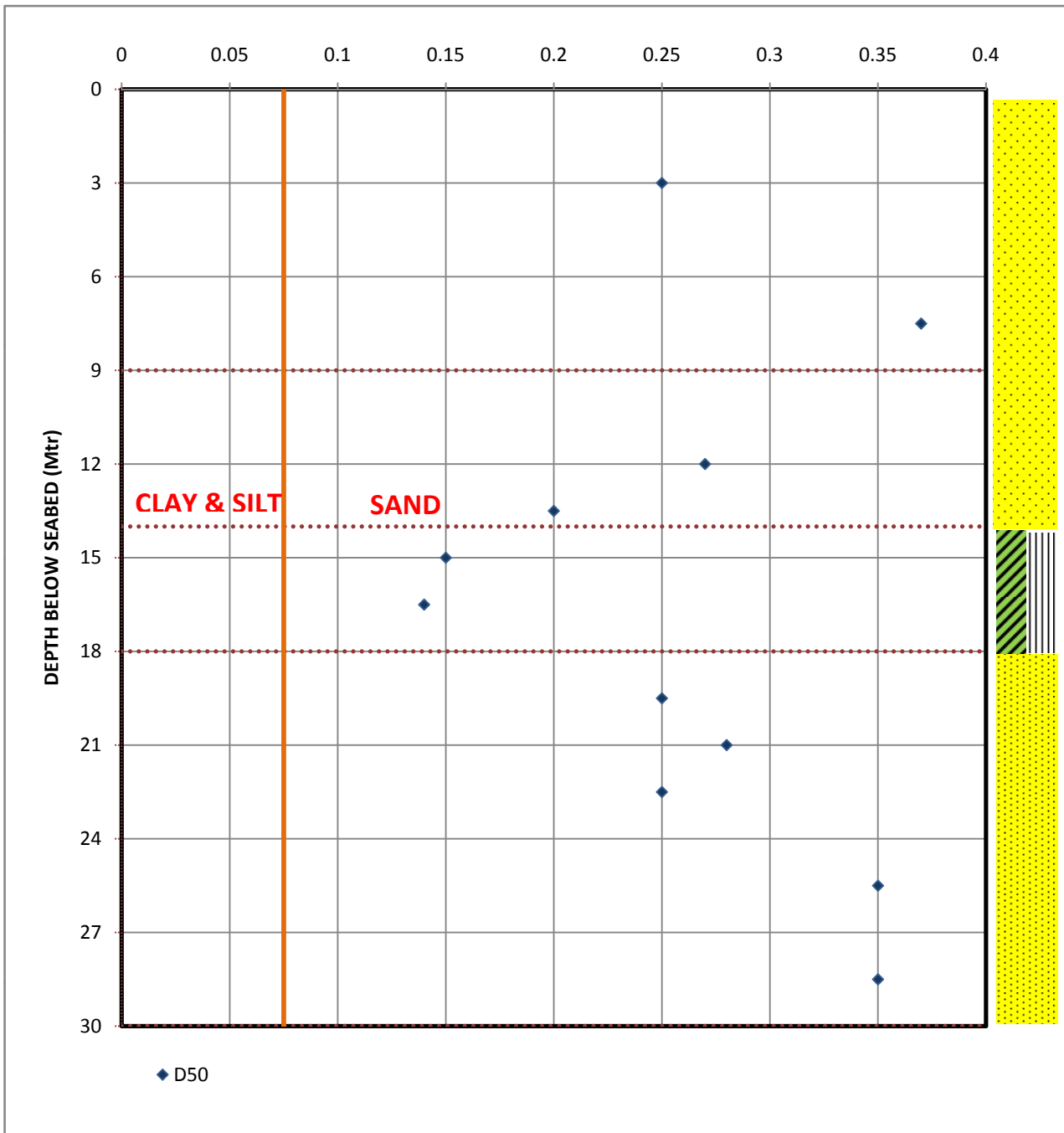
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



