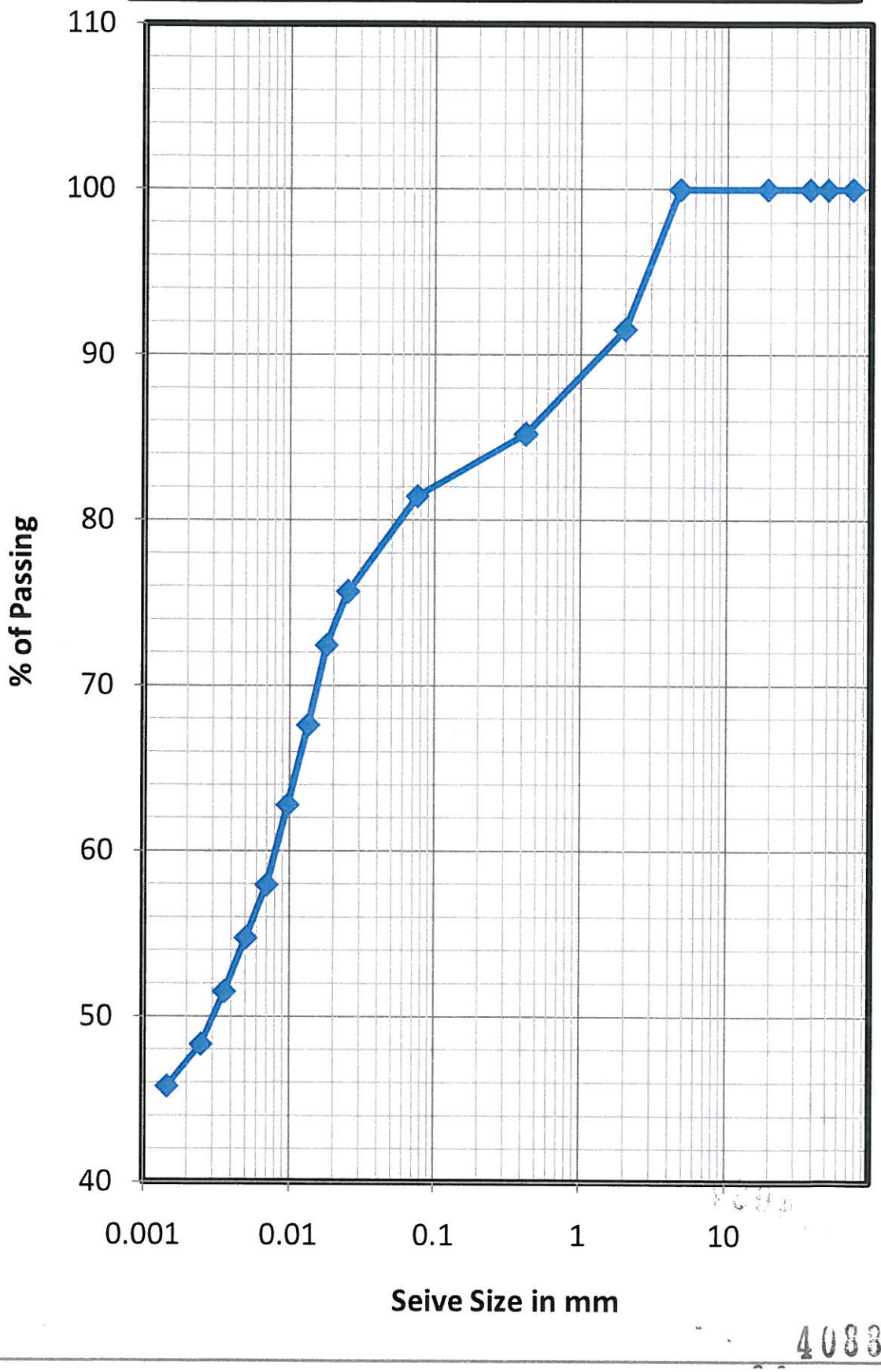
Grain Size Distribution Curve
BH-7,D-48.0m



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ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 9.0m

Date of Testing : 05.10.12

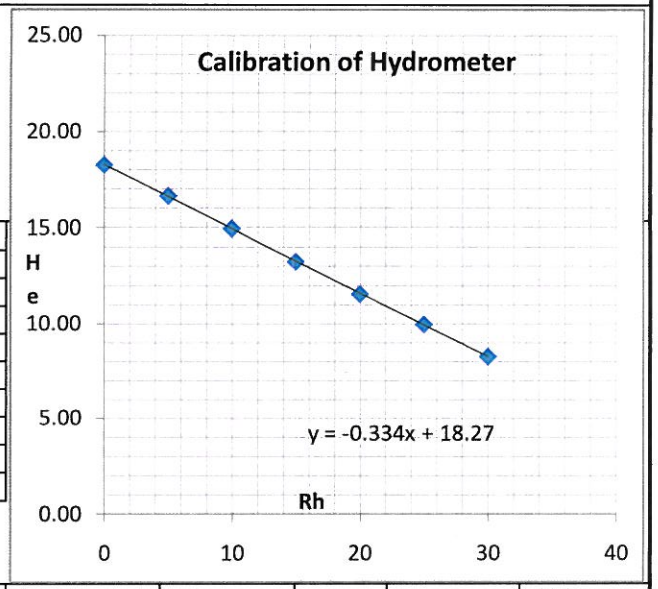
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.36
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.2
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.66	29	-2.0	8.36	30.16	0.528	0.000008341	0.012240833	0.00646318	27.66	3.251	89.92	88.45
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.251	89.40	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.251	89.40	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.251	87.77	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.251	87.77	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.251	87.77	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.251	86.15	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.251	86.15	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.251	86.15	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.251	84.52	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.251	84.52	83.14
	1440	27.60	32	-2.0	9.05	28.10	0.010	0.000007821	0.011853101	0.000121328	25.60	3.251	83.21	81.85

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 10.5m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.61
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

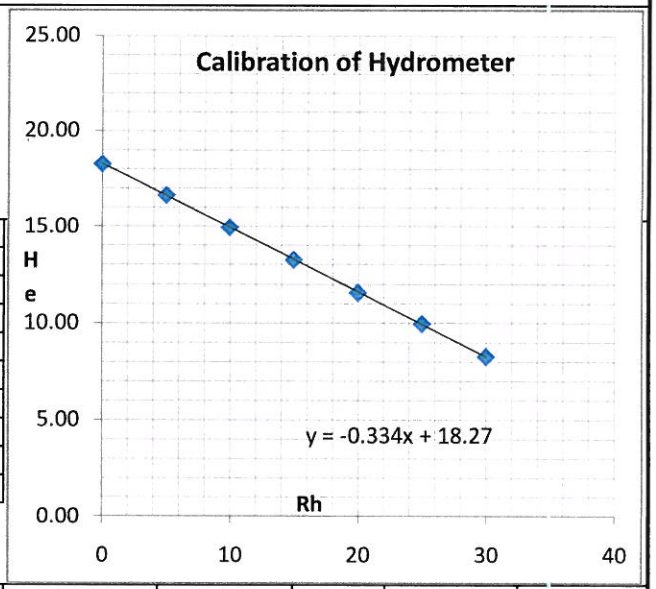
Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.83	29	-2.0	8.31	30.33	0.526	0.000008341	0.012240833	0.00644120	27.83	3.243	90.24	88.99
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.243	89.17	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.243	89.17	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.243	87.55	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.243	87.55	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.243	87.55	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.243	85.93	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.243	85.93	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.243	85.93	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.243	84.31	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.243	84.31	83.14
	1440	27.50	32	-2.0	9.09	28.00	0.010	0.000007821	0.011853101	0.000121551	25.50	3.243	82.68	81.53

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 13.5m

Date of Testing : 05.10.12

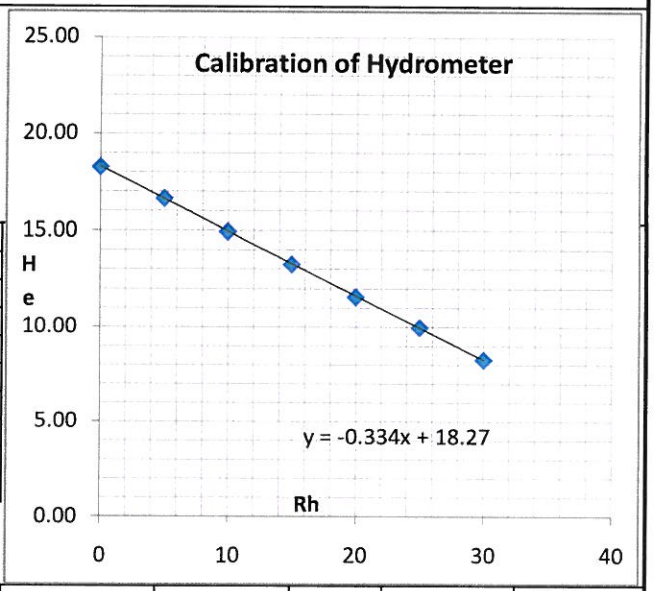
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.53
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.25	29	-2.0	8.50	29.75	0.532	0.000008341	0.012277647	0.00653547	27.25	3.253	88.63	87.33
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012277647	0.00464392	27.00	3.253	87.82	86.53
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012277647	0.00328374	27.00	3.253	87.82	86.53
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012277647	0.00234444	26.50	3.253	86.19	84.93
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012277647	0.00165777	26.50	3.253	86.19	84.93
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.253	86.19	84.93
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012277647	0.00086420	26.00	3.253	84.57	83.33
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.253	84.57	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.253	84.57	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.253	82.94	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.253	82.94	81.72
	1440	27.36	32	-2.0	9.13	27.86	0.010	0.000007821	0.011888750	0.000122213	25.36	3.253	82.50	81.29

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

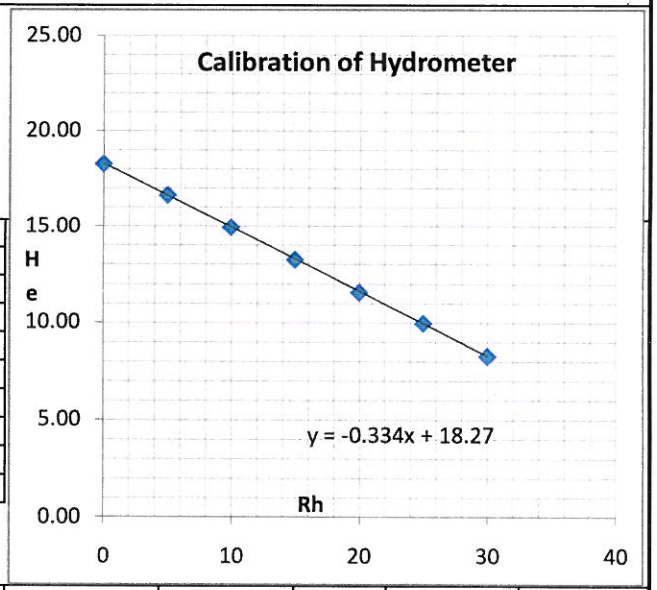
Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 18.0m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		98.11
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.25	29	-2.0	8.50	29.75	0.532	0.000008341	0.012240833	0.00651587	27.25	3.259	88.81	87.13
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.259	88.00	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.259	88.00	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.259	86.37	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.259	86.37	84.74
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.259	86.37	84.74
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.259	84.74	83.14
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.259	84.74	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.259	84.74	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.259	83.11	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.259	83.11	81.54
	1440	27.39	32	-2.0	9.12	27.89	0.010	0.000007821	0.011853101	0.000121789	25.39	3.259	82.75	81.19

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 19.5m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.96
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.5
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

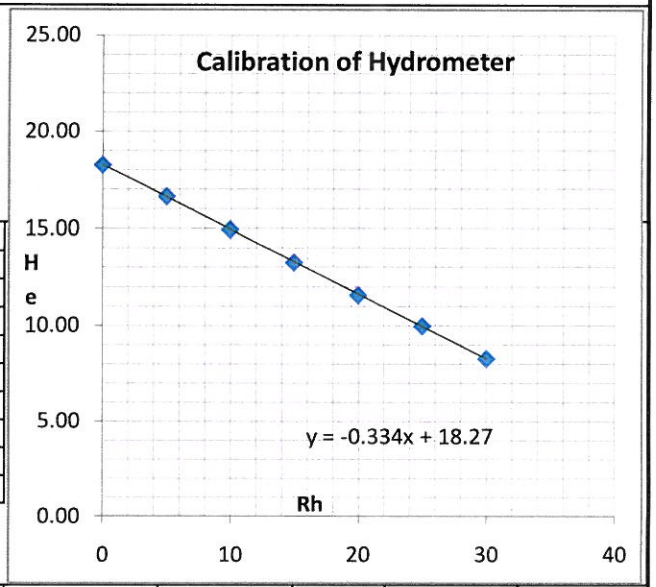
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.45	29	-2.0	8.43	29.95	0.530	0.000008341	0.012277647	0.00650974	27.45	3.238	88.90	87.97
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012277647	0.00464392	27.00	3.238	87.44	86.53
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012277647	0.00328374	27.00	3.238	87.44	86.53
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012277647	0.00234444	26.50	3.238	85.82	84.93
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012277647	0.00165777	26.50	3.238	85.82	84.93
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.238	85.82	84.93
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012277647	0.00086420	26.00	3.238	84.20	83.33
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.238	84.20	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.238	84.20	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.238	82.58	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.238	82.58	81.72
	1440	27.12	32	-2.0	9.21	27.62	0.010	0.000007821	0.011888750	0.000122763	25.12	3.238	81.35	80.50

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 21.0m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.68
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

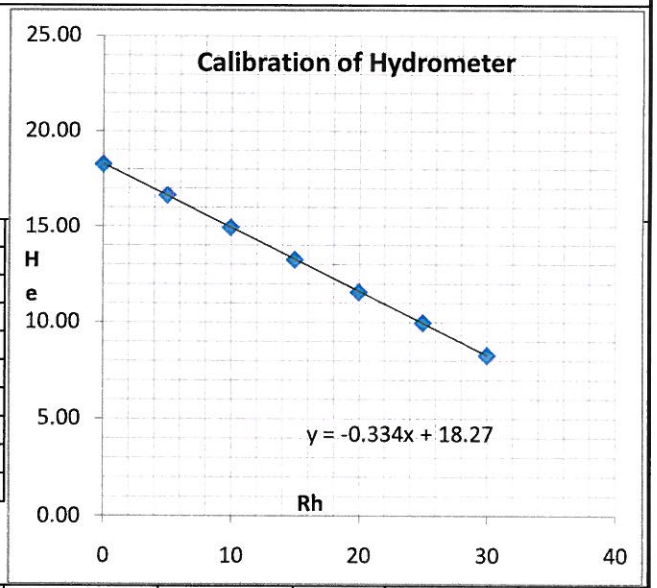
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.57	29	-2.0	8.39	30.07	0.529	0.000008341	0.012240833	0.00647478	27.57	3.240	89.34	88.16
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.240	89.11	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.240	89.11	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.240	87.49	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.240	87.49	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.240	87.49	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.240	85.87	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.240	85.87	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.240	85.87	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.240	84.25	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.240	84.25	83.14
	1440	27.63	32	-2.0	9.04	28.13	0.010	0.000007821	0.011853101	0.000121244	25.63	3.240	83.07	81.97

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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 22.5m

