Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 0.67

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.34	0.34	0.34	99.66
0.425	0.25	0.25	0.59	99.41
0.075	0.08	0.08	0.67	99.33
Total	100.00			

Gravel Content (%)= **0.00**

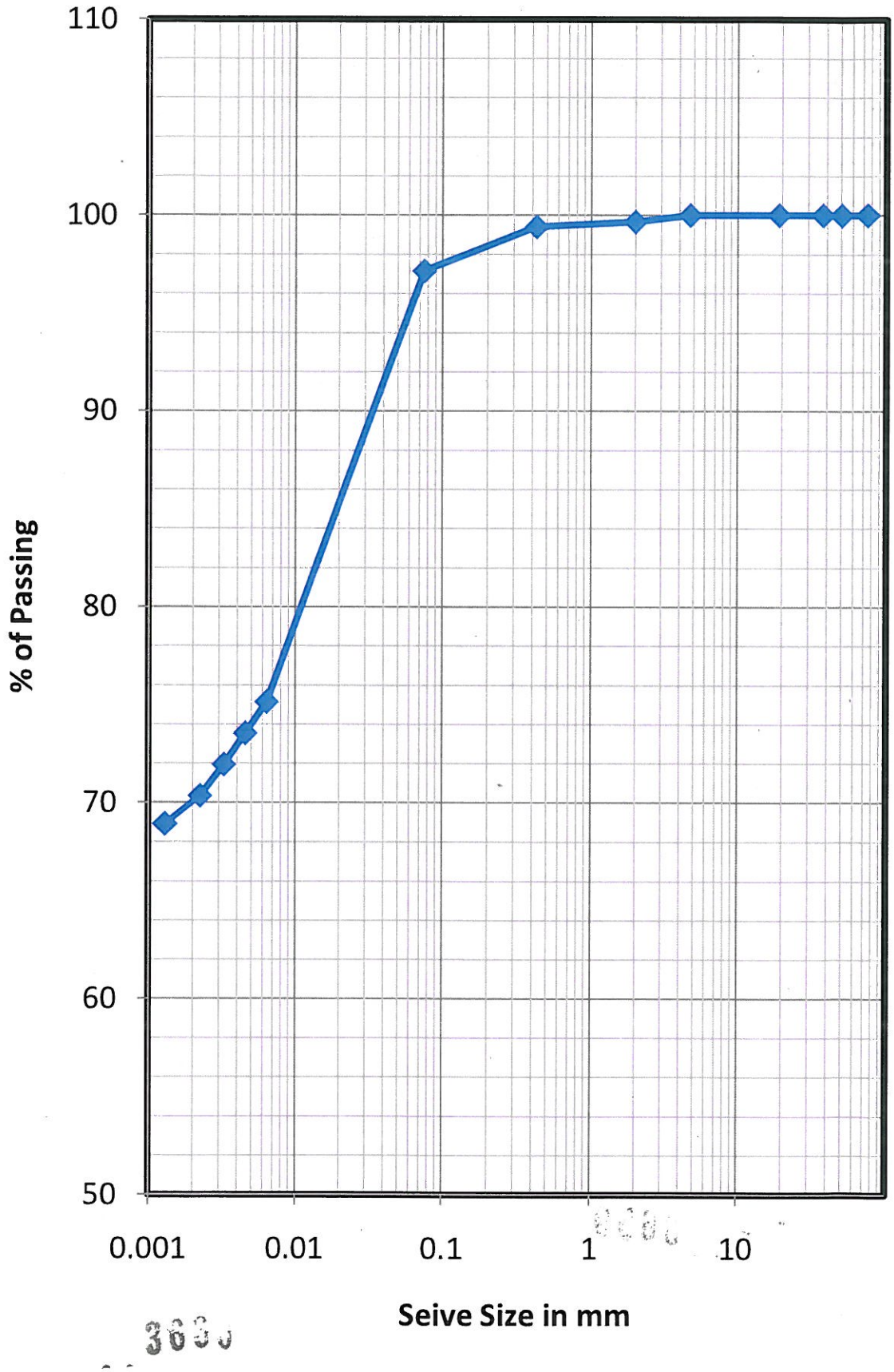
Sand Content (%) = 0.67 **Silt and clay %** 99.33

Remarks :-

3659

Lab Manager Checked By

Grain Size Distribution Curve
BH-3,D-33.0m



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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	34.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 0.48

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.24	0.24	0.24	99.76
0.425	0.18	0.18	0.42	99.58
0.075	0.06	0.06	0.48	99.52
Total	100.00			

Gravel Content (%)= **0.00**

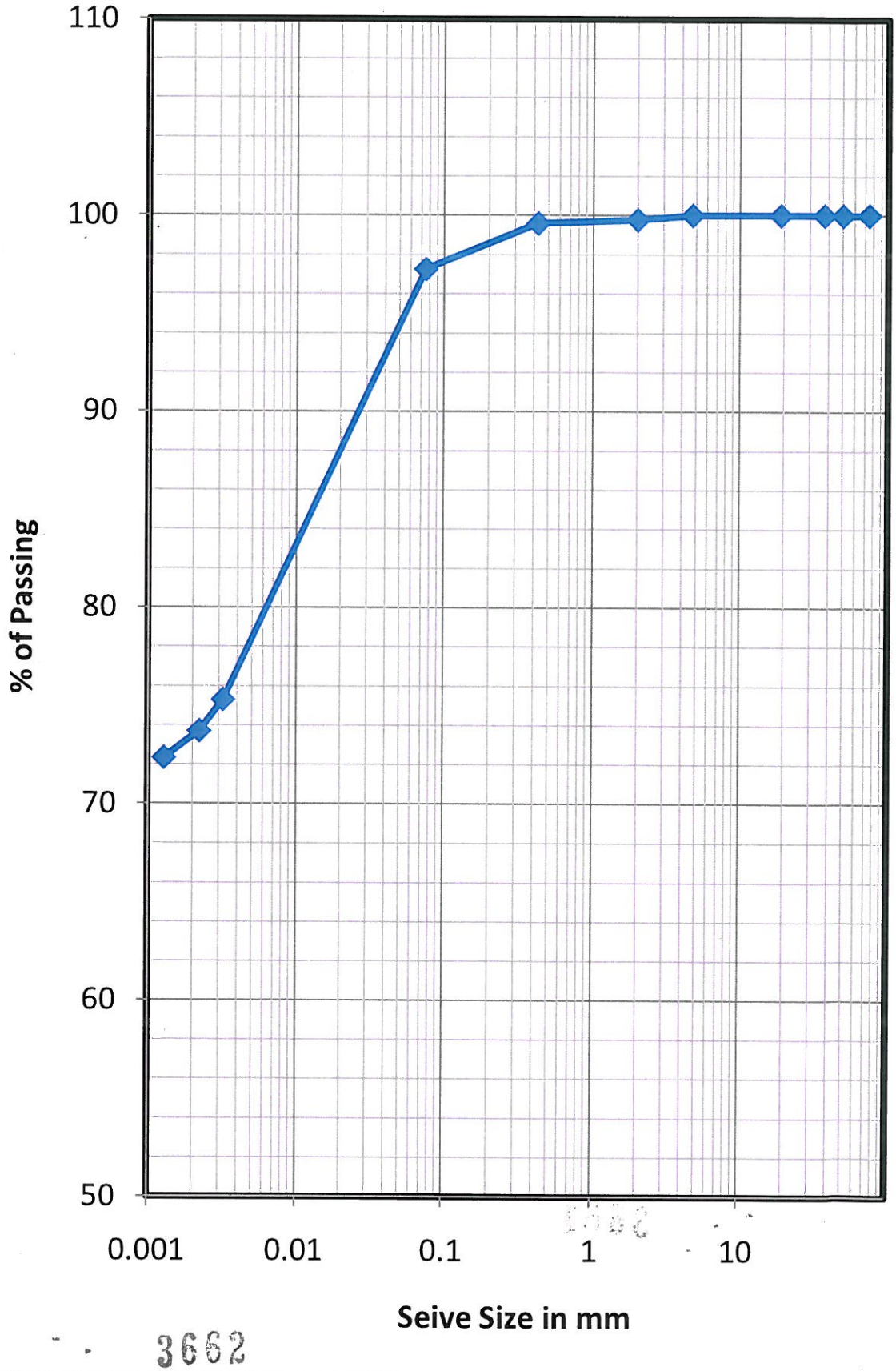
Sand Content (%) = 0.48 **Silt and clay %** 99.52

Remarks :-

3661

Lab Manager Checked By

Grain Size Distribution Curve
BH-3,D-34.5m



3662

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	36.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.23

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.59	0.59	0.59	99.41
0.425	0.48	0.48	1.07	98.93
0.075	0.17	0.17	1.24	98.76
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.24 **Silt and clay %** 98.76

Remarks :-

3663

Lab Manager Checked By

Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	39.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.39

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.62	0.62	0.62	99.38
0.425	0.56	0.56	1.18	98.82
0.075	0.21	0.21	1.39	98.61
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.39 **Silt and clay %** 98.61

Remarks :-

3664

Lab Manager

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	43.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 1.26

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.58	0.58	0.58	99.42
0.425	0.51	0.51	1.09	98.91
0.075	0.17	0.17	1.26	98.74
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.26 **Silt and clay %** 98.74

Remarks :-

3693

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	46.5m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 32.60

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	17.38	17.38	17.38	82.62
0.425	11.95	11.95	29.33	70.67
0.075	3.27	3.27	32.60	67.40
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 32.60 **Silt and clay %** 67.40

Remarks :-

3666

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Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL AS PER IS 2720 (P- 4)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	50.0m	Tested by	:	D.Mohanty

Weight of oven dried sample before washing (gm) :- 100.00

Weight of oven dried sample after washing (gm) :- 29.90

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	14.46	14.46	14.46	85.54
0.425	10.63	10.63	25.09	74.91
0.075	4.81	4.81	29.90	70.10
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 29.90 **Silt and clay %** 70.10

Remarks :-

3667

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 7.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.16
(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		2.66
(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	

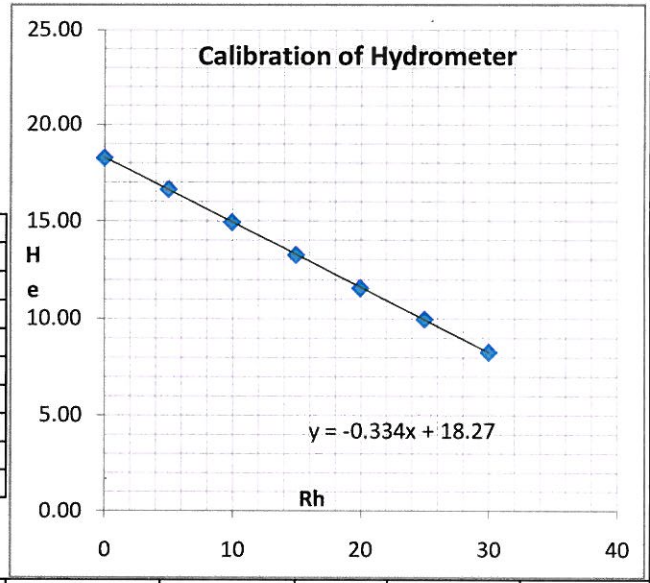
CALIBRATION OF HYDROMETER

(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	29.86	29	-2.0	8.30	30.36	0.526	0.000008341	0.012277647	0.00645667	27.86	3.265	90.96	89.29
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.265	89.78	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.265	89.78	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.265	88.15	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.265	88.15	86.53
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012277647	0.00119905	27.00	3.265	88.15	86.53
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.265	86.52	84.93
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012277647	0.00060533	26.50	3.265	86.52	84.93
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012277647	0.00042803	26.50	3.265	86.52	84.93
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012277647	0.00030554	26.00	3.265	84.89	83.33
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011888750	0.00020921	26.00	3.265	84.89	83.33
	1440	27.86	32	-2.0	8.96	28.36	0.010	0.000007821	0.011888750	0.000121092	25.86	3.265	84.44	82.89

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 9.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.44
(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	

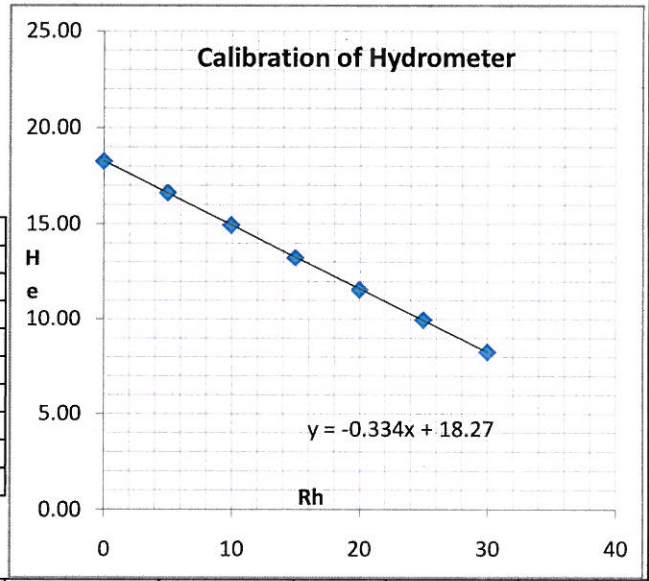
CALIBRATION OF HYDROMETER

(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	29.94	29	-2.0	8.27	30.44	0.525	0.000008341	0.012240833	0.00642694	27.94	3.248	90.76	89.34
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.248	89.33	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.248	89.33	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.248	87.70	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.248	87.70	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.248	86.08	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.248	86.08	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.248	84.46	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.248	84.46	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.248	82.83	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.248	82.83	81.54
	1440	27.27	32	-2.0	9.16	27.77	0.010	0.000007821	0.011853101	0.000122060	25.27	3.248	82.08	80.80

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 10.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.91
(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	

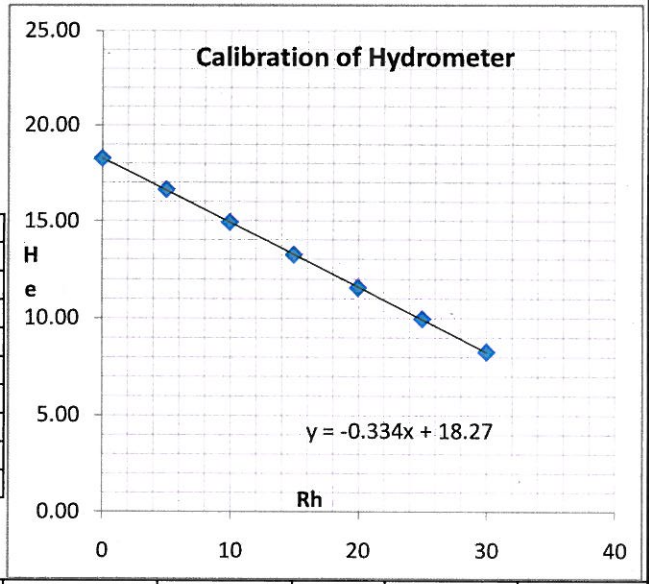
CALIBRATION OF HYDROMETER

(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	29.97	29	-2.0	8.26	30.47	0.525	0.000008341	0.012277647	0.00644236	27.97	3.240	90.63	89.64
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.240	89.10	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.240	89.10	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.240	87.48	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.240	87.48	86.53
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.240	85.86	84.93
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.240	85.86	84.93
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.240	84.24	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.240	84.24	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.240	82.62	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.240	82.62	81.72
	1440	27.02	32	-2.0	9.24	27.52	0.010	0.000007821	0.011888750	0.000122971	25.02	3.240	81.08	80.20

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 : UDS

Location : BH-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 13.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.35
(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		2.66
(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	

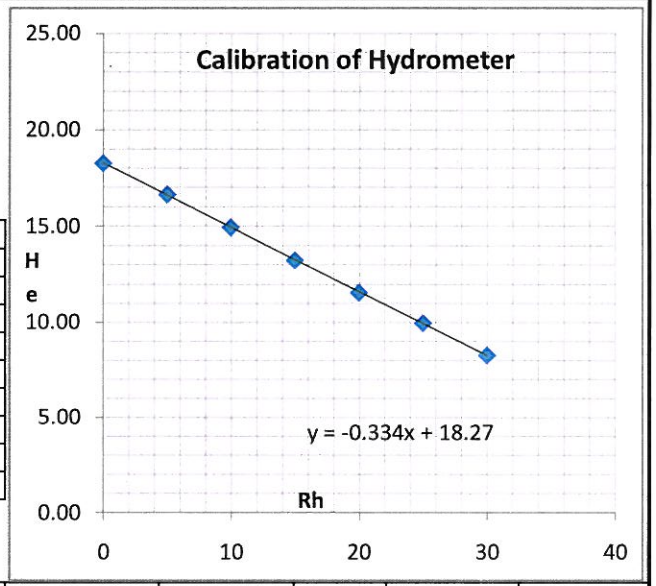
CALIBRATION OF HYDROMETER

(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	29.71	29	-2.0	8.35	30.21	0.527	0.000008341	0.012277647	0.00647614	27.71	3.259	90.30	88.81
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.259	89.61	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.259	89.61	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.259	87.98	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.259	87.98	86.53
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012277647	0.00119905	27.00	3.259	87.98	86.53
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.259	86.35	84.93
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012277647	0.00060533	26.50	3.259	86.35	84.93
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012277647	0.00042803	26.50	3.259	86.35	84.93
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012277647	0.00030554	26.00	3.259	84.72	83.33
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011888750	0.00020921	26.00	3.259	84.72	83.33
	1440	27.61	32	-2.0	9.05	28.11	0.010	0.000007821	0.011888750	0.000121668	25.61	3.259	83.45	82.07

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 15.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

