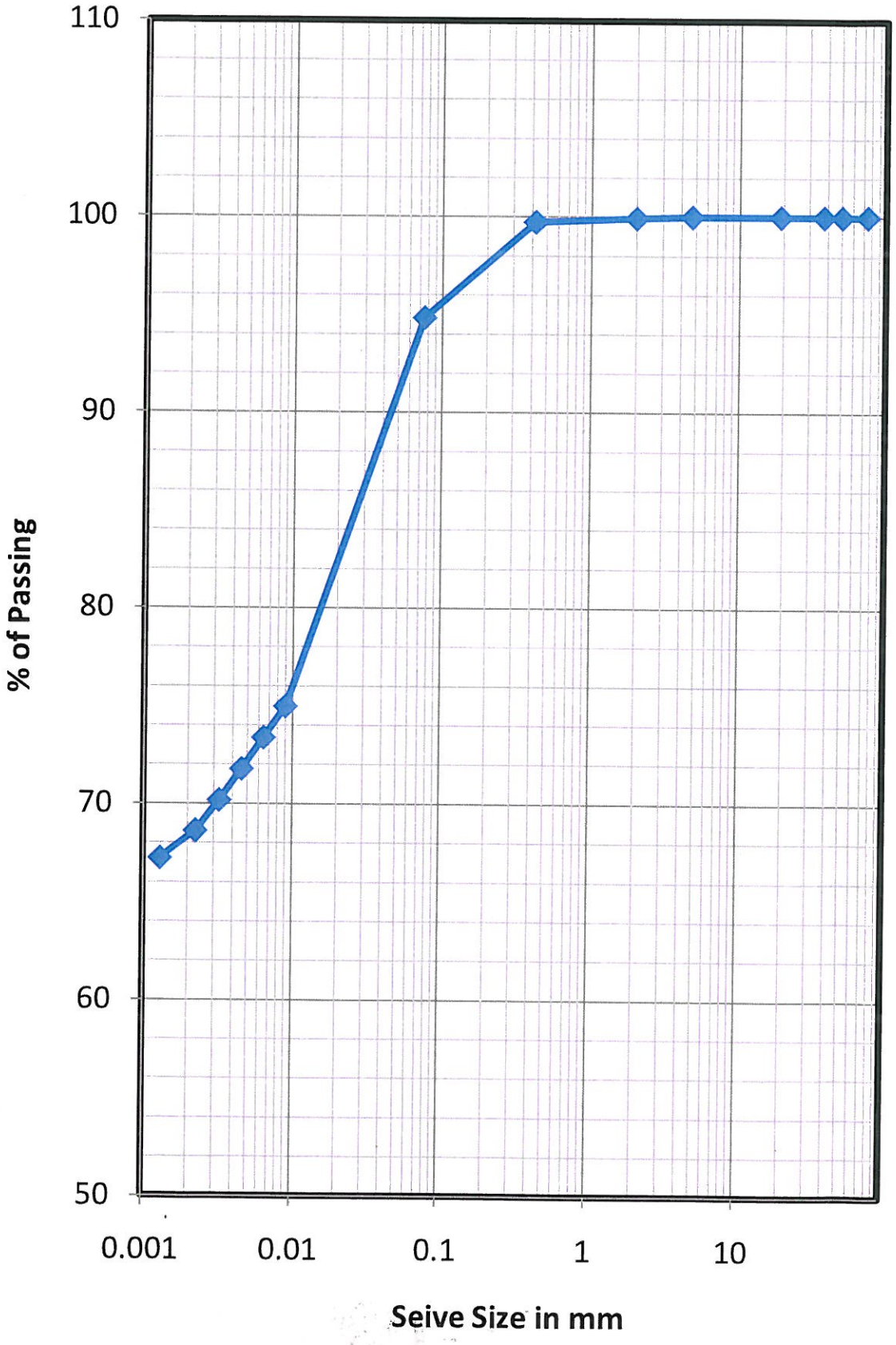
Grain Size Distribution Curve
BH-2, D-28.5m



4367

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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	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	30.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.42

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	0.18	0.18	0.18	99.82
0.425	0.23	0.23	0.41	99.59
0.075	0.01	0.01	0.42	99.58
Total	100.00			

Gravel Content (%)= **0.00**

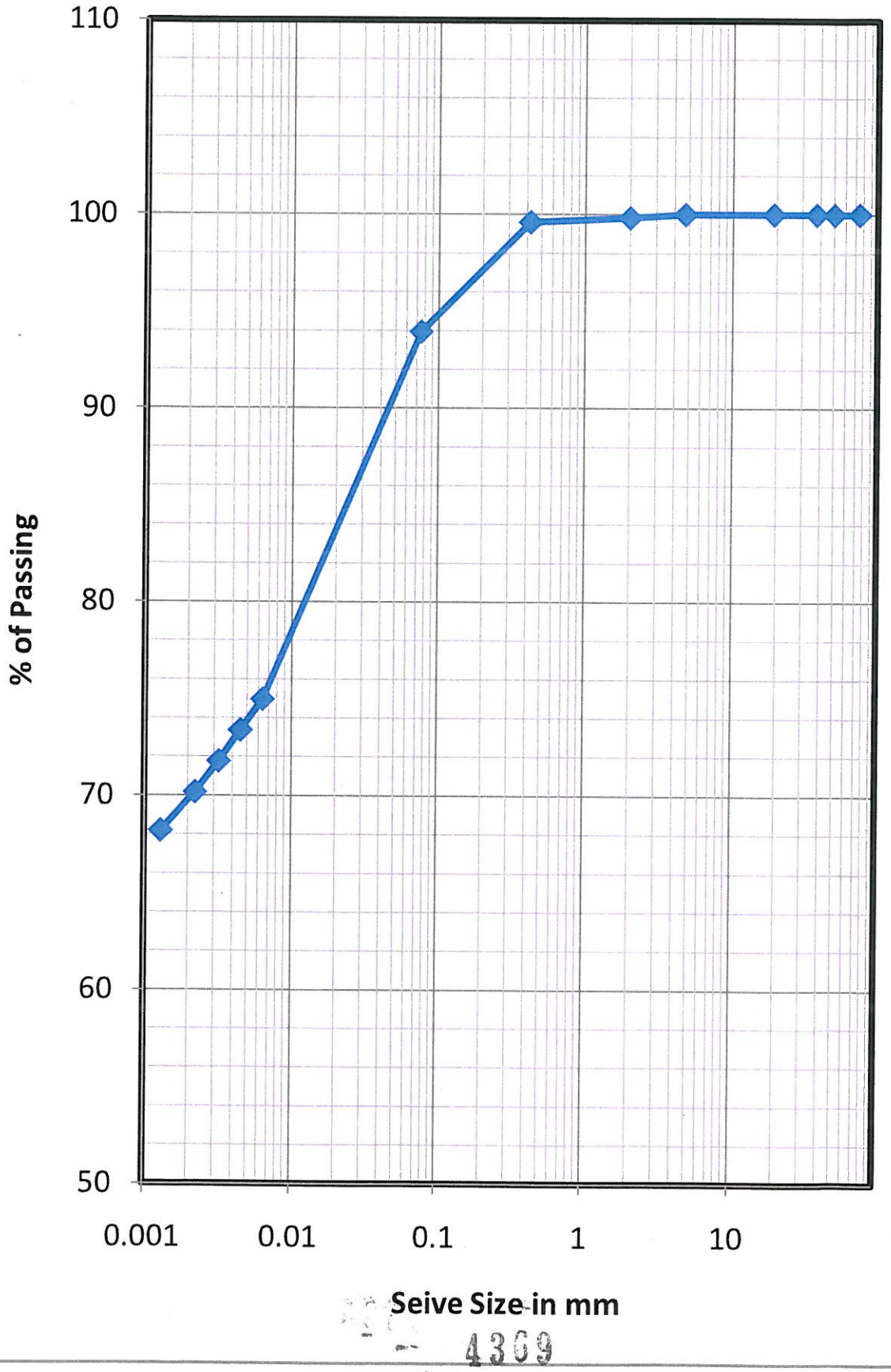
Sand Content (%) = 0.42 **Silt and clay %** 99.58

Remarks :-

Lab Manager Checked By

4358

Grain Size Distribution Curve
BH-2, D-30.0m



4369

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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	:	UDS	Date of Testing	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	31.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.76

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	0.23	0.23	0.23	99.77
0.425	0.16	0.16	0.39	99.61
0.075	0.37	0.37	0.76	99.24
Total	100.00			

Gravel Content (%)= **0.00**

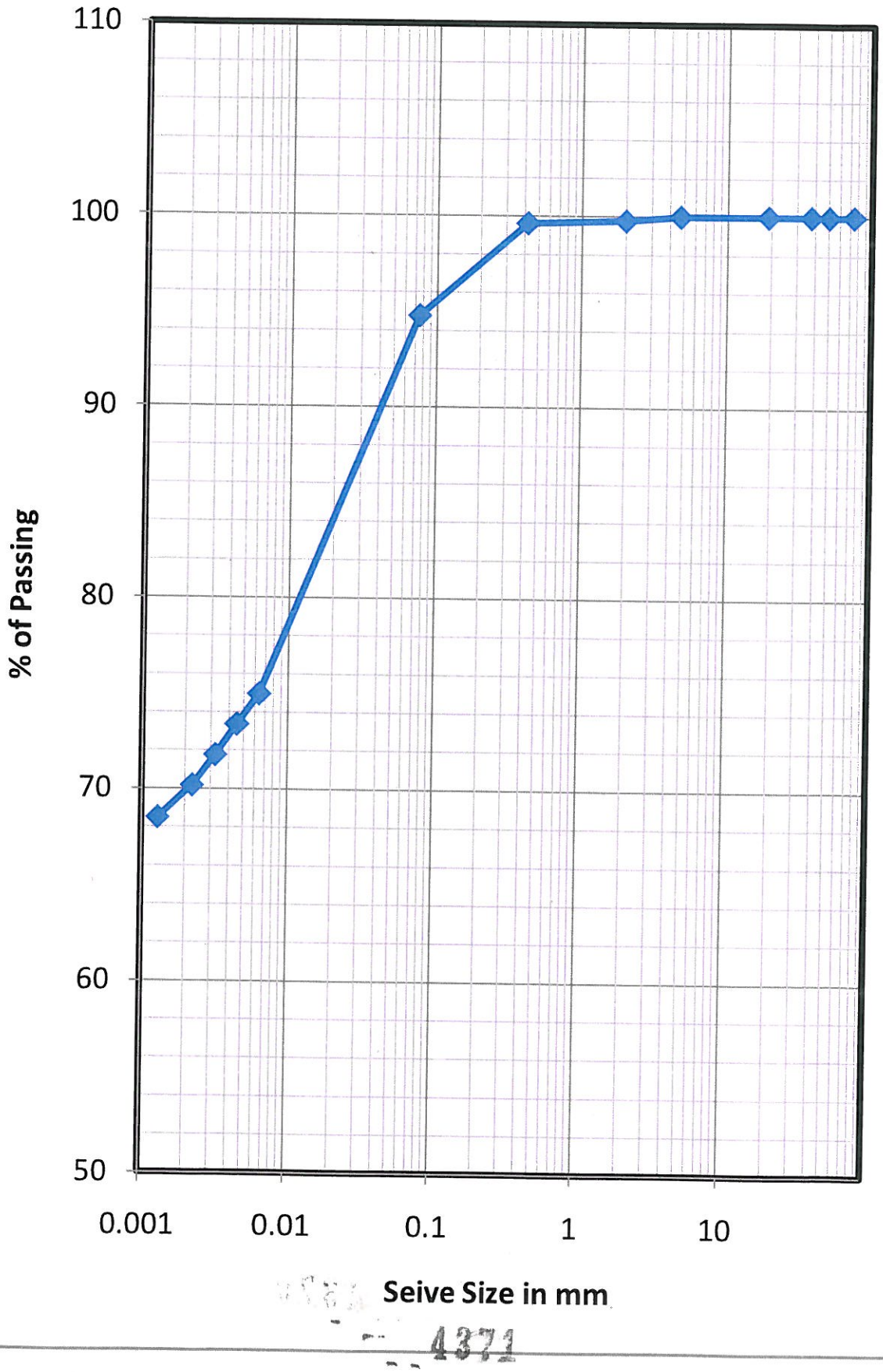
Sand Content (%) = 0.76 **Silt and clay %** 99.24

Remarks :-

Lab Manager Checked By

4370

Grain Size Distribution Curve
BH-2, D-31.5m



4371

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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	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	33.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.19

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	0.03	0.03	0.03	99.97
0.425	0.04	0.04	0.07	99.93
0.075	0.12	0.12	0.19	99.81
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.19 **Silt and clay %** 99.81

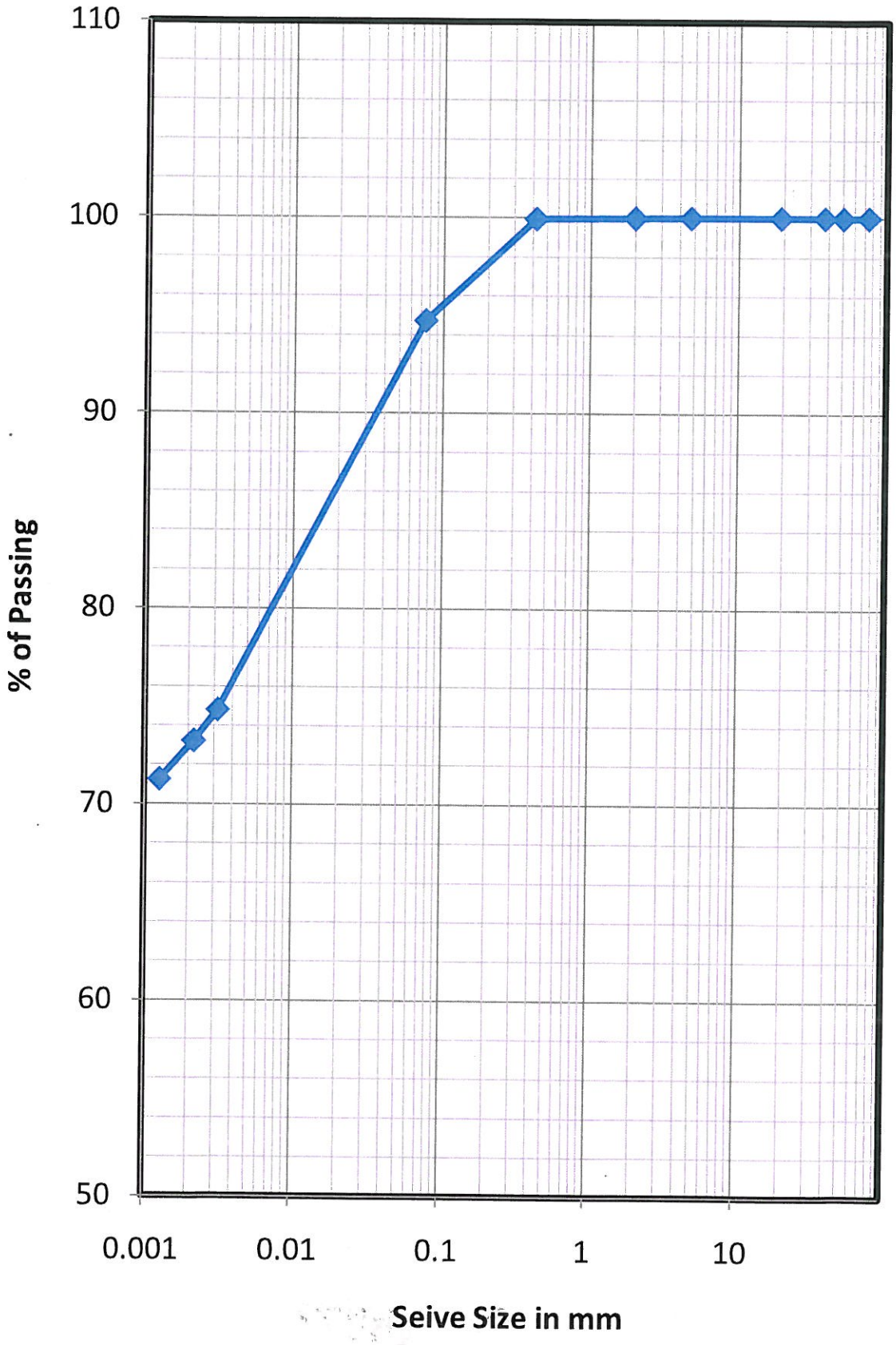
Remarks :-

Lab Manager

4372

Checked By

Grain Size Distribution Curve
BH-2, D-33.0m



4373

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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	:	UDS	Date of Testing	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	34.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.24