Date of Testing : 05.10.12

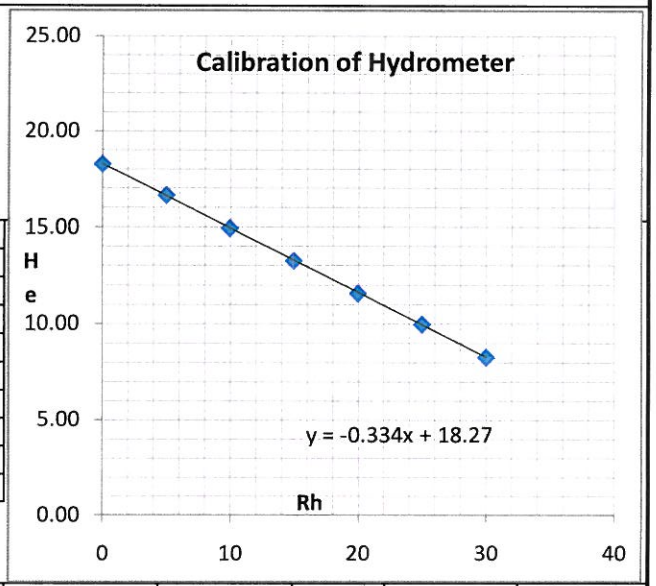
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.25
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.37	29	-2.0	8.46	29.87	0.531	0.000008341	0.012204347	0.00648112	27.37	3.247	88.88	87.32
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.247	87.68	86.14
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.247	87.68	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.247	86.05	84.55
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012204347	0.00164787	26.50	3.247	86.05	84.55
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012204347	0.00120343	26.50	3.247	86.05	84.55
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012204347	0.00085904	26.00	3.247	84.43	82.95
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012204347	0.00060743	26.00	3.247	84.43	82.95
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012204347	0.00042952	26.00	3.247	84.43	82.95
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012204347	0.00030655	25.50	3.247	82.81	81.36
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011817771	0.00020989	25.50	3.247	82.81	81.36
	1440	27.38	32	-2.0	9.13	27.88	0.010	0.000007821	0.011817771	0.000121453	25.38	3.247	82.41	80.97

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GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 25.5m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.32
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.2
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

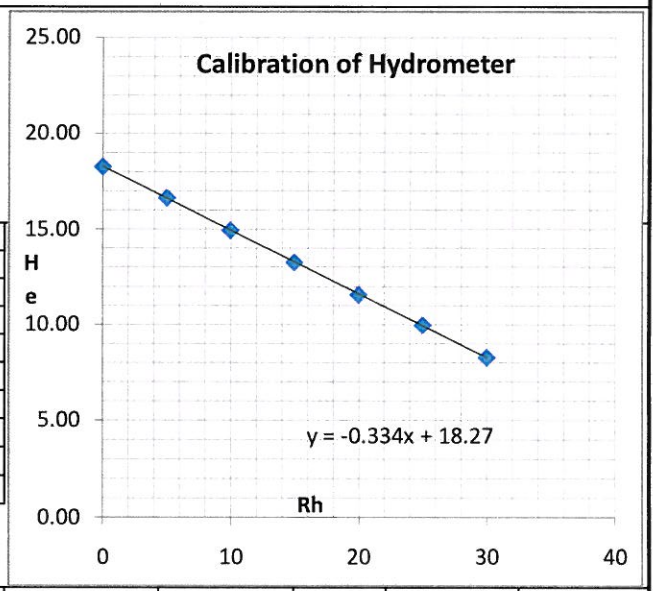
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.78	29	-2.0	8.32	30.28	0.527	0.000008341	0.012240833	0.00644767	27.78	3.252	90.35	88.83
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.252	89.44	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.252	89.44	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.252	87.81	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.252	87.81	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.252	86.18	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.252	86.18	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.252	84.56	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.252	84.56	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.252	82.93	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.252	82.93	81.54
	1440	27.08	32	-2.0	9.22	27.58	0.010	0.000007821	0.011853101	0.000122477	25.08	3.252	81.57	80.20

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GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 28.5m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.63
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

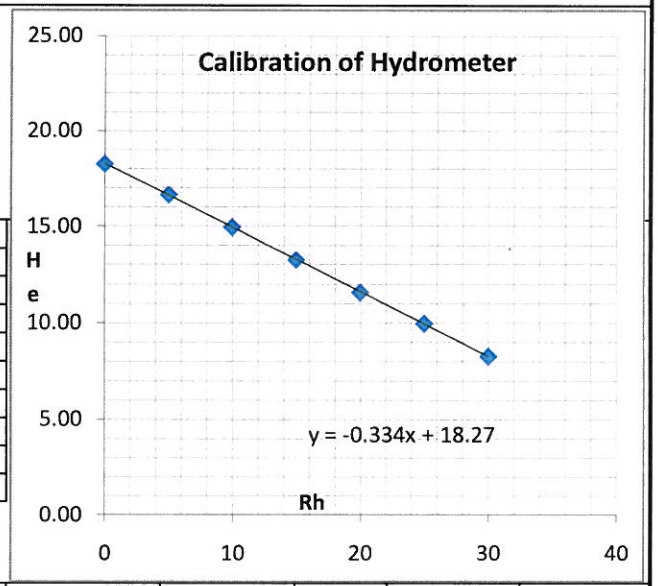
CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.41	29	-2.0	8.45	29.91	0.531	0.000008341	0.012240833	0.00649536	27.41	3.242	88.86	87.65
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.242	87.53	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.242	87.53	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.242	85.91	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.242	85.91	84.74
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012240833	0.00121849	26.00	3.242	84.29	83.14
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.242	84.29	83.14
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012240833	0.00061493	25.50	3.242	82.67	81.54
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012240833	0.00043482	25.50	3.242	82.67	81.54
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012240833	0.00031028	25.00	3.242	81.05	79.94
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011853101	0.00021245	25.00	3.242	81.05	79.94
	1440	26.89	32	-2.0	9.29	27.39	0.010	0.000007821	0.011853101	0.000122892	24.89	3.242	80.71	79.60

Lab Manager

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GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 40.5m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.58
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
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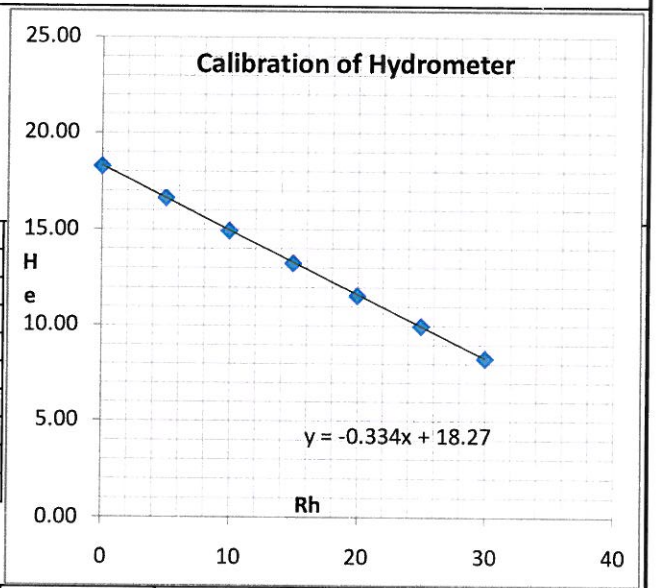
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.57	29	-2.0	8.39	30.07	0.529	0.000008341	0.012240833	0.00647478	27.57	3.244	89.43	88.16
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.244	89.20	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.244	89.20	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.244	87.58	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163689	27.00	3.244	87.59	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.244	85.96	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.244	85.96	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.244	84.34	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.244	84.34	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.244	82.71	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.244	82.71	81.54
	1440	27.44	32	-2.0	9.10	27.94	0.010	0.000007821	0.011853101	0.000121677	25.44	3.244	82.52	81.35

Lab Manager

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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

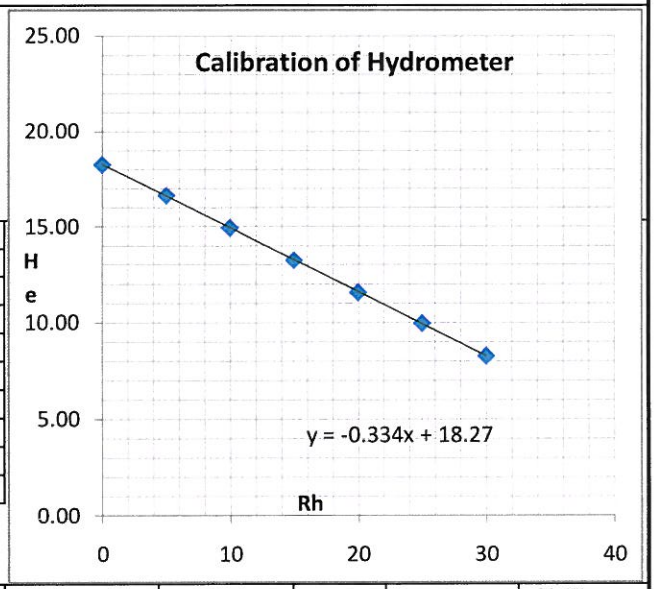
Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Depth	:	46.5m
Type of Sample	:	SPT	Date of Testing	:	05.10.12
Location	:	BH-7(Markanda River- Saharanpur)	Tested by	:	K.C.Sahoo
Sampled by	:	T.K.Das			

(I)	Percentage of 75 micron passing (from sieve analysis)		83.47
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		8.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		41.7
(V)	Specific gravity of soil grains, Gs		2.65
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading
H = height corresponding to Rh
He = Effective height = H + 0.5*(h -V/A)



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	27.99	29	-2.0	8.92	28.49	0.545	0.000008341	0.012314796	0.00671606	25.99	3.848	100.00	83.47
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012314796	0.00479197	25.50	3.848	98.13	81.91
	2	26.50	29	-2.0	9.42	27.00	0.280	0.000008341	0.012314796	0.00345016	24.50	3.848	94.28	78.70
	4	25.50	29	-2.0	9.75	26.00	0.202	0.000008341	0.012314796	0.00248251	23.50	3.848	90.43	75.48
	8	24.50	29	-2.0	10.09	25.00	0.145	0.000008341	0.012314796	0.00178520	22.50	3.848	86.59	72.27
	15	23.00	29	-2.0	10.59	23.50	0.108	0.000008341	0.012314796	0.00133571	21.00	3.848	80.81	67.45
	30	21.50	29	-2.0	11.09	22.00	0.078	0.000008341	0.012314796	0.00096658	19.50	3.848	75.04	62.64
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012314796	0.00069874	18.00	3.848	69.27	57.82
	120	19.00	29	-2.0	11.92	19.50	0.041	0.000008341	0.012314796	0.00050115	17.00	3.848	65.42	54.61
	240	18.00	29	-2.0	12.26	18.50	0.029	0.000008341	0.012314796	0.00035930	16.00	3.848	61.57	51.39
	480	17.00	32	-2.0	12.59	17.50	0.021	0.000007821	0.011924722	0.00024934	15.00	3.848	57.72	48.18
	1440	16.69	32	-2.0	12.69	17.19	0.012	0.000007821	0.011924722	0.000144541	14.69	3.848	56.55	47.20

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

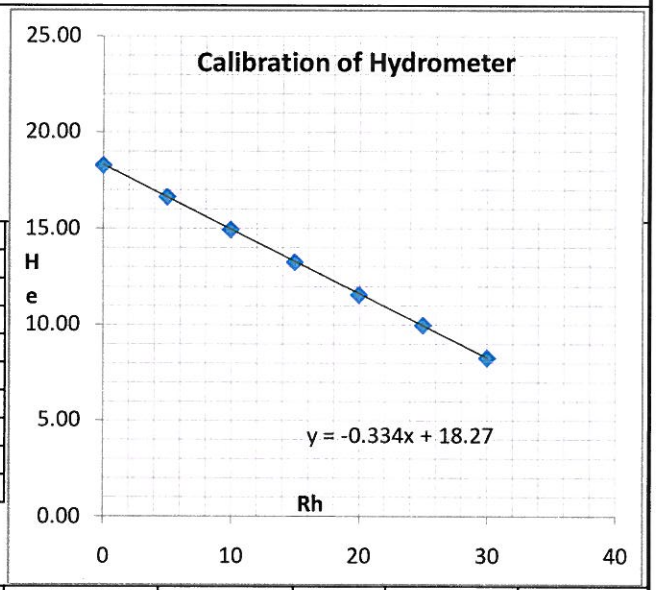
Location : BH-7(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 48.0m

Date of Testing : 05.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		82.82
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		8.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		41.4
(V)	Specific gravity of soil grains, Gs		2.64
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

(Rh)	H (cm)	He (cm)
30	0.7	8.25
25	2.4	9.95
20	4.0	11.55
15	5.7	13.25
10	7.4	14.95
5	9.1	16.65
0	10.7	18.25
-5	12.4	19.95

Rh = hydrometer Reading

H = height corresponding to Rh

He = Effective height = H + 0.5*(h -V/A)

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	27.72	29	-2.0	9.01	28.22	0.548	0.000008341	0.012352284	0.00676940	25.72	3.887	100.00	82.82
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012352284	0.00480656	25.50	3.887	99.13	82.10
	2	26.50	29	-2.0	9.42	27.00	0.280	0.000008341	0.012352284	0.00346066	24.50	3.887	95.24	78.88
	4	25.50	29	-2.0	9.75	26.00	0.202	0.000008341	0.012352284	0.00249007	23.50	3.887	91.35	75.66
	8	24.50	29	-2.0	10.09	25.00	0.145	0.000008341	0.012352284	0.00179064	22.50	3.887	87.47	72.44
	15	23.00	29	-2.0	10.59	23.50	0.108	0.000008341	0.012352284	0.00133978	21.00	3.887	81.63	67.61
	30	21.50	29	-2.0	11.09	22.00	0.078	0.000008341	0.012352284	0.00096952	19.50	3.887	75.80	62.78
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012352284	0.00070087	18.00	3.887	69.97	57.95
	120	19.00	29	-2.0	11.92	19.50	0.041	0.000008341	0.012352284	0.00050268	17.00	3.887	66.09	54.73
	240	18.00	29	-2.0	12.26	18.50	0.029	0.000008341	0.012352284	0.00036039	16.00	3.887	62.20	51.51
	480	17.00	32	-2.0	12.59	17.50	0.021	0.000007821	0.011961022	0.00025010	15.00	3.887	58.31	48.29
	1440	16.21	32	-2.0	12.85	16.71	0.012	0.000007821	0.011961022	0.000145896	14.21	3.887	55.25	45.76