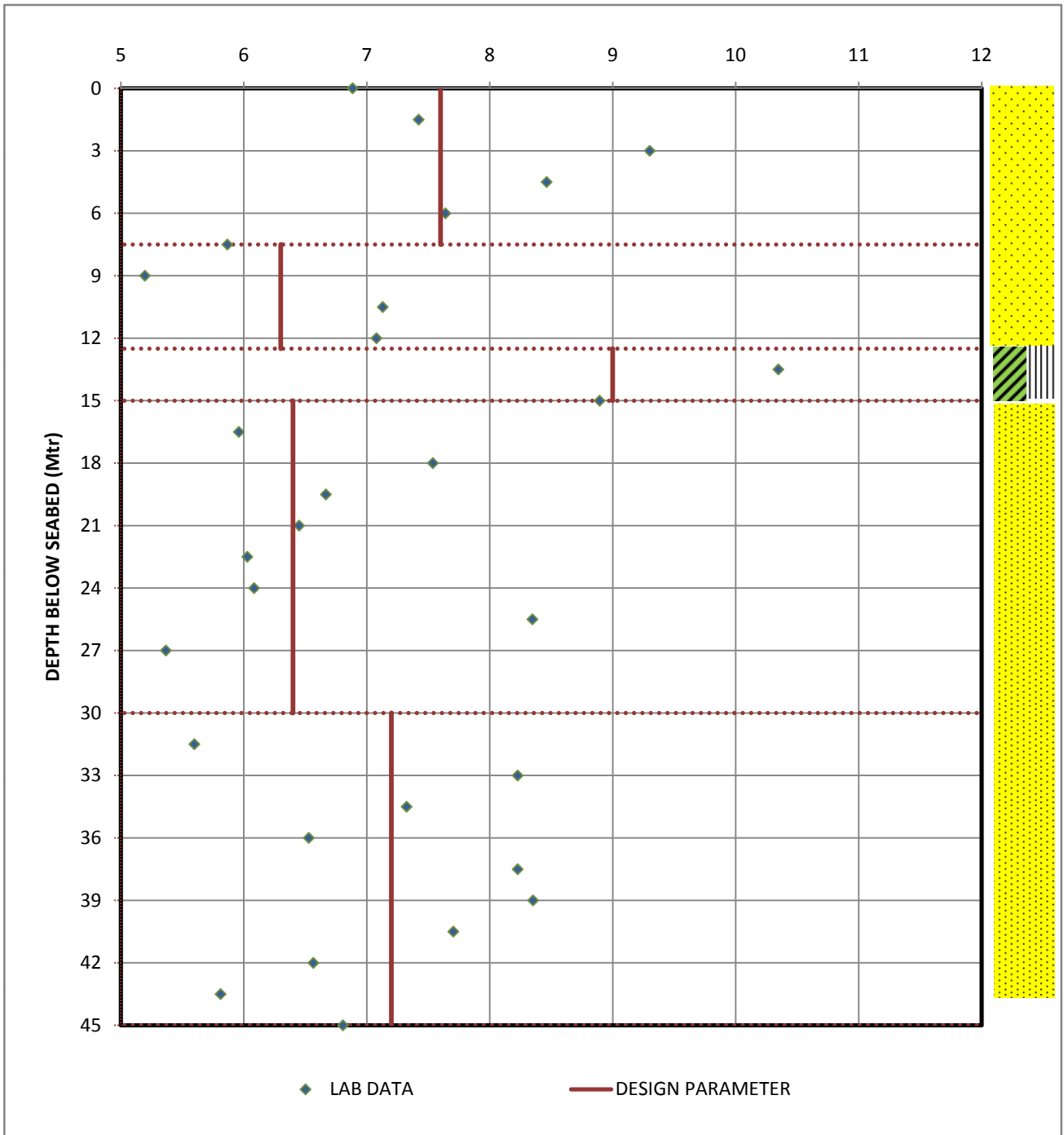
CHEMICAL CONTENTS in PPM