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	0.11	0.11	0.11	99.89
0.425	0.06	0.06	0.17	99.83
0.075	0.07	0.07	0.24	99.76
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.24 **Silt and clay %** 99.76

Remarks :-

Lab Manager Checked By

4374

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	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	43.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.34

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	0.08	0.08	0.08	99.92
0.425	0.16	0.16	0.24	99.76
0.075	0.10	0.10	0.34	99.66
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.34 **Silt and clay %** 99.66

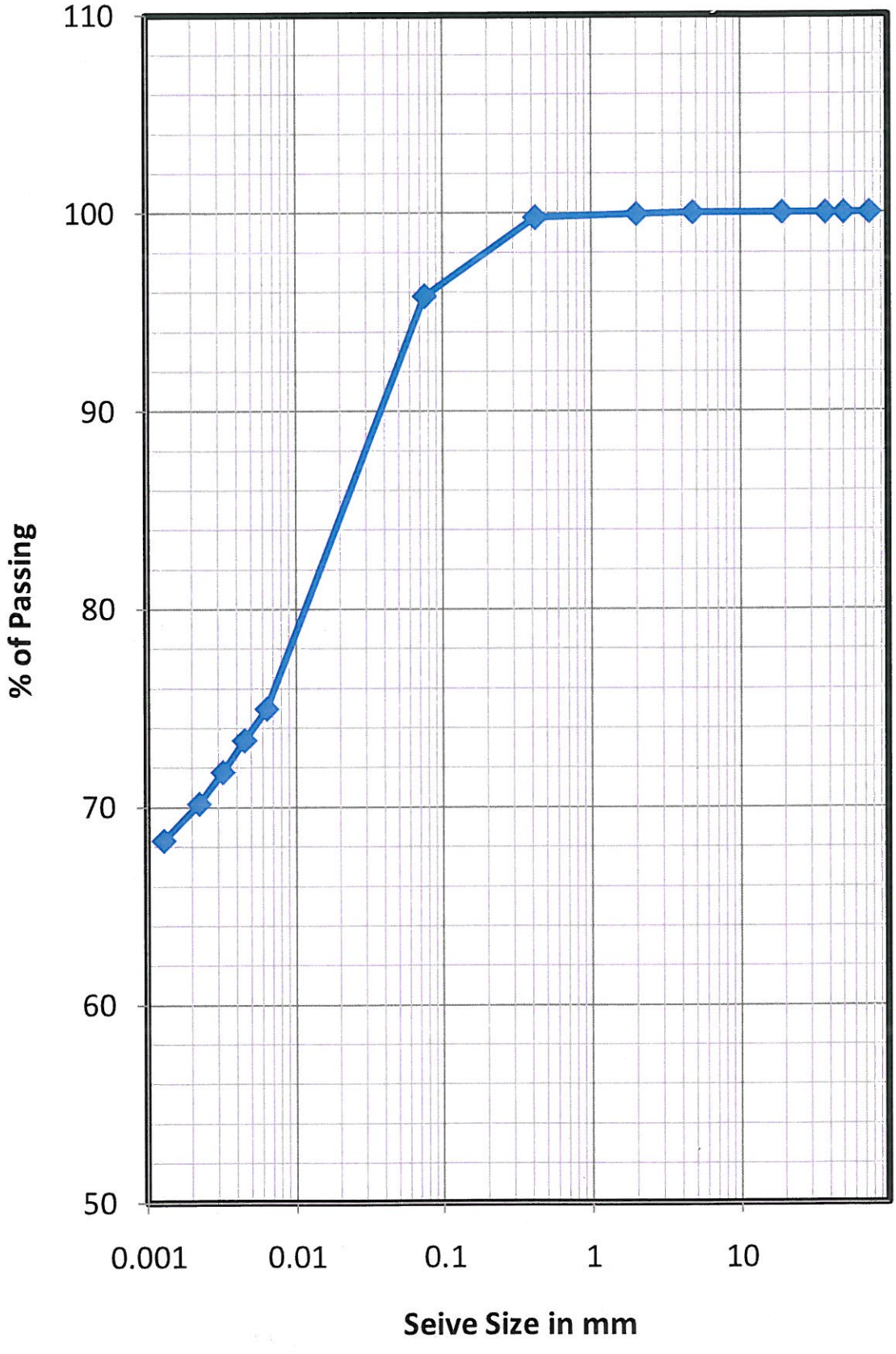
Remarks :-

Lab Manager

Checked By

4375

Grain Size Distribution Curve
BH-2, D-43.5m



4376

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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	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	45.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.60

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	0.13	0.13	0.13	99.87
0.425	0.25	0.25	0.38	99.62
0.075	0.22	0.22	0.60	99.40
Total	100.00			

Gravel Content (%)= **0.00**

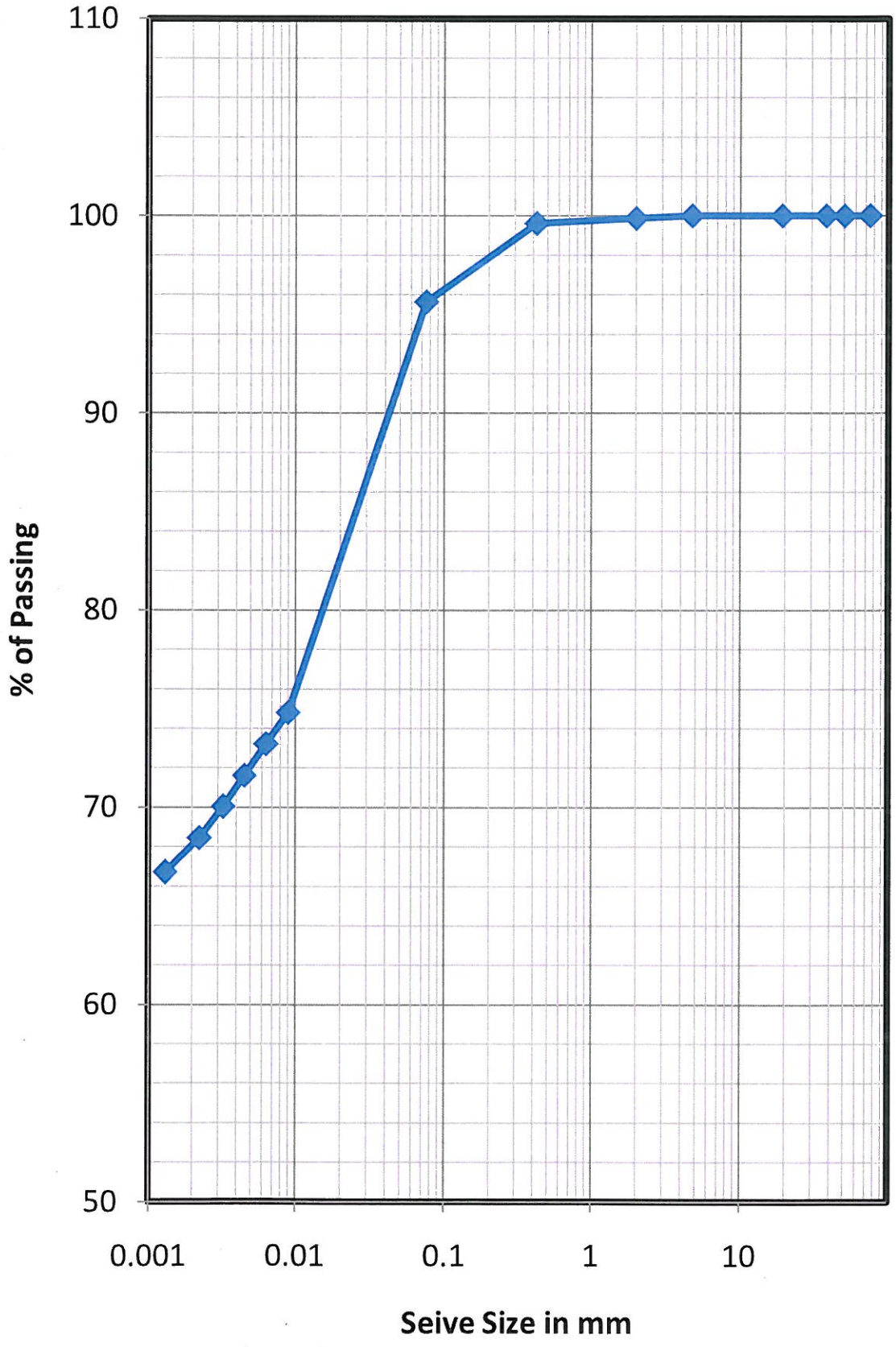
Sand Content (%) = 0.60 **Silt and clay %** 99.40

Remarks :-

Lab Manager Checked By

4377

Grain Size Distribution Curve
BH-2, D-45.0m



4378

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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	:	20.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	50.0m	Tested by	:	K.C Sahoo

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	0.26	0.26	0.26	99.74
0.425	0.17	0.17	0.43	99.57
0.075	0.05	0.05	0.48	99.52
Total	100.00			

Gravel Content (%)= **0.00**

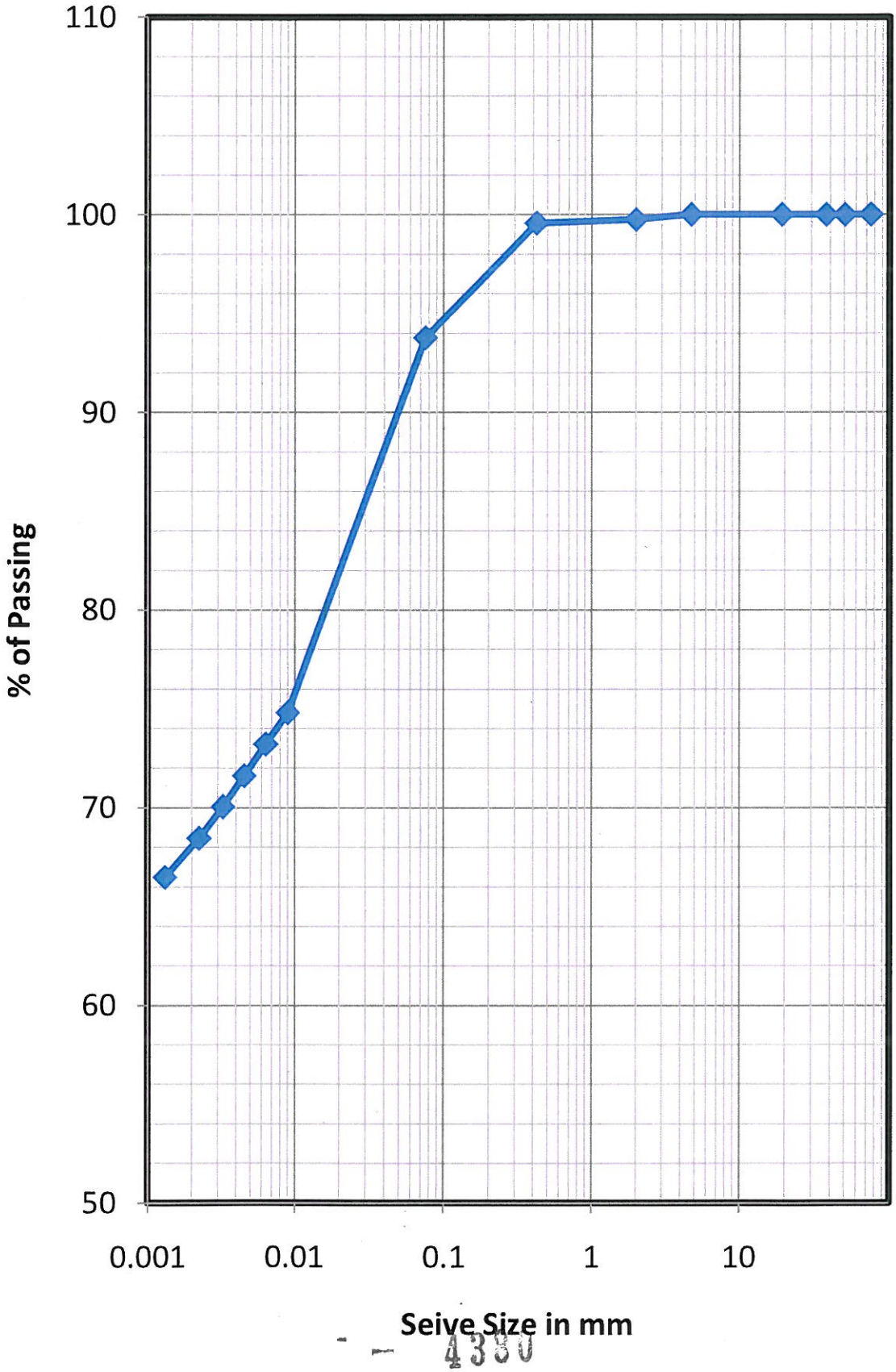
Sand Content (%) = 0.48 **Silt and clay %** 99.52

Remarks :-

Lab Manager Checked By

4379

Grain Size Distribution Curve
BH-2, D-50.0m



4380

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 4.5m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		94.83
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		2.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		47.4
(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	

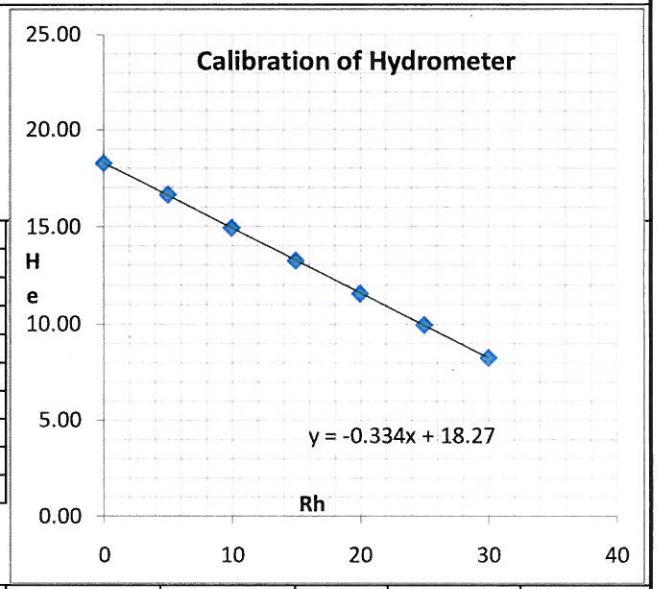
CALIBRATION OF HYDROMETER

(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	28.64	29	-2.0	8.70	29.14	0.539	0.000008341	0.012314796	0.00663334	26.64	3.387	90.24	85.57
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012314796	0.00474772	26.00	3.387	88.07	83.52
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012314796	0.00338843	25.50	3.387	86.37	81.91
	4	27.00	29	-2.0	9.25	27.50	0.196	0.000008341	0.012314796	0.00241791	25.00	3.387	84.68	80.30
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012314796	0.00172508	24.50	3.387	82.99	78.70
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012314796	0.00127094	24.00	3.387	81.29	77.09
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012314796	0.00090648	23.50	3.387	79.60	75.48
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012314796	0.00064645	23.00	3.387	77.91	73.88
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012314796	0.00046094	22.50	3.387	76.21	72.27
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012314796	0.00032862	22.00	3.387	74.52	70.67
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011924722	0.00022683	21.50	3.387	72.83	69.06
	1440	23.24	32	-2.0	10.51	23.74	0.011	0.000007821	0.011924722	0.000131497	21.24	3.387	71.96	68.24

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 5.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		94.35
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		2.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		47.2
(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	