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

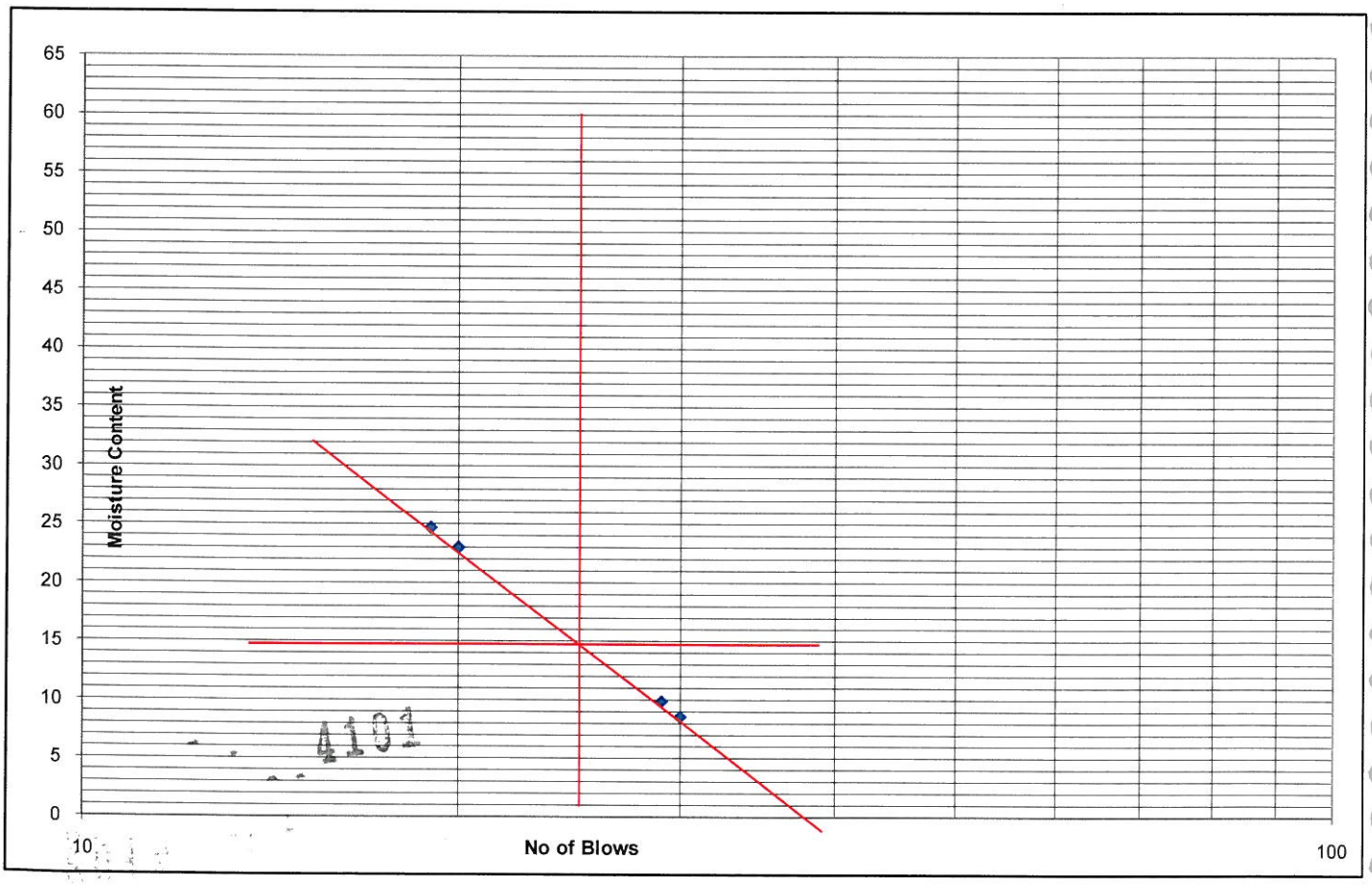
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	D.Mohanty

Number of Blows	30	29	20	19	Plastic Limit	
Container No.	E1	E2	E3	E4	NP	
Container Weight (gm) (W1)	30.48	35.24	37.88	34.61		
Container + Wt. of wet soil (gm) (W2)	81.95	93.96	96.99	100.75		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.88	88.68	85.95	87.66		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.06	5.28	11.04	13.09		
Wt. of oven dry soil (gm) (W3-W1)	47.40	53.44	48.07	53.05		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.57**	**9.89**	**22.97**	**24.68**		

Result Summary

Liquid Limit (WL)	15	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

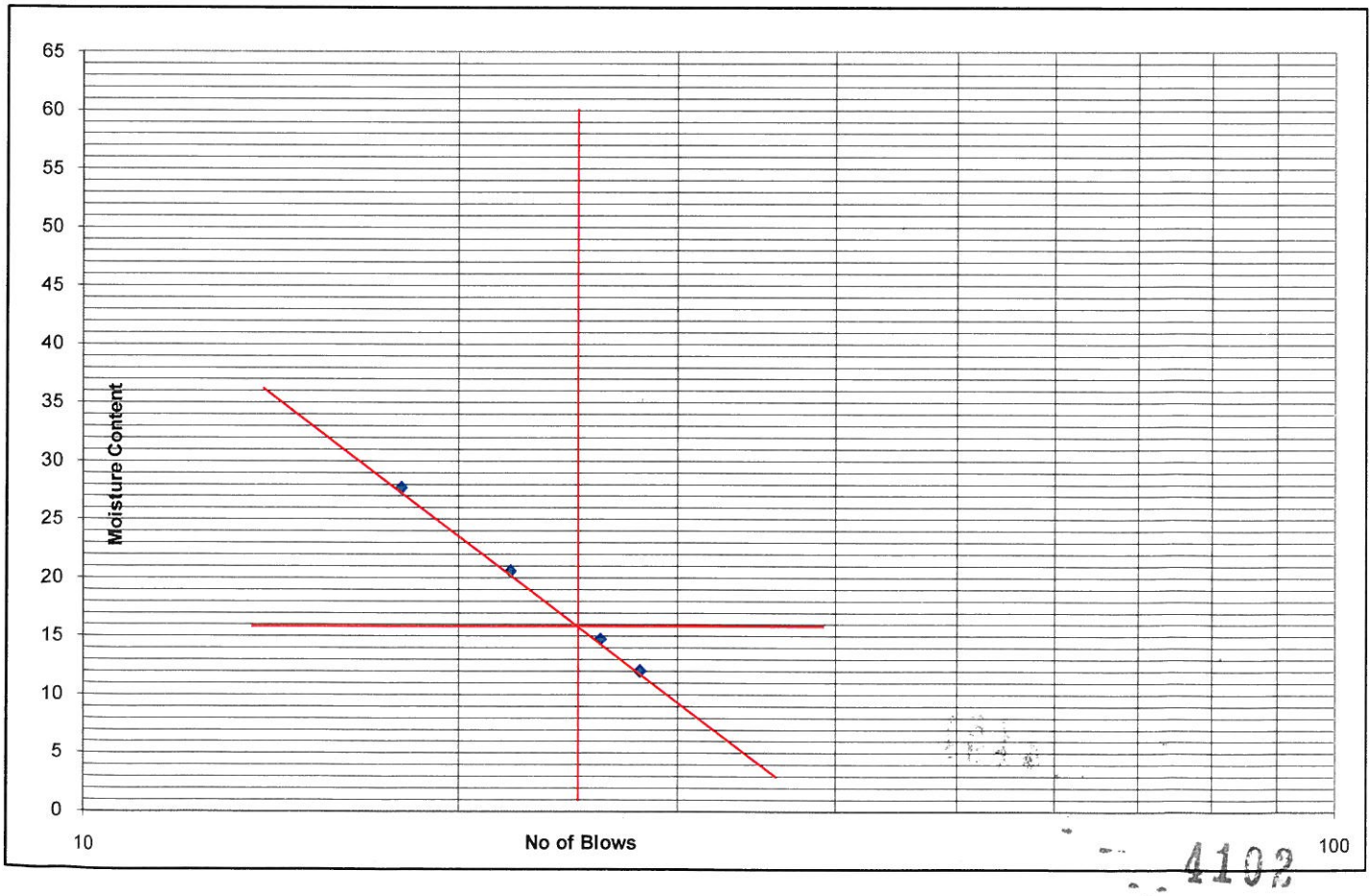
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	D.Mohanty

Number of Blows	28	26	22	18	Plastic Limit	
Container No.	E13	E14	E15	E16	NP	
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42		
Container + Wt. of wet soil (gm) (W2)	83.43	96.48	96.67	102.33		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.96	88.86	85.84	87.82		
Wt. Of water (gm) (W2-W1)-(W3-W1)	5.46	7.63	10.83	14.51		
Wt. of oven dry soil (gm) (W3-W1)	45.38	51.65	52.70	52.40		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**12.04**	**14.77**	**20.55**	**27.69**		

Result Summary

Liquid Limit (WL)	16	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



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Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

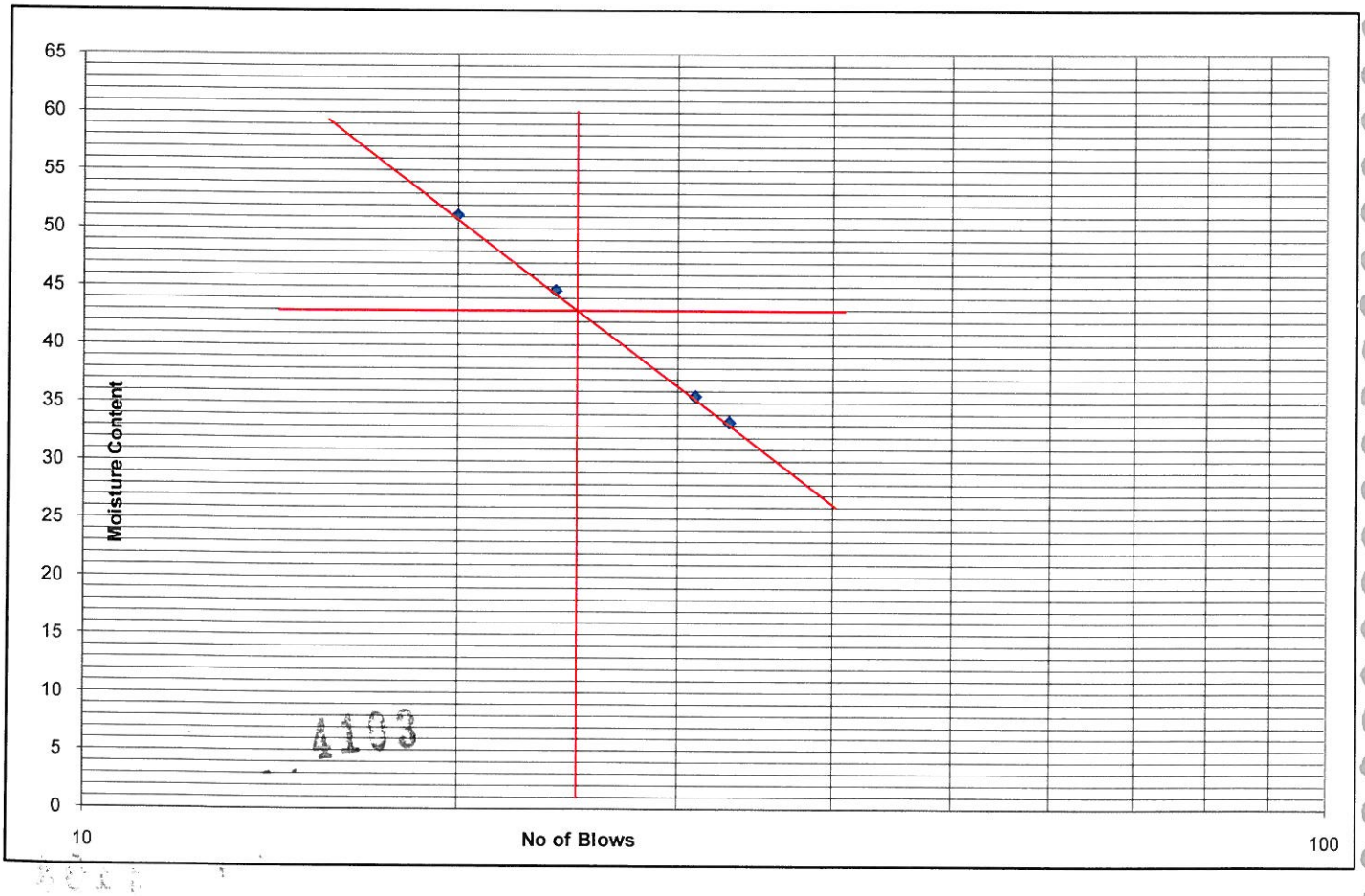
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	9.0m	Tested by	:	D.Mohanty

Number of Blows	33	31	24	20	Plastic Limit	
Container No.	E31	E32	E33	E34	E35	E36
Container Weight (gm) (W1)	30.8	35.09	32.47	31.56	36.29	30.99
Container + Wt. of wet soil (gm) (W2)	94.47	107.97	109.58	117.10	98.87	93.12
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.55	88.86	85.77	88.16	88.38	82.84
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.92	19.11	23.81	28.94	10.49	10.28
Wt. of oven dry soil (gm) (W3-W1)	47.75	53.77	53.30	56.60	52.09	51.85
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.34**	**35.55**	**44.68**	**51.13**	**20.13**	**19.83**

Result Summary

Liquid Limit (WL)	43	%
Plastic Limit (Wp)	20	%
Plasticity Index (Ip)	23	%



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

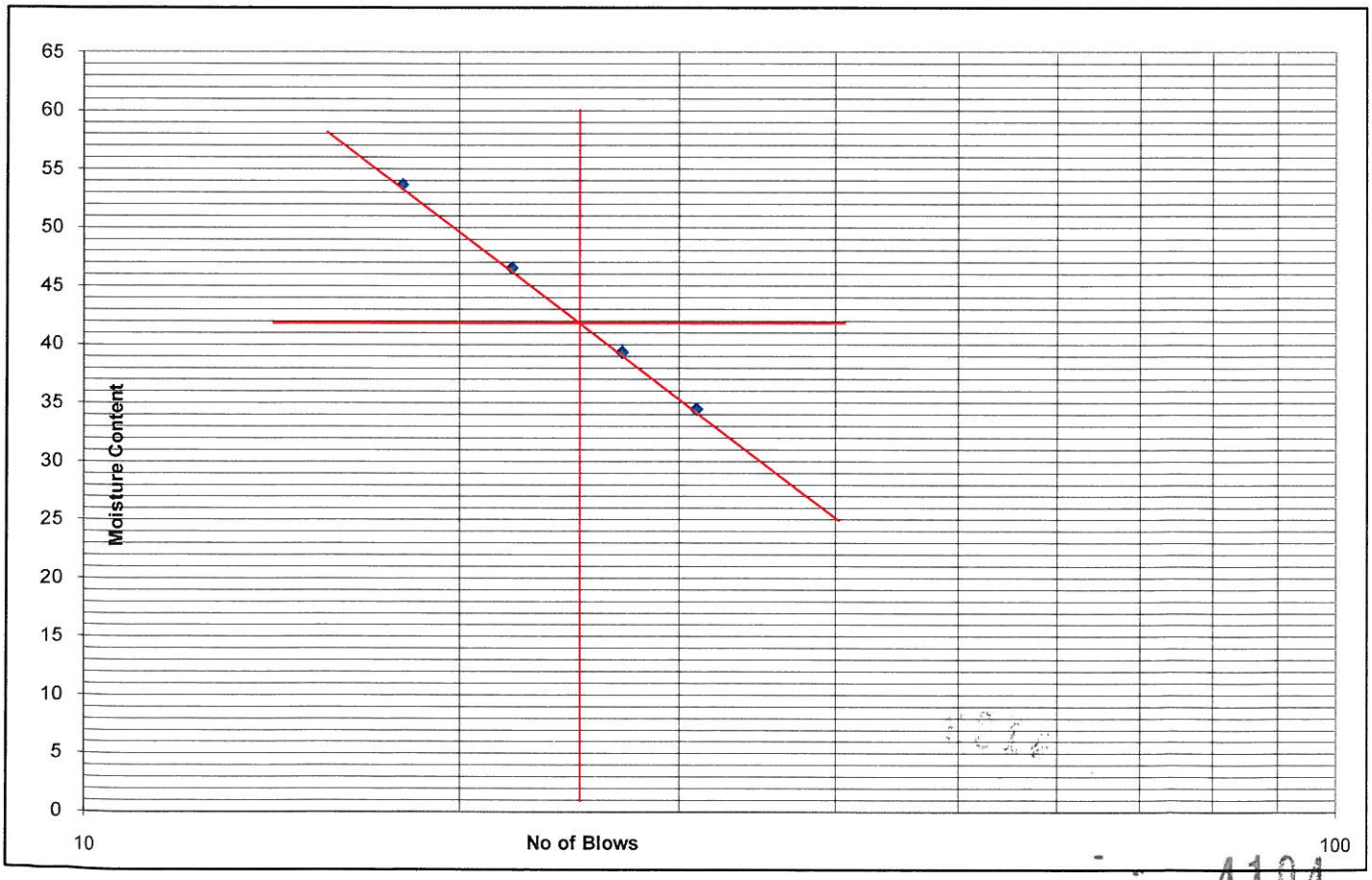
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	10.5m	Tested by	:	D.Mohanty