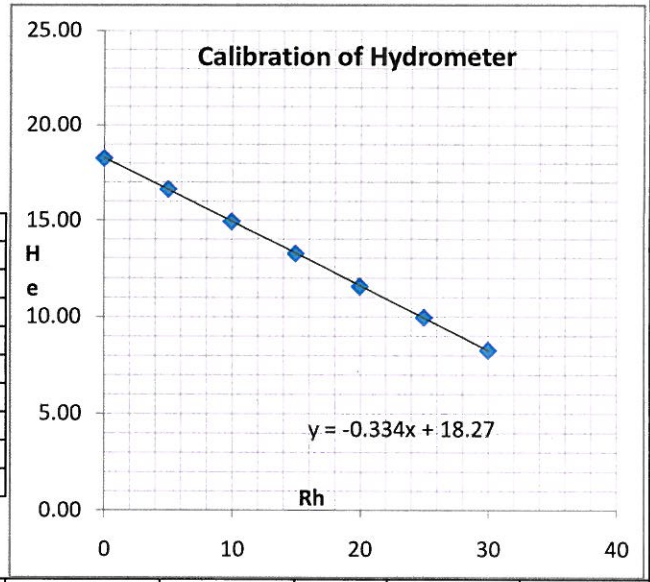
(I)	Percentage of 75 micron passing (from sieve analysis)		99.03
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.5
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading 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	29.99	29	-2.0	8.25	30.49	0.525	0.000008341	0.012204347	0.00640131	27.99	3.222	90.18	89.30
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.222	88.60	87.74
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012204347	0.00323223	27.50	3.222	88.60	87.74
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012204347	0.00230810	27.00	3.222	86.99	86.14
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012204347	0.00163207	27.00	3.222	86.99	86.14
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012204347	0.00120343	26.50	3.222	85.38	84.55
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012204347	0.00085096	26.50	3.222	85.38	84.55
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012204347	0.00060743	26.00	3.222	83.76	82.95
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012204347	0.00042952	26.00	3.222	83.76	82.95
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012204347	0.00030655	25.50	3.222	82.15	81.36
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011817771	0.00020989	25.50	3.222	82.15	81.36
	1440	27.28	32	-2.0	9.16	27.78	0.010	0.000007821	0.011817771	0.000121662	25.28	3.222	81.46	80.67

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 16.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(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	

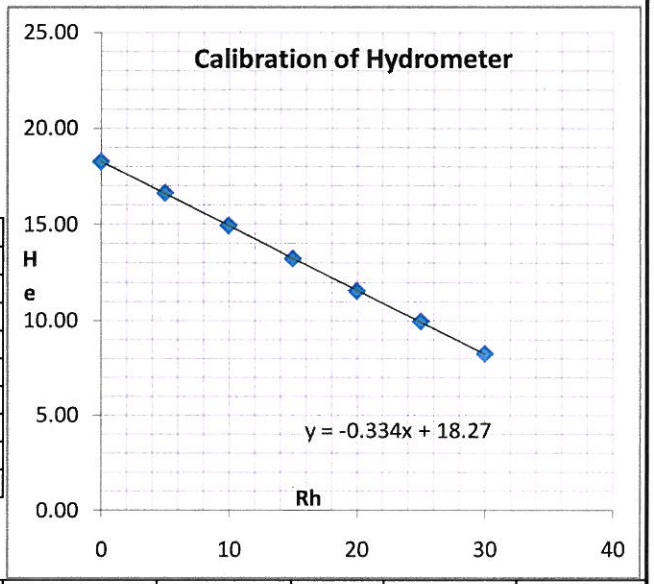
CALIBRATION OF HYDROMETER

(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	29.61	29	-2.0	8.38	30.11	0.529	0.000008341	0.012240833	0.00646962	27.61	3.240	89.47	88.29
	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	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.240	85.87	84.74
	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	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.240	84.25	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.240	84.25	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.240	82.63	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.240	82.63	81.54
	1440	27.60	32	-2.0	9.05	28.10	0.010	0.000007821	0.011853101	0.000121321	25.60	3.240	82.96	81.86

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 19.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.57
(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	

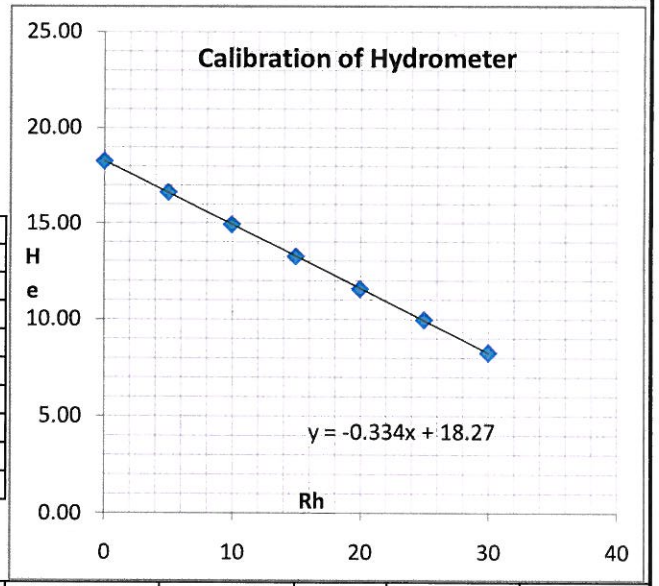
CALIBRATION OF HYDROMETER

(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	29.55	29	-2.0	8.40	30.05	0.529	0.000008341	0.012277647	0.00649684	27.55	3.251	89.57	88.29
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.251	89.41	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.251	89.41	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.251	87.79	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.251	87.79	86.53
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.251	86.16	84.93
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.251	86.16	84.93
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.251	84.53	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.251	84.53	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.251	82.91	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.251	82.91	81.72
	1440	27.44	32	-2.0	9.11	27.94	0.010	0.000007821	0.011888750	0.000122052	25.44	3.251	82.70	81.52

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 22.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.49
(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		2.65
(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	

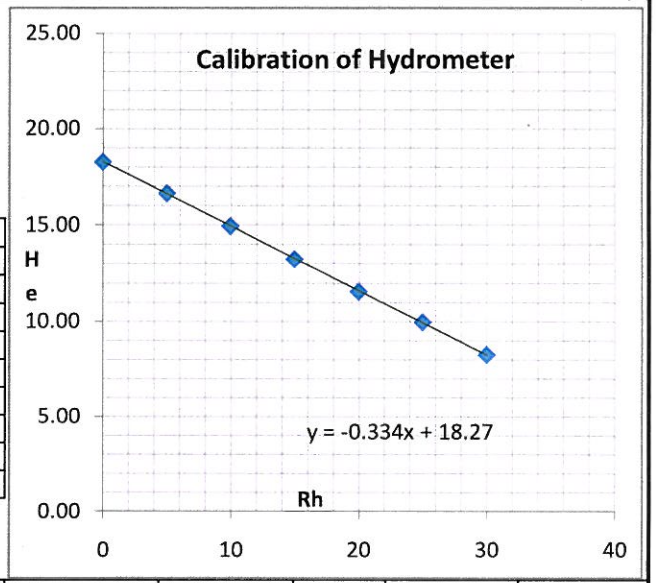
CALIBRATION OF HYDROMETER

(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	29.13	29	-2.0	8.54	29.63	0.534	0.000008341	0.012314796	0.00657068	27.13	3.261	88.48	87.14
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012314796	0.00465797	27.00	3.261	88.06	86.73
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012314796	0.00329368	27.00	3.261	88.06	86.73
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012314796	0.00232898	27.00	3.261	88.06	86.73
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012314796	0.00166278	26.50	3.261	86.43	85.12
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012314796	0.00121432	26.50	3.261	86.43	85.12
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012314796	0.00085866	26.50	3.261	86.43	85.12
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012314796	0.00060716	26.50	3.261	86.43	85.12
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012314796	0.00043744	25.50	3.261	83.16	81.91
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012314796	0.00030932	25.50	3.261	83.16	81.91
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011924722	0.00021179	25.50	3.261	83.16	81.91
	1440	27.34	32	-2.0	9.14	27.84	0.010	0.000007821	0.011924722	0.000122649	25.34	3.261	82.63	81.38

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 24.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(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		2.65
(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	

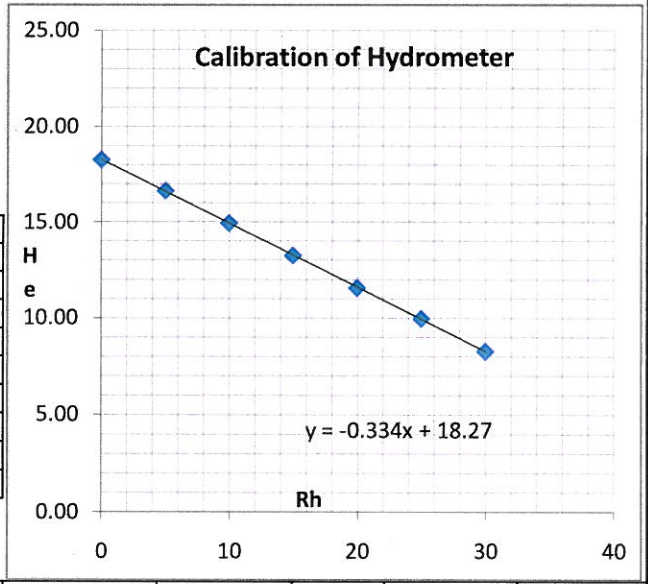
CALIBRATION OF HYDROMETER

(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	28.71	29	-2.0	8.68	29.21	0.538	0.000008341	0.012314796	0.00662442	26.71	3.257	86.99	85.80
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012314796	0.00470306	26.50	3.257	86.30	85.12
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012314796	0.00332556	26.50	3.257	86.30	85.12
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012314796	0.00237386	26.00	3.257	84.68	83.52
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012314796	0.00167857	26.00	3.257	84.68	83.52
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012314796	0.00122586	26.00	3.257	84.68	83.52
	30	27.50	29	-2.0	9.09	28.00	0.071	0.000008341	0.012314796	0.00087489	25.50	3.257	83.05	81.91
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012314796	0.00061864	25.50	3.257	83.05	81.91
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012314796	0.00043744	25.50	3.257	83.05	81.91
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012314796	0.00031215	25.00	3.257	81.42	80.30
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011924722	0.00021373	25.00	3.257	81.42	80.30
	1440	26.73	32	-2.0	9.34	27.23	0.010	0.000007821	0.011924722	0.000123988	24.73	3.257	80.55	79.45

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 27.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.81
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(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	

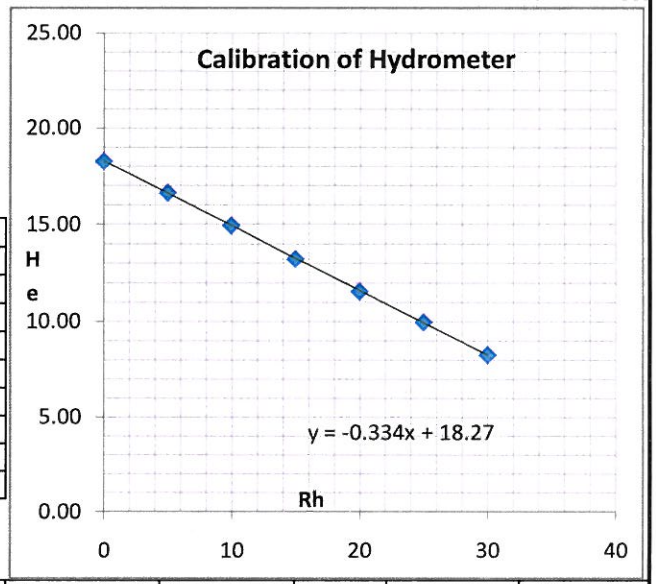
CALIBRATION OF HYDROMETER

(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	29.74	29	-2.0	8.34	30.24	0.527	0.000008341	0.012277647	0.00647225	27.74	3.243	89.97	88.90
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012277647	0.00459852	27.50	3.243	89.19	88.13
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012277647	0.00325165	27.50	3.243	89.19	88.13
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012277647	0.00232196	27.00	3.243	87.57	86.53
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012277647	0.00164187	27.00	3.243	87.57	86.53
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.243	85.95	84.93
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012277647	0.00085607	26.50	3.243	85.95	84.93
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.243	84.33	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.243	84.33	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.243	82.71	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.243	82.71	81.72
	1440	27.38	32	-2.0	9.12	27.88	0.010	0.000007821	0.011888750	0.000122178	25.38	3.243	82.32	81.34

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 30.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.47
(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		2.65
(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	

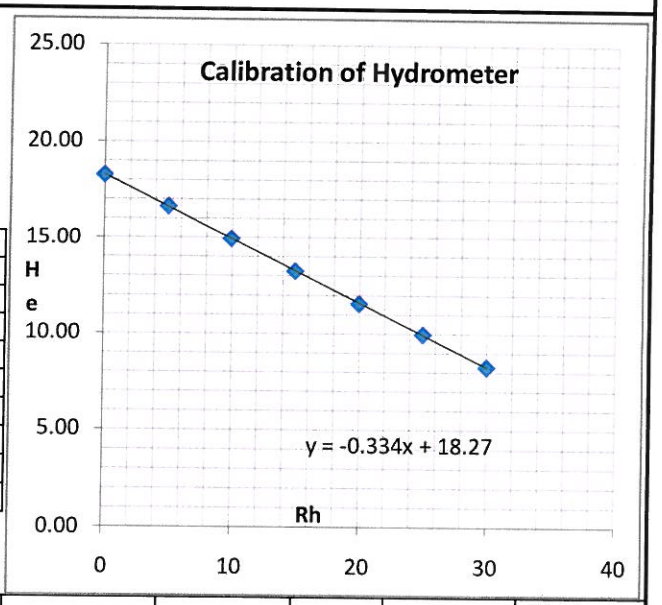
CALIBRATION OF HYDROMETER

(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	28.57	29	-2.0	8.73	29.07	0.539	0.000008341	0.012314796	0.00664224	26.57	3.262	86.67	85.35
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012314796	0.00470306	26.50	3.262	86.44	85.12
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012314796	0.00335715	26.00	3.262	84.81	83.52
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012314796	0.00239598	25.50	3.262	83.18	81.91
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012314796	0.00170972	25.00	3.262	81.55	80.30
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012314796	0.00124860	25.00	3.262	81.55	80.30
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012314796	0.00089083	24.50	3.262	79.92	78.70
	60	26.00	29	-2.0	9.59	26.50	0.052	0.000008341	0.012314796	0.00063547	24.00	3.262	78.29	77.09
	120	25.50	29	-2.0	9.75	26.00	0.037	0.000008341	0.012314796	0.00045324	23.50	3.262	76.66	75.48
	240	25.00	29	-2.0	9.92	25.50	0.026	0.000008341	0.012314796	0.00032322	23.00	3.262	75.03	73.88
	480	24.50	32	-2.0	10.09	25.00	0.019	0.000007821	0.011924722	0.00022317	22.50	3.262	73.40	72.27
	1440	24.07	32	-2.0	10.23	24.57	0.011	0.000007821	0.011924722	0.000129768	22.07	3.262	71.98	70.88

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 33.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.33
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.7
(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	

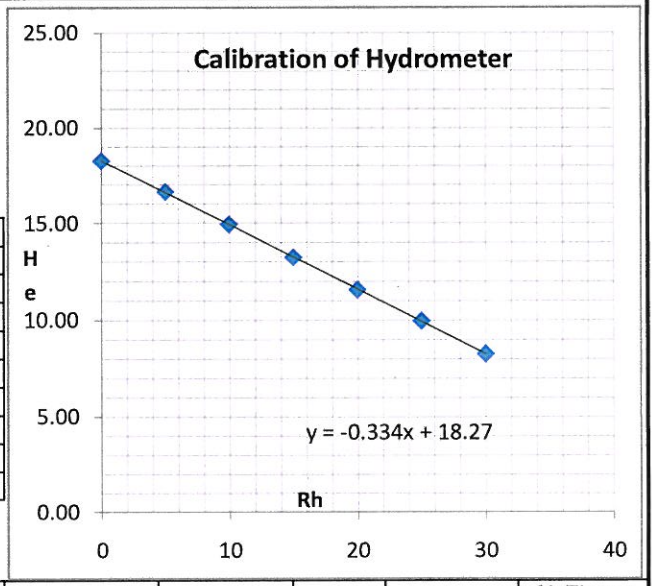
CALIBRATION OF HYDROMETER

(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	29.47	29	-2.0	8.43	29.97	0.530	0.000008341	0.012240833	0.00648765	27.47	3.219	88.43	87.84
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.219	86.92	86.34
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012240833	0.00330559	26.50	3.219	85.31	84.74
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012240833	0.00235960	26.00	3.219	83.70	83.14
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012240833	0.00168404	25.50	3.219	82.09	81.54
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012240833	0.00124110	25.00	3.219	80.48	79.94
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012240833	0.00089329	24.00	3.219	77.26	76.74
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012240833	0.00063713	23.50	3.219	75.65	75.14
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012240833	0.00045436	23.00	3.219	74.04	73.54
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012240833	0.00032397	22.50	3.219	72.43	71.95
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011853101	0.00022366	22.00	3.219	70.82	70.35
	1440	23.55	32	-2.0	10.40	24.05	0.011	0.000007821	0.011853101	0.000130070	21.55	3.219	69.37	68.91