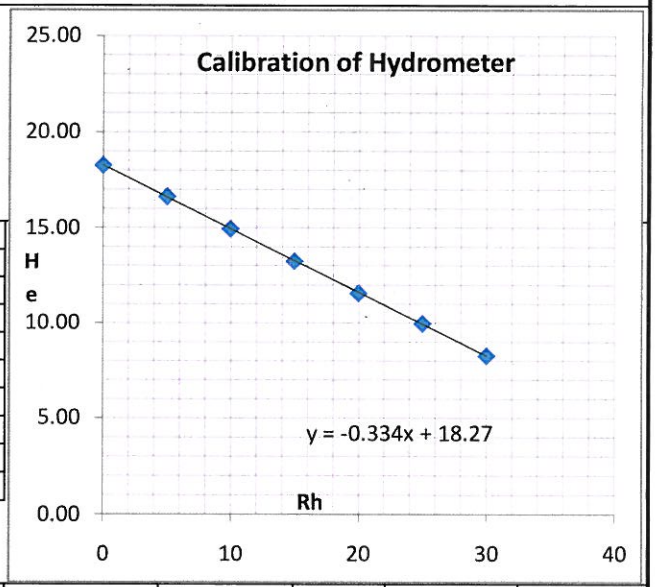
CALIBRATION OF HYDROMETER

(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	28.20	29	-2.0	8.85	28.70	0.543	0.000008341	0.012277647	0.00666892	26.20	3.397	88.99	83.97
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012277647	0.00477751	25.50	3.397	86.62	81.72
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012277647	0.00340912	25.00	3.397	84.92	80.12
	4	26.50	29	-2.0	9.42	27.00	0.198	0.000008341	0.012277647	0.00243227	24.50	3.397	83.22	78.52
	8	26.00	29	-2.0	9.59	26.50	0.141	0.000008341	0.012277647	0.00173505	24.00	3.397	81.52	76.92
	15	25.50	29	-2.0	9.75	26.00	0.104	0.000008341	0.012277647	0.00127809	23.50	3.397	79.82	75.31
	30	25.00	29	-2.0	9.92	25.50	0.074	0.000008341	0.012277647	0.00091145	23.00	3.397	78.12	73.71
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012277647	0.00064990	22.50	3.397	76.43	72.11
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012277647	0.00046334	22.00	3.397	74.73	70.51
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012277647	0.00033028	21.50	3.397	73.03	68.90
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007821	0.011888750	0.00022795	21.00	3.397	71.33	67.30
	1440	22.58	32	-2.0	10.73	23.08	0.011	0.000007821	0.011888750	0.000132488	20.58	3.397	69.89	65.94

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 6.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		94.41
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		2.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		47.2
(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	

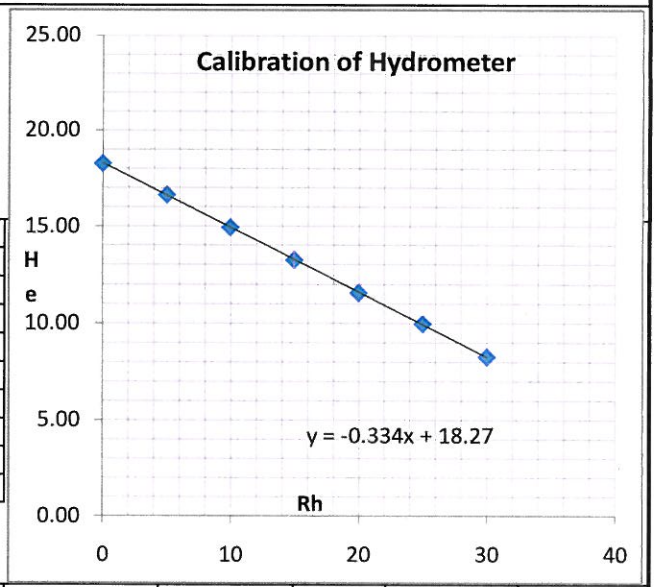
CALIBRATION OF HYDROMETER

(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	28.31	29	-2.0	8.81	28.81	0.542	0.000008341	0.012277647	0.00665507	26.31	3.395	89.31	84.32
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012277647	0.00473340	26.00	3.395	88.26	83.33
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012277647	0.00337821	25.50	3.395	86.56	81.72
	4	27.00	29	-2.0	9.25	27.50	0.196	0.000008341	0.012277647	0.00241061	25.00	3.395	84.86	80.12
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012277647	0.00171988	24.50	3.395	83.17	78.52
	15	25.50	29	-2.0	9.75	26.00	0.104	0.000008341	0.012277647	0.00127809	23.50	3.395	79.77	75.31
	30	25.00	29	-2.0	9.92	25.50	0.074	0.000008341	0.012277647	0.00091145	23.00	3.395	78.08	73.71
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012277647	0.00064990	22.50	3.395	76.38	72.11
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012277647	0.00046334	22.00	3.395	74.68	70.51
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012277647	0.00033028	21.50	3.395	72.98	68.90
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007821	0.011888750	0.00022795	21.00	3.395	71.29	67.30
	1440	22.53	32	-2.0	10.75	23.03	0.011	0.000007821	0.011888750	0.000132591	20.53	3.395	69.67	65.78

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 8.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		93.88
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		3.1
(IV)	Mass of dry soil passing 75 micron Wh (gm)		46.9
(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	

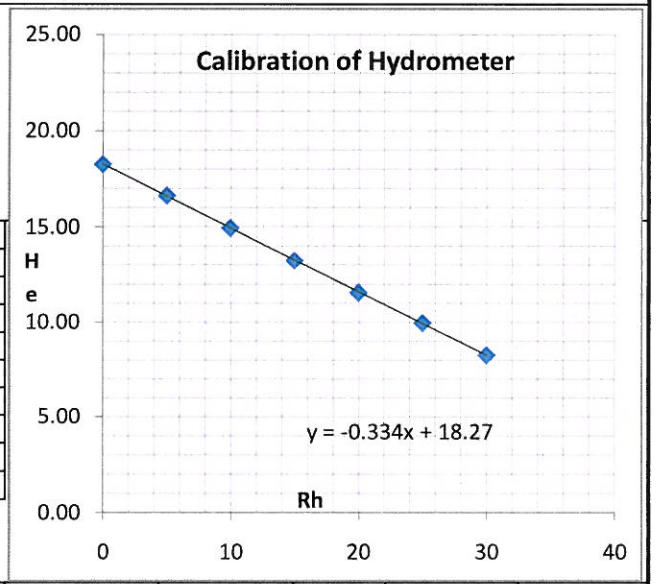
CALIBRATION OF HYDROMETER

(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	27.96	29	-2.0	8.93	28.46	0.546	0.000008341	0.012277647	0.00669905	25.96	3.414	88.62	83.20
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012277647	0.00477751	25.50	3.414	87.05	81.72
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012277647	0.00340912	25.00	3.414	85.34	80.12
	4	26.50	29	-2.0	9.42	27.00	0.198	0.000008341	0.012277647	0.00243227	24.50	3.414	83.64	78.52
	8	26.00	29	-2.0	9.59	26.50	0.141	0.000008341	0.012277647	0.00173505	24.00	3.414	81.93	76.92
	15	25.50	29	-2.0	9.75	26.00	0.104	0.000008341	0.012277647	0.00127809	23.50	3.414	80.22	75.31
	30	25.00	29	-2.0	9.92	25.50	0.074	0.000008341	0.012277647	0.00091145	23.00	3.414	78.52	73.71
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012277647	0.00064990	22.50	3.414	76.81	72.11
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012277647	0.00046334	22.00	3.414	75.10	70.51
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012277647	0.00033028	21.50	3.414	73.40	68.90
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007821	0.011888750	0.00022795	21.00	3.414	71.69	67.30
	1440	22.80	32	-2.0	10.65	23.30	0.011	0.000007821	0.011888750	0.000132024	20.80	3.414	71.01	66.66

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 13.5m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		93.92
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		3.0
(IV)	Mass of dry soil passing 75 micron Wh (gm)		47.0
(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	

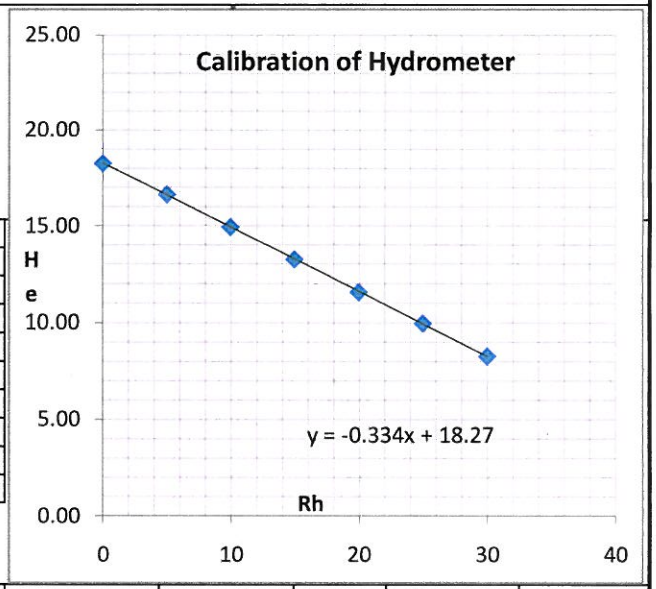
CALIBRATION OF HYDROMETER

(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	27.83	29	-2.0	8.97	28.33	0.547	0.000008341	0.012277647	0.00671532	25.83	3.412	88.14	82.78
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012277647	0.00473340	26.00	3.412	88.72	83.33
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012277647	0.00337821	25.50	3.412	87.01	81.72
	4	27.00	29	-2.0	9.25	27.50	0.196	0.000008341	0.012277647	0.00241061	25.00	3.412	85.31	80.12
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012277647	0.00171988	24.50	3.412	83.60	78.52
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012277647	0.00126711	24.00	3.412	81.89	76.92
	30	25.00	29	-2.0	9.92	25.50	0.074	0.000008341	0.012277647	0.00091145	23.00	3.412	78.48	73.71
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012277647	0.00064990	22.50	3.412	76.78	72.11
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012277647	0.00046334	22.00	3.412	75.07	70.51
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012277647	0.00033028	21.50	3.412	73.36	68.90
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007821	0.011888750	0.00022795	21.00	3.412	71.66	67.30
	1440	22.63	32	-2.0	10.71	23.13	0.011	0.000007821	0.011888750	0.000132379	20.63	3.412	70.39	66.11

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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

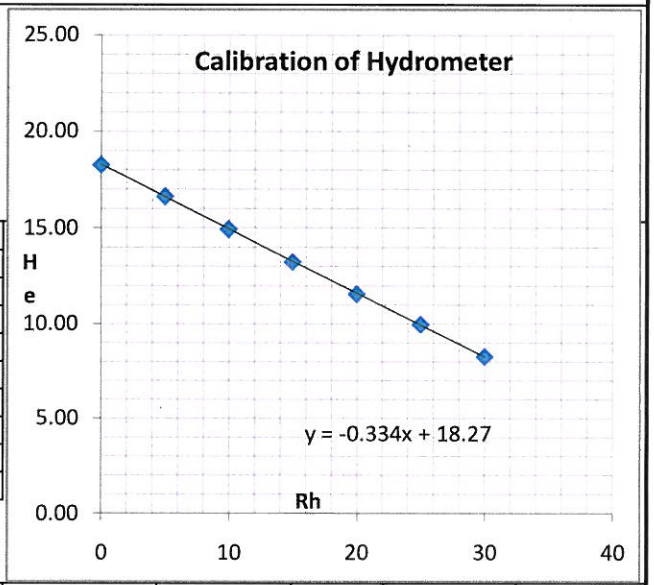
Location : BH-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 18.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		99.75
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.1
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.9
(V)	Specific gravity of soil grains, Gs		2.69
(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	29.73	29	-2.0	8.34	30.23	0.527	0.000008341	0.012168186	0.00641583	27.73	3.191	88.50	88.28
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012168186	0.00455752	27.50	3.191	87.76	87.54
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012168186	0.00325447	27.00	3.191	86.17	85.95
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012168186	0.00232353	26.50	3.191	84.57	84.36
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012168186	0.00165859	26.00	3.191	82.98	82.77
	15	27.50	29	-2.0	9.09	28.00	0.100	0.000008341	0.012168186	0.00122255	25.50	3.191	81.38	81.18
	30	27.00	29	-2.0	9.25	27.50	0.072	0.000008341	0.012168186	0.00087238	25.00	3.191	79.79	79.59
	60	26.50	29	-2.0	9.42	27.00	0.051	0.000008341	0.012168186	0.00062241	24.50	3.191	78.19	77.99
	120	26.00	29	-2.0	9.59	26.50	0.036	0.000008341	0.012168186	0.00044400	24.00	3.191	76.59	76.40
	240	25.50	29	-2.0	9.75	26.00	0.026	0.000008341	0.012168186	0.00031667	23.50	3.191	75.00	74.81
	480	25.00	32	-2.0	9.92	25.50	0.019	0.000007821	0.011782756	0.00021868	23.00	3.191	73.40	73.22
	1440	24.40	32	-2.0	10.12	24.90	0.011	0.000007821	0.011782756	0.000127516	22.40	3.191	71.50	71.32

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 19.5m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.17
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.4
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.6
(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	

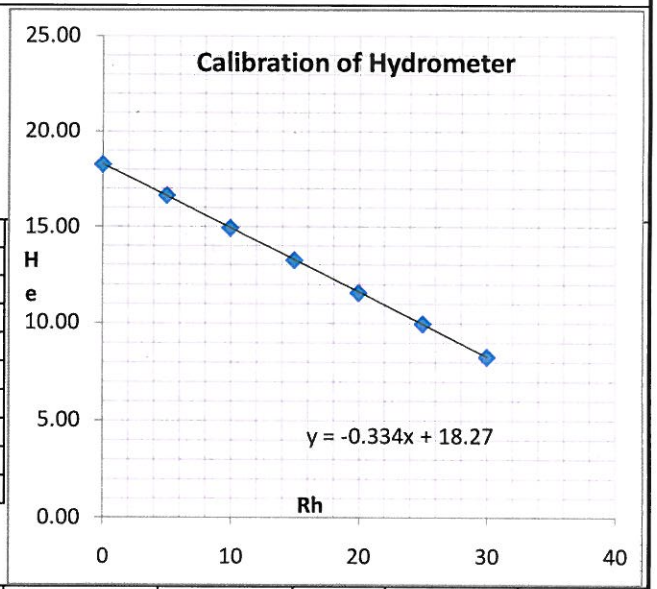
CALIBRATION OF HYDROMETER

(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	29.75	29	-2.0	8.33	30.25	0.527	0.000008341	0.012204347	0.00643232	27.75	3.217	89.28	88.54
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.217	88.47	87.74
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.217	86.86	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.217	85.26	84.55
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012204347	0.00166352	26.00	3.217	83.65	82.95
	15	27.50	29	-2.0	9.09	28.00	0.100	0.000008341	0.012204347	0.00122618	25.50	3.217	82.04	81.36
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012204347	0.00088284	24.50	3.217	78.82	78.17
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.217	75.60	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.217	74.00	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.217	72.39	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011817771	0.00022299	22.00	3.217	70.78	70.19
	1440	23.79	32	-2.0	10.32	24.29	0.011	0.000007821	0.011817771	0.000129183	21.79	3.217	70.10	69.52

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 24.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.38
(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		2.68
(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	