Number of Blows	31	27	22	18	Plastic Limit	
Container No.	E19	E20	E21	E22	E23	E24
Container Weight (gm) (W1)	31.69	35.24	37.88	34.61	35.8	32.51
Container + Wt. of wet soil (gm) (W2)	94.20	109.98	109.65	116.41	98.99	93.21
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.19	88.89	86.86	87.84	88.12	83.16
Wt. Of water (gm) (W2-W1)-(W3-W1)	16.01	21.09	22.79	28.57	10.86	10.05
Wt. of oven dry soil (gm) (W3-W1)	46.50	53.65	48.98	53.23	52.32	50.65
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.44**	**39.31**	**46.52**	**53.68**	**20.76**	**19.84**

Result Summary

Liquid Limit (WL)	42	%
Plastic Limit (Wp)	20	%
Plasticity Index (Ip)	22	%



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Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

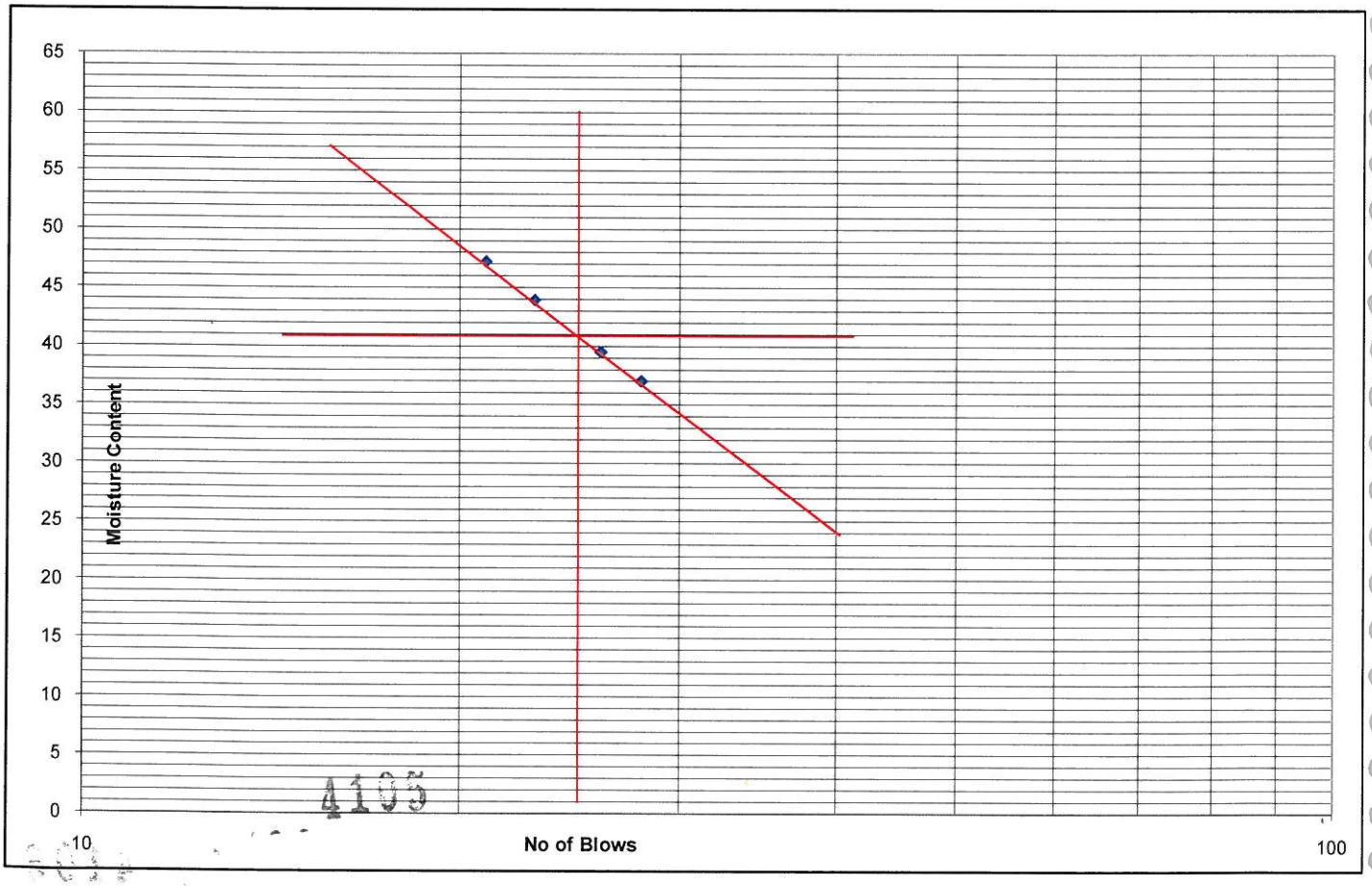
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	D.Mohanty

Number of Blows	28	26	23	21	Plastic Limit	
Container No.	E5	E6	E17	E18	E29	E30
Container Weight (gm) (W1)	35.8	32.51	31.85	36.97	31.26	30.12
Container + Wt. of wet soil (gm) (W2)	94.07	111.54	111.61	112.05	99.10	92.14
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.32	89.16	87.26	87.97	88.31	82.35
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.74	22.38	24.35	24.08	10.79	9.79
Wt. of oven dry soil (gm) (W3-W1)	42.52	56.65	55.41	51.00	57.05	52.23
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**37.02**	**39.51**	**43.94**	**47.22**	**18.92**	**18.75**

Result Summary

Liquid Limit (WL)	41	%
Plastic Limit (Wp)	19	%
Plasticity Index (Ip)	22	%



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

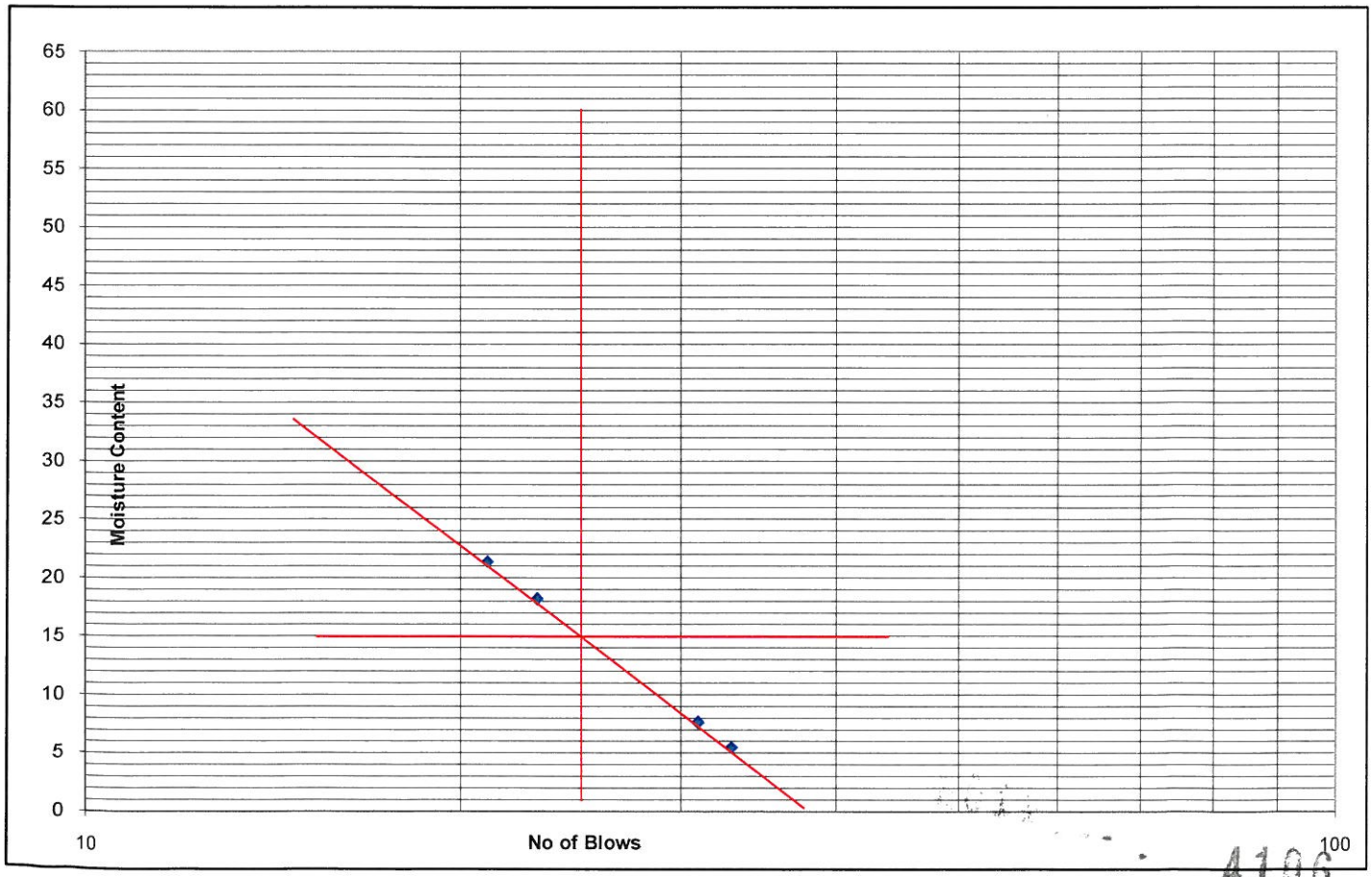
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	16.5m	Tested by	:	D.Mohanty

Number of Blows	33	31	23	21	Plastic Limit	
Container No.	E25	E26	E27	E28	NP	
Container Weight (gm) (W1)	33.6	34.2	36.7	32.65		
Container + Wt. of wet soil (gm) (W2)	80.79	93.82	97.38	100.34		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.32	89.58	88.06	88.42		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.46	4.24	9.33	11.92		
Wt. of oven dry soil (gm) (W3-W1)	44.72	55.38	51.36	55.77		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**5.51**	**7.65**	**18.16**	**21.37**		

Result Summary

Liquid Limit (WL)	15	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



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Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

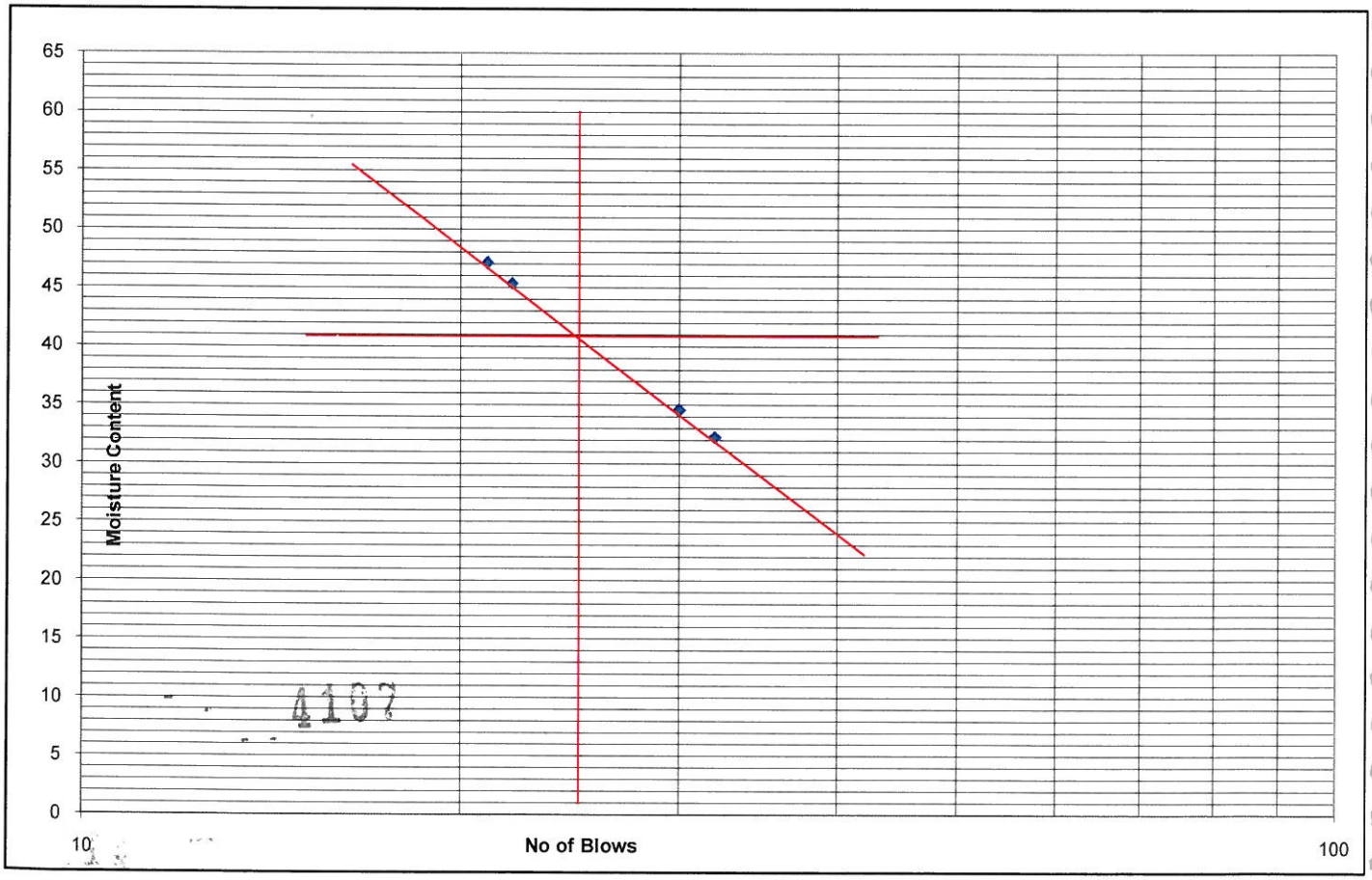
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	18.0m	Tested by	:	D.Mohanty

Number of Blows	32	30	22	21	Plastic Limit	
Container No.	B25	B26	B27	B28	B29	B30
Container Weight (gm) (W1)	35.22	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	91.97	107.71	112.71	110.52	99.11	93.13
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.13	88.61	87.27	87.76	87.90	82.81
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.84	19.10	25.44	22.76	11.21	10.32
Wt. of oven dry soil (gm) (W3-W1)	42.91	55.25	56.07	48.34	53.04	52.05
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.26**	**34.57**	**45.38**	**47.08**	**21.14**	**19.83**