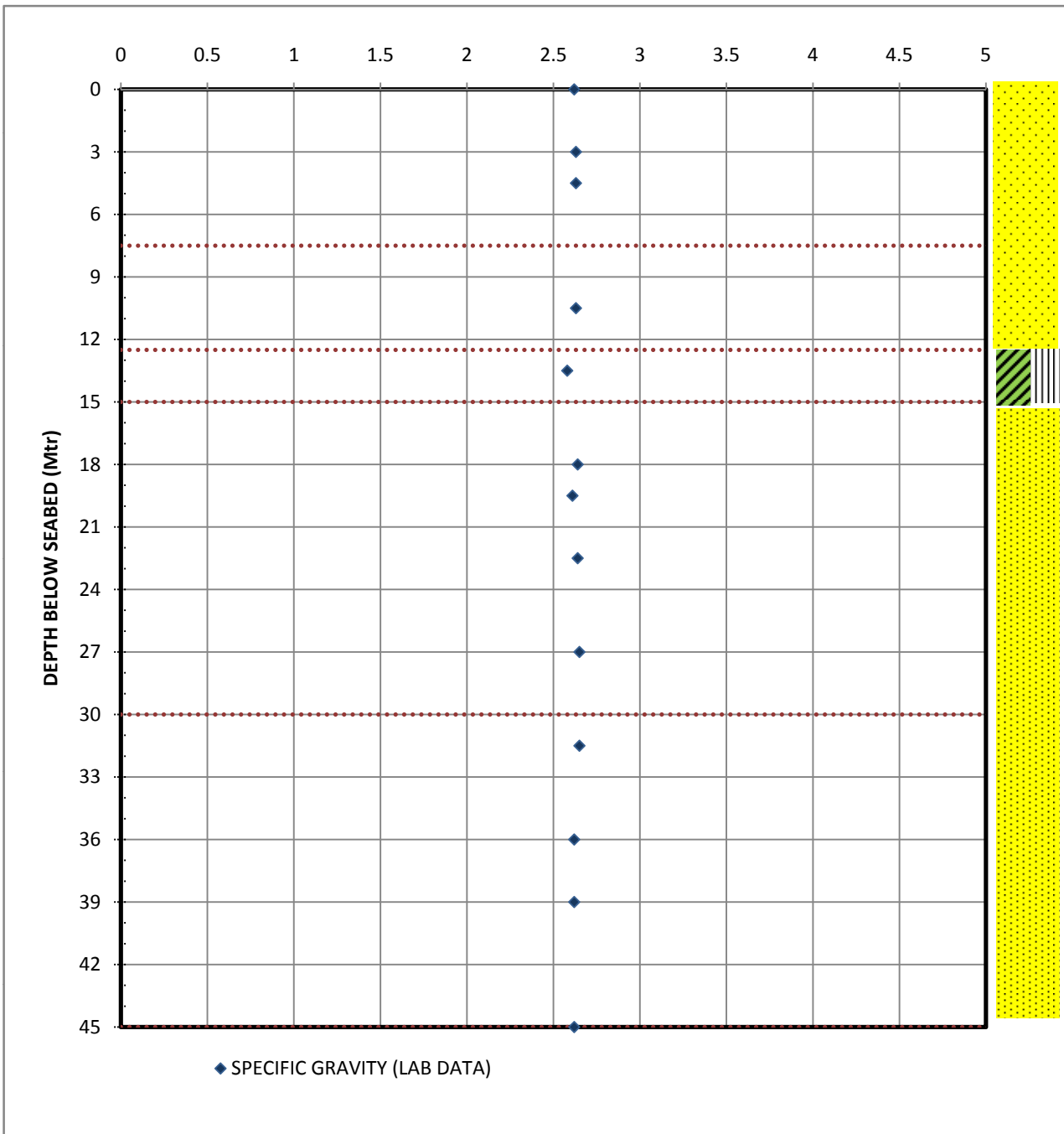
D50



SUBMERGED UNIT WEIGHT KN/M³