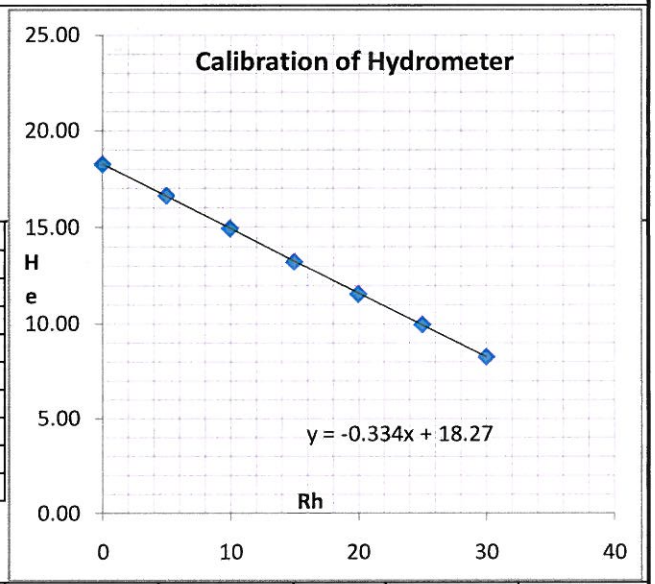
CALIBRATION OF HYDROMETER

(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	29.30	29	-2.0	8.48	29.80	0.532	0.000008341	0.012204347	0.00649007	27.30	3.210	87.64	87.10
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012204347	0.00466088	26.50	3.210	85.08	84.55
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012204347	0.00332704	26.00	3.210	83.47	82.95
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012204347	0.00237450	25.50	3.210	81.86	81.36
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012204347	0.00169438	25.00	3.210	80.26	79.76
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012204347	0.00124852	24.50	3.210	78.65	78.17
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012204347	0.00089835	23.50	3.210	75.44	74.98
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012204347	0.00064065	23.00	3.210	73.84	73.38
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012204347	0.00045680	22.50	3.210	72.23	71.79
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012204347	0.00032567	22.00	3.210	70.63	70.19
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011817771	0.00022480	21.50	3.210	69.02	68.60
	1440	23.38	32	-2.0	10.46	23.88	0.011	0.000007821	0.011817771	0.000130045	21.38	3.210	68.63	68.20

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 25.5m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.09
(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	

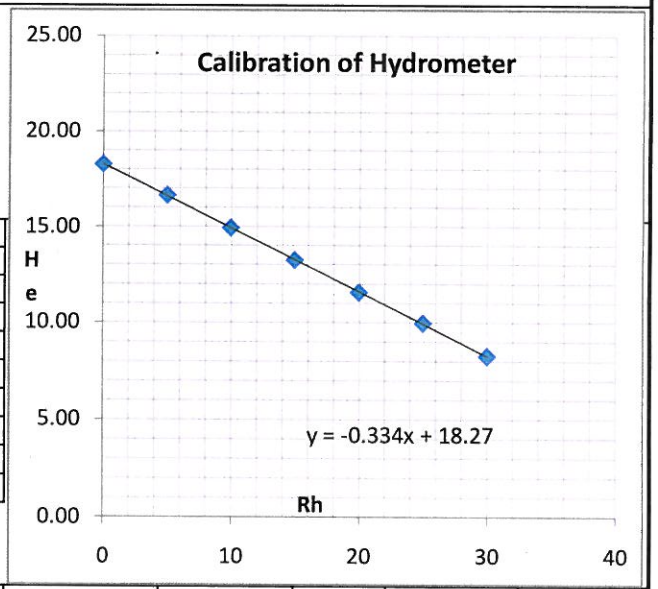
CALIBRATION OF HYDROMETER

(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	29.04	29	-2.0	8.57	29.54	0.534	0.000008341	0.012204347	0.00652320	27.04	3.220	87.06	86.27
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012204347	0.00466088	26.50	3.220	85.32	84.55
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012204347	0.00332704	26.00	3.220	83.71	82.95
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012204347	0.00237450	25.50	3.220	82.10	81.36
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012204347	0.00169438	25.00	3.220	80.49	79.76
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012204347	0.00124852	24.50	3.220	78.88	78.17
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012204347	0.00089063	24.00	3.220	77.27	76.57
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.220	75.66	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.220	74.05	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.220	72.44	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011817771	0.00022299	22.00	3.220	70.84	70.19
	1440	23.74	32	-2.0	10.34	24.24	0.011	0.000007821	0.011817771	0.000129282	21.74	3.220	70.01	69.37

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 27.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.62
(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		2.67
(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	

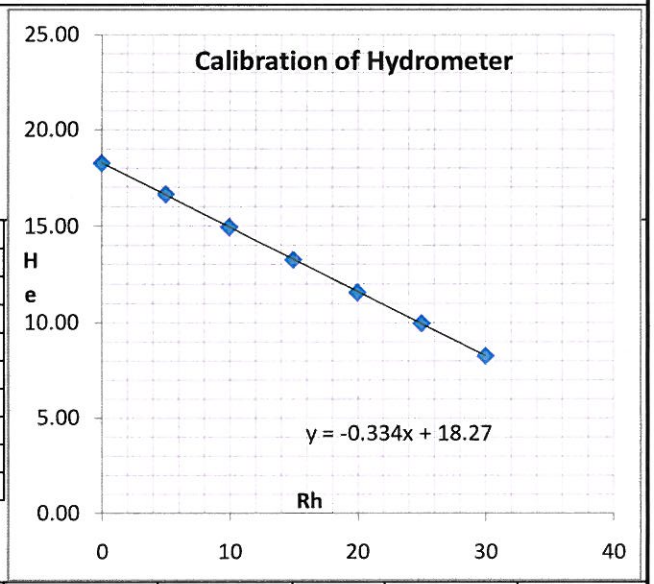
CALIBRATION OF HYDROMETER

(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	29.50	29	-2.0	8.42	30.00	0.530	0.000008341	0.012240833	0.00648379	27.50	3.210	88.27	87.93
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.210	86.66	86.34
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012240833	0.00330559	26.50	3.210	85.06	84.74
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012240833	0.00235960	26.00	3.210	83.45	83.14
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012240833	0.00168404	25.50	3.210	81.85	81.54
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012240833	0.00125225	24.50	3.210	78.64	78.34
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012240833	0.00090104	23.50	3.210	75.43	75.14
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012240833	0.00064795	22.50	3.210	72.22	71.95
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012240833	0.00046195	22.00	3.210	70.62	70.35
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012240833	0.00032929	21.50	3.210	69.01	68.75
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007821	0.011853101	0.00022727	21.00	3.210	67.41	67.15
	1440	22.44	32	-2.0	10.78	22.94	0.011	0.000007821	0.011853101	0.000132374	20.44	3.210	65.60	65.35

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 28.5m

Date of Testing : 21.09.12

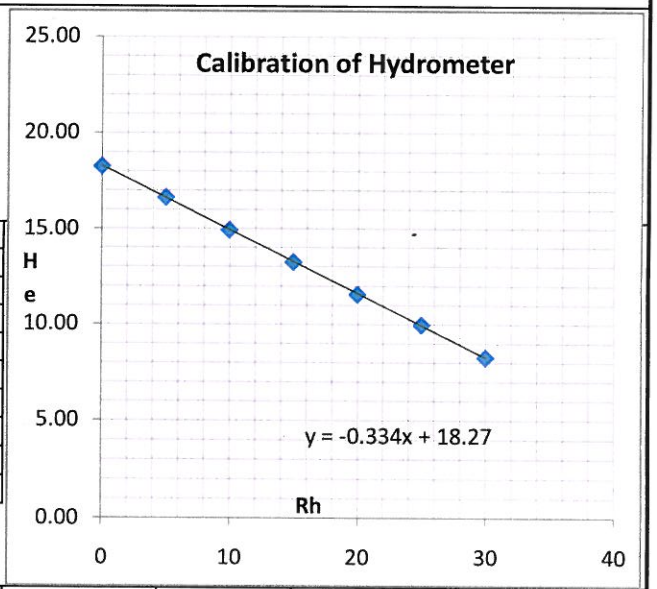
Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.27
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.4
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.6
(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	29.04	29	-2.0	8.57	29.54	0.534	0.000008341	0.012204347	0.00652320	27.04	3.214	86.90	86.27
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012204347	0.00466088	26.50	3.214	85.17	84.55
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012204347	0.00332704	26.00	3.214	83.56	82.95
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012204347	0.00237450	25.50	3.214	81.96	81.36
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012204347	0.00169438	25.00	3.214	80.35	79.76
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012204347	0.00125954	24.00	3.214	77.13	76.57
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012204347	0.00089835	23.50	3.214	75.53	74.98
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012204347	0.00064065	23.00	3.214	73.92	73.38
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012204347	0.00045680	22.50	3.214	72.31	71.79
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012204347	0.00032567	22.00	3.214	70.71	70.19
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011817771	0.00022480	21.50	3.214	69.10	68.60
	1440	23.07	32	-2.0	10.57	23.57	0.011	0.000007821	0.011817771	0.000130688	21.07	3.214	67.70	67.21

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 30.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

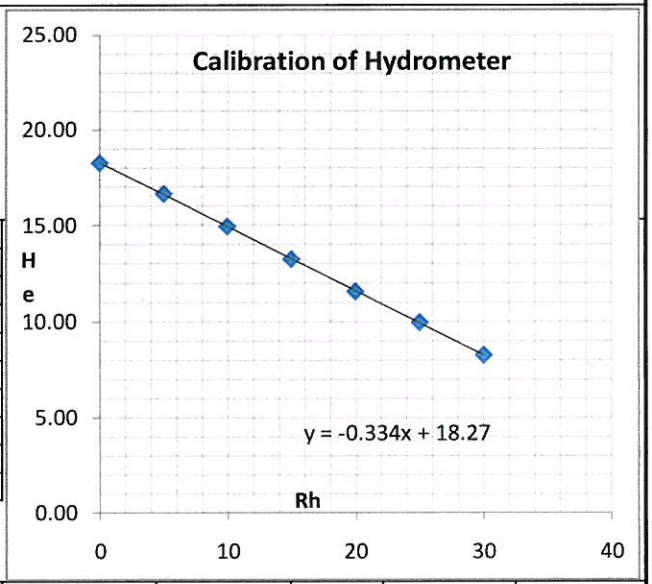
(I)	Percentage of 75 micron passing (from sieve analysis)		99.58
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.2
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.8
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading 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	29.84	29	-2.0	8.30	30.34	0.526	0.000008341	0.012204347	0.00642071	27.84	3.204	89.20	88.82
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.204	86.51	86.14
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012204347	0.00329574	26.50	3.204	84.90	84.55
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012204347	0.00235257	26.00	3.204	83.30	82.95
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.204	81.70	81.36
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012204347	0.00123740	25.00	3.204	80.10	79.76
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012204347	0.00089063	24.00	3.204	76.89	76.57
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.204	75.29	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.204	73.69	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.204	72.09	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011817771	0.00022299	22.00	3.204	70.49	70.19
	1440	23.38	32	-2.0	10.46	23.88	0.011	0.000007821	0.011817771	0.000130045	21.38	3.204	68.49	68.20

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 31.5m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

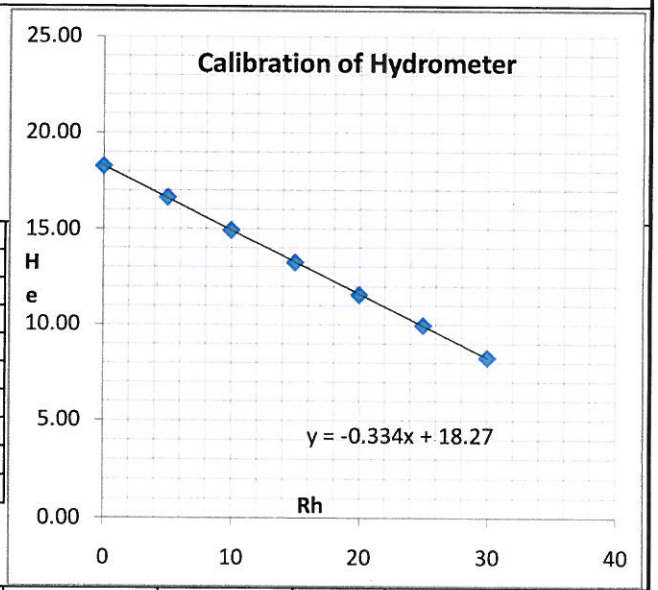
(I)	Percentage of 75 micron passing (from sieve analysis)		99.24
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.4
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.6
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading 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	29.57	29	-2.0	8.39	30.07	0.529	0.000008341	0.012204347	0.00645548	27.57	3.215	88.64	87.96
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.215	86.80	86.14
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012204347	0.00329574	26.50	3.215	85.20	84.55
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012204347	0.00235257	26.00	3.215	83.59	82.95
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.215	81.98	81.36
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012204347	0.00123740	25.00	3.215	80.37	79.76
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012204347	0.00089063	24.00	3.215	77.16	76.57
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.215	75.55	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.215	73.94	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.215	72.34	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011817771	0.00022299	22.00	3.215	70.73	70.19
	1440	23.47	32	-2.0	10.43	23.97	0.011	0.000007821	0.011817771	0.000129850	21.47	3.215	69.02	68.50

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 33.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.81
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.1
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.9
(V)	Specific gravity of soil grains, Gs		2.69
(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	

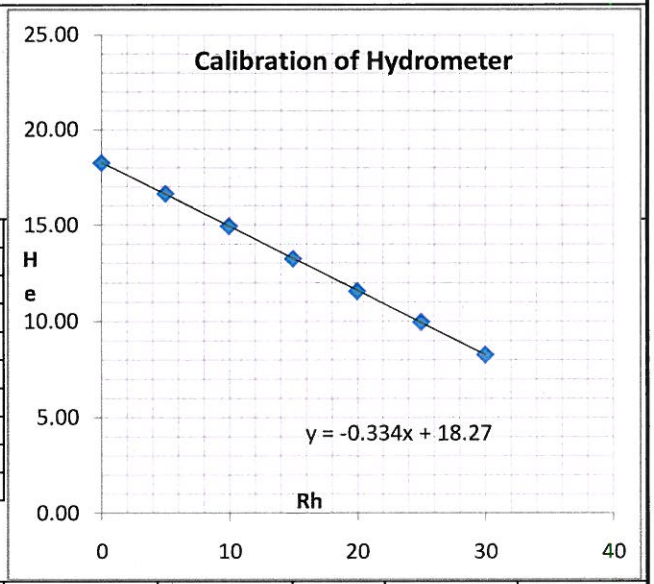
CALIBRATION OF HYDROMETER

(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	29.91	29	-2.0	8.28	30.41	0.525	0.000008341	0.012168186	0.00639267	27.91	3.189	89.02	88.85
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012168186	0.00455752	27.50	3.189	87.71	87.54
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012168186	0.00325447	27.00	3.189	86.12	85.95
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012168186	0.00232353	26.50	3.189	84.52	84.36
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012168186	0.00165859	26.00	3.189	82.93	82.77
	15	27.50	29	-2.0	9.09	28.00	0.100	0.000008341	0.012168186	0.00122255	25.50	3.189	81.33	81.18
	30	27.00	29	-2.0	9.25	27.50	0.072	0.000008341	0.012168186	0.00087238	25.00	3.189	79.74	79.59
	60	26.50	29	-2.0	9.42	27.00	0.051	0.000008341	0.012168186	0.00062241	24.50	3.189	78.14	77.99
	120	26.00	29	-2.0	9.59	26.50	0.036	0.000008341	0.012168186	0.00044400	24.00	3.189	76.55	76.40
	240	25.50	29	-2.0	9.75	26.00	0.026	0.000008341	0.012168186	0.00031667	23.50	3.189	74.95	74.81
	480	25.00	32	-2.0	9.92	25.50	0.019	0.000007821	0.011782756	0.00021868	23.00	3.189	73.36	73.22
	1440	24.38	32	-2.0	10.13	24.88	0.011	0.000007821	0.011782756	0.000127555	22.38	3.189	71.40	71.26

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 43.5m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.66
(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		2.68
(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	