Result Summary

Liquid Limit (WL)	41	%
Plastic Limit (Wp)	20	%
Plasticity Index (Ip)	21	%



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

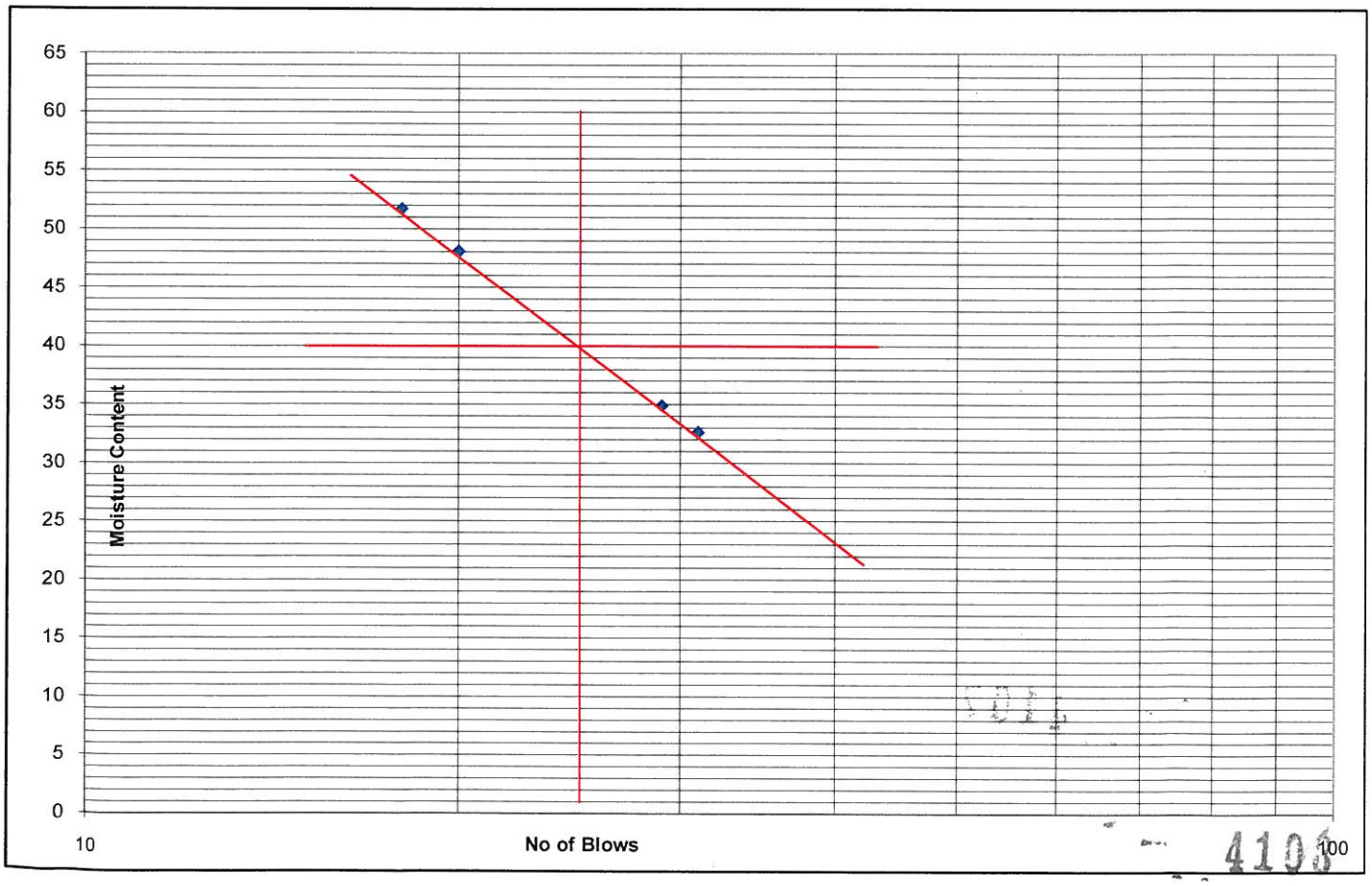
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	19.5m	Tested by	:	D.Mohanty

Number of Blows	31	29	20	18	Plastic Limit	
Container No.	B1	B2	B3	B4	B5	B6
Container Weight (gm) (W1)	34.29	33.64	36.7	32.65	31.26	30.57
Container + Wt. of wet soil (gm) (W2)	92.41	107.91	112.01	116.73	98.57	92.47
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.12	88.69	87.58	88.07	87.84	82.64
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.29	19.22	24.44	28.66	10.73	9.83
Wt. of oven dry soil (gm) (W3-W1)	43.83	55.05	50.88	55.42	56.58	52.07
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.60**	**34.91**	**48.03**	**51.72**	**18.96**	**18.88**

Result Summary

Liquid Limit (WL)	40	%
Plastic Limit (Wp)	19	%
Plasticity Index (Ip)	21	%



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Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

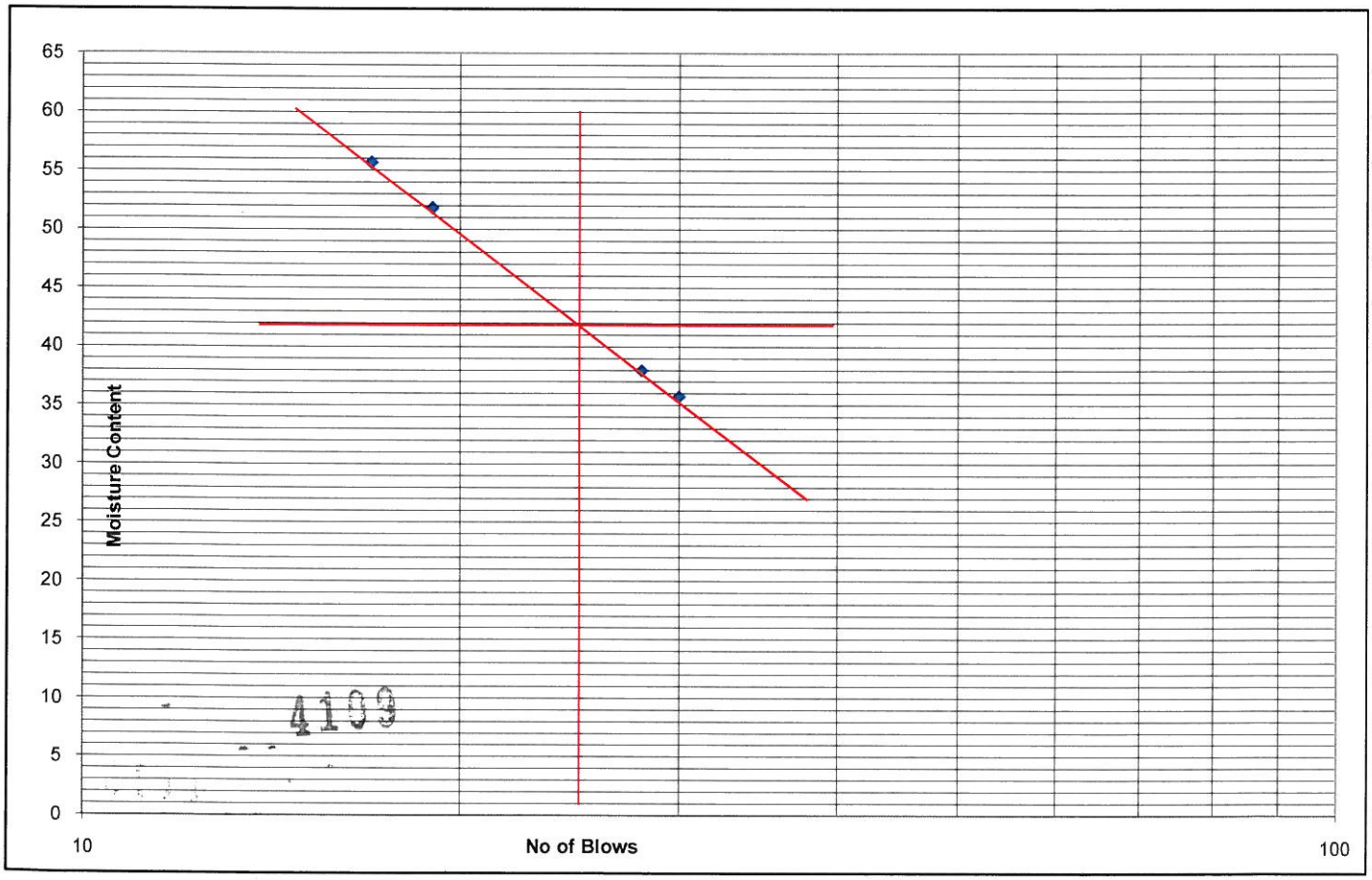
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	21.0m	Tested by	:	D.Mohanty

Number of Blows	30	28	19	17	Plastic Limit	
Container No.	B19	B20	B21	B22	B23	B24
Container Weight (gm) (W1)	31.66	35.46	33.74	34.61	36.87	32.54
Container + Wt. of wet soil (gm) (W2)	94.99	109.31	115.44	117.81	99.00	92.87
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.31	88.98	87.57	88.07	87.78	83.30
Wt. Of water (gm) (W2-W1)-(W3-W1)	16.68	20.32	27.88	29.74	11.22	9.57
Wt. of oven dry soil (gm) (W3-W1)	46.65	53.52	53.83	53.46	50.91	50.76
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**35.75**	**37.97**	**51.79**	**55.64**	**22.03**	**18.86**

Result Summary

Liquid Limit (WL)	42	%
Plastic Limit (Wp)	20	%
Plasticity Index (Ip)	22	%



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

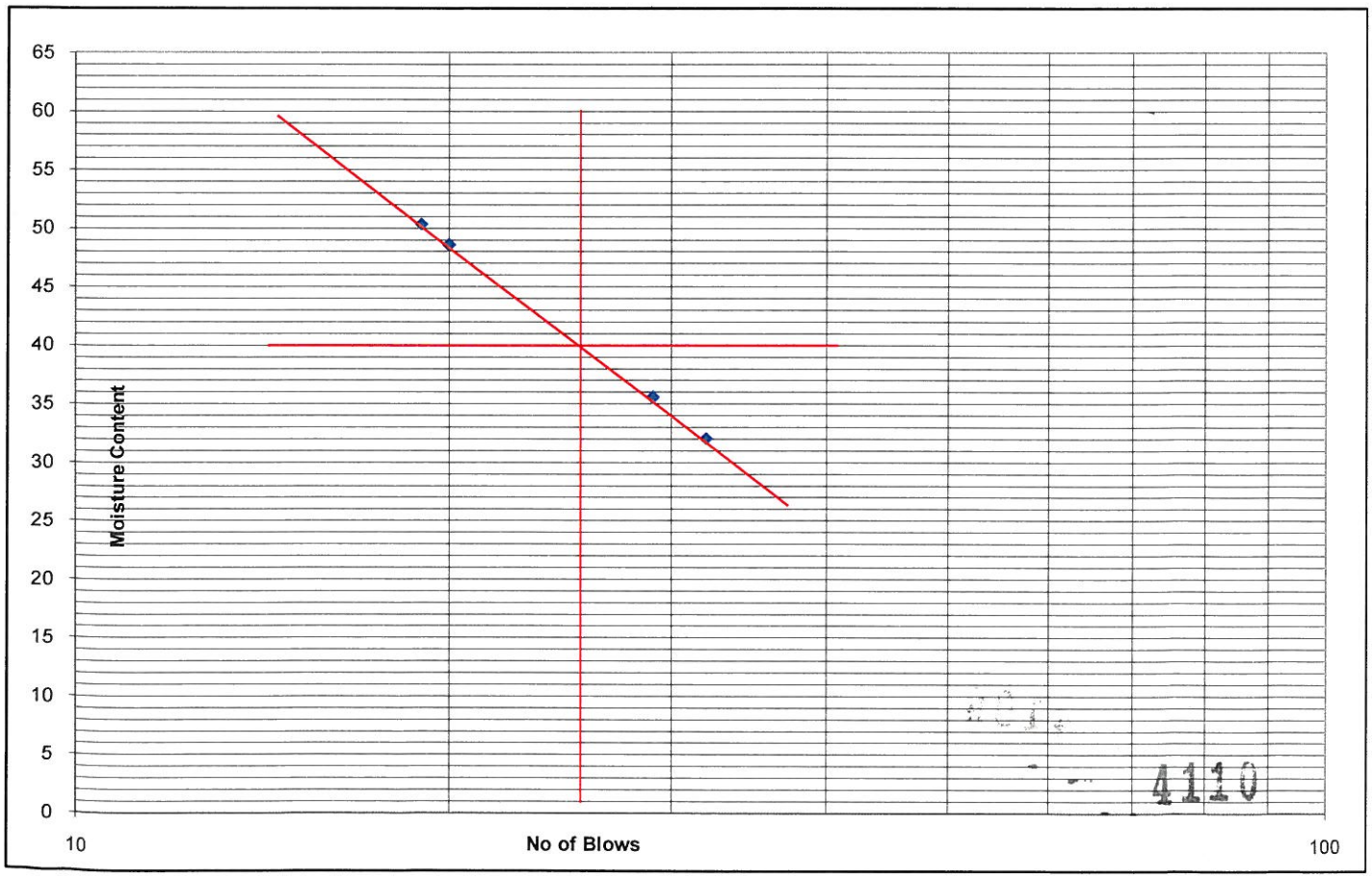
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	05.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	22.5m	Tested by	:	D.Mohanty

Number of Blows	32	29	20	19	Plastic Limit	
Container No.	B7	B8	B9	B10	B11	B12
Container Weight (gm) (W1)	36.85	32.71	31.43	34.52	35.81	33.24
Container + Wt. of wet soil (gm) (W2)	91.79	109.21	114.85	114.70	97.38	93.50
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.45	89.14	87.58	87.85	87.84	84.42
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.33	20.08	27.27	26.85	9.54	9.09
Wt. of oven dry soil (gm) (W3-W1)	41.60	56.43	56.15	53.33	52.03	51.18
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.05**	**35.58**	**48.57**	**50.35**	**18.34**	**17.76**

Result Summary

Liquid Limit (WL)	40	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	22	%



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

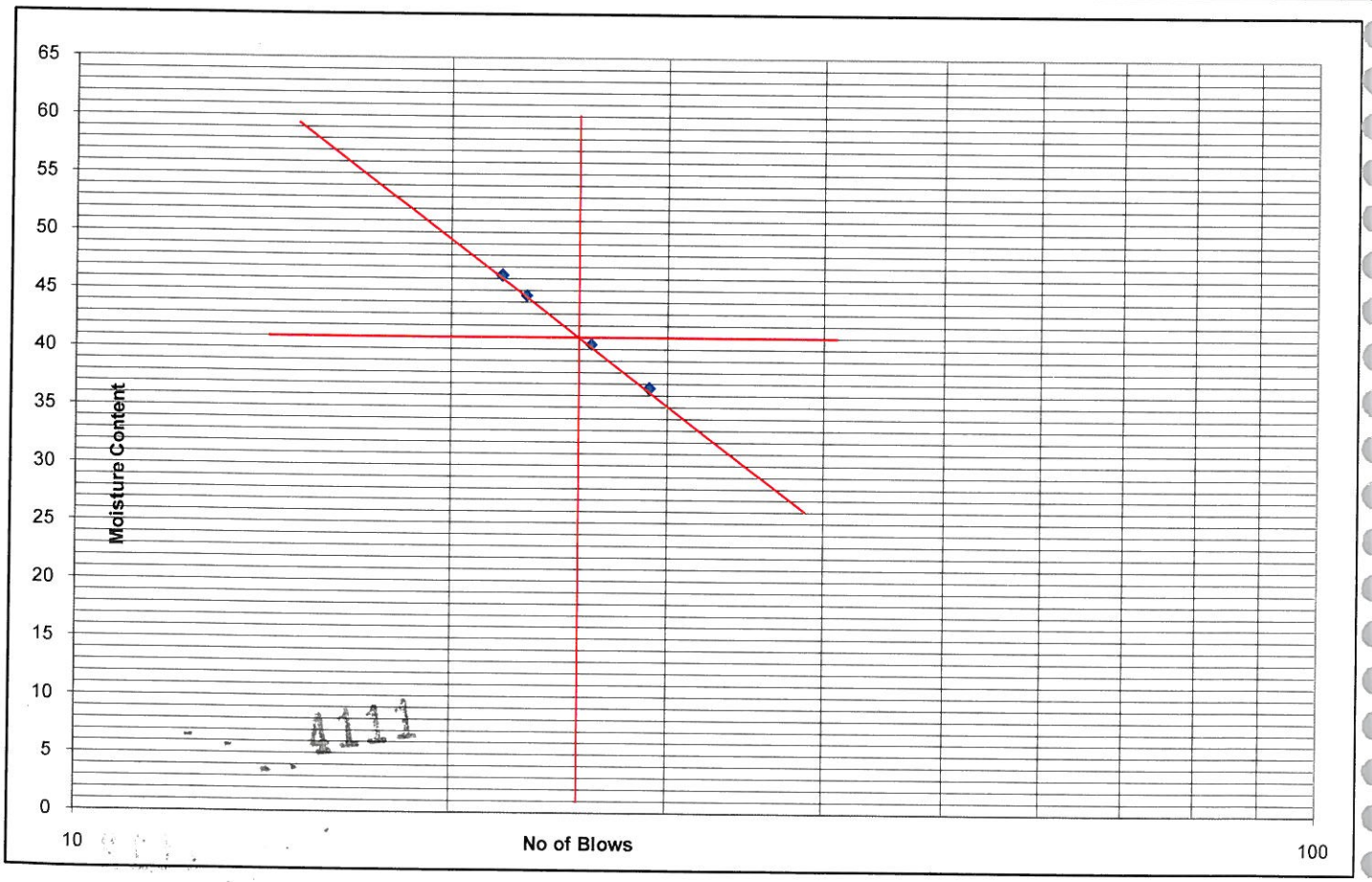
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	25.5m	Tested by	:	D.Mohanty