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

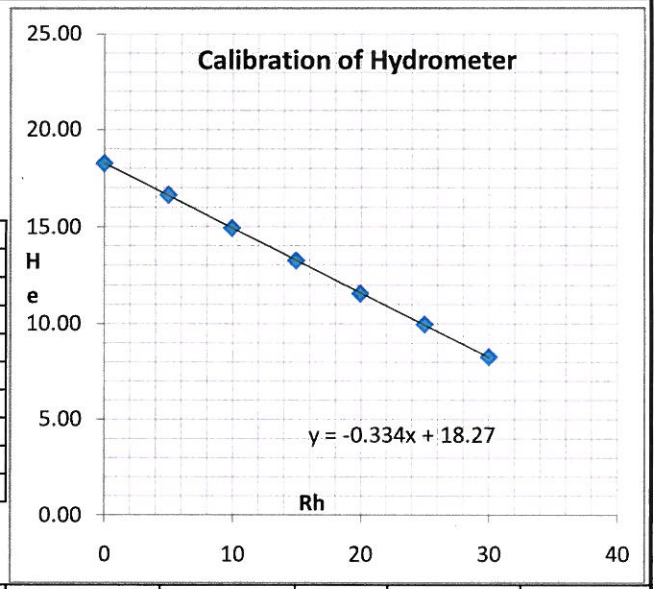
Location : BH-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 34.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		99.52
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.2
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.8
(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	29.31	29	-2.0	8.48	29.81	0.532	0.000008341	0.012277647	0.00652776	27.31	3.220	87.95	87.52
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012277647	0.00464392	27.00	3.220	86.95	86.53
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012277647	0.00331553	26.50	3.220	85.34	84.93
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012277647	0.00236670	26.00	3.220	83.73	83.33
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012277647	0.00168911	25.50	3.220	82.12	81.72
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012277647	0.00124483	25.00	3.220	80.51	80.12
	30	27.00	29	-2.0	9.25	27.50	0.072	0.000008341	0.012277647	0.00088023	25.00	3.220	80.51	80.12
	60	26.50	29	-2.0	9.42	27.00	0.051	0.000008341	0.012277647	0.00062801	24.50	3.220	78.90	78.52
	120	26.00	29	-2.0	9.59	26.50	0.036	0.000008341	0.012277647	0.00044799	24.00	3.220	77.29	76.92
	240	25.50	29	-2.0	9.75	26.00	0.026	0.000008341	0.012277647	0.00031952	23.50	3.220	75.68	75.31
	480	25.00	32	-2.0	9.92	25.50	0.019	0.000007821	0.011888750	0.00022065	23.00	3.220	74.07	73.71
	1440	24.58	32	-2.0	10.06	25.08	0.011	0.000007821	0.011888750	0.000128291	22.58	3.220	72.71	72.36

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 36.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.76
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(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	

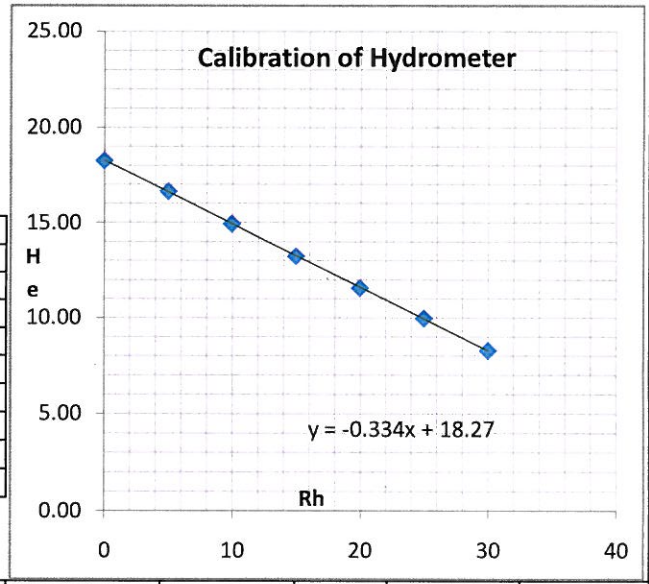
CALIBRATION OF HYDROMETER

(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	29.30	29	-2.0	8.48	29.80	0.532	0.000008341	0.012240833	0.00650947	27.30	3.238	88.39	87.29
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.238	87.42	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.238	87.42	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.238	85.80	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.238	85.80	84.74
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.238	85.80	84.74
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.238	84.18	83.14
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.238	84.18	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.238	84.18	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.238	82.56	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.238	82.56	81.54
	1440	27.27	32	-2.0	9.16	27.77	0.010	0.000007821	0.011853101	0.000122067	25.27	3.238	81.80	80.79

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 39.0m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(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		2.68
(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	

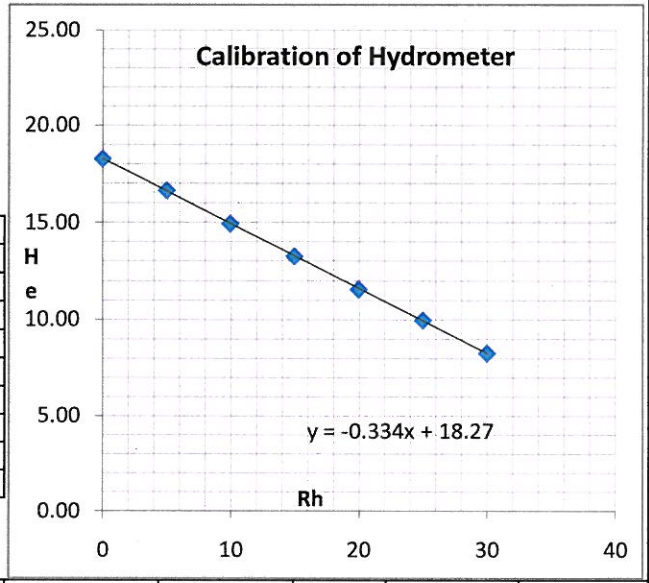
CALIBRATION OF HYDROMETER

(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	29.27	29	-2.0	8.49	29.77	0.532	0.000008341	0.012204347	0.00649390	27.27	3.235	88.23	87.00
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.235	87.36	86.14
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.235	87.36	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.235	85.74	84.55
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012204347	0.00164787	26.50	3.235	85.74	84.55
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012204347	0.00120343	26.50	3.235	85.74	84.55
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012204347	0.00085904	26.00	3.235	84.12	82.95
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012204347	0.00060743	26.00	3.235	84.12	82.95
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012204347	0.00042952	26.00	3.235	84.12	82.95
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012204347	0.00030655	25.50	3.235	82.50	81.36
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011817771	0.00020989	25.50	3.235	82.50	81.36
	1440	27.33	32	-2.0	9.14	27.83	0.010	0.000007821	0.011817771	0.000121571	25.33	3.235	81.94	80.80

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-3(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 43.5m

Date of Testing : 29.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.74
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(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	

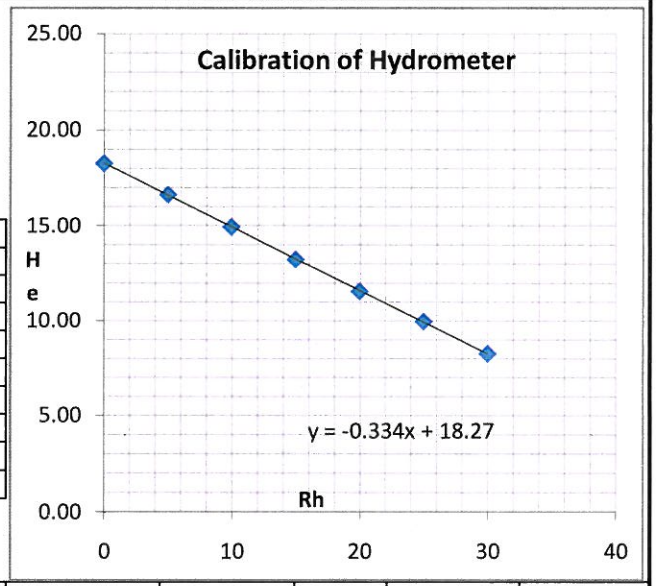
CALIBRATION OF HYDROMETER

(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	29.44	29	-2.0	8.44	29.94	0.530	0.000008341	0.012240833	0.00649150	27.44	3.238	88.86	87.74
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.238	87.44	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.238	87.44	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.238	85.82	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.238	85.82	84.74
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012240833	0.00121849	26.00	3.238	84.20	83.14
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.238	84.20	83.14
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012240833	0.00061493	25.50	3.238	82.58	81.54
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012240833	0.00043482	25.50	3.238	82.58	81.54
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012240833	0.00031028	25.00	3.238	80.96	79.94
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011853101	0.00021245	25.00	3.238	80.96	79.94
	1440	26.90	32	-2.0	9.29	27.40	0.010	0.000007821	0.011853101	0.000122886	24.90	3.238	80.63	79.61

Lab Manager

Checked By

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

Location : BH-3(Markanda River-Ambala)

Depth : 1.5m

Date Of Testing : 29.10.12

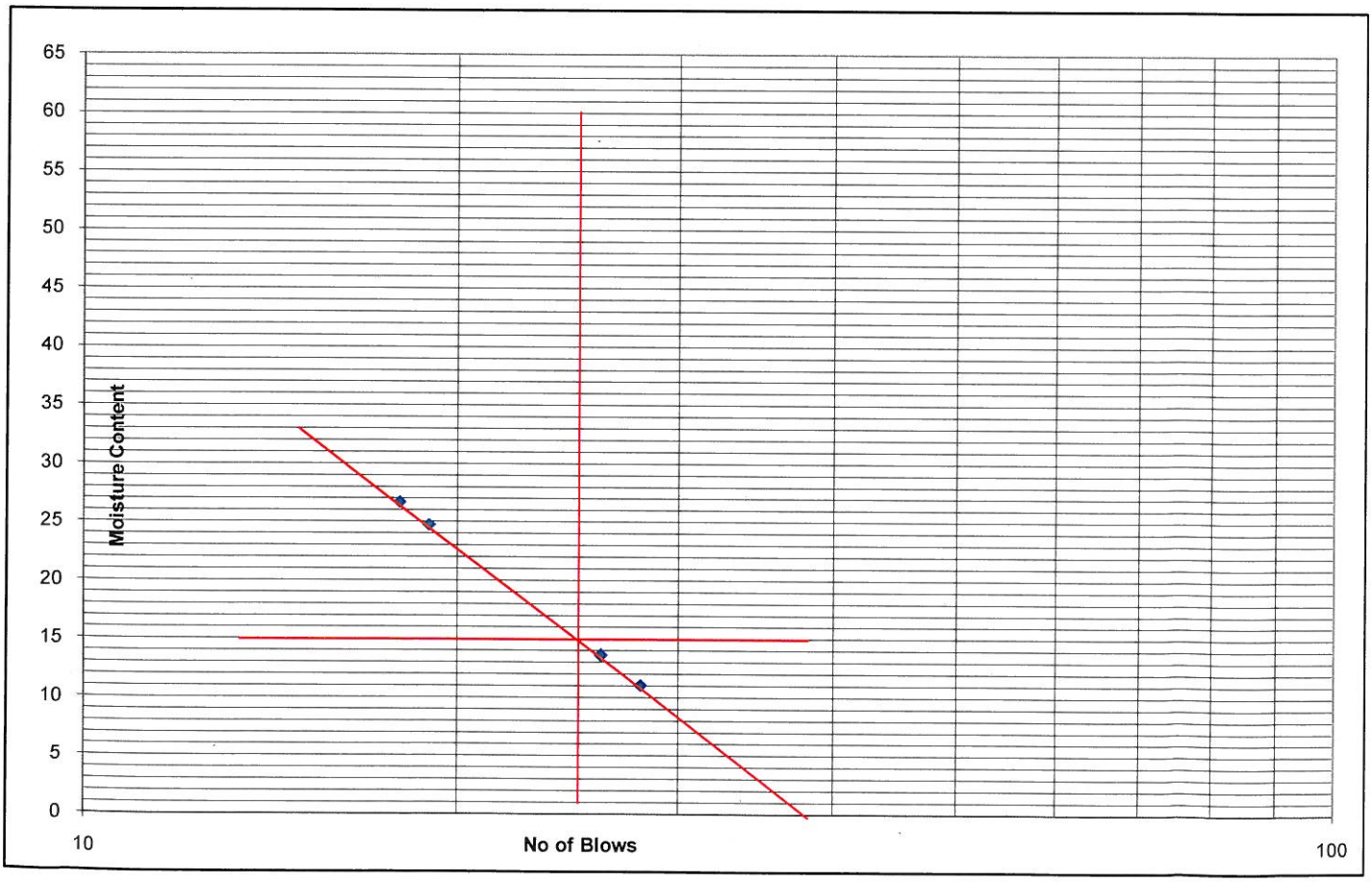
Sampled by : T.K.Das

Tested by : D.Mohanty

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C19	C20	C21	C22	NP	
Container Weight (gm) (W1)	30.48	35.24	32.64	34.61		
Container + Wt. of wet soil (gm) (W2)	83.16	95.55	98.85	100.67		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.91	88.32	85.72	86.74		
Wt. Of water (gm) (W2-W1)-(W3-W1)	5.25	7.22	13.14	13.92		
Wt. of oven dry soil (gm) (W3-W1)	47.43	53.08	53.08	52.13		
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**11.07**	**13.61**	**24.75**	**26.71**		

Result Summary

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



3684

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

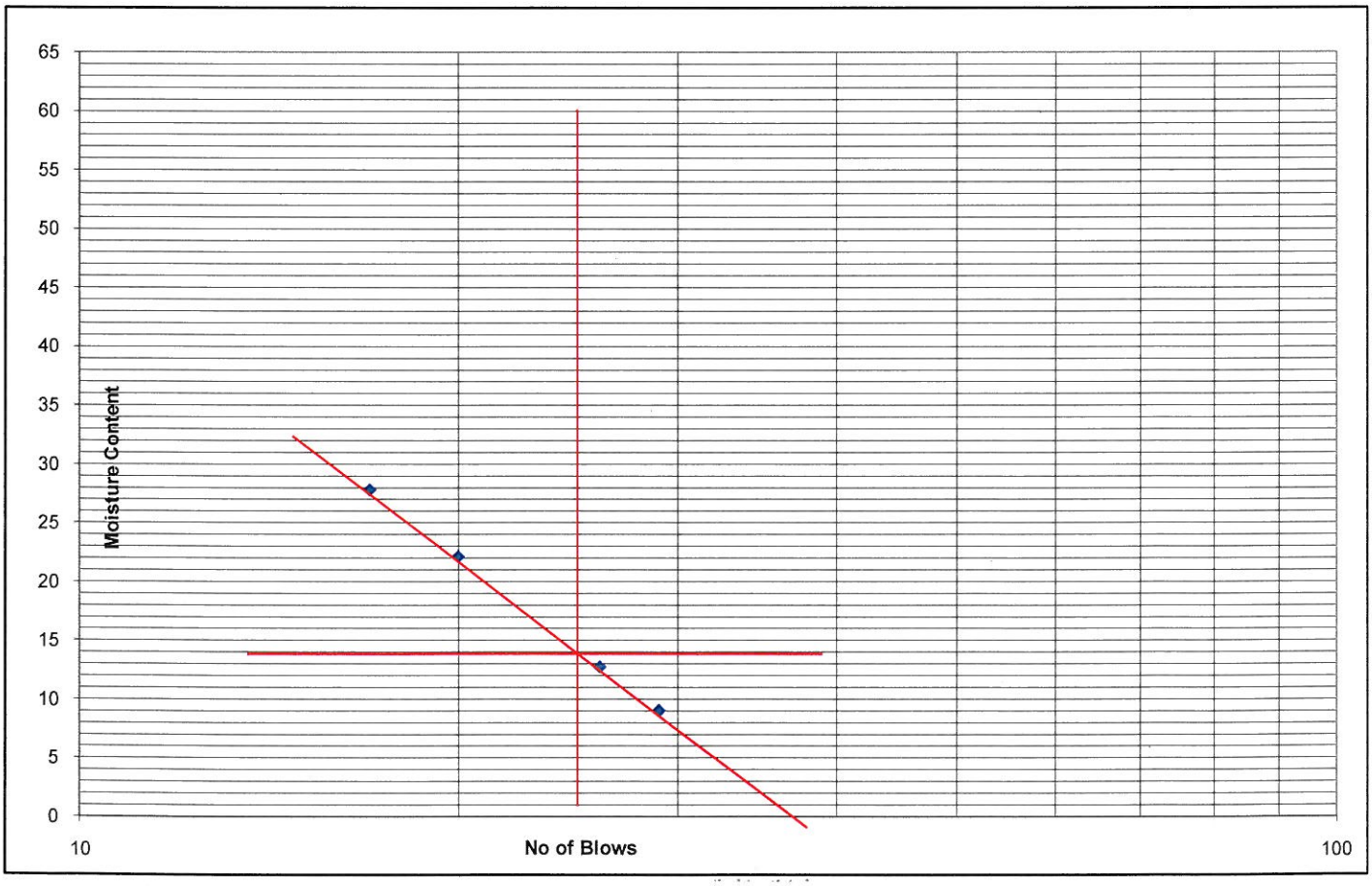
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	3.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	20	17	Plastic Limit	
Container No.	C7	C8	C9	C10	NP	
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42		
Container + Wt. of wet soil (gm) (W2)	82.16	95.16	97.28	101.20		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.06	88.61	85.66	86.89		
Wt. of water (gm) (W2-W1)-(W3-W1)	4.10	6.55	11.62	14.31		
Wt. of oven dry soil (gm) (W3-W1)	45.48	51.40	52.52	51.47		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**9.02**	**12.75**	**22.12**	**27.81**		