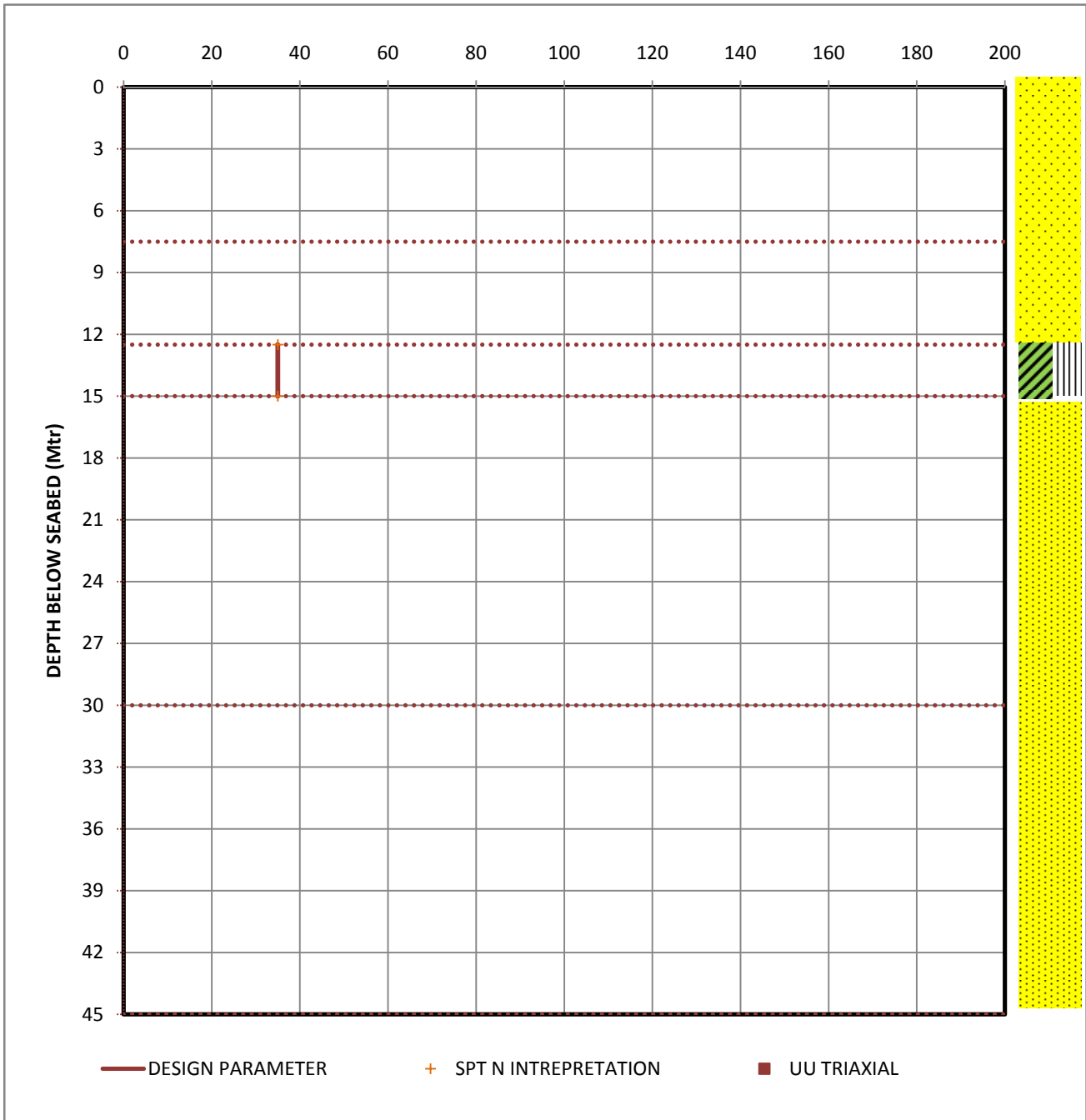


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