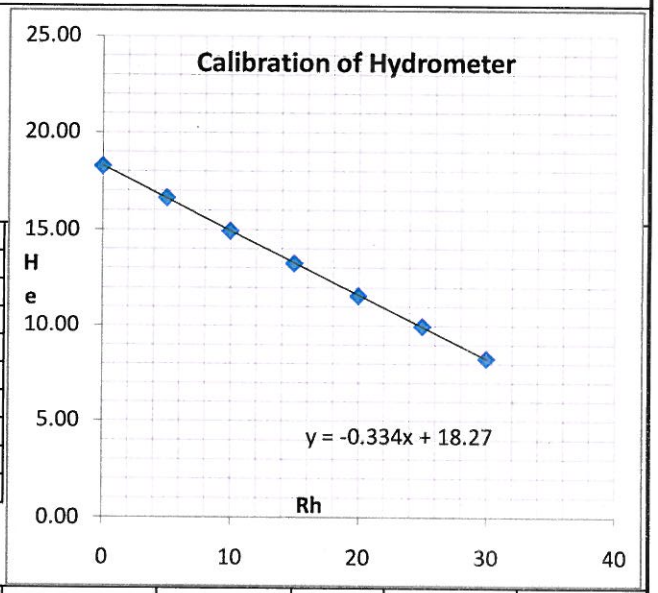
CALIBRATION OF HYDROMETER

(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	29.50	29	-2.0	8.42	30.00	0.530	0.000008341	0.012204347	0.00646446	27.50	3.201	88.04	87.74
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.201	86.44	86.14
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012204347	0.00329574	26.50	3.201	84.84	84.55
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012204347	0.00235257	26.00	3.201	83.24	82.95
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.201	81.63	81.36
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012204347	0.00124852	24.50	3.201	78.43	78.17
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012204347	0.00089063	24.00	3.201	76.83	76.57
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.201	75.23	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.201	73.63	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.201	72.03	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011817771	0.00022299	22.00	3.201	70.43	70.19
	1440	23.42	32	-2.0	10.45	23.92	0.011	0.000007821	0.011817771	0.000129960	21.42	3.201	68.56	68.33

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 45.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.40
(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		2.69
(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	

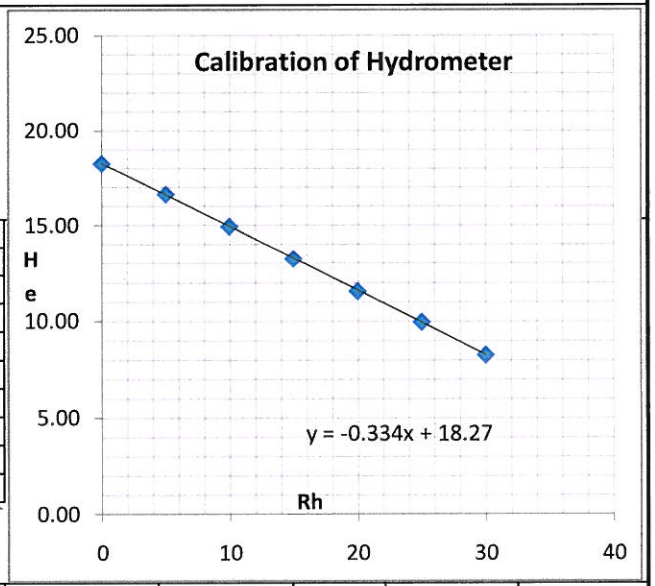
Rh = hydrometer Reading

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	29.71	29	-2.0	8.35	30.21	0.527	0.000008341	0.012168186	0.00641840	27.71	3.203	88.75	88.21
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012168186	0.00460251	27.00	3.203	86.47	85.95
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012168186	0.00328597	26.50	3.203	84.87	84.36
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012168186	0.00234560	26.00	3.203	83.27	82.77
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012168186	0.00167405	25.50	3.203	81.67	81.18
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012168186	0.00124482	24.50	3.203	78.46	77.99
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012168186	0.00089569	23.50	3.203	75.26	74.81
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012168186	0.00063875	23.00	3.203	73.66	73.22
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012168186	0.00045545	22.50	3.203	72.06	71.63
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012168186	0.00032471	22.00	3.203	70.46	70.04
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011782756	0.00022413	21.50	3.203	68.86	68.44
	1440	22.96	32	-2.0	10.60	23.46	0.011	0.000007821	0.011782756	0.000130528	20.96	3.203	67.11	66.71

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO

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-2(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 50.0m

Date of Testing : 21.09.12

Tested by : K.C Sahoo

(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		2.69
(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	

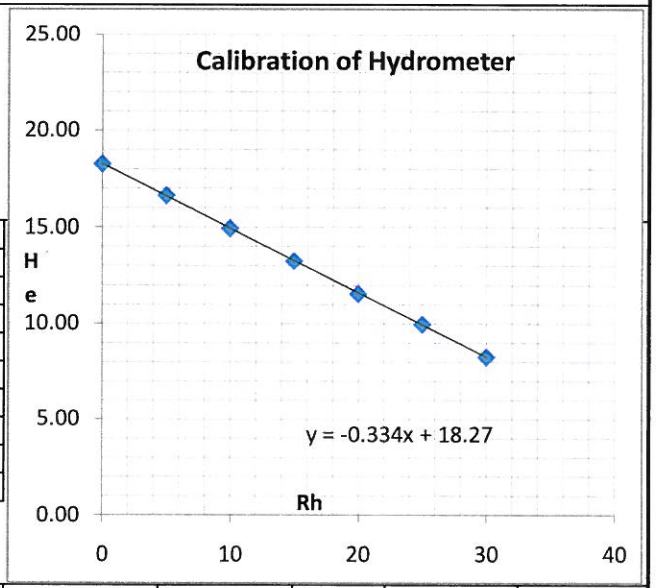
CALIBRATION OF HYDROMETER

(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	0.012168186	0.00646191	27.37	3.199	87.55	87.13
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012168186	0.00464707	26.50	3.199	84.77	84.36
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012168186	0.00331718	26.00	3.199	83.17	82.77
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012168186	0.00236746	25.50	3.199	81.57	81.18
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012168186	0.00168936	25.00	3.199	79.97	79.59
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012168186	0.00124482	24.50	3.199	78.37	77.99
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012168186	0.00089569	23.50	3.199	75.17	74.81
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012168186	0.00063875	23.00	3.199	73.57	73.22
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012168186	0.00045545	22.50	3.199	71.97	71.63
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012168186	0.00032471	22.00	3.199	70.37	70.04
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011782756	0.00022413	21.50	3.199	68.77	68.44
	1440	22.88	32	-2.0	10.63	23.38	0.011	0.000007821	0.011782756	0.000130676	20.88	3.199	66.80	66.48

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

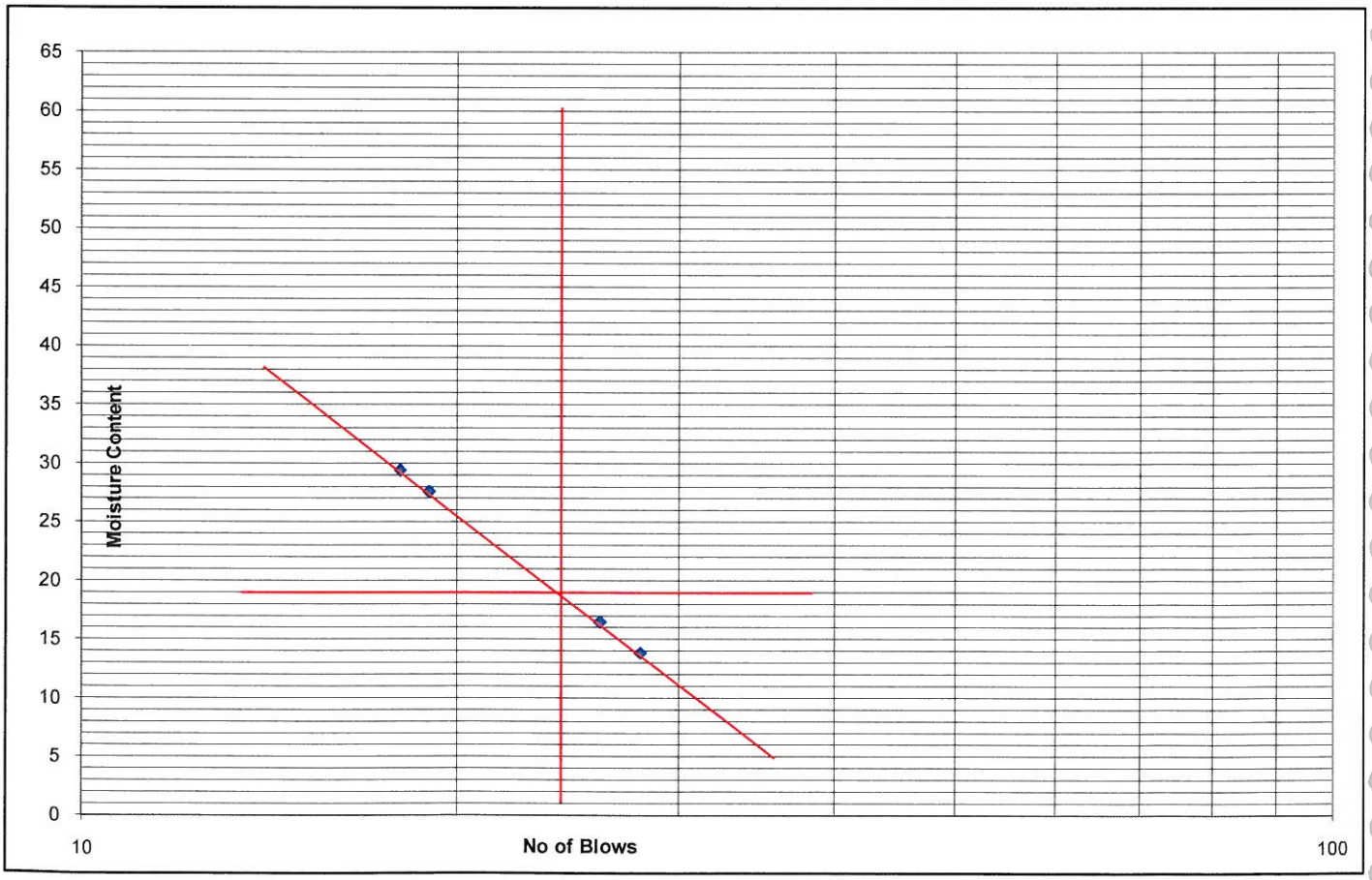
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	3.0m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C39	C40	C41	C42	NP	
Container Weight (gm) (W1)	39.43	30.5	37.6	35.55		
Container + Wt. of wet soil (gm) (W2)	83.87	97.46	98.86	101.77		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.46	87.98	85.62	86.73		
Wt. Of water (gm) (W2-W1)-(W3-W1)	5.41	9.48	13.24	15.04		
Wt. of oven dry soil (gm) (W3-W1)	39.03	57.48	48.02	51.18		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**13.87**	**16.49**	**27.58**	**29.39**		

Result Summary

Liquid Limit (WL)	19	%
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

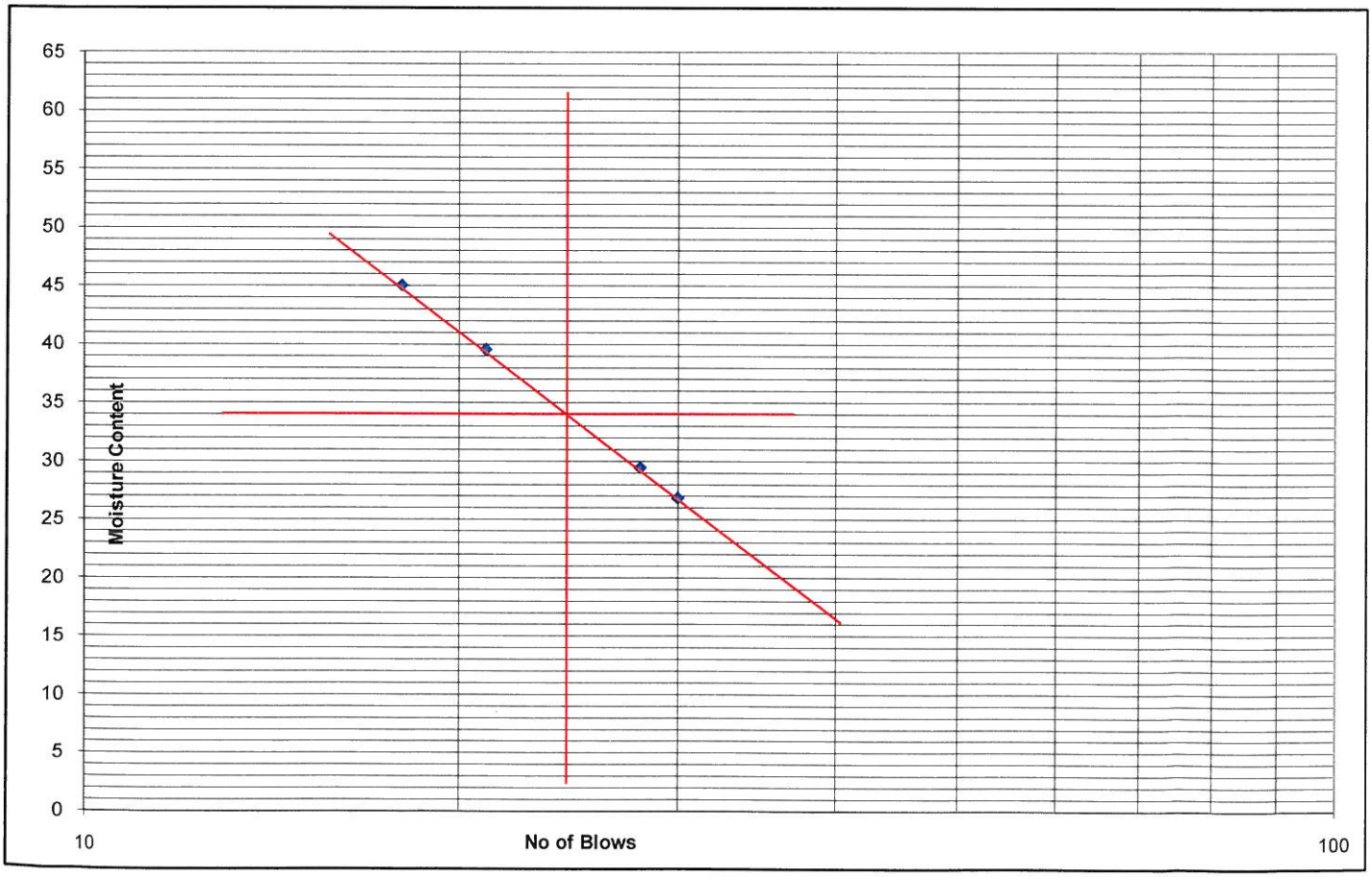
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	4.5m	Tested by	:	K.C.Sahoo

Number of Blows	30	28	21	18	Plastic Limit	
Container No.	C1	C2	C3	C4	C5	C6
Container Weight (gm) (W1)	33.6	34.2	36.7	32.65	31.26	30.12
Container + Wt. of wet soil (gm) (W2)	90.60	103.82	105.06	111.56	90.98	89.96
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	12.07	15.84	19.37	24.51	9.35	9.29
Wt. of oven dry soil (gm) (W3-W1)	44.93	53.78	48.99	54.40	50.37	50.55
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**26.87**	**29.45**	**39.54**	**45.05**	**18.56**	**18.38**