Result Summary

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



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

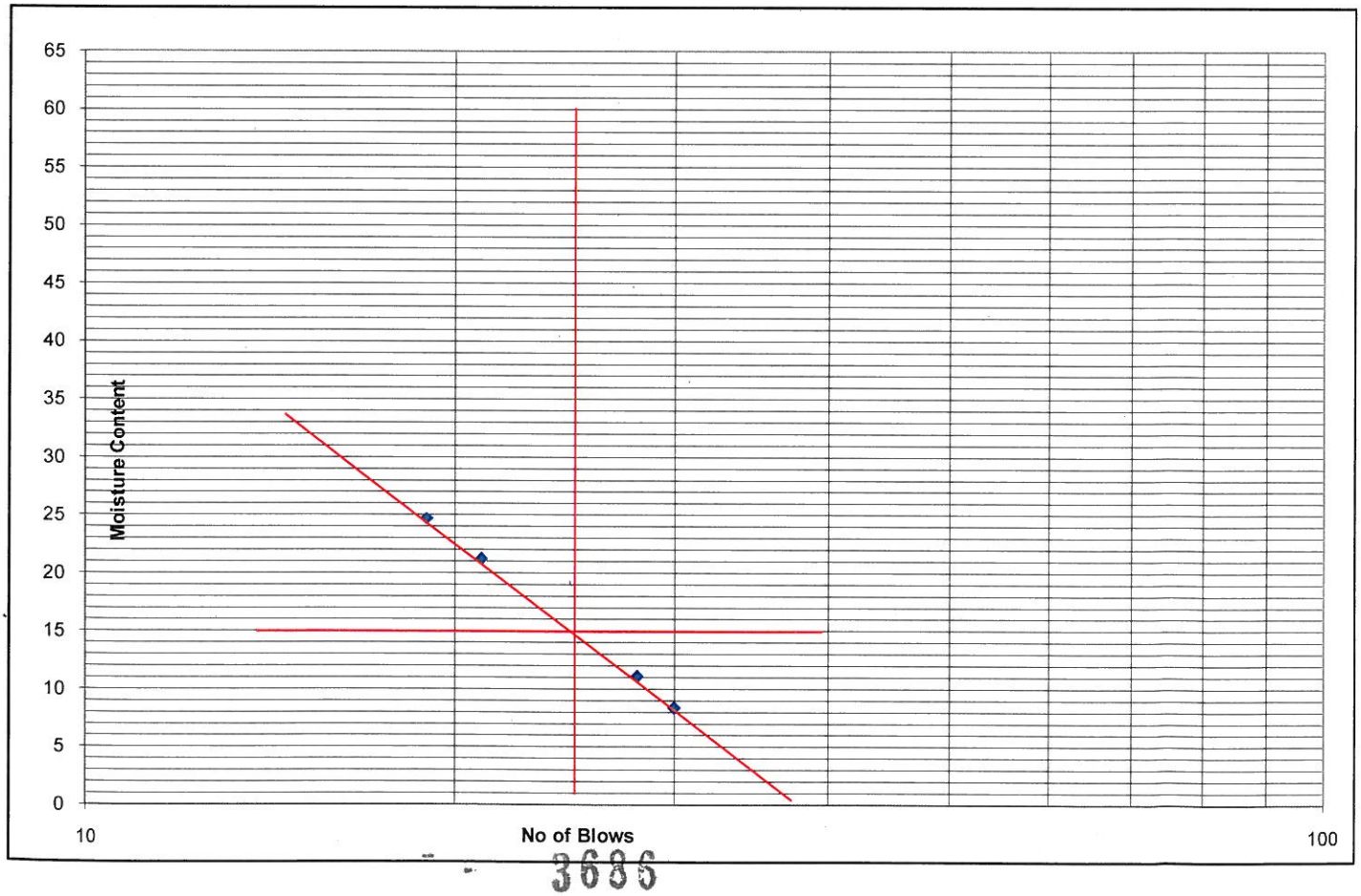
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	D.Mohanty

Number of Blows	30	28	21	19	Plastic Limit	
Container No.	C13	C14	C9	C16	NP	
Container Weight (gm) (W1)	39.64	36.34	33.14	32.28		
Container + Wt. of wet soil (gm) (W2)	81.66	94.38	96.96	100.55		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.42	88.59	85.80	87.03		
Wt. of water (gm) (W2-W1)-(W3-W1)	3.25	5.79	11.15	13.53		
Wt. of oven dry soil (gm) (W3-W1)	38.78	52.25	52.66	54.75		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.38**	**11.08**	**21.18**	**24.71**		

Result Summary

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



3686

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

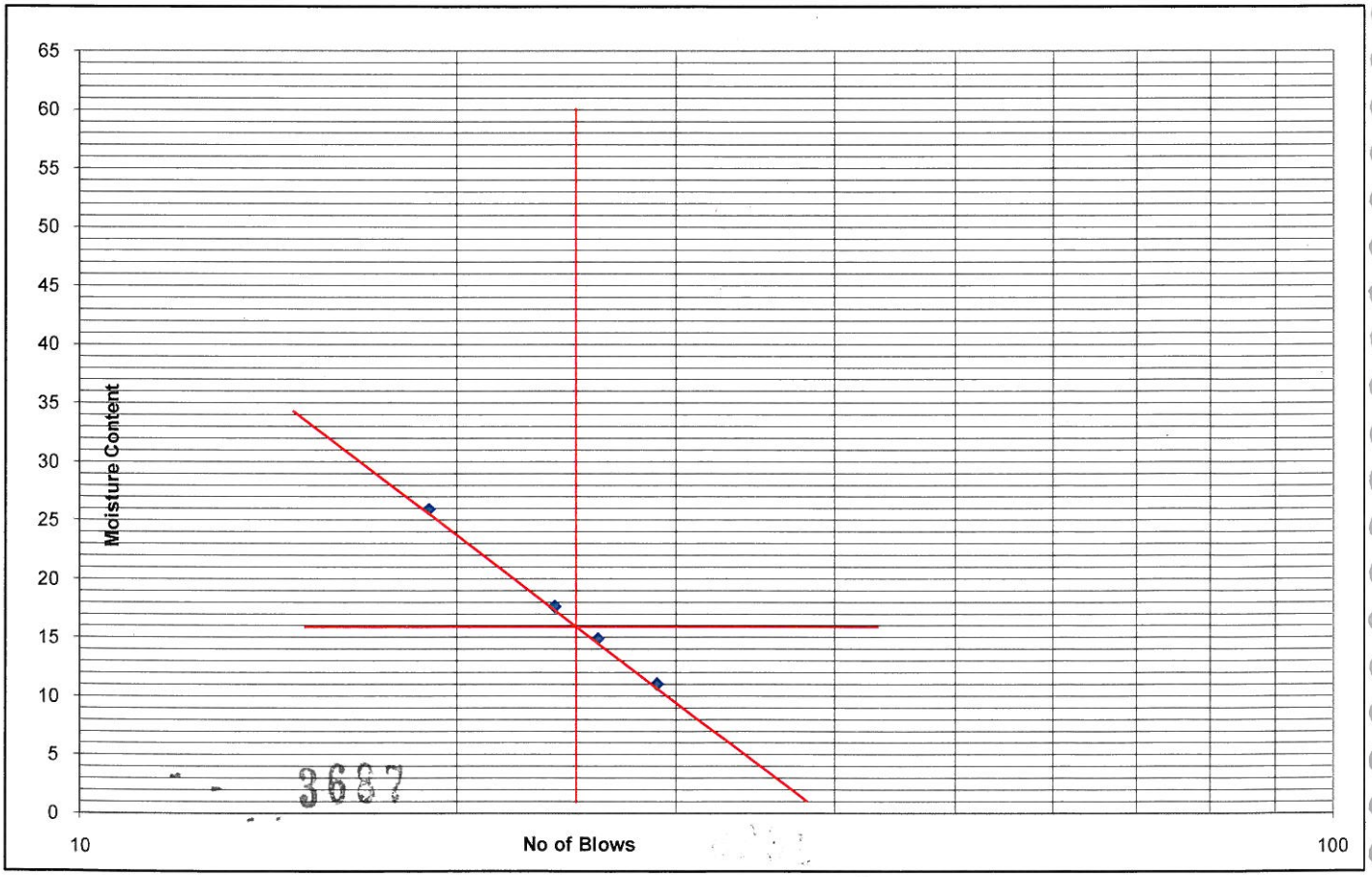
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	24	19	Plastic Limit	
Container No.	C37	C38	C39	C40	NP	
Container Weight (gm) (W1)	38.52	37.22	39.43	30.5		
Container + Wt. of wet soil (gm) (W2)	82.89	95.92	94.08	101.64		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.48	88.30	85.89	86.97		
Wt. of water (gm) (W2-W1)-(W3-W1)	4.41	7.62	8.19	14.67		
Wt. of oven dry soil (gm) (W3-W1)	39.96	51.08	46.46	56.47		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**11.04**	**14.92**	**17.64**	**25.98**		

Result Summary

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



3687

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

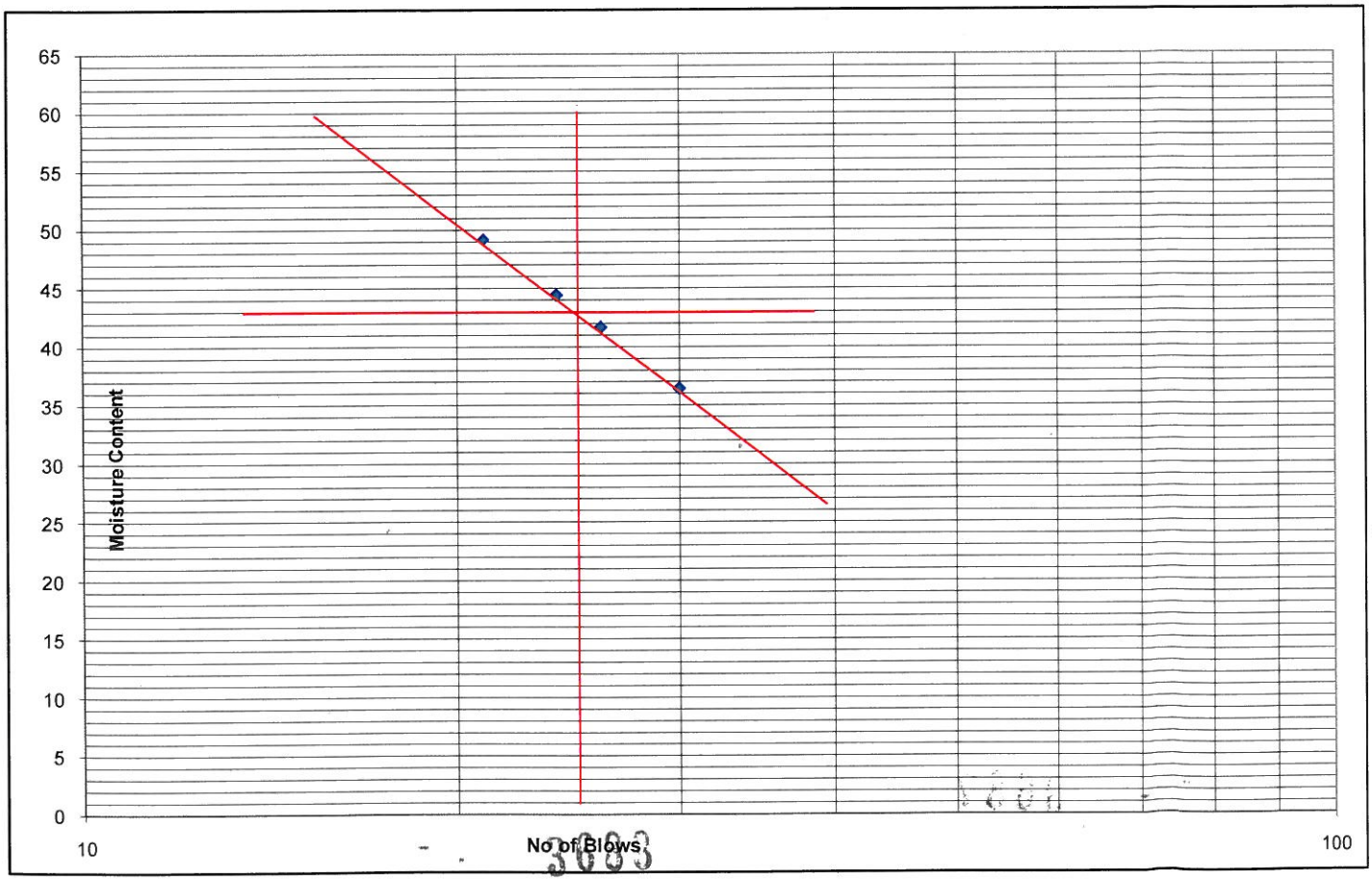
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	7.5m	Tested by	:	D.Mohanty

Number of Blows	30	26	24	21	Plastic Limit	
Container No.	C25	C26	C27	C28	C29	C30
Container Weight (gm) (W1)	35.83	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	94.15	111.16	110.33	110.47	92.13	90.04
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.59	88.29	86.00	87.05	82.35	80.02
Wt. of water (gm) (W2-W1)-(W3-W1)	15.57	22.87	24.33	23.42	9.78	10.02
Wt. of oven dry soil (gm) (W3-W1)	42.76	54.93	54.80	47.63	47.49	49.26
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**36.41**	**41.63**	**44.39**	**49.17**	**20.59**	**20.35**

Result Summary

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



3083

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

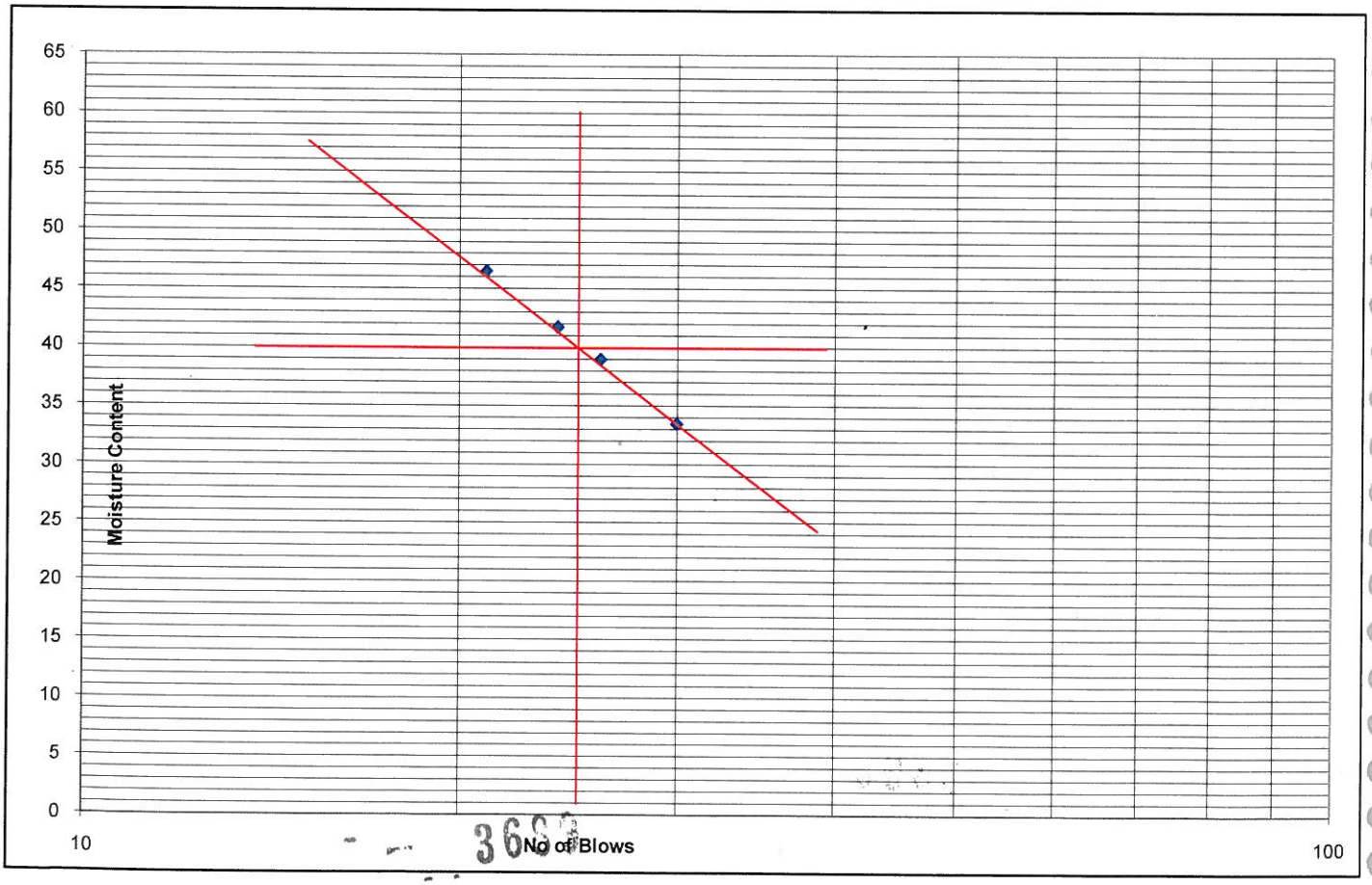
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	9.0m	Tested by	:	D.Mohanty

Number of Blows	30	26	24	21	Plastic Limit	
Container No.	C25	C26	C27	C28	C29	C30
Container Weight (gm) (W1)	35.83	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	93.01	110.06	108.69	109.14	91.82	89.69
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.68	88.57	85.89	87.02	82.43	80.32
Wt. of water (gm) (W2-W1)-(W3-W1)	14.33	21.50	22.80	22.12	9.39	9.38
Wt. of oven dry soil (gm) (W3-W1)	42.85	55.21	54.69	47.60	47.57	49.56
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.45**	**38.94**	**41.69**	**46.47**	**19.73**	**18.92**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