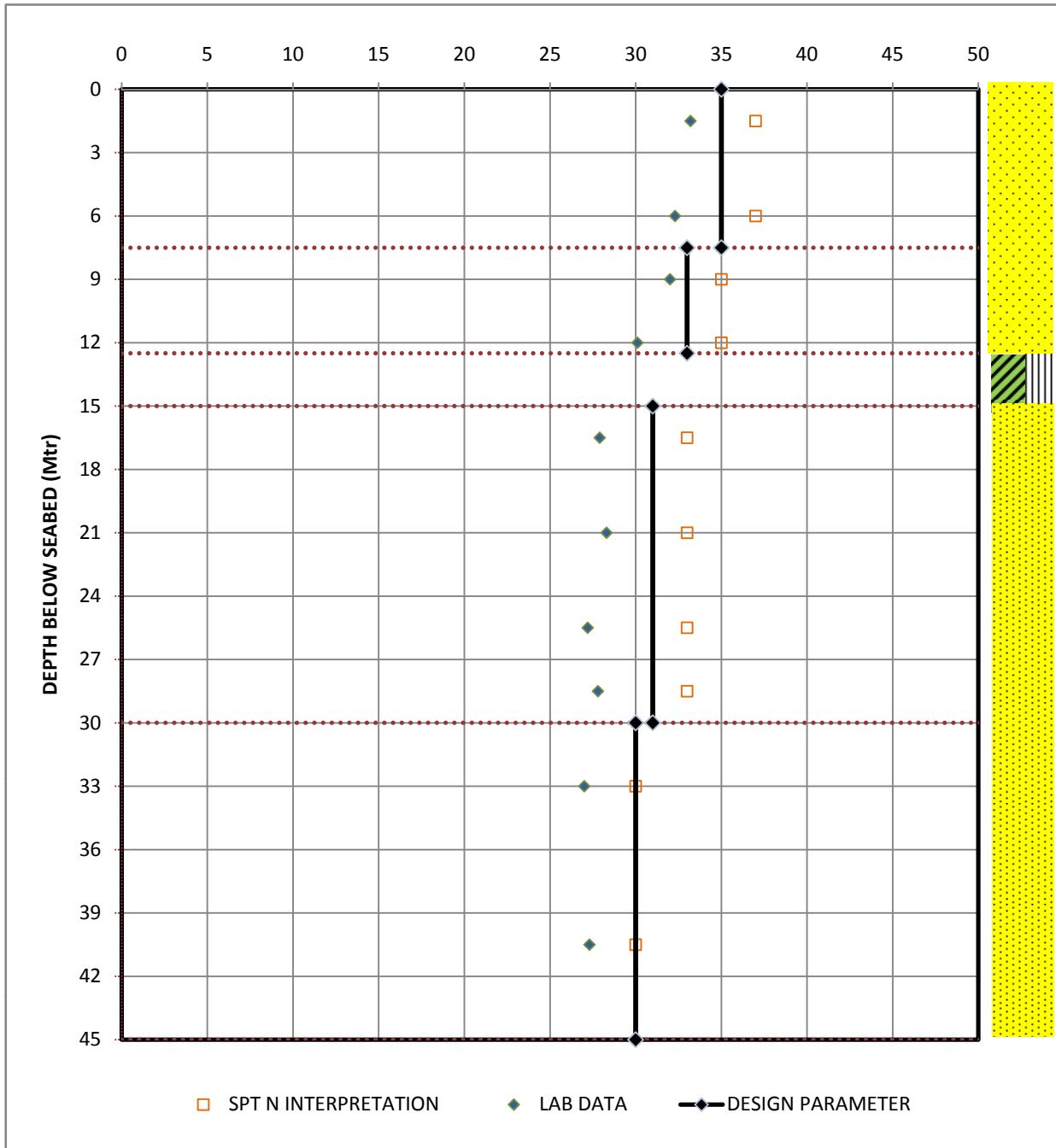


PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.