Result Summary

Liquid Limit (WL)	34	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	16	%



4399

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

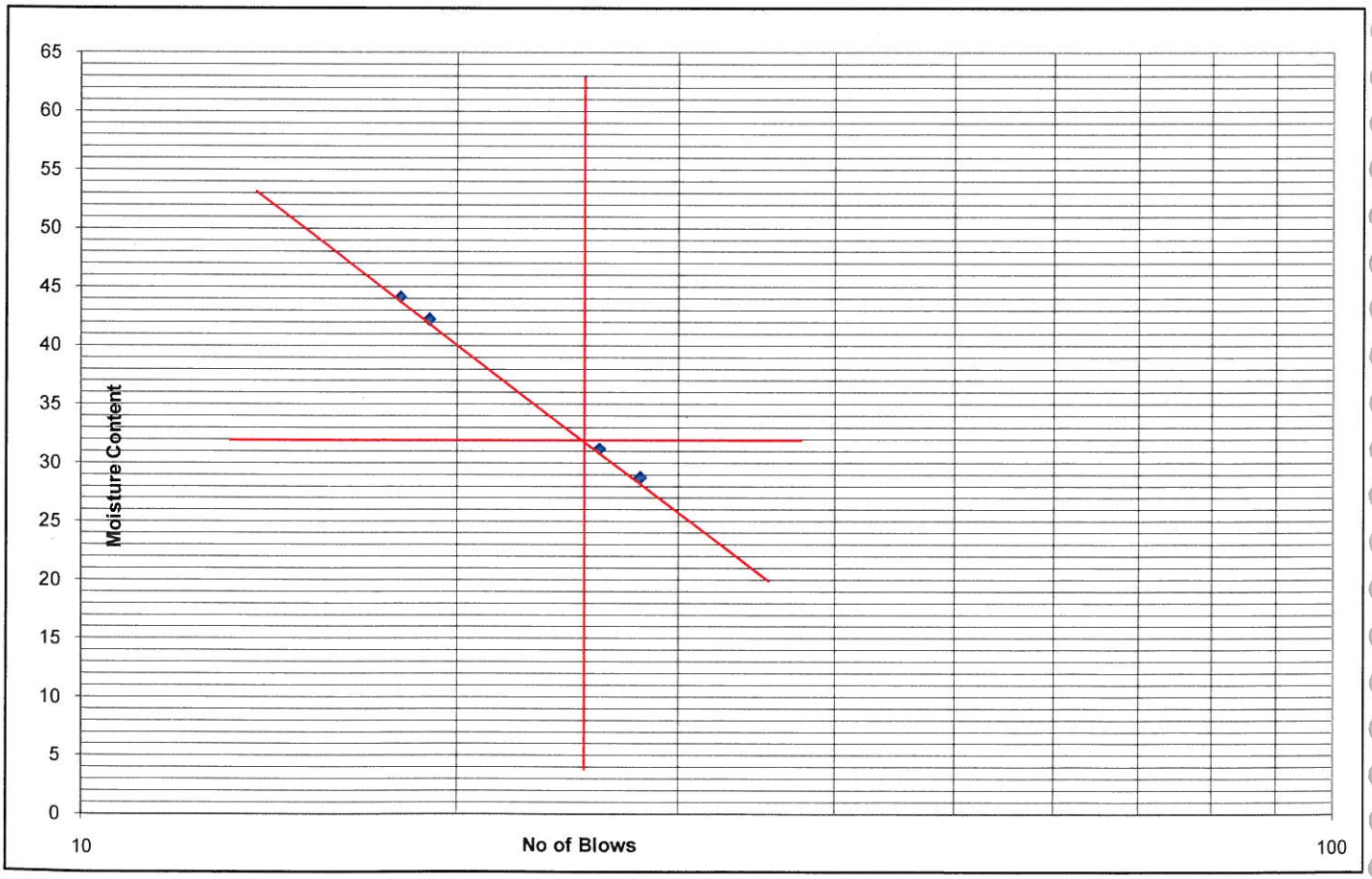
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	5.0m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C7	C8	C9	C10	C11	C12
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42	31.85	36.97
Container + Wt. of wet soil (gm) (W2)	91.75	103.82	107.88	109.85	89.88	87.74
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.22	15.84	22.19	22.80	8.25	7.07
Wt. of oven dry soil (gm) (W3-W1)	45.95	50.77	52.55	51.63	49.78	43.70
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**28.76**	**31.20**	**42.22**	**44.15**	**16.57**	**16.18**

Result Summary

Liquid Limit (WL)	32	%
Plastic Limit (Wp)	16	%
Plasticity Index (Ip)	16	%



4490

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

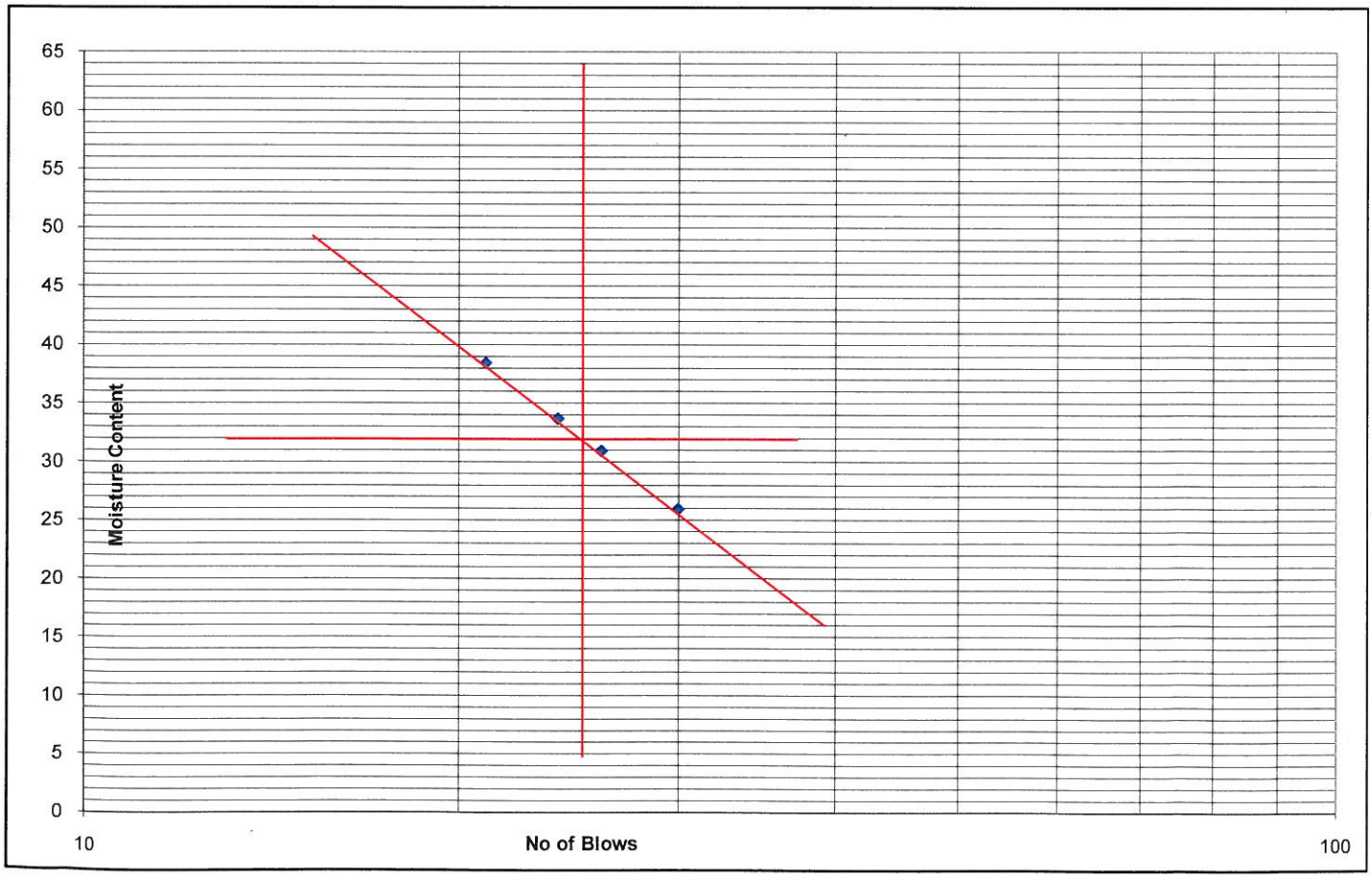
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	6.0m	Tested by	:	K.C.Sahoo

Number of Blows	30	26	24	21	Plastic Limit	
Container No.	C13	C14	C15	C16	C17	C18
Container Weight (gm) (W1)	30.44	36.34	37.83	32.28	30.76	32.24
Container + Wt. of wet soil (gm) (W2)	91.02	104.99	101.81	107.79	90.55	89.02
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	88.77	85.69	86.82	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	12.48	16.22	16.12	20.97	8.92	8.35
Wt. of oven dry soil (gm) (W3-W1)	48.09	52.43	47.86	54.54	50.87	48.43
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**25.96**	**30.94**	**33.68**	**38.45**	**17.54**	**17.24**

Result Summary

Liquid Limit (WL)	32	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	15	%



4401

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

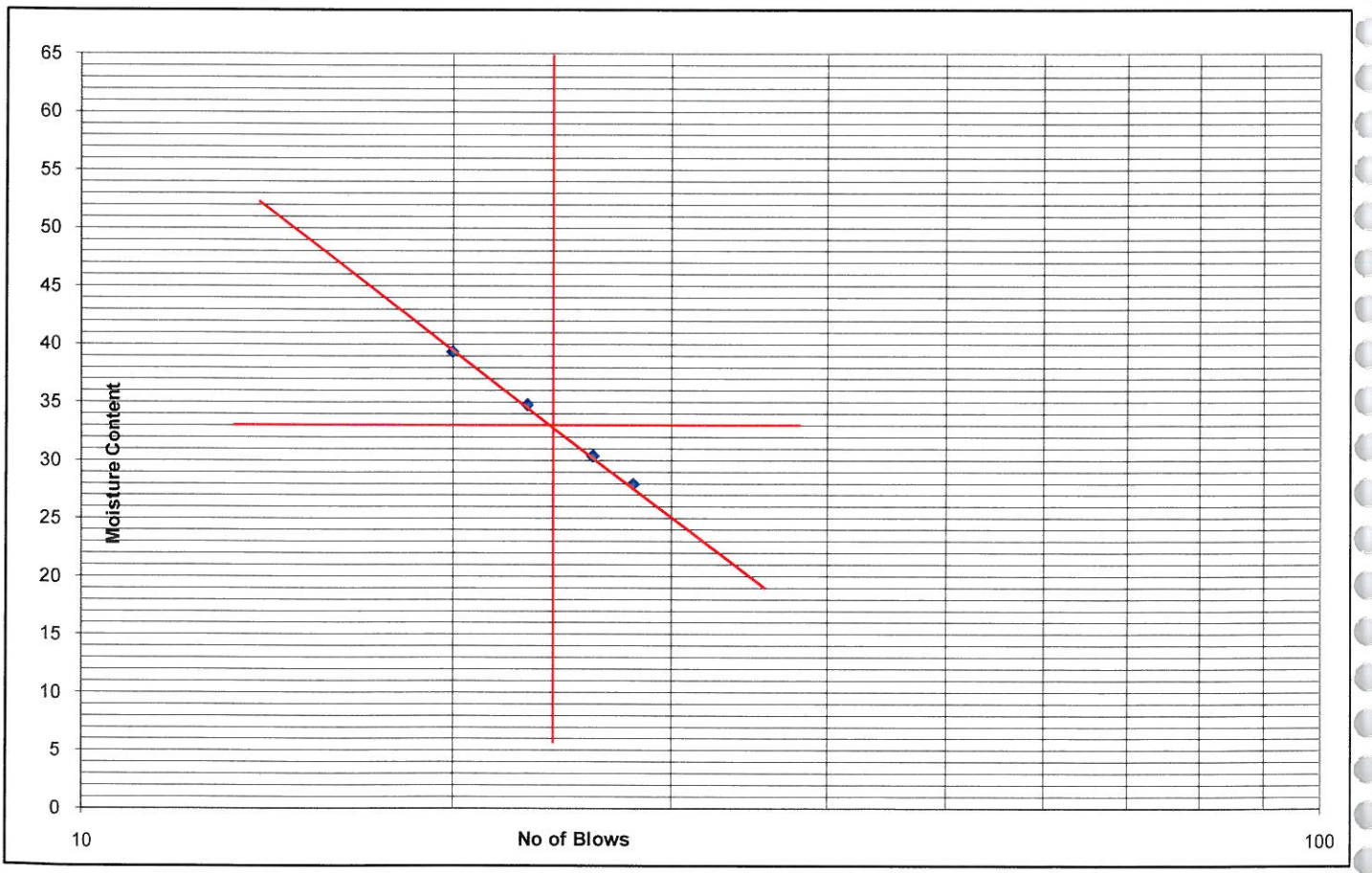
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	8.0m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	23	20	Plastic Limit	
Container No.	C19	C20	C21	C22	C23	C24
Container Weight (gm) (W1)	30.48	35.24	37.88	34.61	35.8	32.51
Container + Wt. of wet soil (gm) (W2)	91.98	103.99	102.31	107.68	90.05	89.48
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.45	16.02	16.62	20.63	8.41	8.81
Wt. of oven dry soil (gm) (W3-W1)	48.05	52.74	47.81	52.44	45.83	48.16
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**27.98**	**30.37**	**34.76**	**39.34**	**18.36**	**18.29**

Result Summary

Liquid Limit (WL)	33	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	15	%



4402

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

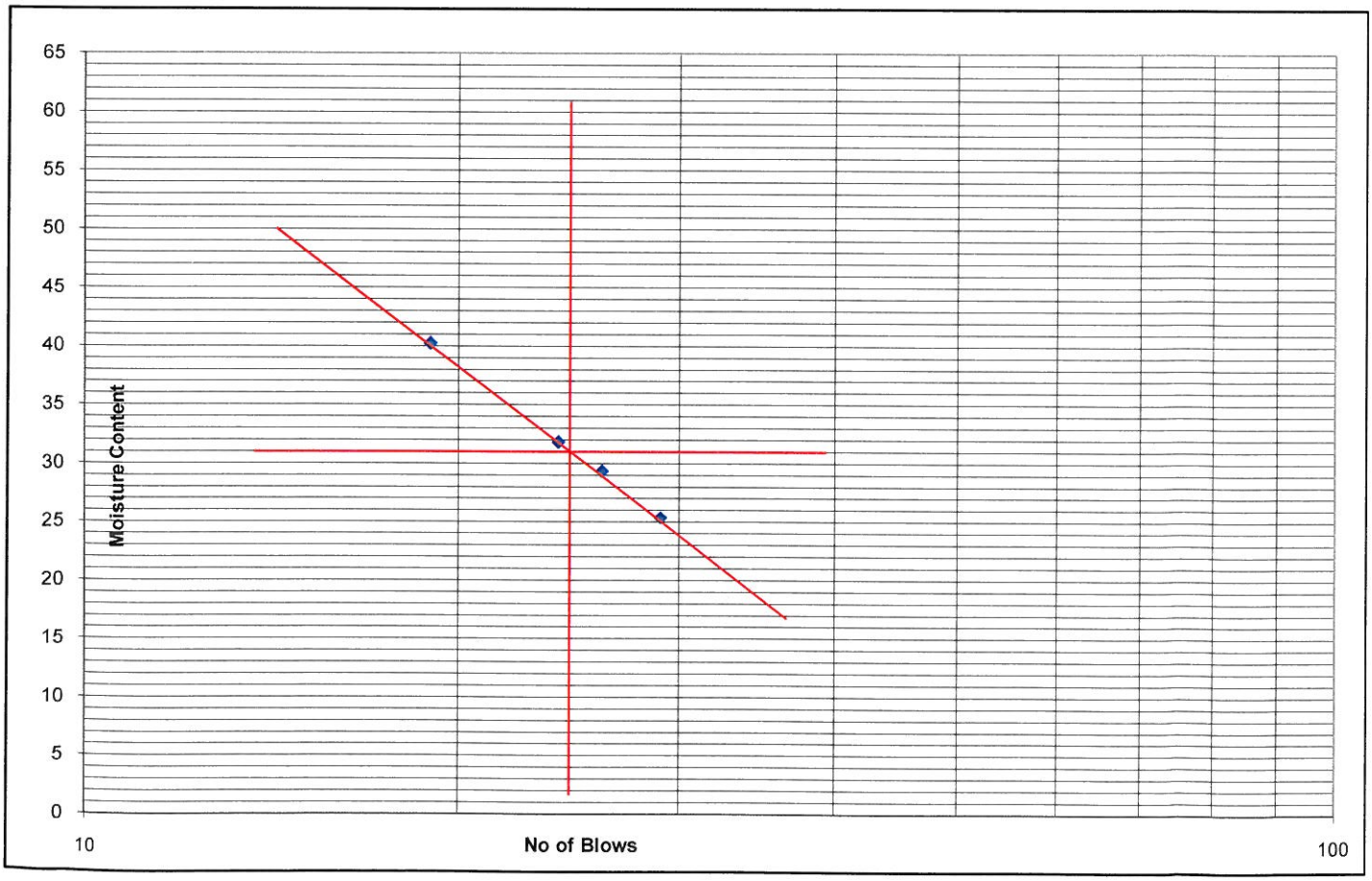
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	9.0m	Tested by	:	K.C.Sahoo