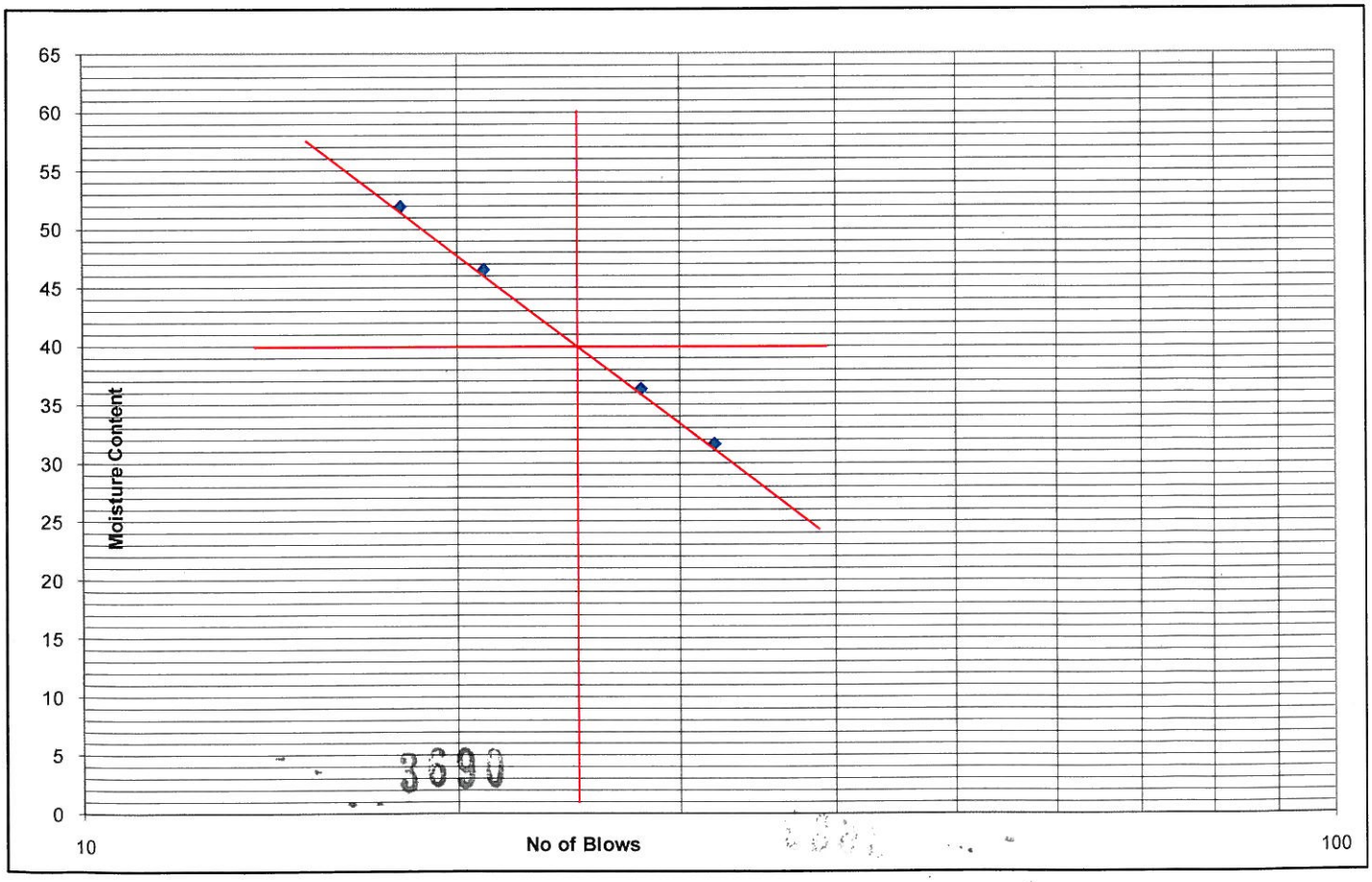
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	10.5m	Tested by	:	D.Mohanty

Number of Blows	32	28	21	18	Plastic Limit	
Container No.	C11	C12	C17	C19	C41	C42
Container Weight (gm) (W1)	31.85	36.97	30.76	33.24	37.6	35.55
Container + Wt. of wet soil (gm) (W2)	92.94	107.11	111.46	115.33	91.24	88.14
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.27	88.43	85.84	87.28	82.36	80.44
Wt. of water (gm) (W2-W1)-(W3-W1)	14.66	18.68	25.62	28.04	8.87	7.70
Wt. of oven dry soil (gm) (W3-W1)	46.42	51.46	55.08	54.04	44.76	44.89
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.59**	**36.31**	**46.52**	**51.89**	**19.82**	**17.16**

Result Summary

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



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

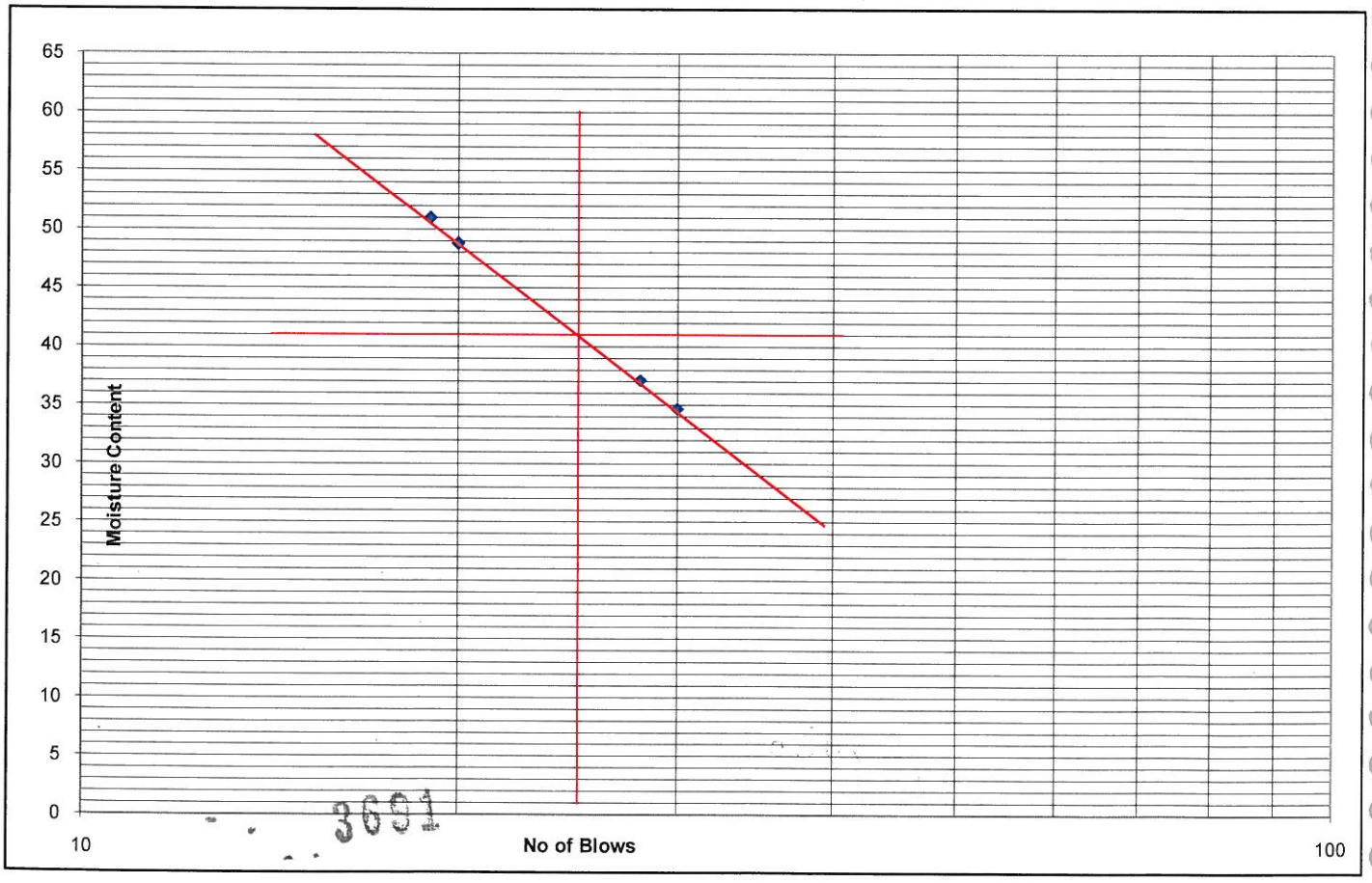
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	D.Mohanty

Number of Blows	30	28	20	19	Plastic Limit	
Container No.	D13	D14	D15	D16	D17	D18
Container Weight (gm) (W1)	34.4	33.46	32.41	35.31	30.56	31.49
Container + Wt. of wet soil (gm) (W2)	93.76	108.66	111.76	114.29	93.67	91.09
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.47	88.31	85.74	87.63	82.39	80.66
Wt. of water (gm) (W2-W1)-(W3-W1)	15.29	20.36	26.02	26.66	11.28	10.44
Wt. of oven dry soil (gm) (W3-W1)	44.07	54.85	53.33	52.32	51.83	49.17
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.70**	**37.12**	**48.79**	**50.96**	**21.76**	**21.23**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

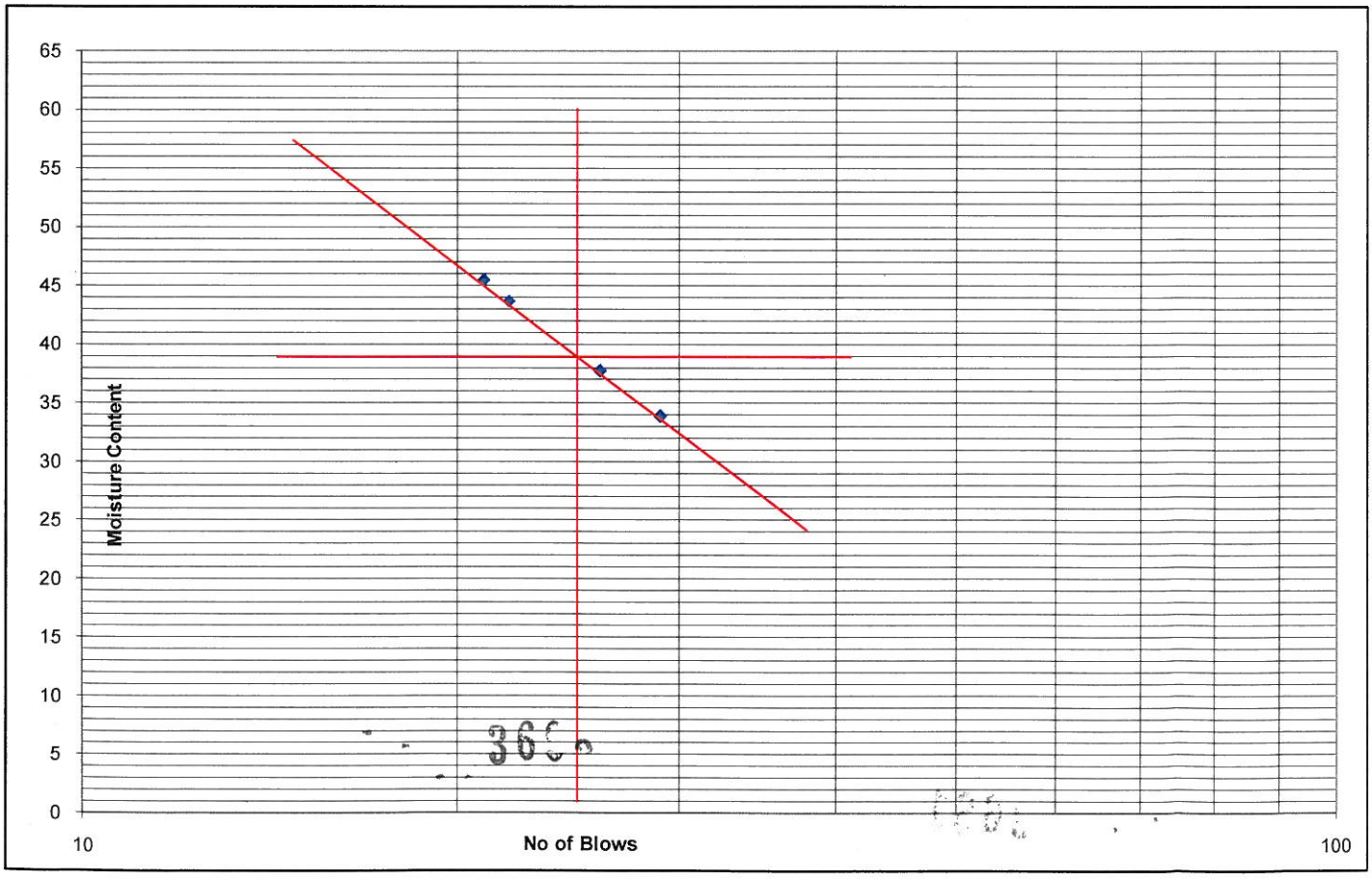
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	15.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	22	21	Plastic Limit	
Container No.	D7	D8	D9	D10	D11	D12
Container Weight (gm) (W1)	35.82	31.27	34.13	32.45	36.48	37.96
Container + Wt. of wet soil (gm) (W2)	92.91	109.75	108.05	112.58	91.06	88.64
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.47	88.25	85.58	87.54	82.49	80.80
Wt. of water (gm) (W2-W1)-(W3-W1)	14.44	21.50	22.48	25.04	8.57	7.84
Wt. of oven dry soil (gm) (W3-W1)	42.65	56.98	51.45	55.09	46.01	42.84
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.86**	**37.73**	**43.69**	**45.46**	**18.62**	**18.30**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

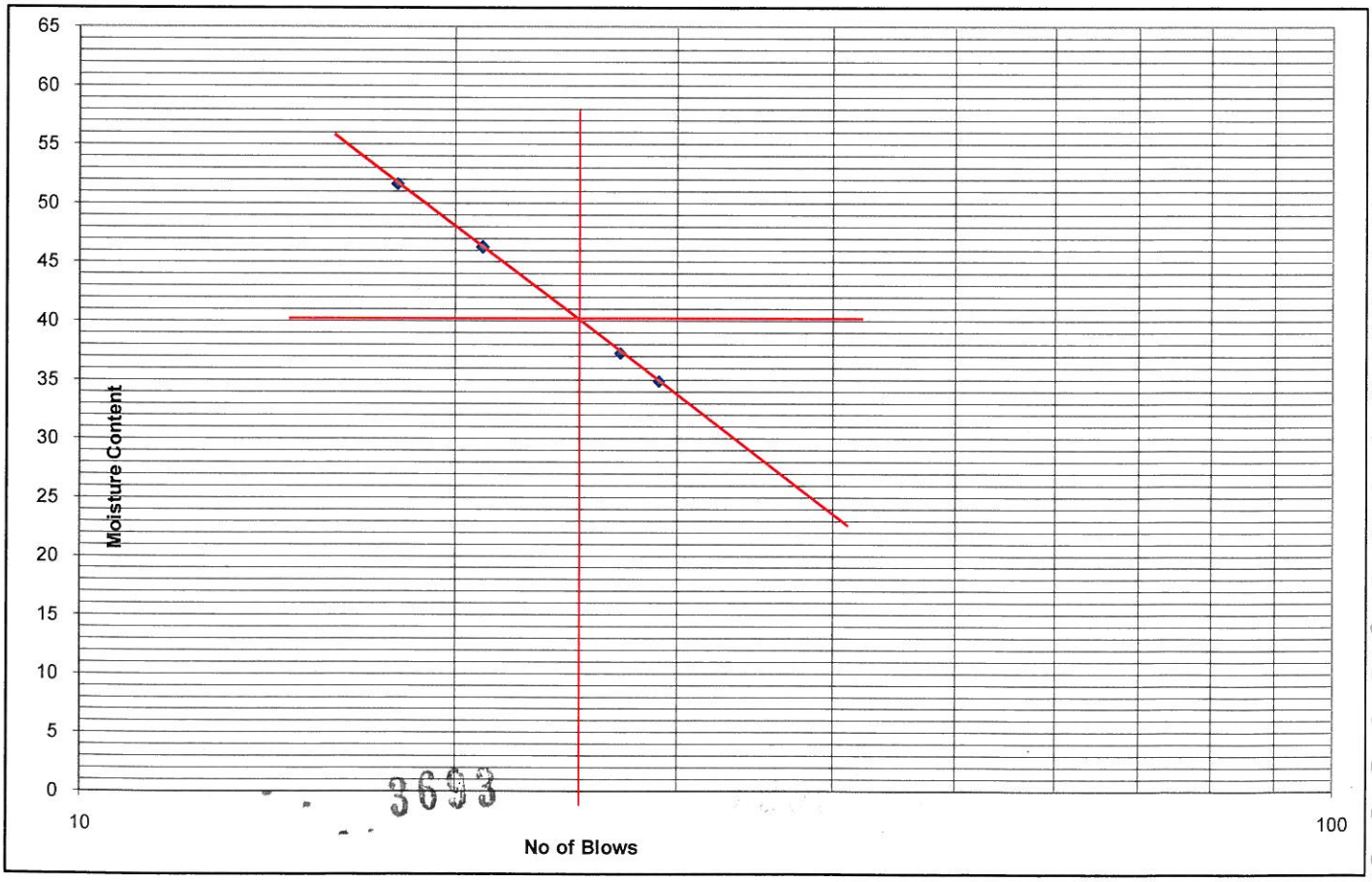
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	16.5m	Tested by	:	D.Mohanty

Number of Blows	29	27	21	18	Plastic Limit	
Container No.	D37	D38	D39	D40	D41	D42
Container Weight (gm) (W1)	36.57	32.26	31.04	30.5	34.97	35.55
Container + Wt. of wet soil (gm) (W2)	93.45	108.60	110.90	116.85	92.05	91.14
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.73	87.88	85.64	87.45	82.39	81.20
Wt. of water (gm) (W2-W1)-(W3-W1)	14.71	20.72	25.26	29.40	9.66	9.94
Wt. of oven dry soil (gm) (W3-W1)	42.16	55.62	54.60	56.95	47.42	45.65
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.89**	**37.25**	**46.27**	**51.63**	**20.37**	**21.77**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