Number of Blows	29	26	23	22	Plastic Limit	
Container No.	B37	B38	B39	B40	B41	B42
Container Weight (gm) (W1)	35.22	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	95.01	111.21	112.16	110.34	98.41	92.41
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.98	88.80	87.20	87.89	87.84	82.21
Wt. Of water (gm) (W2-W1)-(W3-W1)	16.03	22.40	24.96	22.45	10.57	10.19
Wt. of oven dry soil (gm) (W3-W1)	43.76	55.44	56.00	48.47	52.98	51.45
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**36.62**	**40.41**	**44.57**	**46.31**	**19.95**	**19.81**

Result Summary

Liquid Limit (WL)	41	%
Plastic Limit (Wp)	20	%
Plasticity Index (Ip)	21	%



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

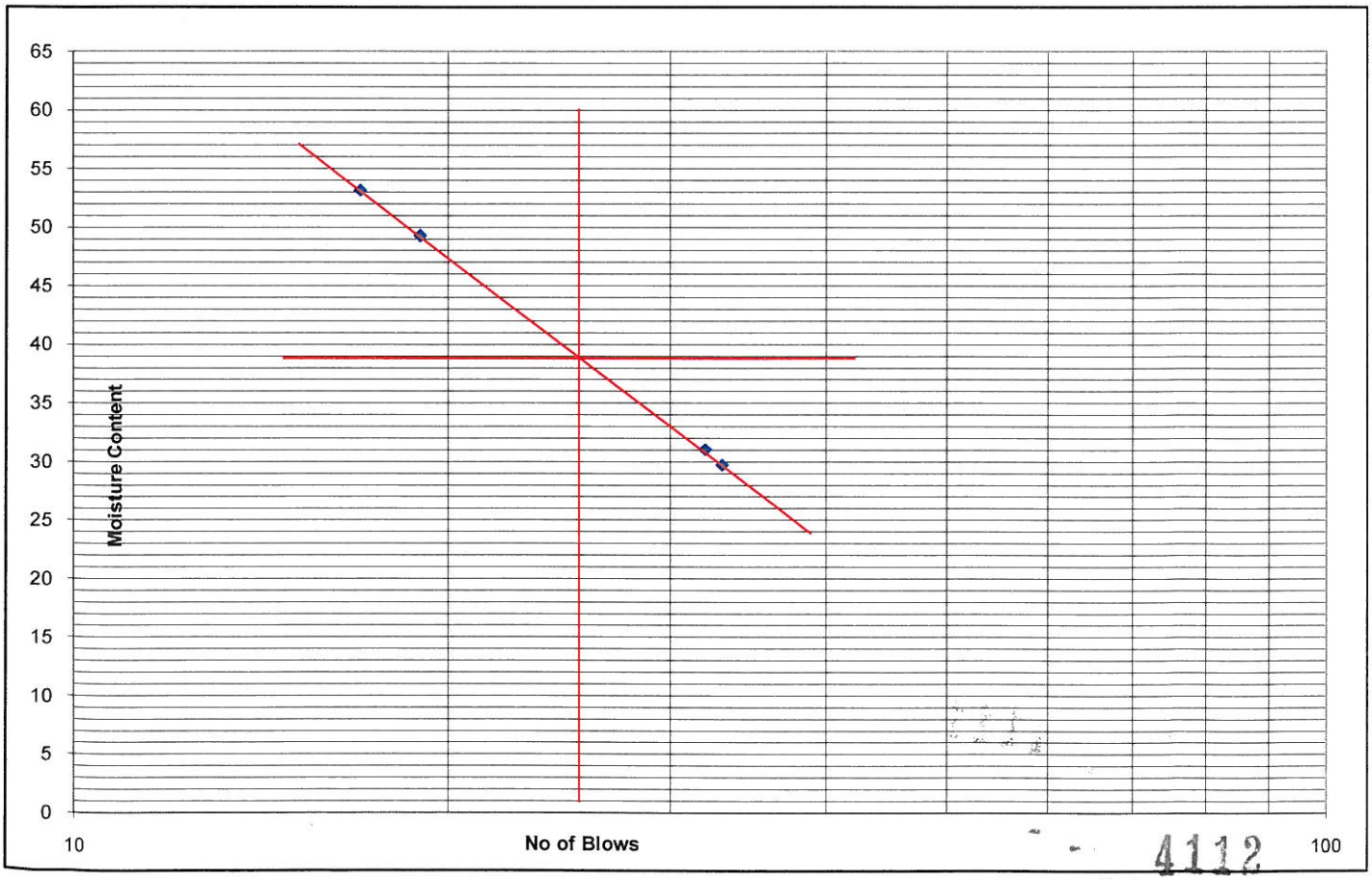
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	28.5m	Tested by	:	D.Mohanty

Number of Blows	33	32	19	17	Plastic Limit	
Container No.	B31	B32	B33	B34	B35	B36
Container Weight (gm) (W1)	34.29	33.64	36.7	32.65	31.26	30.57
Container + Wt. of wet soil (gm) (W2)	91.31	106.30	112.65	117.39	98.51	91.97
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.25	89.09	87.58	87.98	87.84	82.64
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.07	17.21	25.07	29.40	10.67	9.33
Wt. of oven dry soil (gm) (W3-W1)	43.96	55.45	50.88	55.33	56.58	52.07
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**29.73**	**31.04**	**49.27**	**53.14**	**18.85**	**17.92**

Result Summary

Liquid Limit (WL)	39	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	21	%



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Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

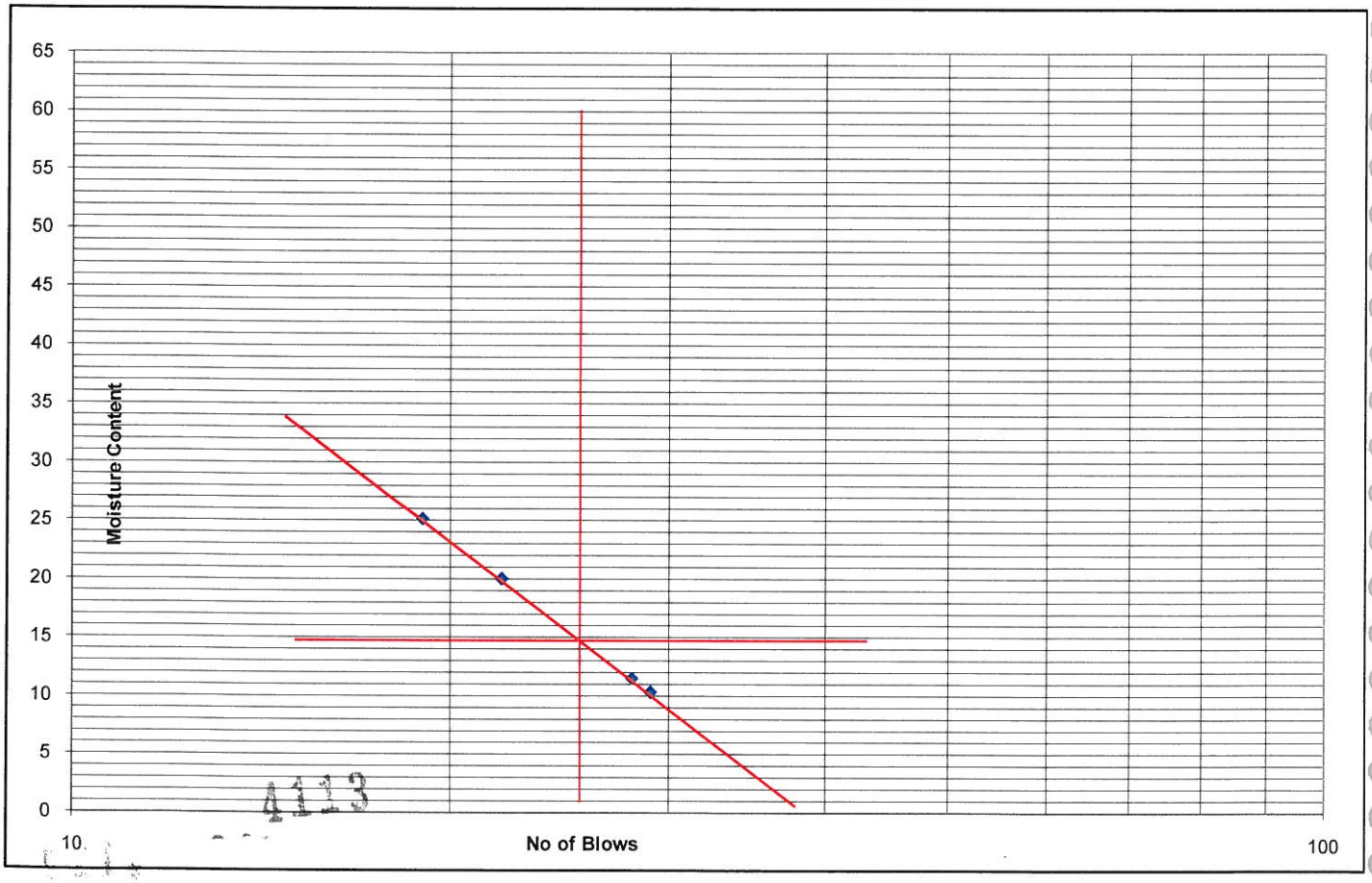
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	30.0m	Tested by	:	D.Mohanty

Number of Blows	29	28	22	19	Plastic Limit	
Container No.	D7	D8	D9	D10	NP	
Container Weight (gm) (W1)	35.82	31.27	34.13	32.45		
Container + Wt. of wet soil (gm) (W2)	82.80	96.60	99.19	102.21		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.39	89.85	88.33	88.19		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.41	6.75	10.86	14.02		
Wt. of oven dry soil (gm) (W3-W1)	42.57	58.58	54.20	55.74		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.35**	**11.53**	**20.03**	**25.16**		

Result Summary

Liquid Limit (WL)	15	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

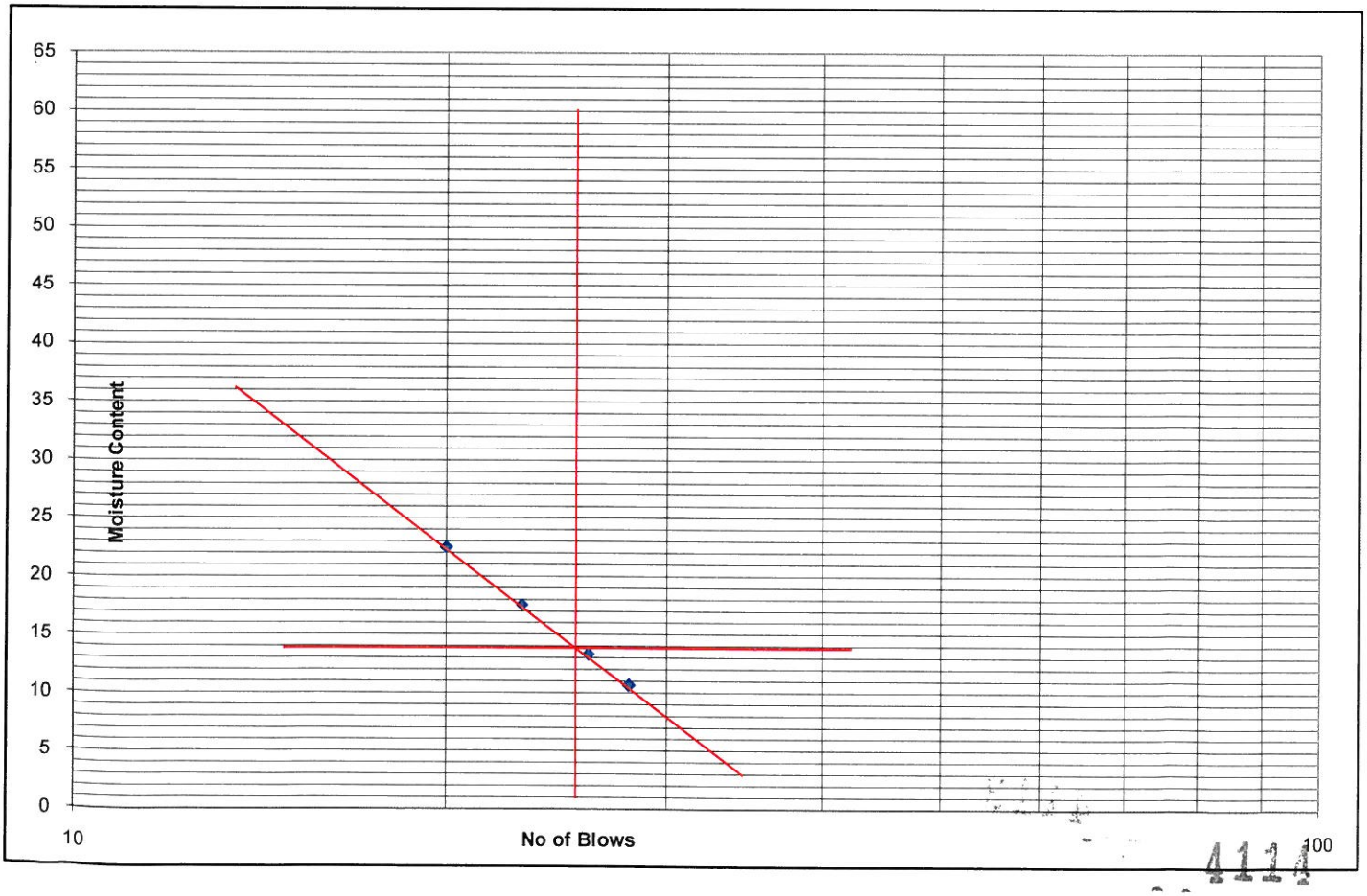
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	31.5m	Tested by	:	D.Mohanty

Number of Blows	28	26	23	20	Plastic Limit	
Container No.	D25	D26	D29	D31	NP	
Container Weight (gm) (W1)	33.58	34.18	36.84	31.87		
Container + Wt. of wet soil (gm) (W2)	83.10	97.22	97.18	99.98		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.33	89.81	88.17	87.48		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.77	7.41	9.02	12.50		
Wt. of oven dry soil (gm) (W3-W1)	44.75	55.63	51.33	55.61		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.66**	**13.32**	**17.57**	**22.48**		

Result Summary

Liquid Limit (WL)	14	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



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Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