Number of Blows	29	26	24	19	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)	89.21	97.72	102.04	105.76	89.31	88.80
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.40	83.12	84.94	86.73	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	10.80	14.60	17.10	19.03	7.68	8.13
Wt. of oven dry soil (gm) (W3-W1)	42.57	49.76	53.74	47.31	46.77	49.91
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**25.38**	**29.34**	**31.82**	**40.23**	**16.41**	**16.28**

Result Summary

Liquid Limit (WL)	31	%
Plastic Limit (Wp)	16	%
Plasticity Index (Ip)	15	%



4403

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

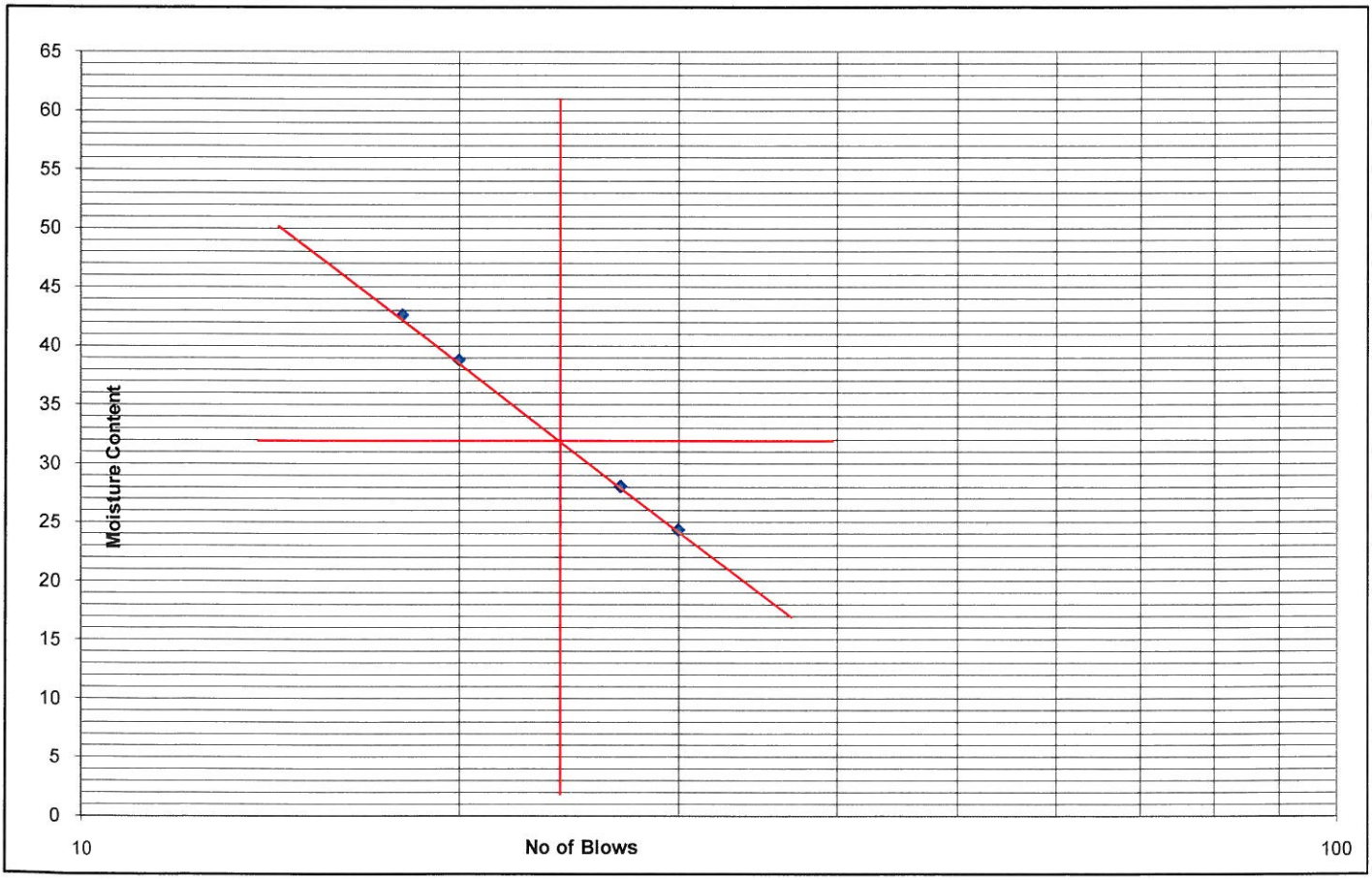
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	13.5m	Tested by	:	K.C.Sahoo

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	C31	C32	C33	C34	C35	C36
Container Weight (gm) (W1)	30.8	38.08	32.47	31.56	37.73	30.99
Container + Wt. of wet soil (gm) (W2)	90.08	101.48	106.35	110.56	89.66	89.82
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.47	87.59	85.69	86.97	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	11.61	13.89	20.66	23.60	8.03	9.15
Wt. of oven dry soil (gm) (W3-W1)	47.67	49.51	53.22	55.41	43.90	49.68
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**24.35**	**28.06**	**38.82**	**42.59**	**18.29**	**18.41**

Result Summary

Liquid Limit (WL)	32	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	14	%



4404

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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

Location : BH-2(Tangri River-Saharanpur)

Depth : 15.0m

Date Of Testing : 21.09.12

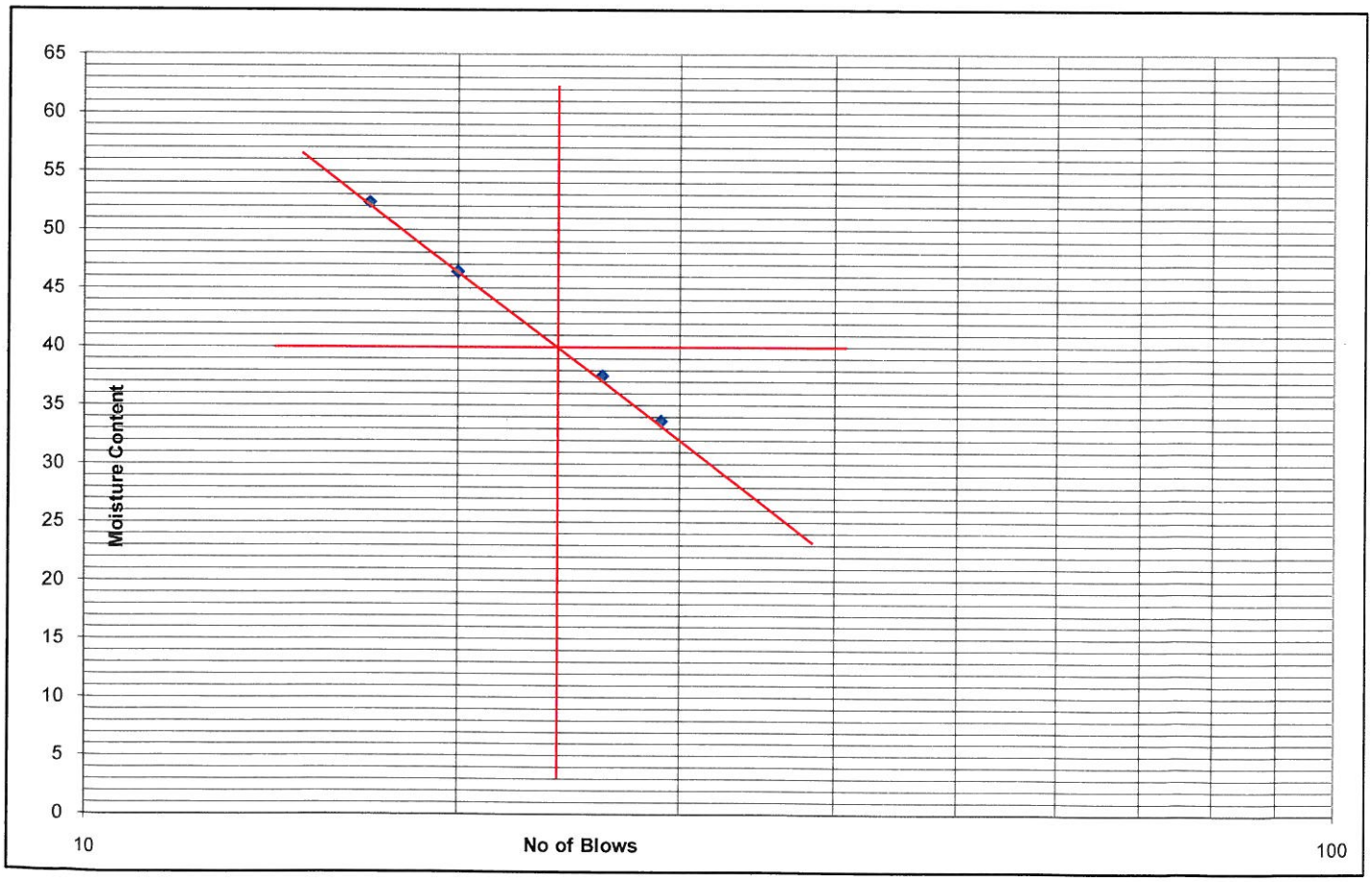
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	29	26	20	17	Plastic Limit	
Container No.	C37	C38	C39	C40	C41	C42
Container Weight (gm) (W1)	38.52	37.22	39.43	30.5	37.6	35.55
Container + Wt. of wet soil (gm) (W2)	90.40	107.02	105.31	116.66	90.59	89.78
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.33	87.98	84.43	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.06	19.04	20.88	29.60	8.96	9.11
Wt. of oven dry soil (gm) (W3-W1)	38.81	50.76	45.00	56.55	44.03	45.12
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.66**	**37.52**	**46.41**	**52.35**	**20.35**	**20.19**

Result Summary

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



4405

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

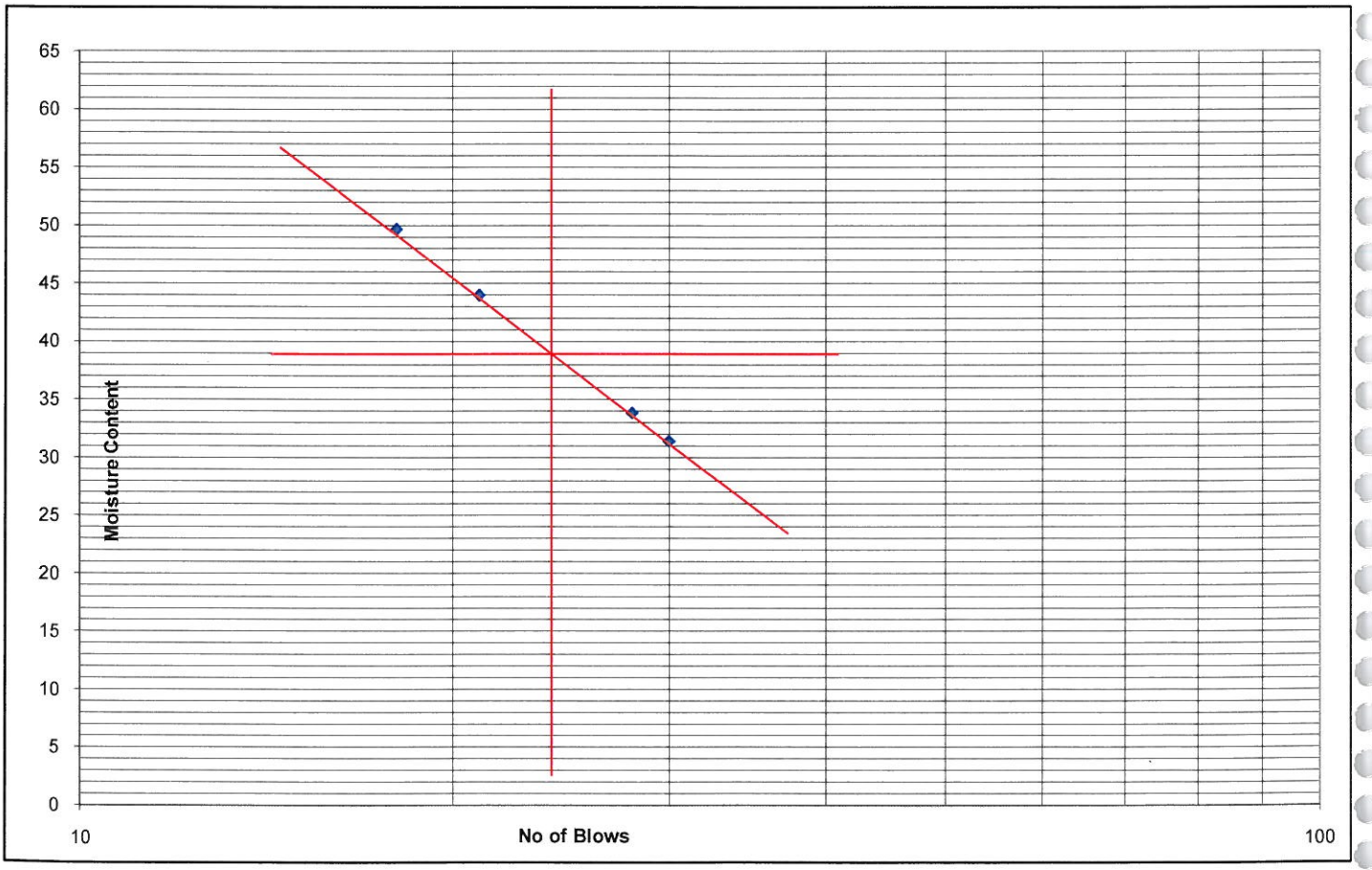
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	16.5m	Tested by	:	K.C.Sahoo

Number of Blows	30	28	21	18	Plastic Limit	
Container No.	C1	C2	C3	C4	C5	C6
Container Weight (gm) (W1)	33.6	34.2	36.7	32.65	31.26	30.12
Container + Wt. of wet soil (gm) (W2)	92.65	106.13	105.77	114.05	91.88	91.02
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.94	84.67	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.12	18.19	21.09	27.00	10.25	10.35
Wt. of oven dry soil (gm) (W3-W1)	44.93	53.74	47.97	54.40	50.37	50.55
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.42**	**33.85**	**43.97**	**49.63**	**20.34**	**20.47**

Result Summary

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



4406

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO 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-2(Tangri River-Saharanpur)