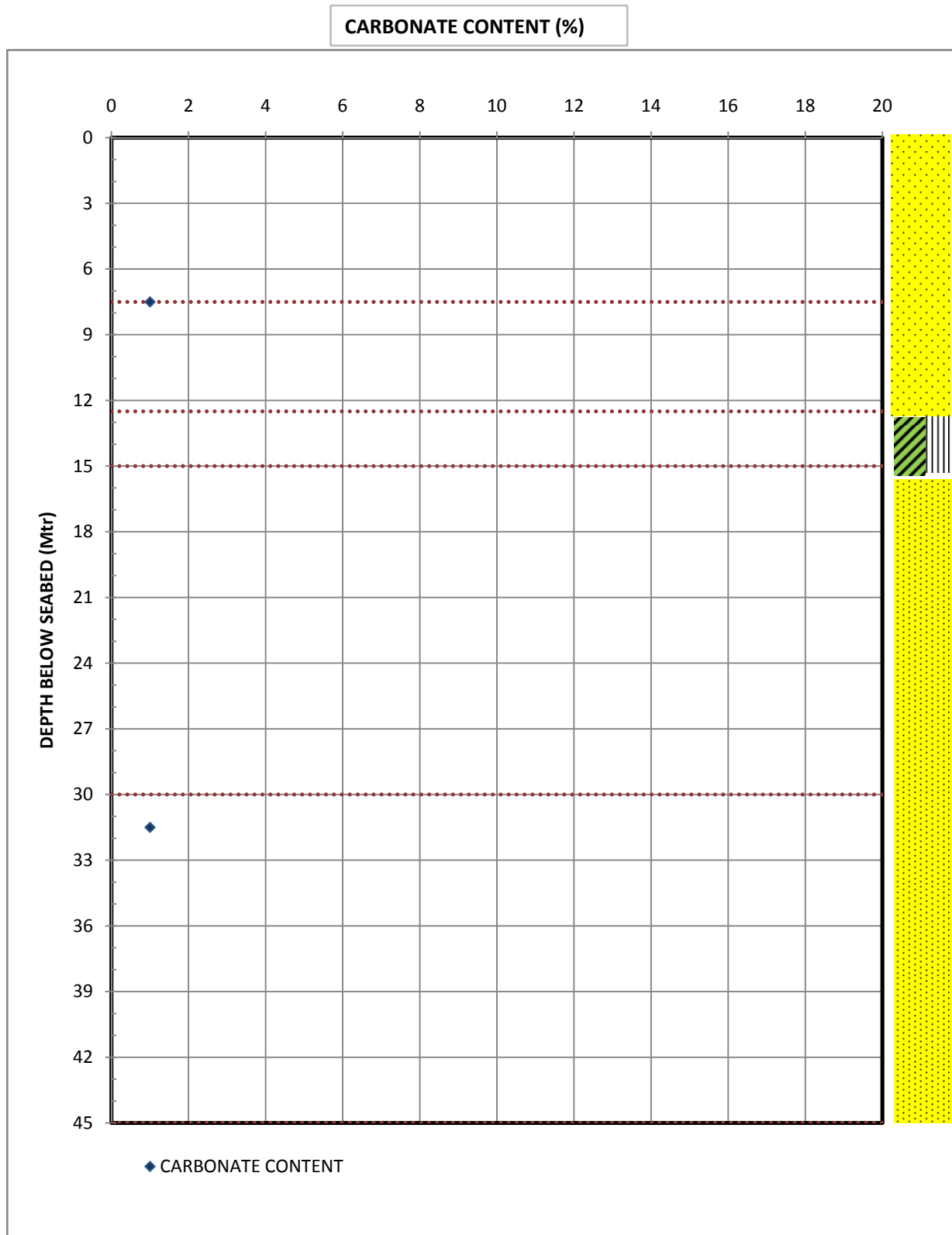
SHEAR STRENGTH (IN kPa)



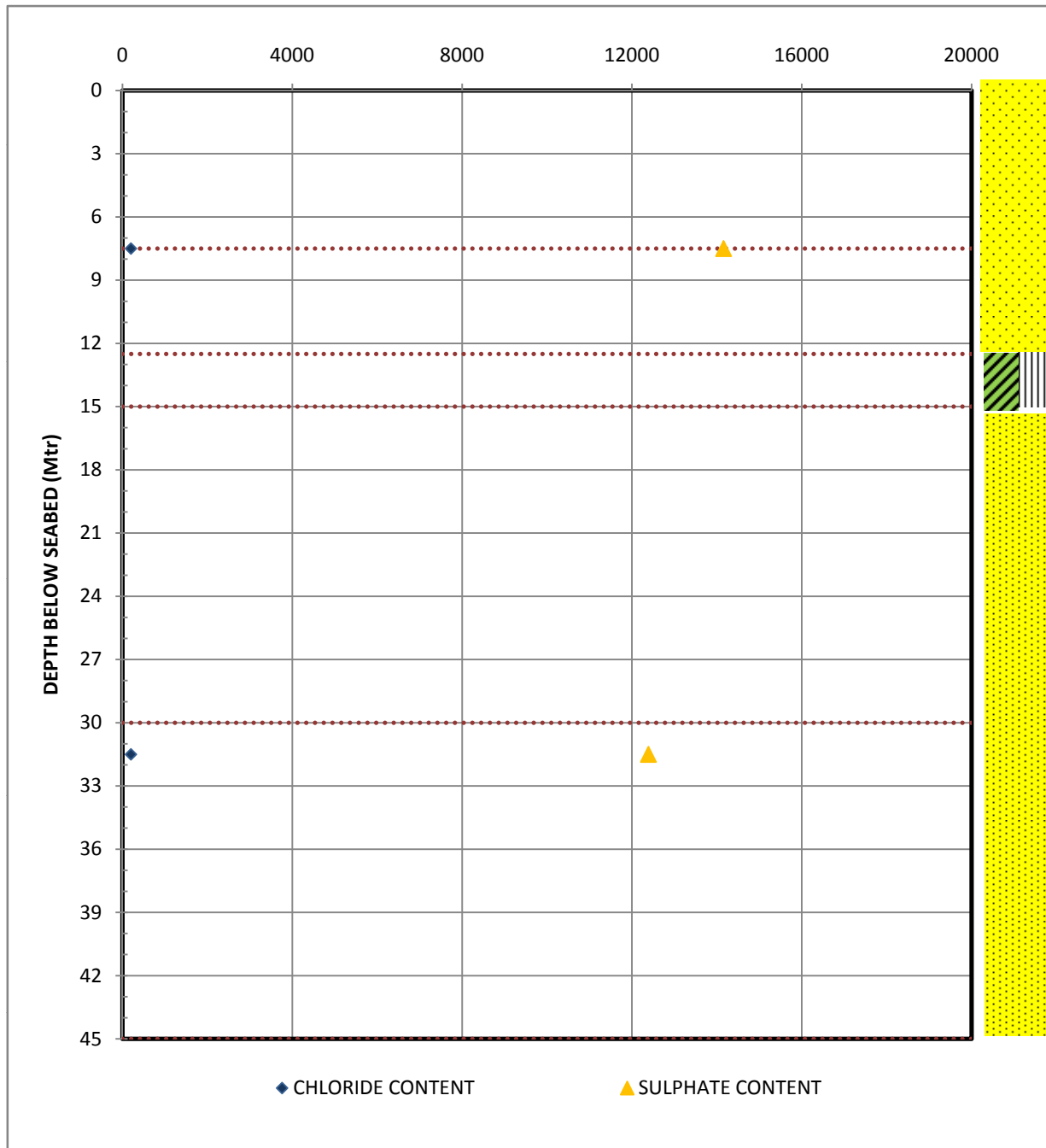
ANGLE OF INTERNAL FRICTION-PHI (DEGREE)