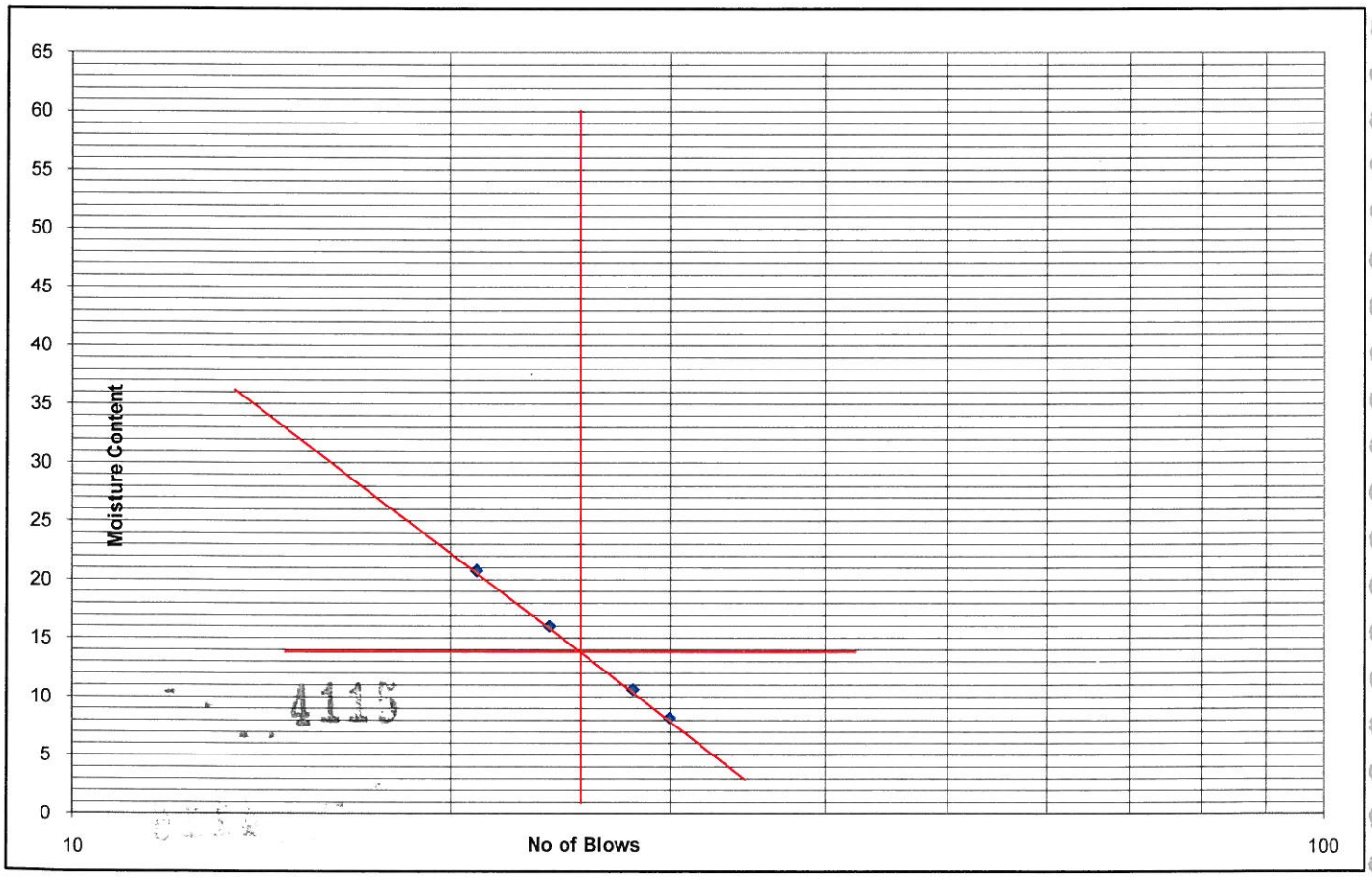
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Number of Blows	30	28	24	21	Plastic Limit	
Container No.	D23	D24	D5	D6	NP	
Container Weight (gm) (W1)	33.72	34.86	34.68	35.29		
Container + Wt. of wet soil (gm) (W2)	82.16	95.43	97.09	98.48		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.48	89.61	88.47	87.62		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.67	5.83	8.62	10.86		
Wt. of oven dry soil (gm) (W3-W1)	44.76	54.75	53.79	52.33		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.21**	**10.64**	**16.03**	**20.76**		

Result Summary

Liquid Limit (WL)	14	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

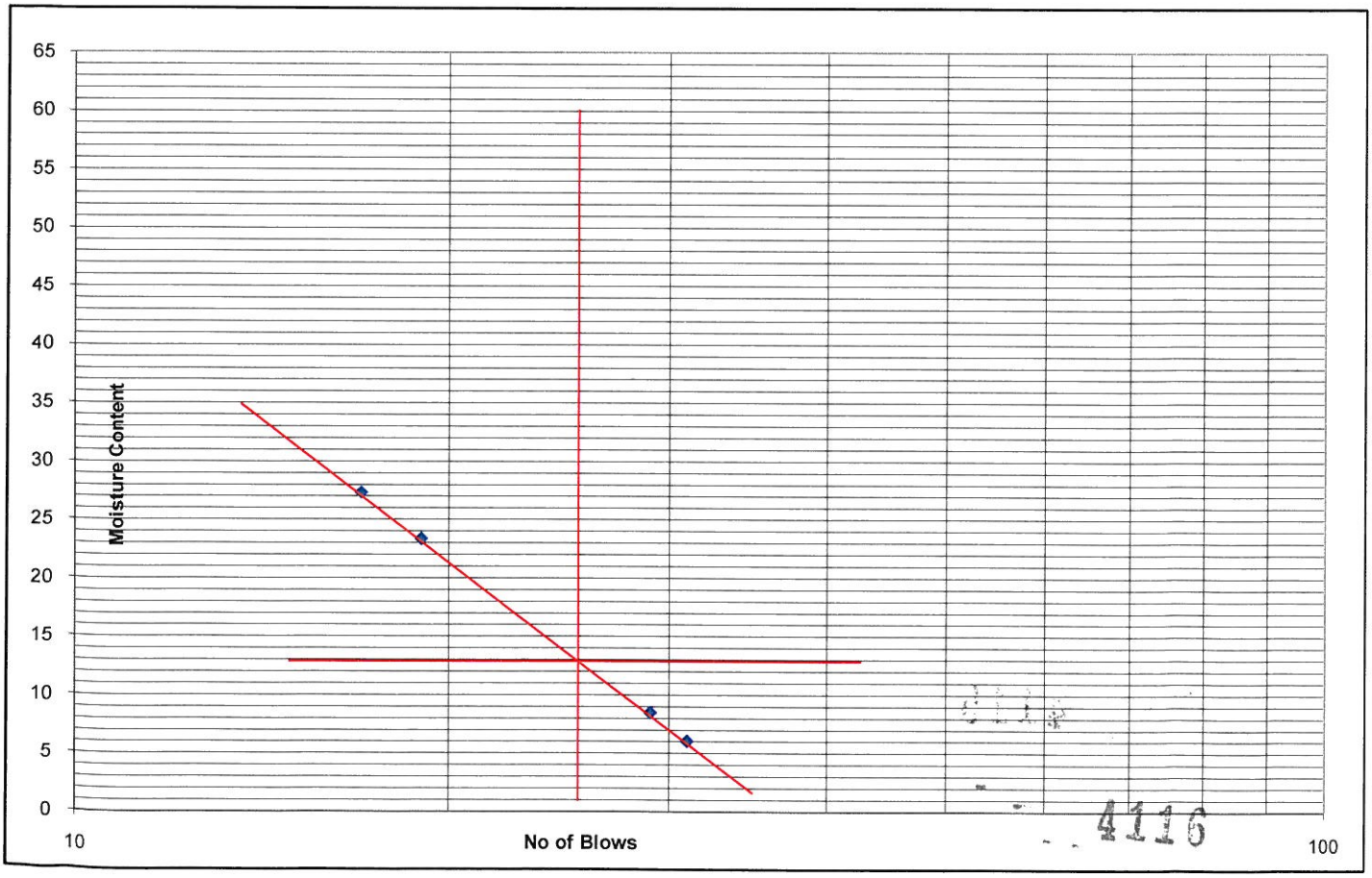
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	36.0m	Tested by	:	D.Mohanty

Number of Blows	31	29	19	17	Plastic Limit	
Container No.	D39	D40	D5	D6	NP	
Container Weight (gm) (W1)	31.04	30.5	34.68	35.29		
Container + Wt. of wet soil (gm) (W2)	81.49	94.85	97.09	101.93		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.60	89.80	85.28	87.62		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.89	5.05	11.81	14.31		
Wt. of oven dry soil (gm) (W3-W1)	47.56	59.30	50.60	52.33		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**6.07**	**8.51**	**23.34**	**27.34**		

Result Summary

Liquid Limit (WL)	13	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

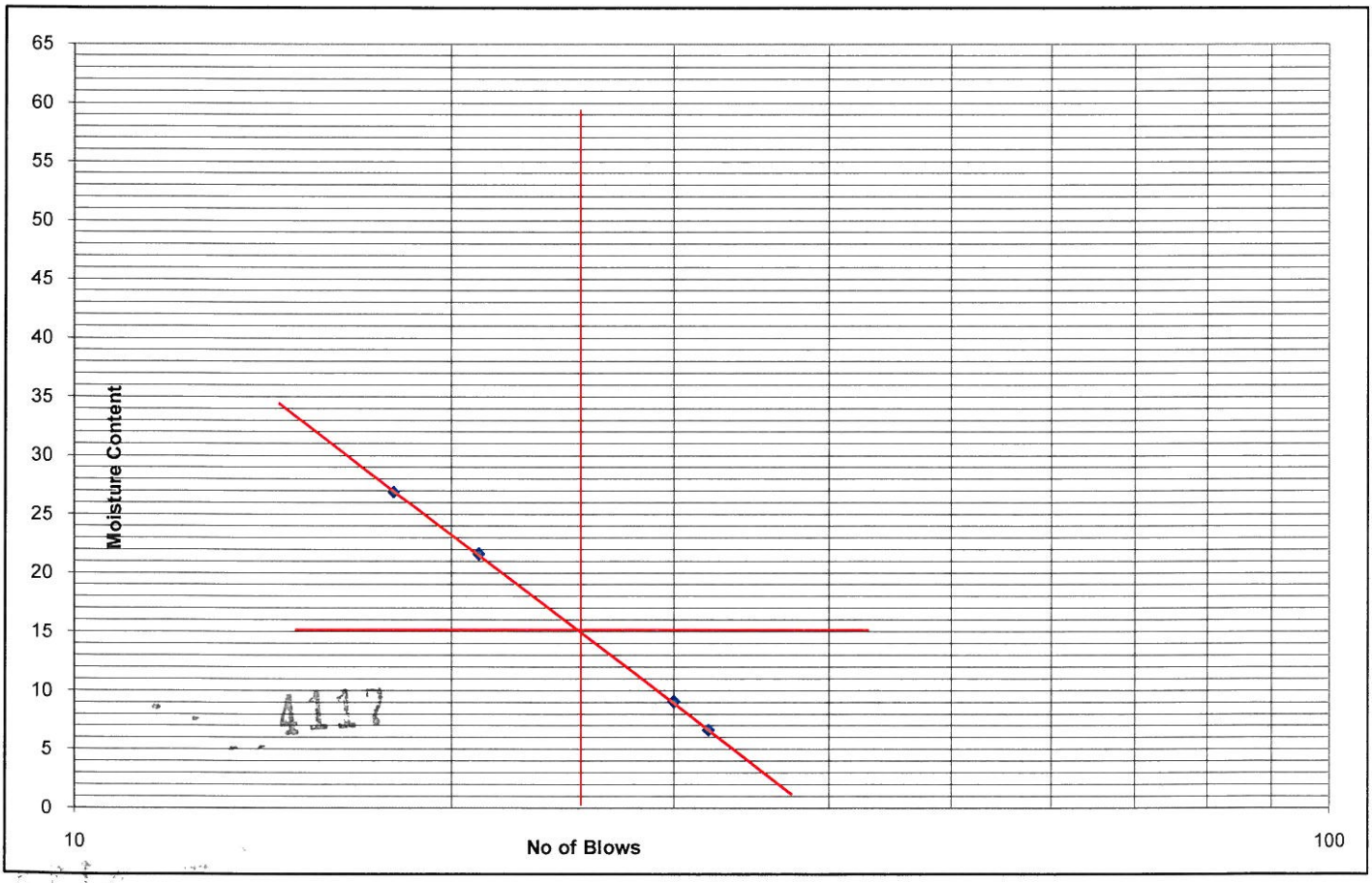
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	37.5m	Tested by	:	D.Mohanty

Number of Blows	32	30	21	18	Plastic Limit	
Container No.	E19	E20	E21	E22	NP	
Container Weight (gm) (W1)	31.69	35.24	37.88	34.61		
Container + Wt. of wet soil (gm) (W2)	81.69	95.66	98.94	103.29		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.57	90.65	88.10	88.72		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.12	5.01	10.84	14.56		
Wt. of oven dry soil (gm) (W3-W1)	46.88	55.41	50.22	54.11		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**6.66**	**9.05**	**21.58**	**26.91**		

Result Summary

Liquid Limit (WL)	15	%
Plastic Limit (Wp)	_	%
Plasticity Index (Ip)	_	%



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

IS : 2720 (Part -5)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River-Saharanpur)

Depth : 40.5m

Date Of Testing : 06.10.12

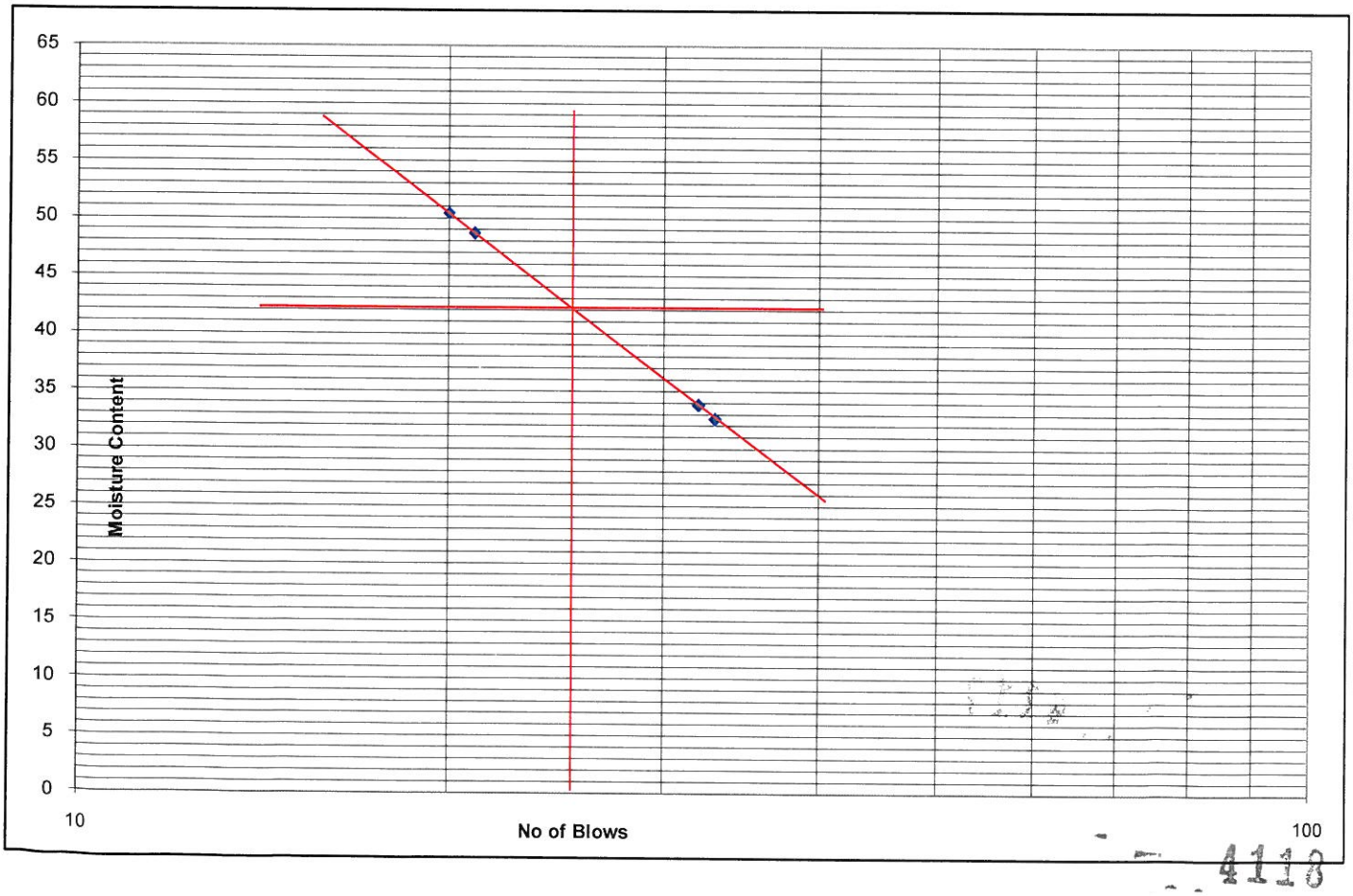
Sampled by : T.K.Das

Tested by : D.Mohanty

Number of Blows	33	32	21	20	Plastic Limit	
Container No.	E19	E20	E21	E22	E23	E24
Container Weight (gm) (W1)	31.69	35.24	37.88	34.61	35.8	32.51
Container + Wt. of wet soil (gm) (W2)	93.23	107.24	111.34	114.63	98.46	92.92
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.10	89.06	87.30	87.81	88.53	83.44
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.13	18.18	24.04	26.82	9.93	9.48
Wt. of oven dry soil (gm) (W3-W1)	46.41	53.82	49.42	53.20	52.73	50.93
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.59**	**33.79**	**48.65**	**50.42**	**18.84**	**18.62**