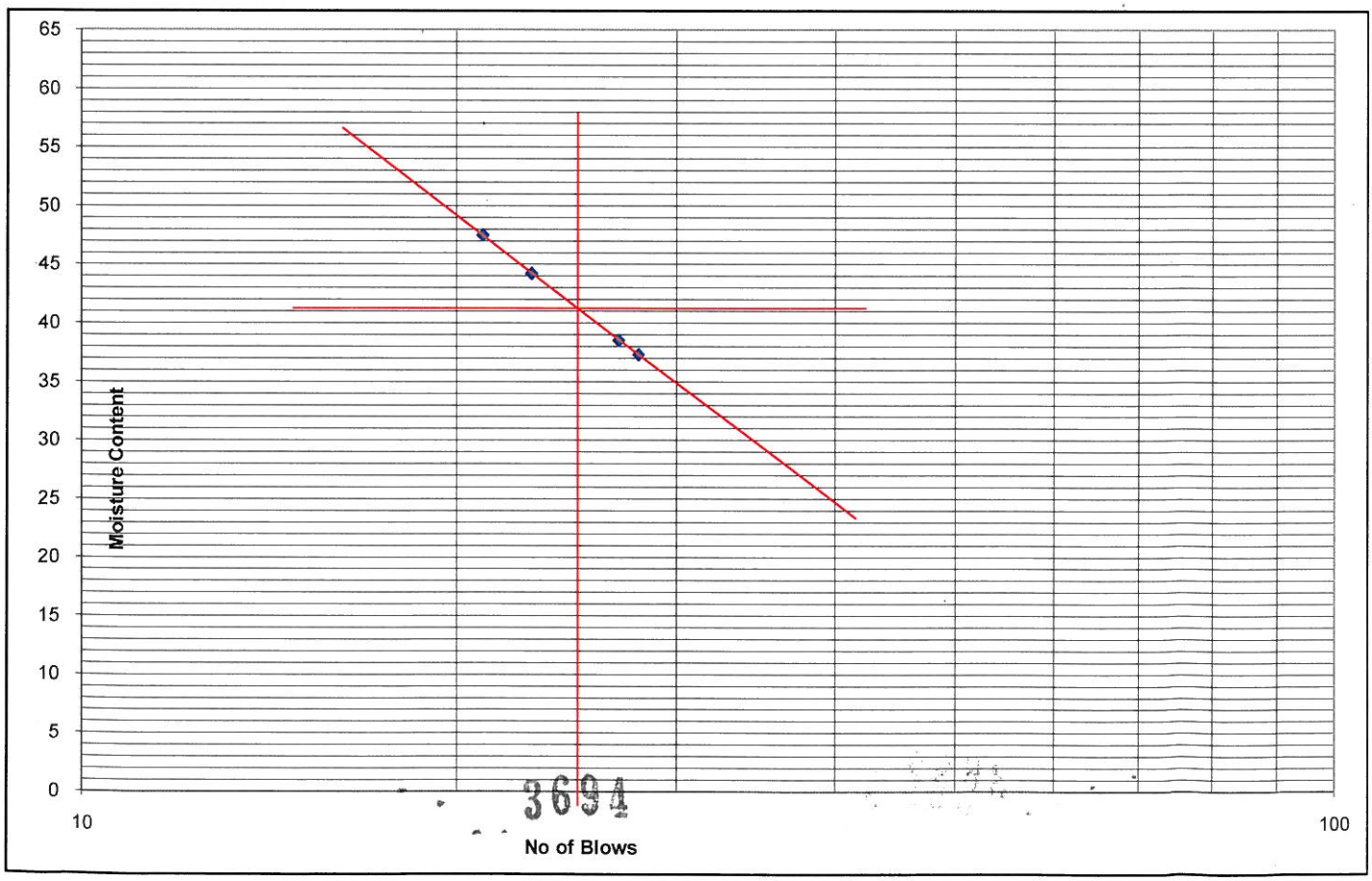
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	29.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	19.5m	Tested by	:	D.Mohanty

Number of Blows	28	27	23	21	Plastic Limit	
Container No.	D25	D26	D27	D28	D29	D30
Container Weight (gm) (W1)	33.58	34.18	32.29	34.64	36.84	30.87
Container + Wt. of wet soil (gm) (W2)	95.41	108.64	109.31	112.58	91.95	91.68
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.62	87.94	85.70	87.48	82.56	81.36
Wt. of water (gm) (W2-W1)-(W3-W1)	16.79	20.70	23.61	25.10	9.39	10.33
Wt. of oven dry soil (gm) (W3-W1)	45.04	53.76	53.41	52.84	45.72	50.49
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**37.28**	**38.50**	**44.21**	**47.50**	**20.54**	**20.45**

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

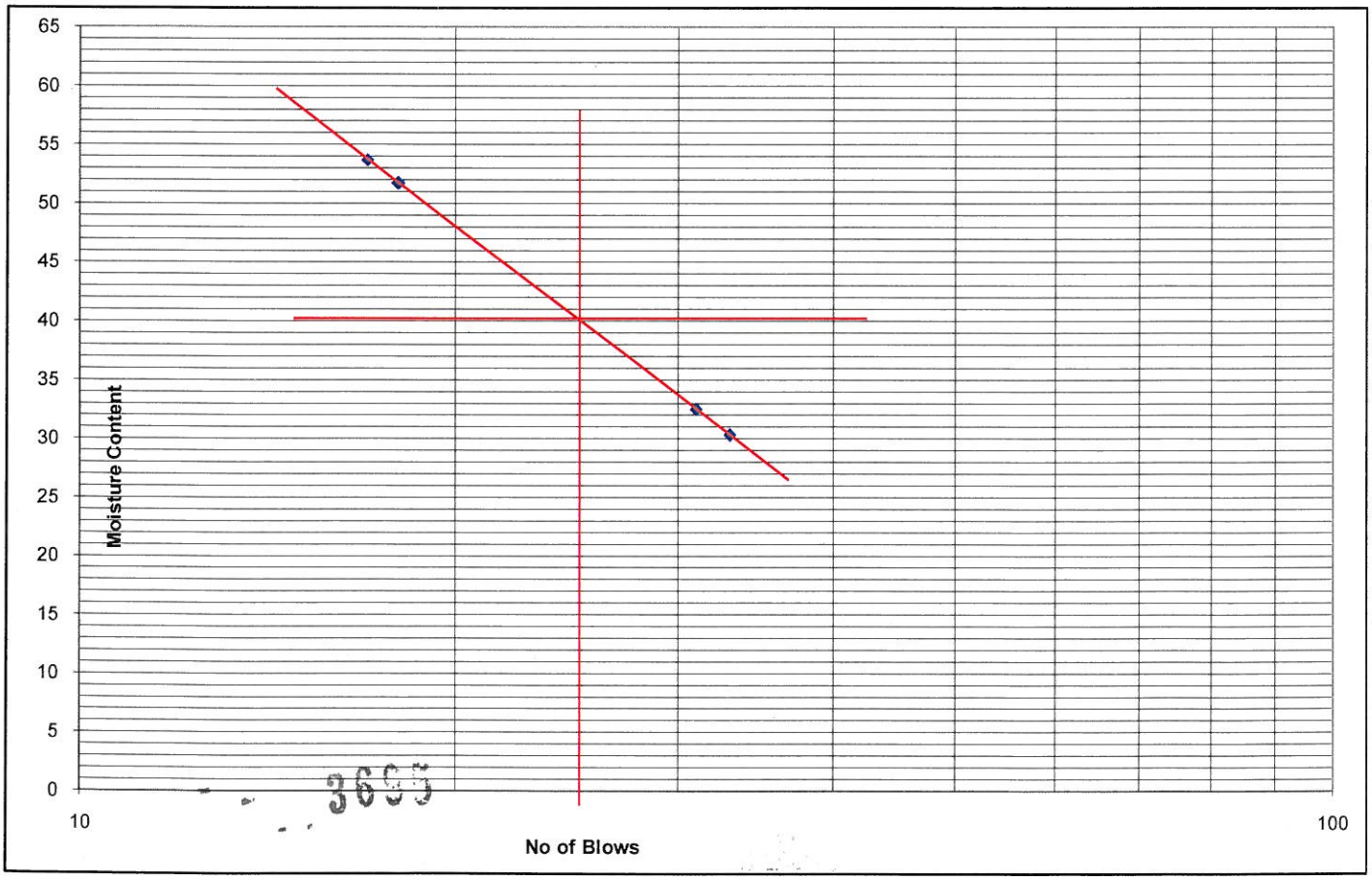
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	22.5m	Tested by	:	D.Mohanty

Number of Blows	33	31	18	17	Plastic Limit	
Container No.	D19	D20	D21	D22	D23	D24
Container Weight (gm) (W1)	35.26	31.48	30.11	32.39	33.72	34.86
Container + Wt. of wet soil (gm) (W2)	92.05	107.05	114.42	116.81	92.66	90.39
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.84	88.53	85.68	87.31	82.83	81.55
Wt. of water (gm) (W2-W1)-(W3-W1)	13.21	18.52	28.74	29.50	9.83	8.85
Wt. of oven dry soil (gm) (W3-W1)	43.58	57.05	55.57	54.92	49.11	46.69
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**30.31**	**32.46**	**51.73**	**53.71**	**20.02**	**18.95**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

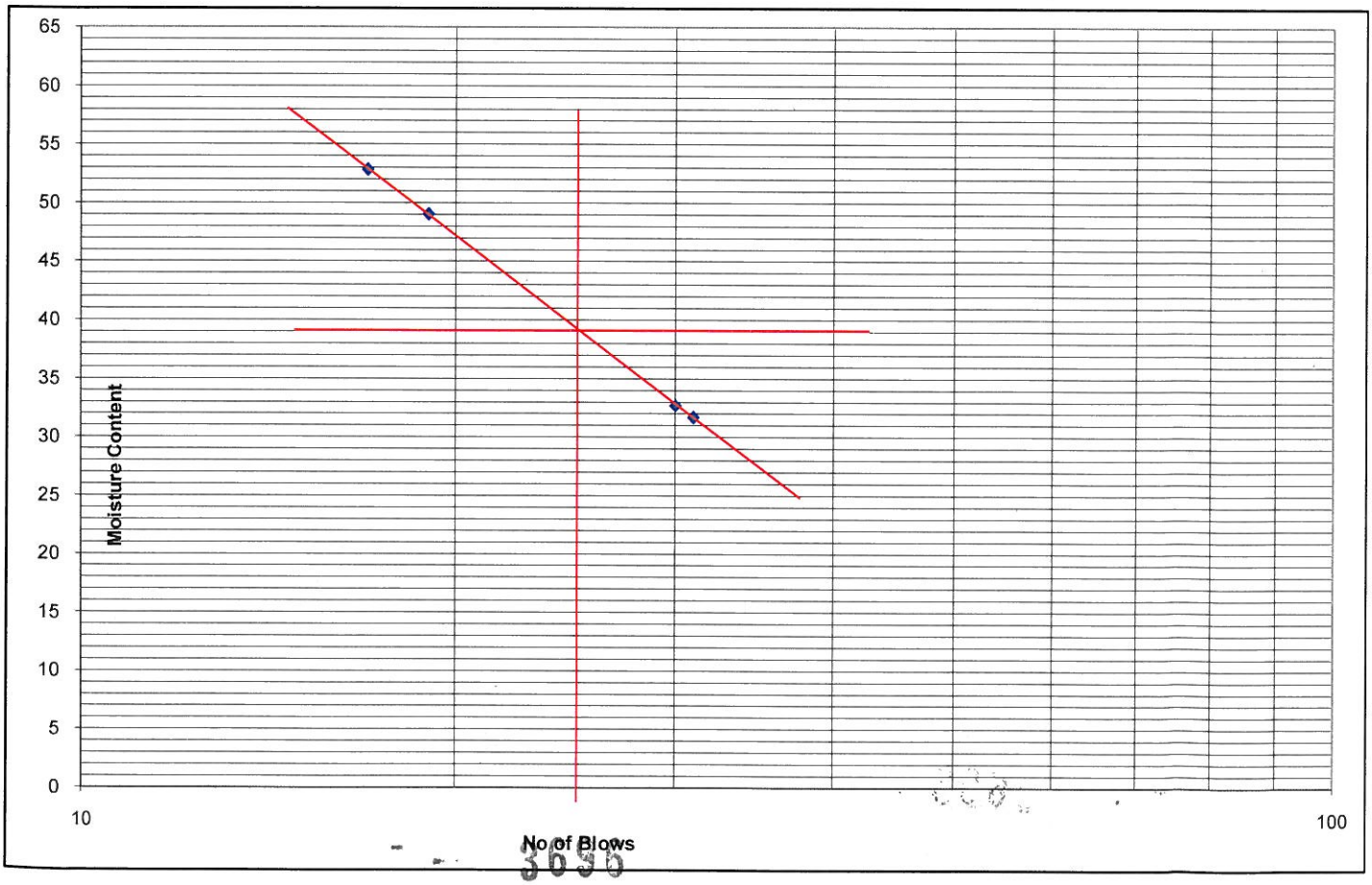
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	24.0m	Tested by	:	D.Mohanty

Number of Blows	31	30	19	17	Plastic Limit	
Container No.	D1	D2	D3	D4	D5	D6
Container Weight (gm) (W1)	32.58	33.69	31.24	30.58	34.68	35.29
Container + Wt. of wet soil (gm) (W2)	93.46	106.67	112.44	117.12	91.75	90.25
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.81	88.68	85.73	87.20	82.67	81.56
Wt. of water (gm) (W2-W1)-(W3-W1)	14.65	17.99	26.71	29.92	9.08	8.69
Wt. of oven dry soil (gm) (W3-W1)	46.23	54.99	54.49	56.62	47.99	46.27
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.68**	**32.71**	**49.02**	**52.84**	**18.92**	**18.79**

Result Summary

Liquid Limit (WL)	39	%
Plastic Limit (Wp)	19	%
Plasticity Index (Ip)	20	%



3636

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

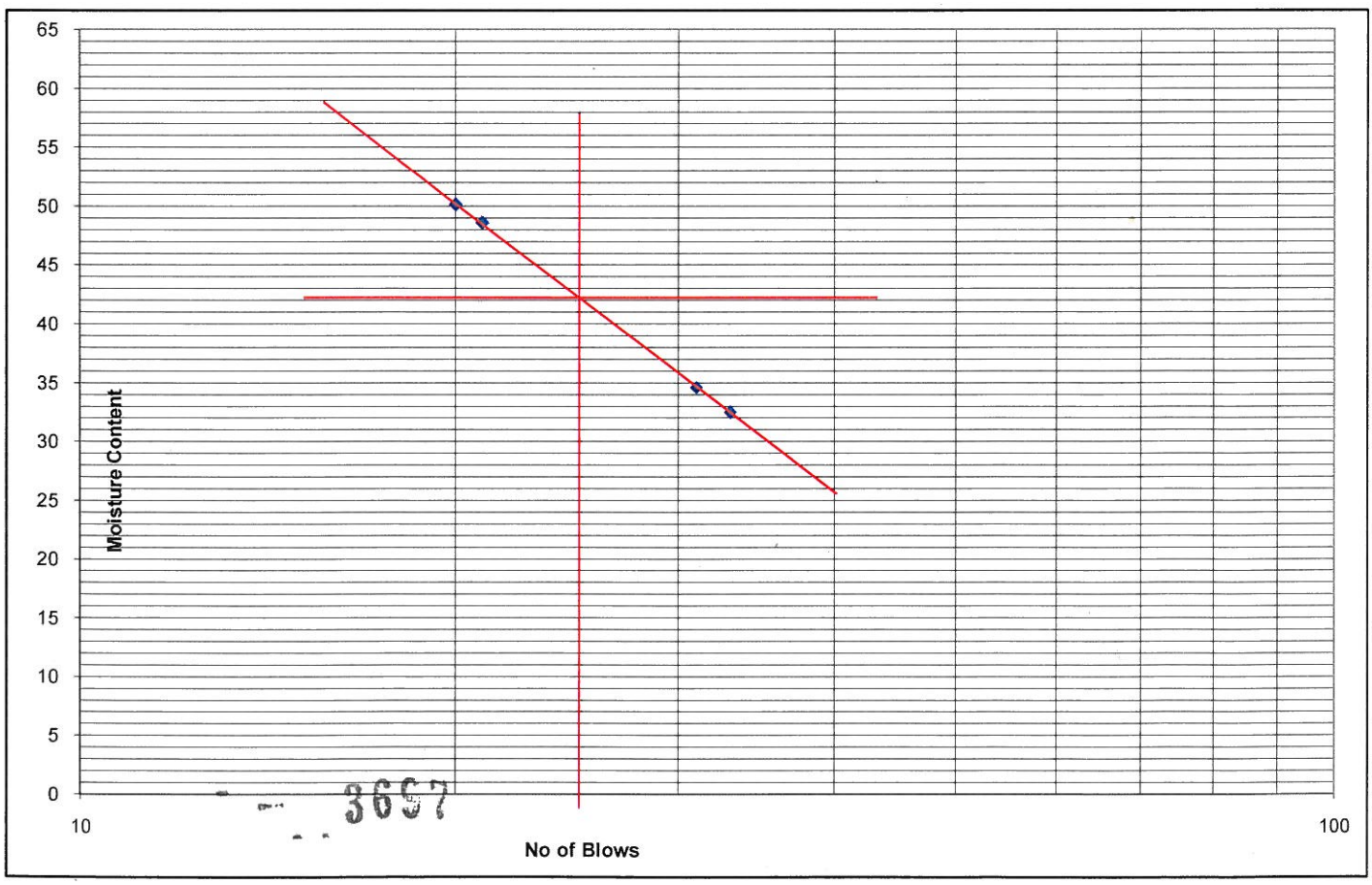
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	27.0m	Tested by	:	D.Mohanty

Number of Blows	33	31	21	20	Plastic Limit	
Container No.	A13	A14	A15	A16	A17	A18
Container Weight (gm) (W1)	30.74	36.34	35.26	32.28	30.76	32.29
Container + Wt. of wet soil (gm) (W2)	94.41	106.97	110.37	114.92	93.55	91.62
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.80	88.81	85.81	87.33	82.85	81.77
Wt. of water (gm) (W2-W1)-(W3-W1)	15.61	18.16	24.56	27.60	10.70	9.86
Wt. of oven dry soil (gm) (W3-W1)	48.06	52.47	50.55	55.05	52.09	49.48
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.48**	**34.61**	**48.59**	**50.13**	**20.54**	**19.92**