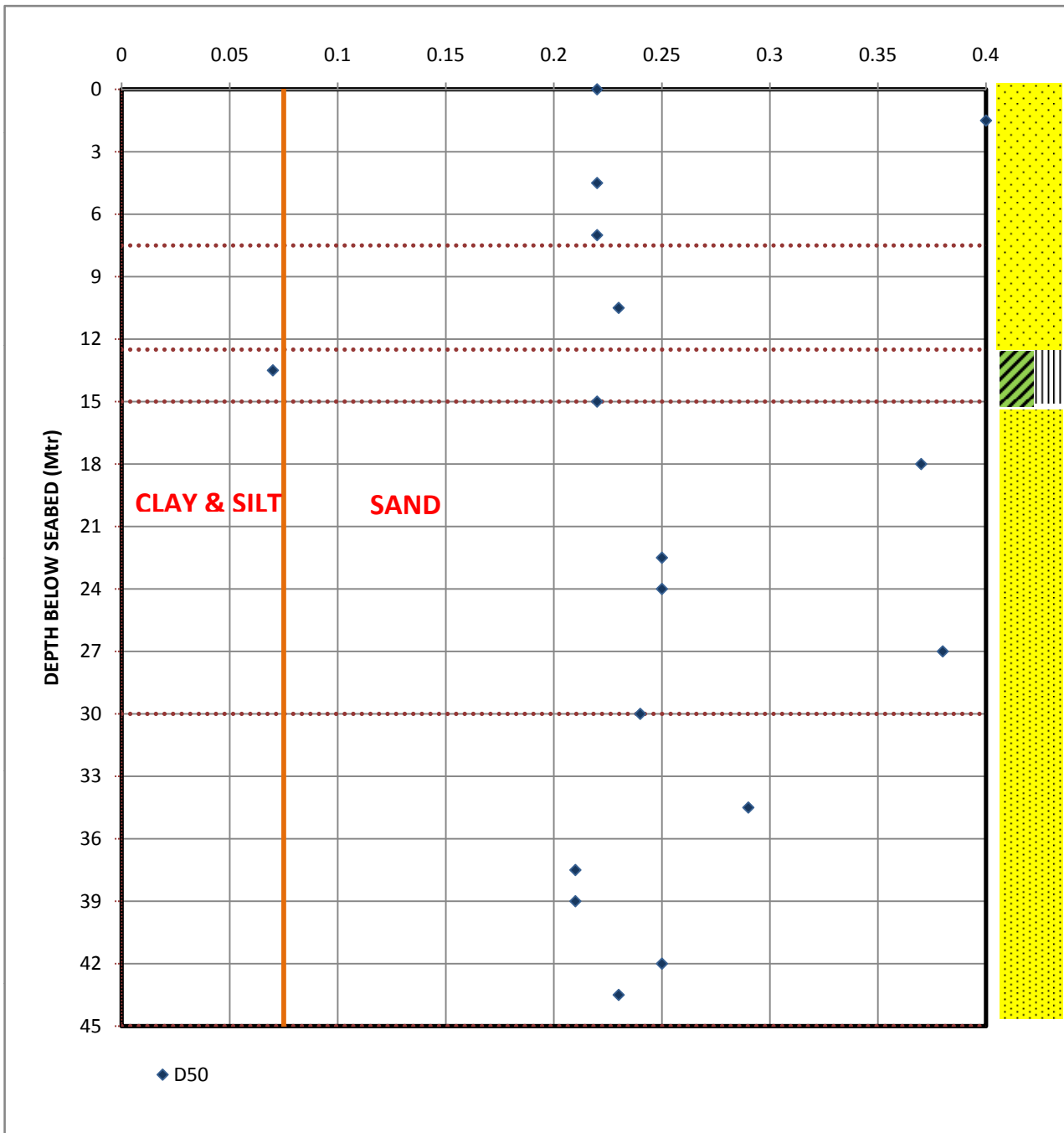
PROJECT : Geotechnical Investigation for Development of Capative Jetty(ies) at Jatadharmuhan, District Jagatsinghpur, Odisha.



CHEMICAL CONTENTS in PPM



D50



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

SUBMERGED UNIT WEIGHT KN/M³