Result Summary

Liquid Limit (WL)	42	%
Plastic Limit (Wp)	19	%
Plasticity Index (Ip)	23	%



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Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

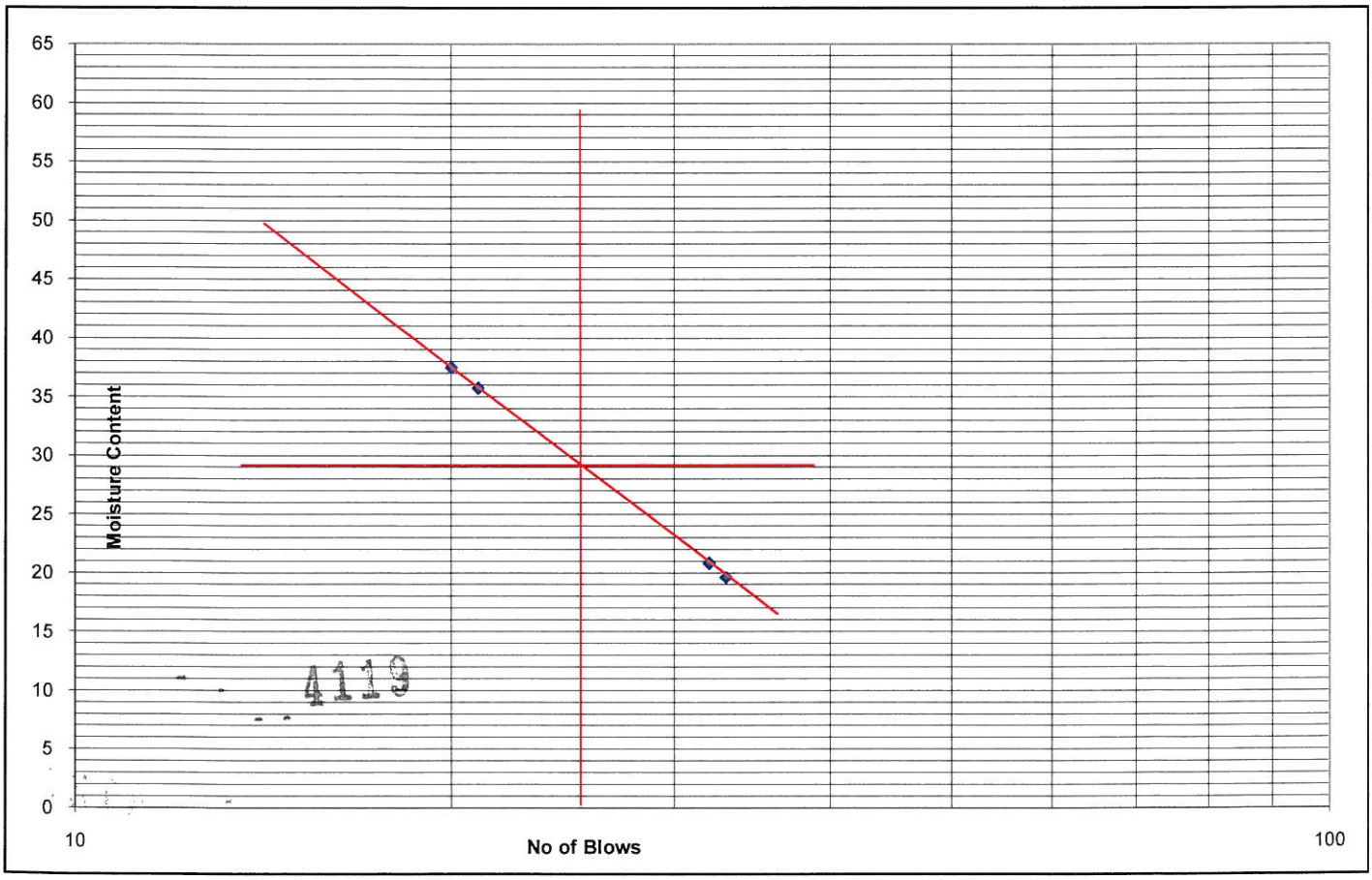
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	46.5m	Tested by	:	D.Mohanty

Number of Blows	33	32	21	20	Plastic Limit	
Container No.	E5	E6	E17	E18	E29	E30
Container Weight (gm) (W1)	35.8	32.51	31.85	36.97	31.26	30.12
Container + Wt. of wet soil (gm) (W2)	86.53	100.58	107.41	106.90	97.87	91.41
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.21	88.87	87.53	87.85	87.88	82.37
Wt. Of water (gm) (W2-W1)-(W3-W1)	8.32	11.71	19.88	19.05	9.99	9.04
Wt. of oven dry soil (gm) (W3-W1)	42.41	56.36	55.68	50.88	56.62	52.25
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**19.61**	**20.78**	**35.71**	**37.45**	**17.64**	**17.31**

Result Summary

Liquid Limit (WL)	29	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	12	%



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

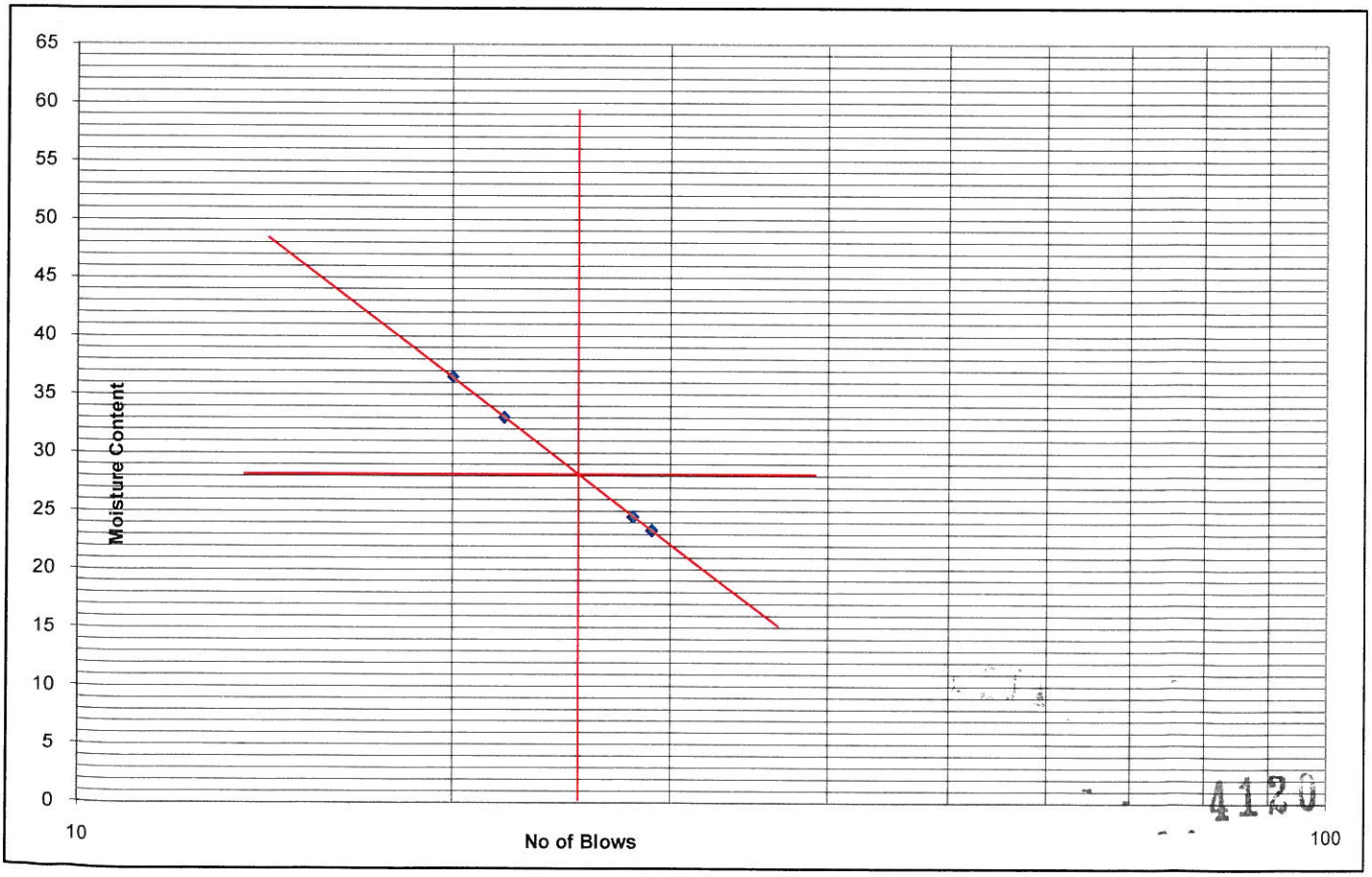
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	06.10.12
Location	:	BH-7(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	48.0m	Tested by	:	D.Mohanty

Number of Blows	29	28	22	20	Plastic Limit	
Container No.	B25	B26	B27	B28	B29	B30
Container Weight (gm) (W1)	35.22	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	88.36	102.43	106.29	105.64	96.70	90.99
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.31	88.85	87.66	87.93	87.91	82.49
Wt. Of water (gm) (W2-W1)-(W3-W1)	10.05	13.58	18.64	17.72	8.79	8.49
Wt. of oven dry soil (gm) (W3-W1)	43.09	55.49	56.46	48.51	53.05	51.73
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**23.33**	**24.48**	**33.01**	**36.53**	**16.56**	**16.42**

Result Summary

Liquid Limit (WL)	28	%
Plastic Limit (Wp)	16	%
Plasticity Index (Ip)	12	%



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	04.10.12
Type of Sample	:	SPT	Tested by	:	K.C.Sahoo
Location	:	BH-7(Markanda River-Saharnpur)	Sampled by	:	T.K.Das
Depth	:	9.0m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.0	3.00	30	24	50%
2	10	12.5	2.50	25		
3	10	11.7	1.70	17		

Remarks:

Lab Manager

Checked By:

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Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	04.10.12
Type of Sample	:	UDS	Tested by	:	K.C.Sahoo
Location	:	BH-7(Markanda River-Saharnpur)	Sampled by	:	T.K.Das
Depth	:	10.5m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.0	3.00	30	25	50%
2	10	12.5	2.50	25		
3	10	12.0	2.00	20		

Remarks:

Lab Manager

Checked By:

4122

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River-Saharnpur)

Depth : 13.5m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.0	3.00	30	23	50%
2	10	12.5	2.50	25		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

4123

ARKITECHNO

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River-Saharnpur)

Depth : 18.0m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	14.0	4.00	40	25	50%
2	10	12.5	2.50	25		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

4124

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	04.10.12
Type of Sample	:	UDS	Tested by	:	K.C.Sahoo
Location	:	BH-7(Markanda River-Saharnpur)	Sampled by	:	T.K.Das
Depth	:	19.5m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.5	3.50	35	24	50%
2	10	12.5	2.50	25		
3	10	11.3	1.30	13		

Remarks:

Lab Manager

Checked By:

4125

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River-Saharnpur)

Depth : 21.0m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.5	3.50	35	26	50%
2	10	12.5	2.50	25		
3	10	11.8	1.80	18		

Remarks:

Lab Manager

Checked By:

4126

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	04.10.12
Type of Sample	:	UDS	Tested by	:	K.C.Sahoo
Location	:	BH-7(Markanda River-Saharnpur)	Sampled by	:	T.K.Das
Depth	:	22.5m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	14.0	4.00	40	24	50%
2	10	12.0	2.00	20		
3	10	11.2	1.20	12		

Remarks:

Lab Manager

Checked By:

4127

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : UDS

Location : BH-7(Markanda River-Saharnpur)

Depth : 25.5m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.0	3.00	30	25	50%
2	10	12.5	2.50	25		
3	10	12.0	2.00	20		

Remarks:

Lab Manager

Checked By:

4128

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	04.10.12
Type of Sample	:	UDS	Tested by	:	K.C.Sahoo
Location	:	BH-7(Markanda River-Saharnpur)	Sampled by	:	T.K.Das
Depth	:	28.5m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.0	3.00	30	23	50%
2	10	12.0	2.00	20		
3	10	12.0	2.00	20		

Remarks:

Lab Manager

Checked By:

4129

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River-Saharnpur)

Depth : 40.5m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	13.8	3.80	38	26	50%
2	10	12.5	2.50	25		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

4130

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River-Saharnpur)

Depth : 46.5m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.2	1.20	12	9	50%
2	10	11.0	1.00	10		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

4131

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DIFFERENTIAL FREE SWELL INDEX OF SOIL (D.F.S.)

AS PER IS: 2720 (PART - 40)

Client : DFCC

Project Name : G.I For 3 Nos. Important Bridges

Type of Sample : SPT

Location : BH-7(Markanda River-Saharnpur)

Depth : 48.0m

Date Of Testing : 04.10.12

Tested by : K.C.Sahoo

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.5	1.50	15	8	50%
2	10	10.5	0.50	5		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

4132

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	04.10.12
Location	:	BH-7(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	K.C.Sahoo

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.35	
3	Weight of bottle with soil and water W3 in gm	137.24	
4	Weight of bottle full of water W4 in gm	134.24	
5	Weight of dry soil (W2-W1)in gm	4.83	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.83	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

Checked By

4133

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	04.10.12
Location	:	BH-7(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	K.C.Sahoo

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	35.88	
3	Weight of bottle with soil and water W3 in gm	136.26	
4	Weight of bottle full of water W4 in gm	133.55	
5	Weight of dry soil (W2-W1)in gm	4.36	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.65	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

4134

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	04.10.12
Location	:	BH-7(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	9.0m	Tested by	:	K.C.Sahoo

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.86	
3	Weight of bottle with soil and water W3 in gm	135.74	
4	Weight of bottle full of water W4 in gm	131.77	
5	Weight of dry soil (W2-W1)in gm	6.35	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.38	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

4195

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	04.10.12
Location	:	BH-7(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	10.5m	Tested by	:	K.C.Sahoo

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	38.24	
3	Weight of bottle with soil and water W3 in gm	135.23	
4	Weight of bottle full of water W4 in gm	131.03	
5	Weight of dry soil (W2-W1)in gm	6.72	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.52	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

4136

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF SPECIFIC GRAVITY BY DENSITY BOTTLE METHOD AS PER IS : 2386 (Part -2)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	04.10.12
Location	:	BH-7(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	K.C.Sahoo

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.54	
3	Weight of bottle with soil and water W3 in gm	136.37	
4	Weight of bottle full of water W4 in gm	132.61	
5	Weight of dry soil (W2-W1)in gm	6.02	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

4137