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

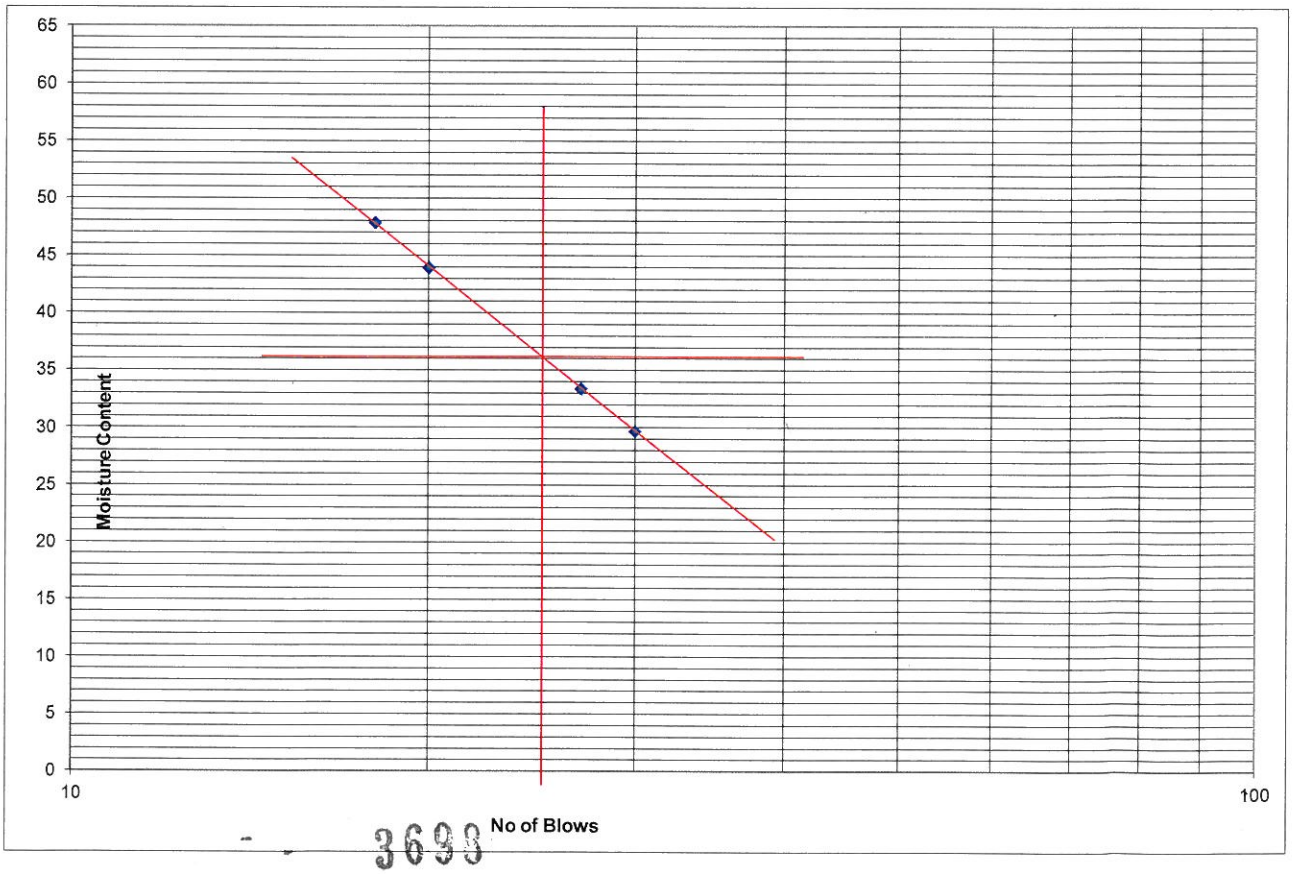
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	30.0m	Tested by	:	D.Mohanty

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	A1	A2	A3	A4	A5	A6
Container Weight (gm) (W1)	30.58	33.64	36.7	32.65	34.87	31.29
Container + Wt. of wet soil (gm) (W2)	93.31	107.17	107.26	113.65	91.96	90.67
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.96	88.77	85.73	87.43	83.20	82.11
Wt. of water (gm) (W2-W1)-(W3-W1)	14.35	18.40	21.53	26.21	8.76	8.56
Wt. of oven dry soil (gm) (W3-W1)	48.38	55.13	49.03	54.78	48.33	50.82
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**29.67**	**33.37**	**43.91**	**47.85**	**18.13**	**16.84**

Result Summary

Liquid Limit (WL)	36	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	19	%



3698

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

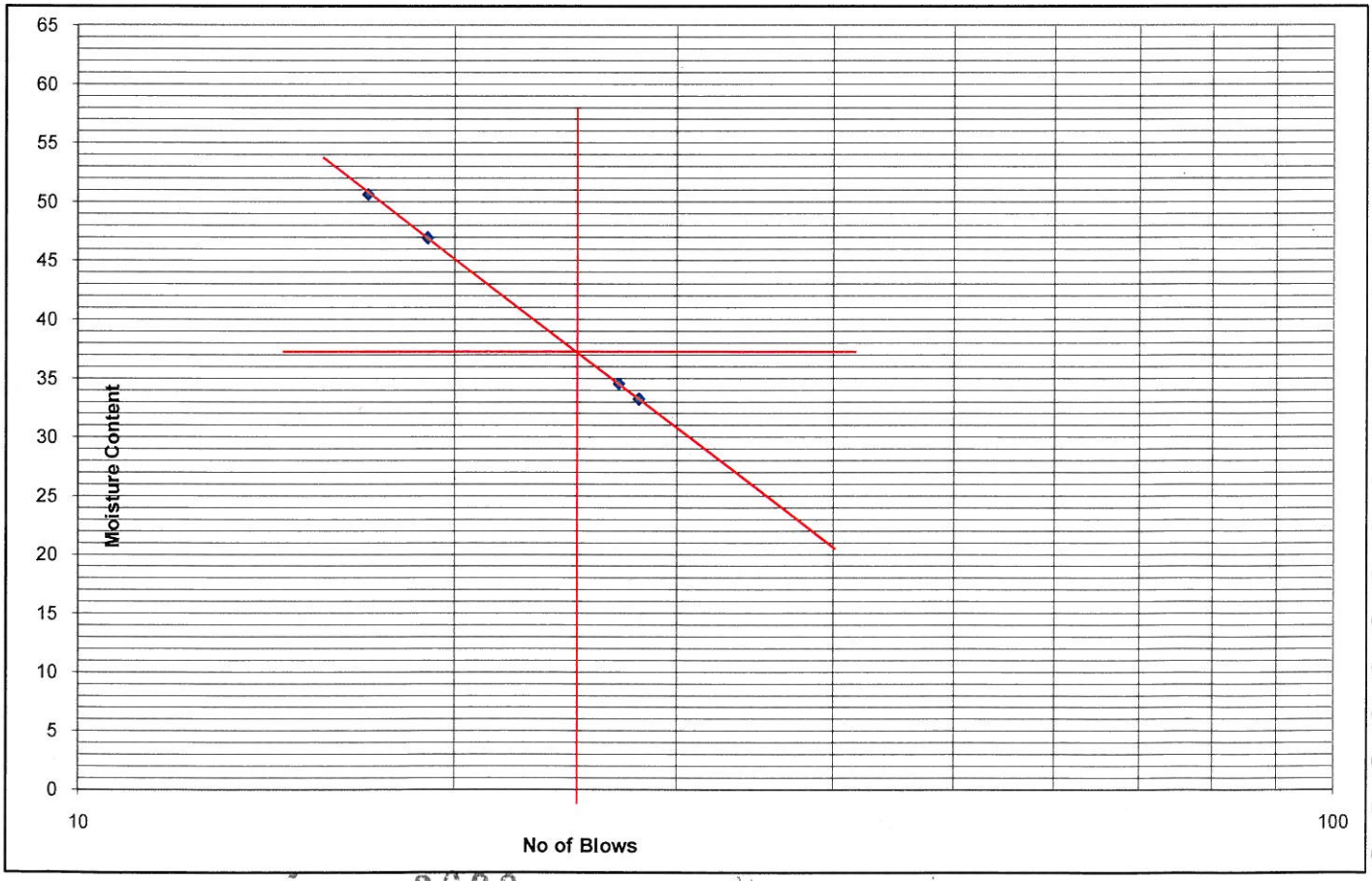
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Number of Blows	28	27	19	17	Plastic Limit	
Container No.	A19	A20	A21	A22	A23	A24
Container Weight (gm) (W1)	30.48	36.37	35.44	34.61	32.86	30.49
Container + Wt. of wet soil (gm) (W2)	95.28	107.00	109.18	113.65	91.75	90.83
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.13	88.85	85.63	87.08	83.23	82.14
Wt. of water (gm) (W2-W1)-(W3-W1)	16.16	18.14	23.55	26.57	8.52	8.69
Wt. of oven dry soil (gm) (W3-W1)	48.65	52.48	50.19	52.47	50.37	51.65
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.21**	**34.57**	**46.91**	**50.63**	**16.91**	**16.83**

Result Summary

Liquid Limit (WL)	37	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	20	%



3699

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

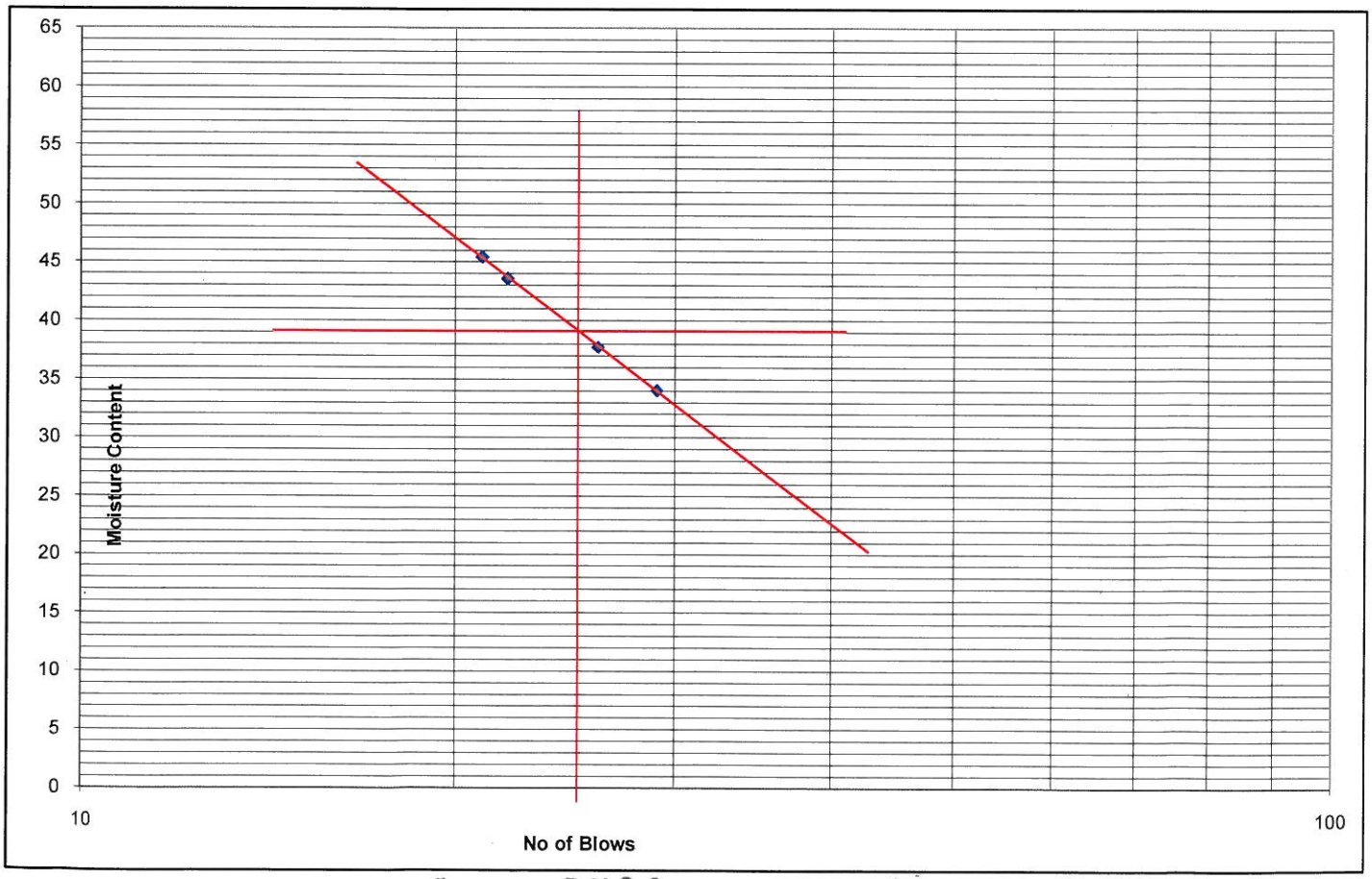
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	34.5m	Tested by	:	D.Mohanty

Number of Blows	29	26	22	21	Plastic Limit	
Container No.	A7	A8	A9	A10	A11	A12
Container Weight (gm) (W1)	36.24	35.69	32.84	33.18	31.85	34.26
Container + Wt. of wet soil (gm) (W2)	94.01	108.70	108.61	111.45	92.99	91.18
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.35	88.70	85.62	87.00	83.40	82.34
Wt. of water (gm) (W2-W1)-(W3-W1)	14.66	20.00	23.00	24.45	9.59	8.84
Wt. of oven dry soil (gm) (W3-W1)	43.11	53.01	52.78	53.82	51.55	48.08
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.01**	**37.74**	**43.57**	**45.43**	**18.61**	**18.38**

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

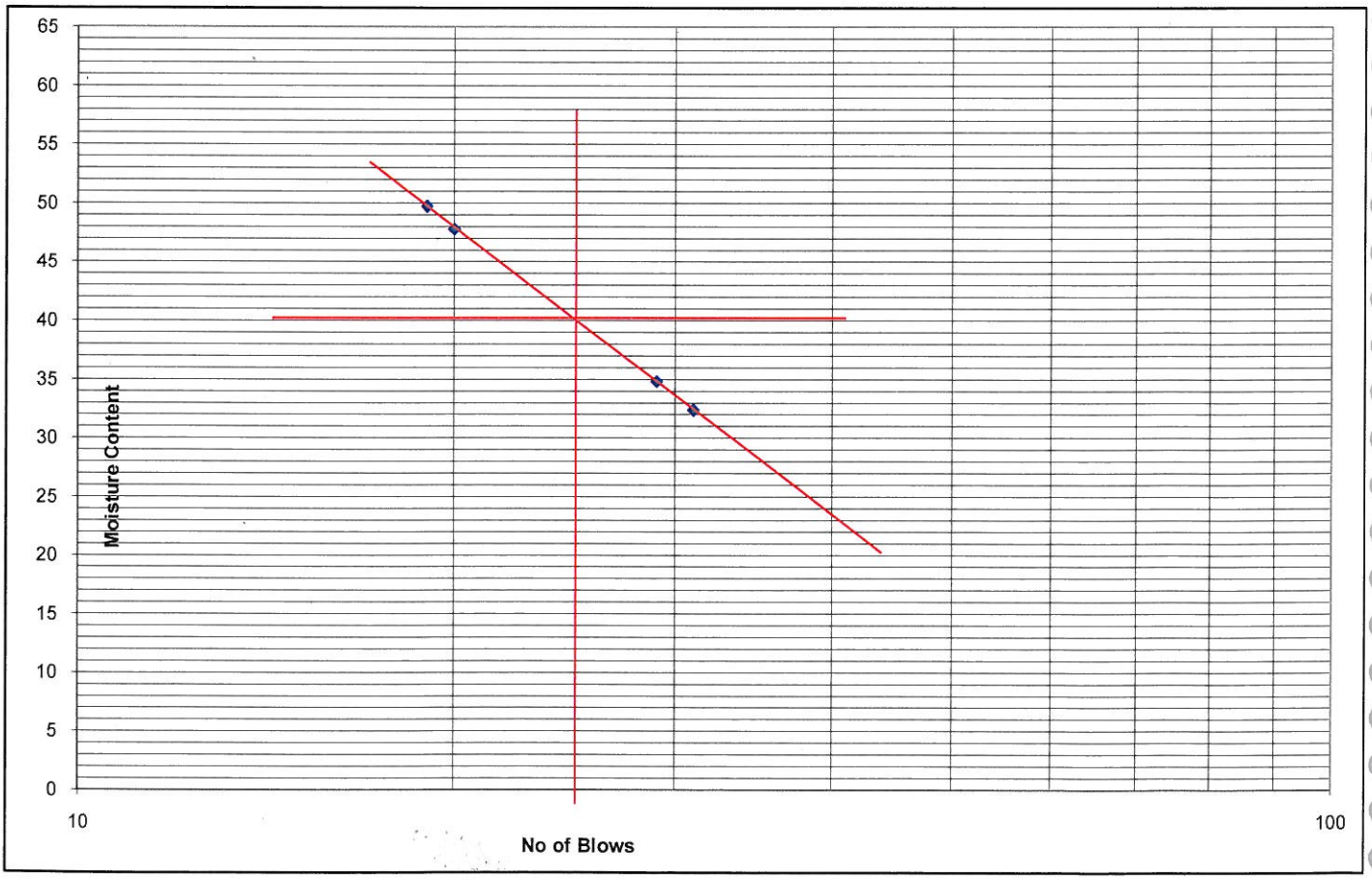
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	36.0m	Tested by	:	D.Mohanty

Number of Blows	31	29	20	19	Plastic Limit	
Container No.	A25	A26	A27	A28	A29	A30
Container Weight (gm) (W1)	35.83	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	93.41	108.03	111.42	110.49	93.05	92.59
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.33	88.74	85.48	86.89	83.37	82.36
Wt. of water (gm) (W2-W1)-(W3-W1)	14.08	19.28	25.94	23.60	9.68	10.22
Wt. of oven dry soil (gm) (W3-W1)	43.50	55.38	54.28	47.47	48.51	51.60
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.38**	**34.82**	**47.79**	**49.72**	**19.95**	**19.81**

Result Summary

Liquid Limit (WL)	40	%
Plastic Limit (Wp)	20	%
Plasticity Index (Ip)	20	%



3701

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

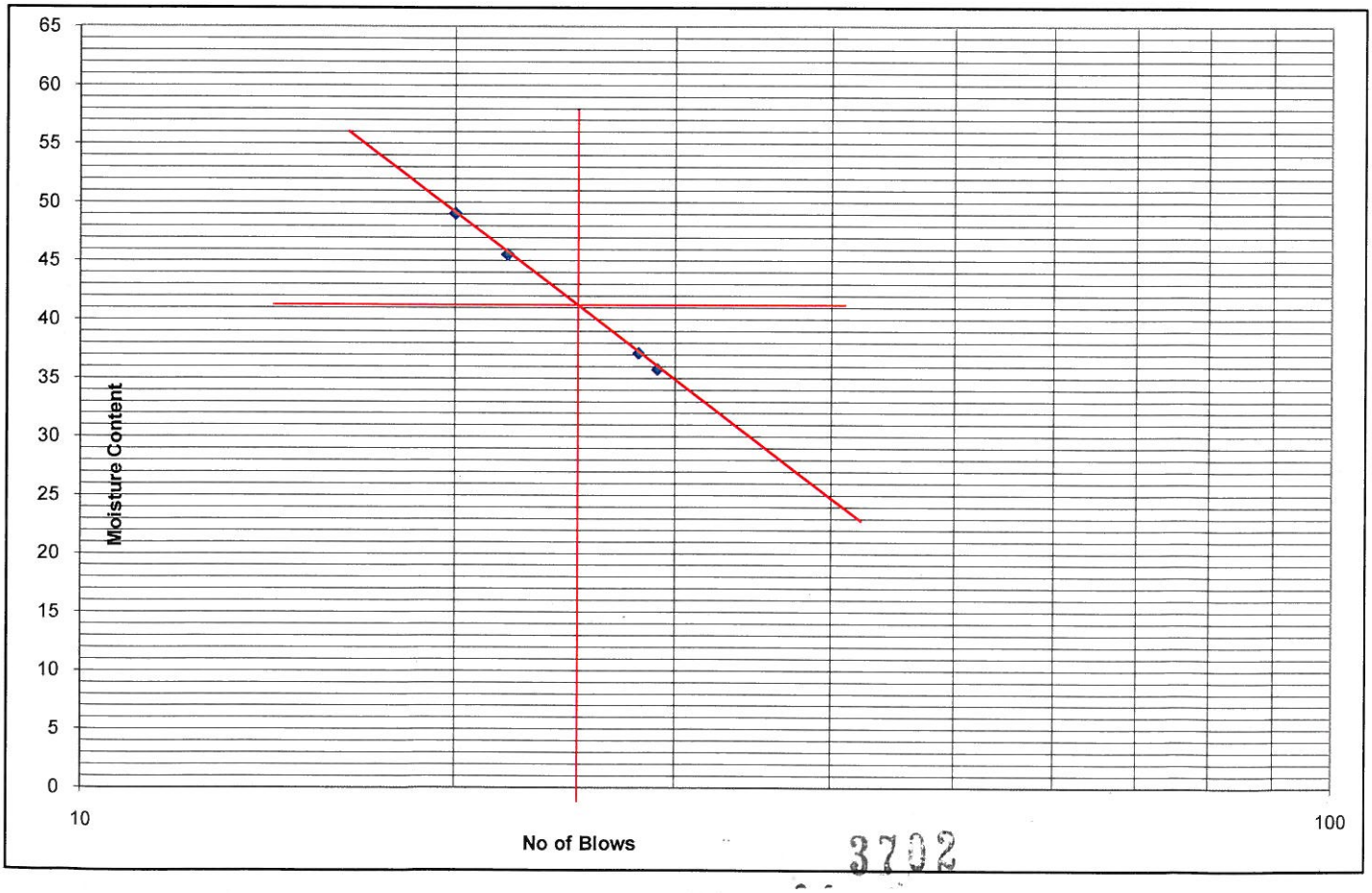
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	39.0m	Tested by	:	D.Mohanty

Number of Blows	29	28	22	20	Plastic Limit	
Container No.	A37	A38	A39	A40	A41	A42
Container Weight (gm) (W1)	30.18	33.67	35.48	31.39	32.16	35.55
Container + Wt. of wet soil (gm) (W2)	96.74	109.19	108.08	114.32	93.75	92.59
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.20	88.73	85.36	87.03	83.12	83.02
Wt. of water (gm) (W2-W1)-(W3-W1)	17.54	20.46	22.72	27.29	10.62	9.57
Wt. of oven dry soil (gm) (W3-W1)	49.02	55.06	49.88	55.64	50.96	47.47
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**35.79**	**37.16**	**45.56**	**49.05**	**20.84**	**20.15**

Result Summary

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



3702

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

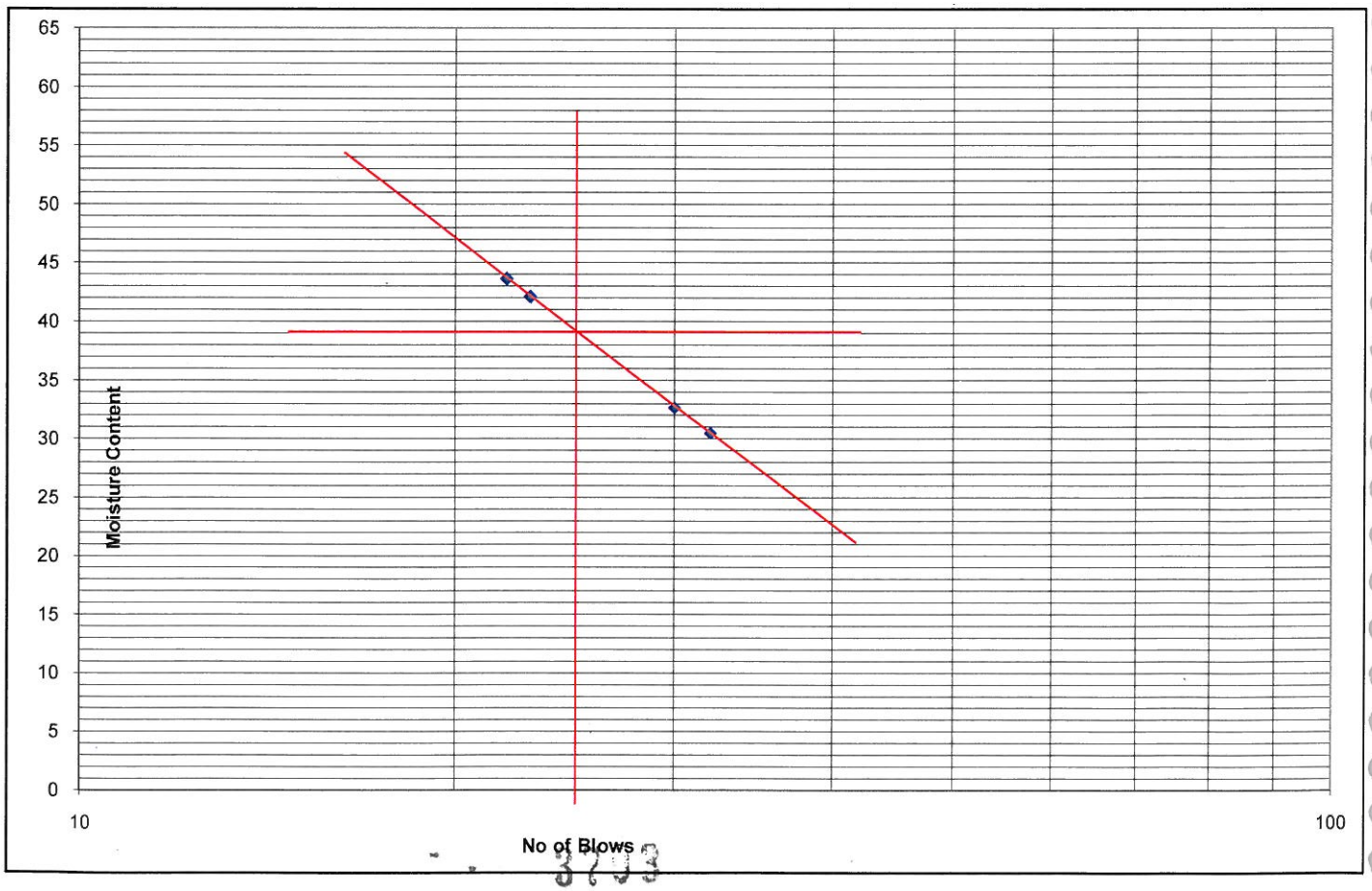
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	43.5m	Tested by	:	D.Mohanty

Number of Blows	32	30	23	22	Plastic Limit	
Container No.	A31	A32	A33	A34	A35	A36
Container Weight (gm) (W1)	35.64	34.29	32.47	31.56	30.22	33.47
Container + Wt. of wet soil (gm) (W2)	92.96	106.47	107.88	111.19	94.17	91.93
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.56	88.69	85.54	87.00	83.45	83.50
Wt. of water (gm) (W2-W1)-(W3-W1)	13.39	17.77	22.34	24.18	10.72	8.43
Wt. of oven dry soil (gm) (W3-W1)	43.92	54.40	53.07	55.44	53.23	50.03
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**30.49**	**32.67**	**42.10**	**43.62**	**20.13**	**16.85**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

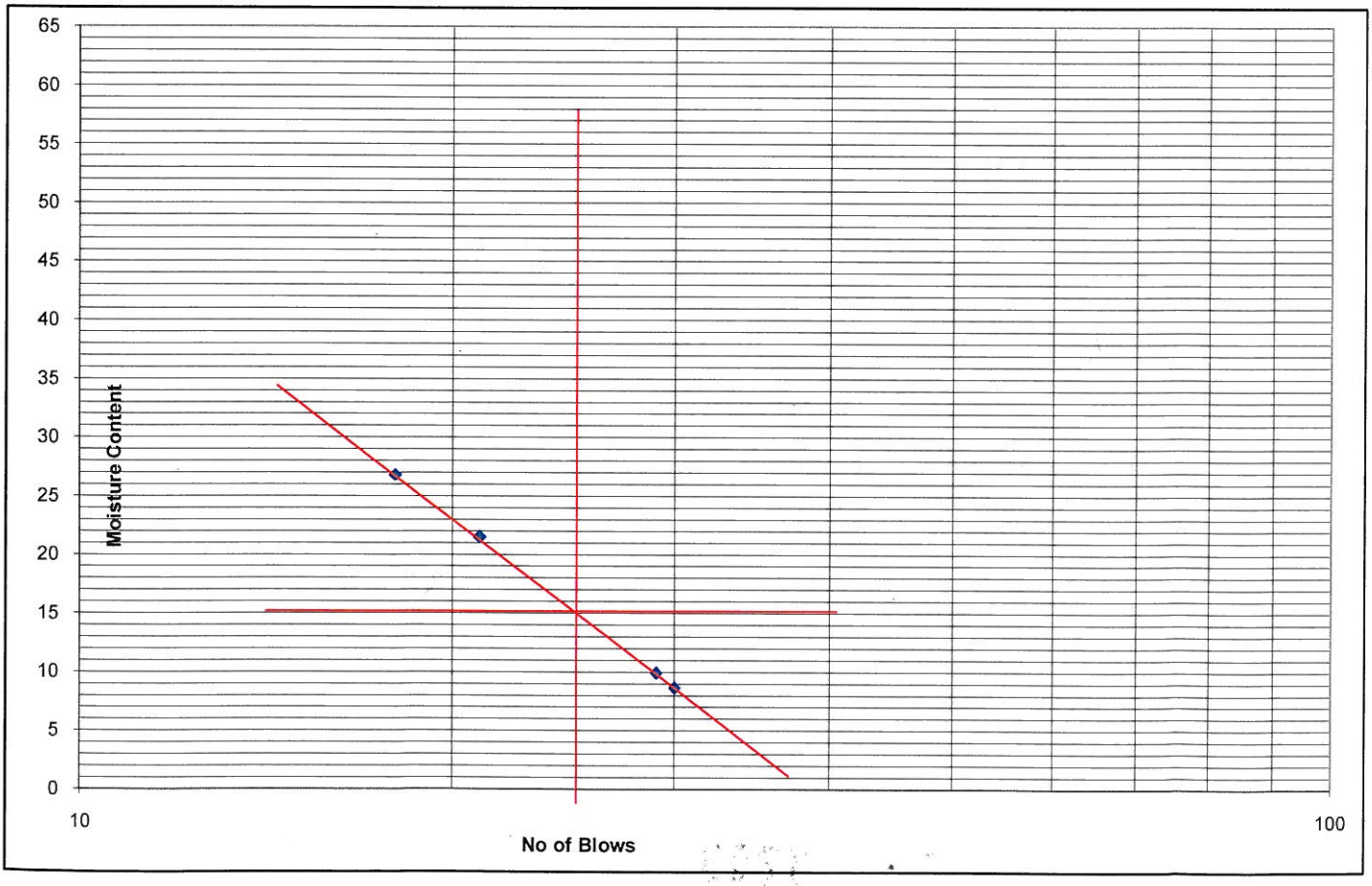
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	46.5m	Tested by	:	D.Mohanty

Number of Blows	30	29	21	18	Plastic Limit	
Container No.	C7	C8	C9	C10	NP	
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42		
Container + Wt. of wet soil (gm) (W2)	83.62	94.04	97.11	101.13		
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.56	88.92	85.79	87.24		
Wt. of water (gm) (W2-W1)-(W3-W1)	4.06	5.11	11.32	13.88		
Wt. of oven dry soil (gm) (W3-W1)	46.98	51.71	52.65	51.82		
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.64**	**9.89**	**21.49**	**26.79**		

Result Summary

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



3701

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

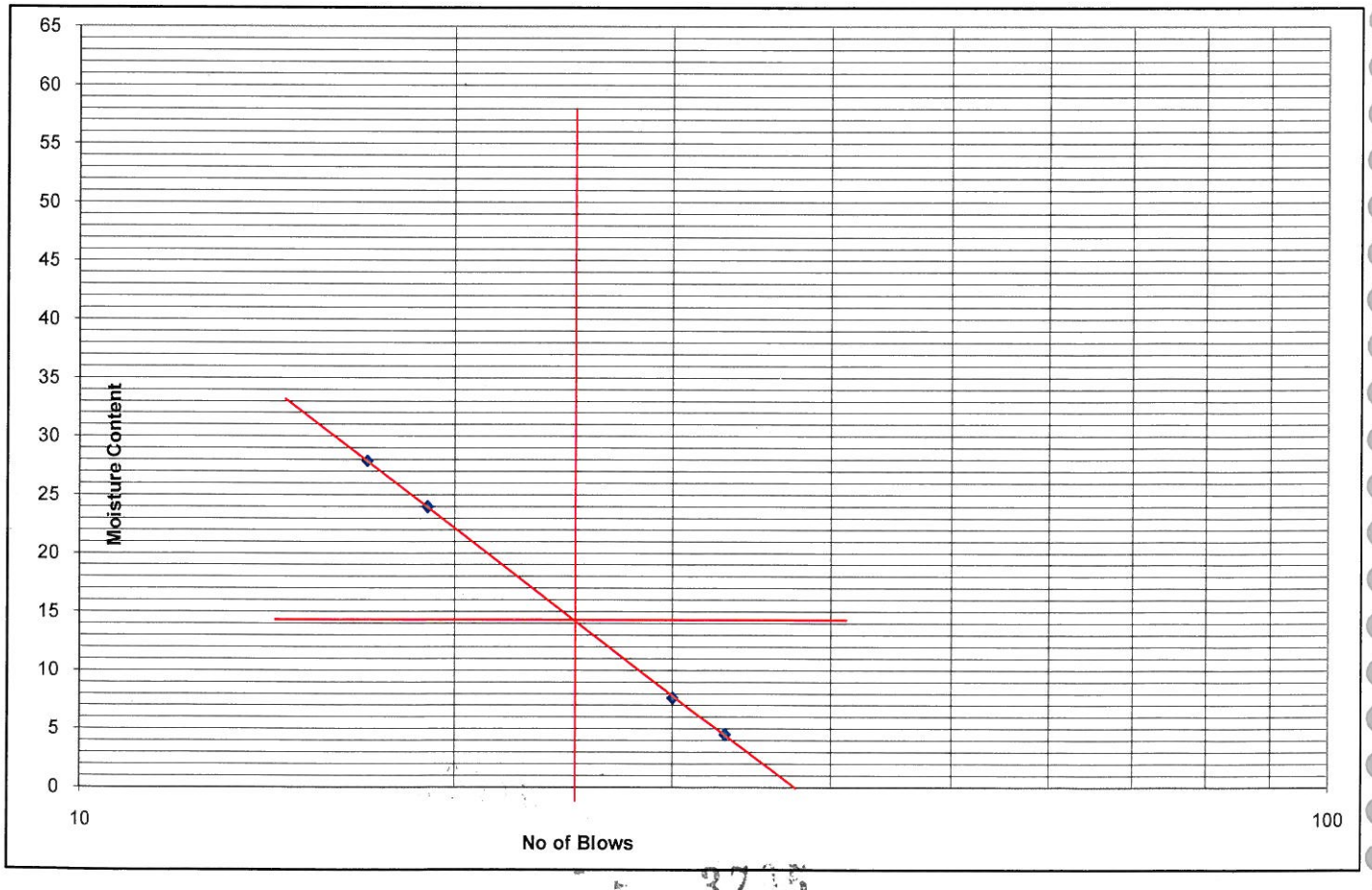
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	30.10.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	50.0m	Tested by	:	D.Mohanty

Number of Blows	33	30	19	17	Plastic Limit	
Container No.	C13	C14	C9	C16	NP	
Container Weight (gm) (W1)	39.64	36.34	33.14	32.28		
Container + Wt. of wet soil (gm) (W2)	80.81	92.94	98.31	102.76		
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.03	88.92	85.71	87.38		
Wt. of water (gm) (W2-W1)-(W3-W1)	1.78	4.01	12.60	15.38		
Wt. of oven dry soil (gm) (W3-W1)	39.40	52.58	52.57	55.10		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**4.51**	**7.63**	**23.96**	**27.91**		

Result Summary

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



3735

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-3(Markanda River-Ambala)

Depth : 7.5m

Date Of Testing : 28.09.12

Tested by : D.Mohanty

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	27	50%
2	10	12.5	2.50	25		
3	10	12.0	2.00	20		

Remarks:

Lab Manager

Checked By:

3706

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	:	28.09.12	
Type of Sample	: SPT	Tested by	:	D.Mohanty	
Location	: BH-3(Markanda River-Ambala)	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	14.0	4.00	40	25	50%
2	10	12.0	2.00	20		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

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	:	28.09.12	
Type of Sample	: UDS	Tested by	:	D.Mohanty	
Location	: BH-3(Markanda River-Ambala)	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	24	50%
2	10	12.5	2.50	25		
3	10	11.7	1.70	17		

Remarks:

Lab Manager

Checked By:

3708