Depth : 18.0m

Date Of Testing : 21.09.12

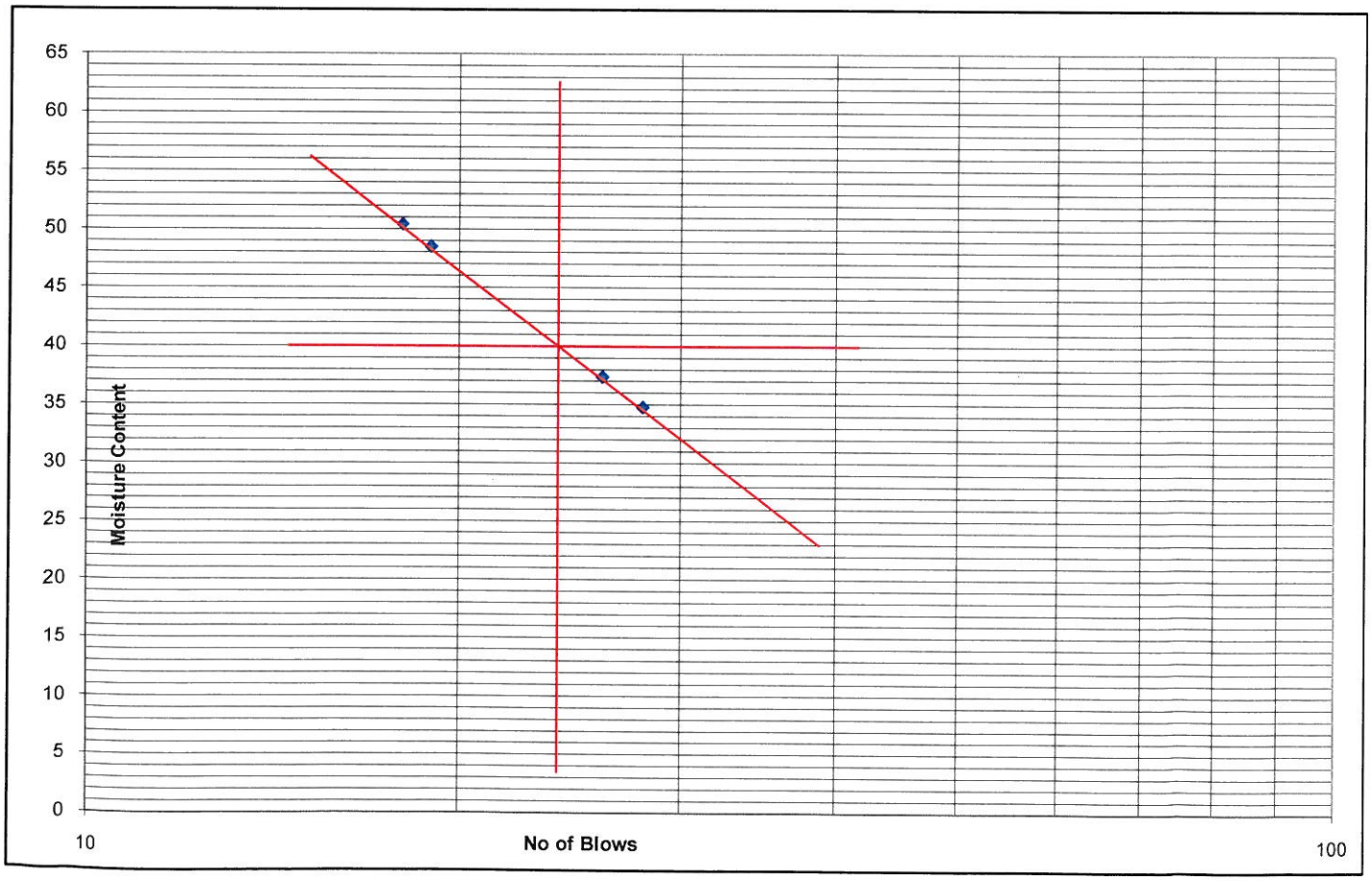
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C7	C8	C9	C10	C11	C12
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42	31.85	36.97
Container + Wt. of wet soil (gm) (W2)	94.46	106.91	111.15	112.83	91.25	89.16
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.49	87.96	85.69	86.90	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.96	18.95	25.46	25.93	9.62	8.49
Wt. of oven dry soil (gm) (W3-W1)	45.91	50.75	52.55	51.48	49.78	43.70
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.77**	**37.35**	**48.45**	**50.37**	**19.33**	**19.42**

Result Summary

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



4407

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

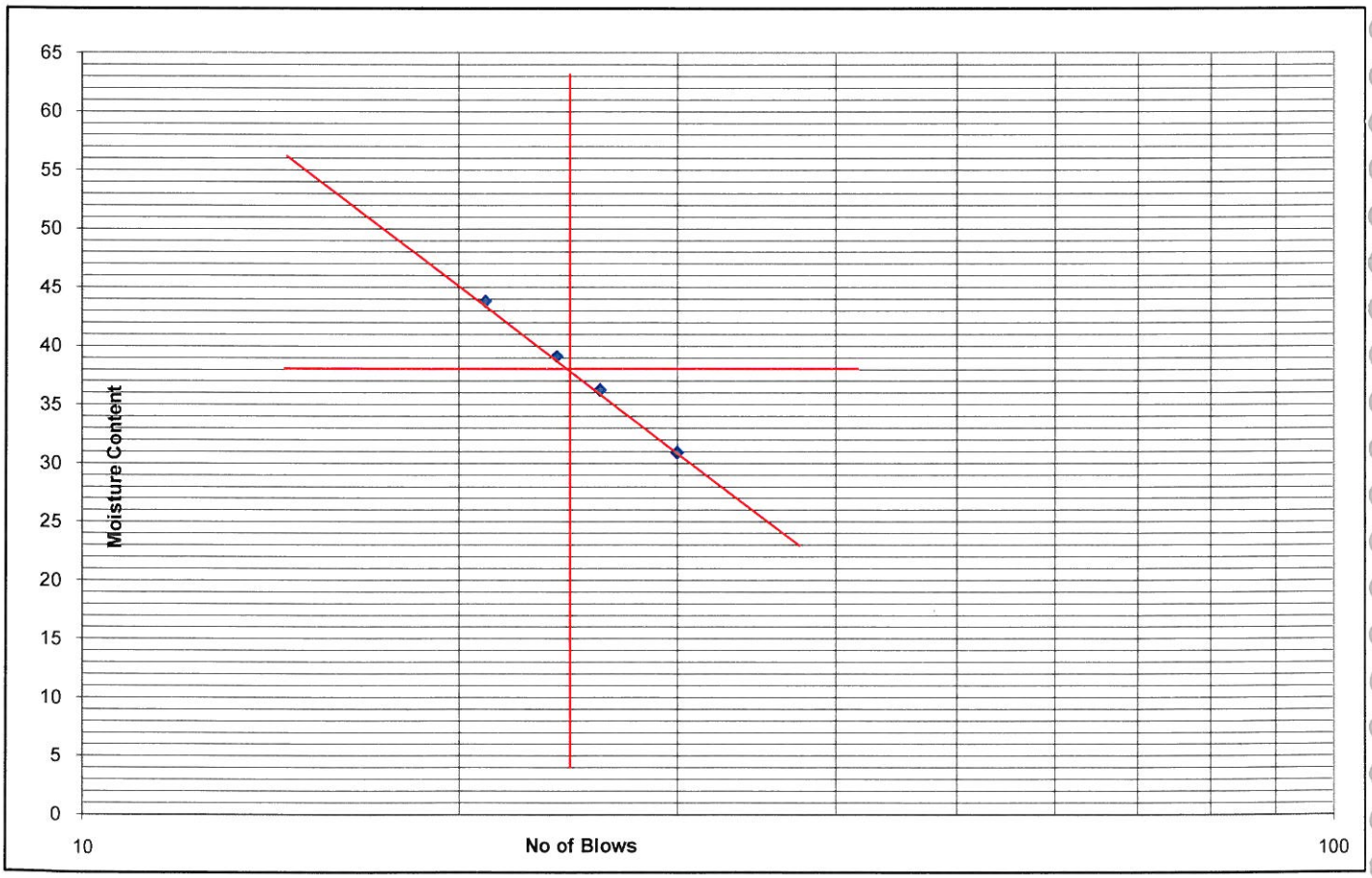
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	19.5m	Tested by	:	K.C.Sahoo

Number of Blows	30	26	24	21	Plastic Limit	
Container No.	C13	C14	C15	C16	C17	C18
Container Weight (gm) (W1)	30.44	36.34	37.83	32.28	30.76	32.24
Container + Wt. of wet soil (gm) (W2)	93.24	106.41	104.51	111.22	90.90	89.52
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.41	87.77	85.76	87.16	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.83	18.64	18.75	24.05	9.27	8.85
Wt. of oven dry soil (gm) (W3-W1)	47.97	51.43	47.93	54.88	50.87	48.43
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**30.91**	**36.24**	**39.13**	**43.82**	**18.22**	**18.27**

Result Summary

Liquid Limit (WL)	38	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	20	%



4408

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

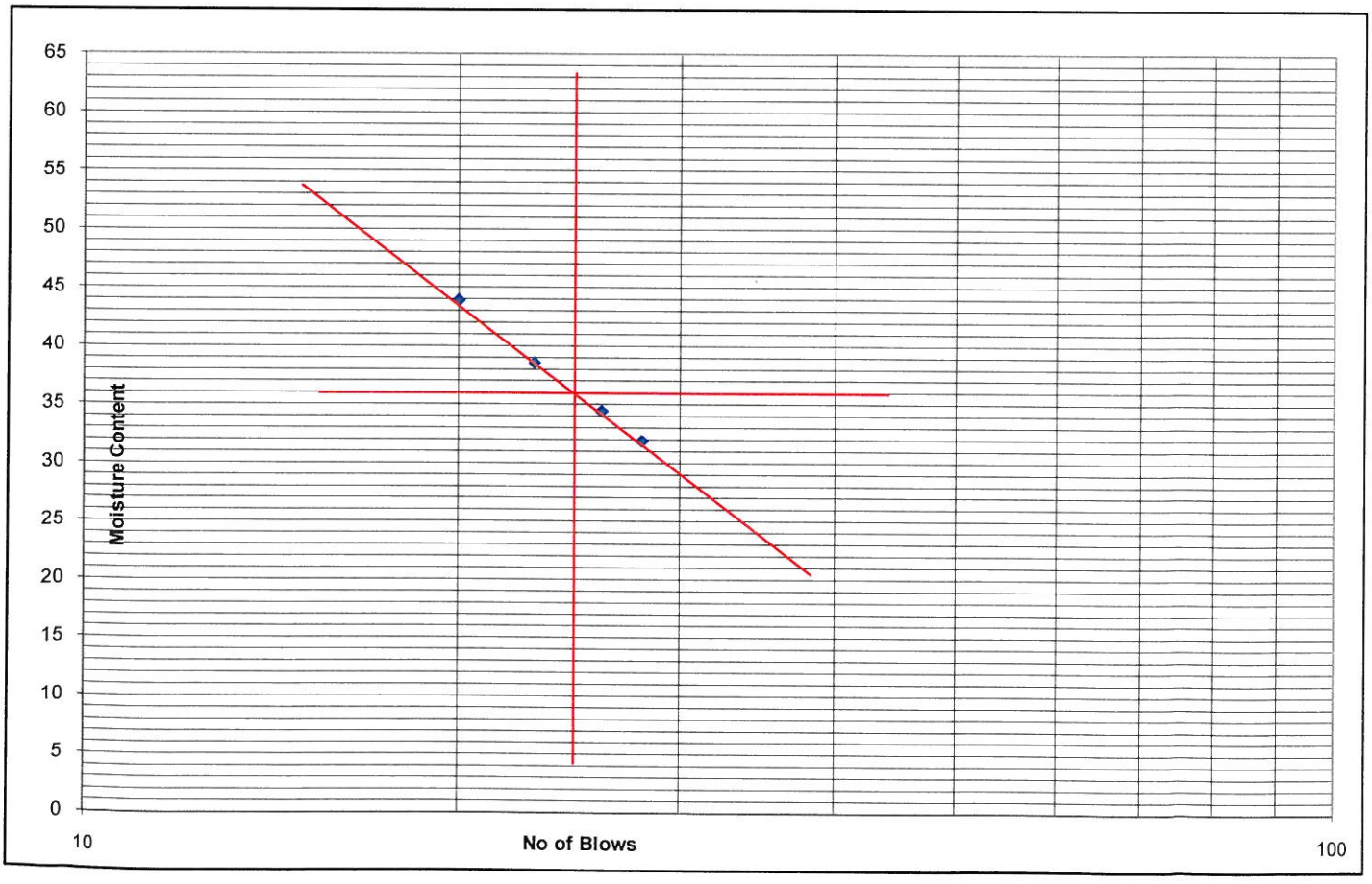
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	24.0m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	23	20	Plastic Limit	
Container No.	C19	C20	C21	C22	C23	C24
Container Weight (gm) (W1)	30.48	35.24	37.88	34.61	35.8	32.51
Container + Wt. of wet soil (gm) (W2)	95.29	106.13	103.97	109.83	90.06	89.52
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.62	87.98	85.58	86.89	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.67	18.15	18.39	22.94	8.43	8.85
Wt. of oven dry soil (gm) (W3-W1)	49.14	52.74	47.70	52.28	45.83	48.16
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.88**	**34.42**	**38.56**	**43.87**	**18.39**	**18.37**

Result Summary

Liquid Limit (WL)	36	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	18	%



4409

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

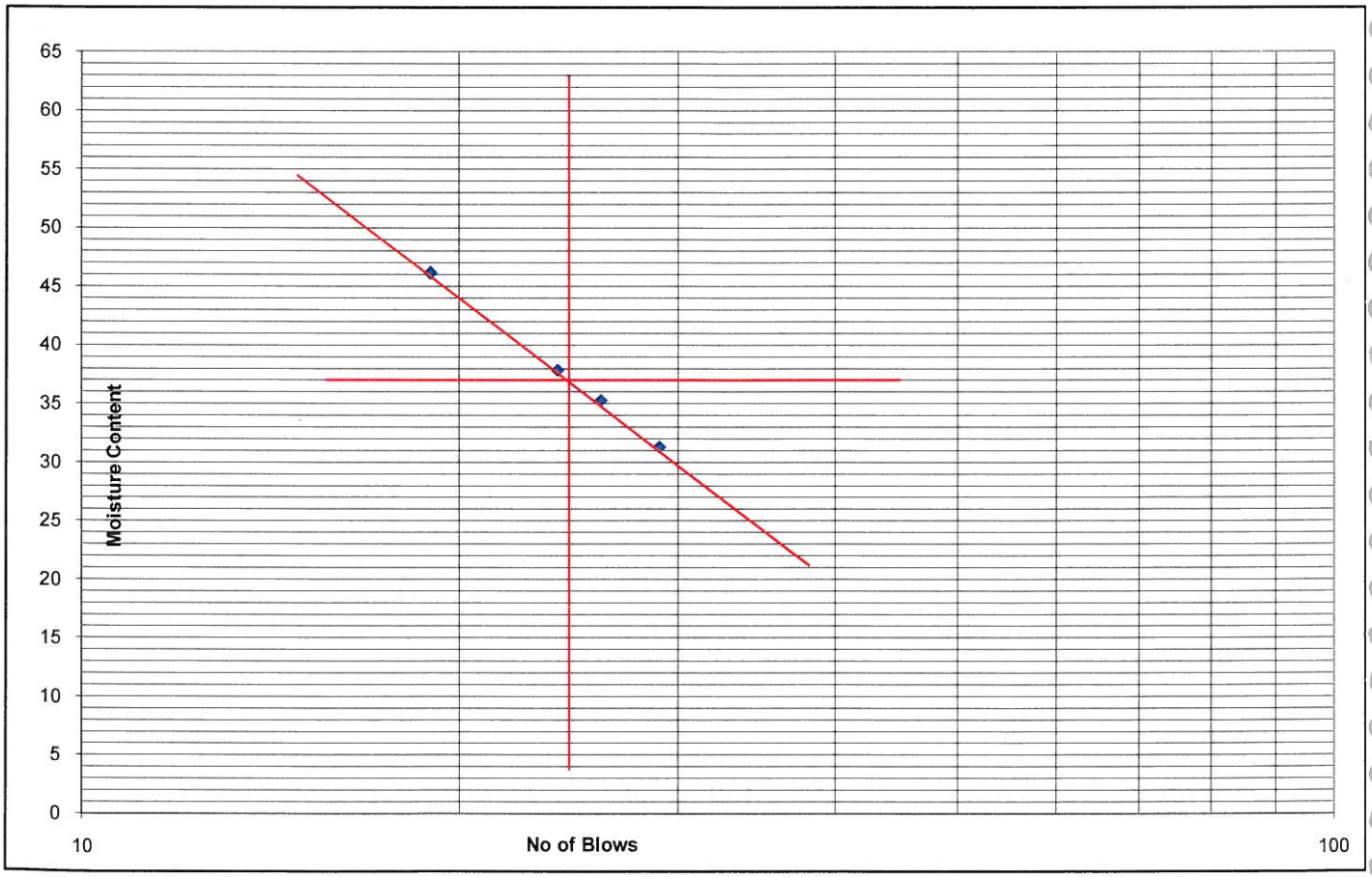
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	25.5m	Tested by	:	K.C.Sahoo

Number of Blows	29	26	24	19	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)	91.77	109.96	106.33	109.14	89.79	89.30
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.43	89.98	85.69	87.13	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.34	19.98	20.64	22.01	8.16	8.62
Wt. of oven dry soil (gm) (W3-W1)	42.60	56.62	54.49	47.71	46.77	49.91
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.31**	**35.28**	**37.87**	**46.13**	**17.45**	**17.28**

Result Summary

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



4410

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

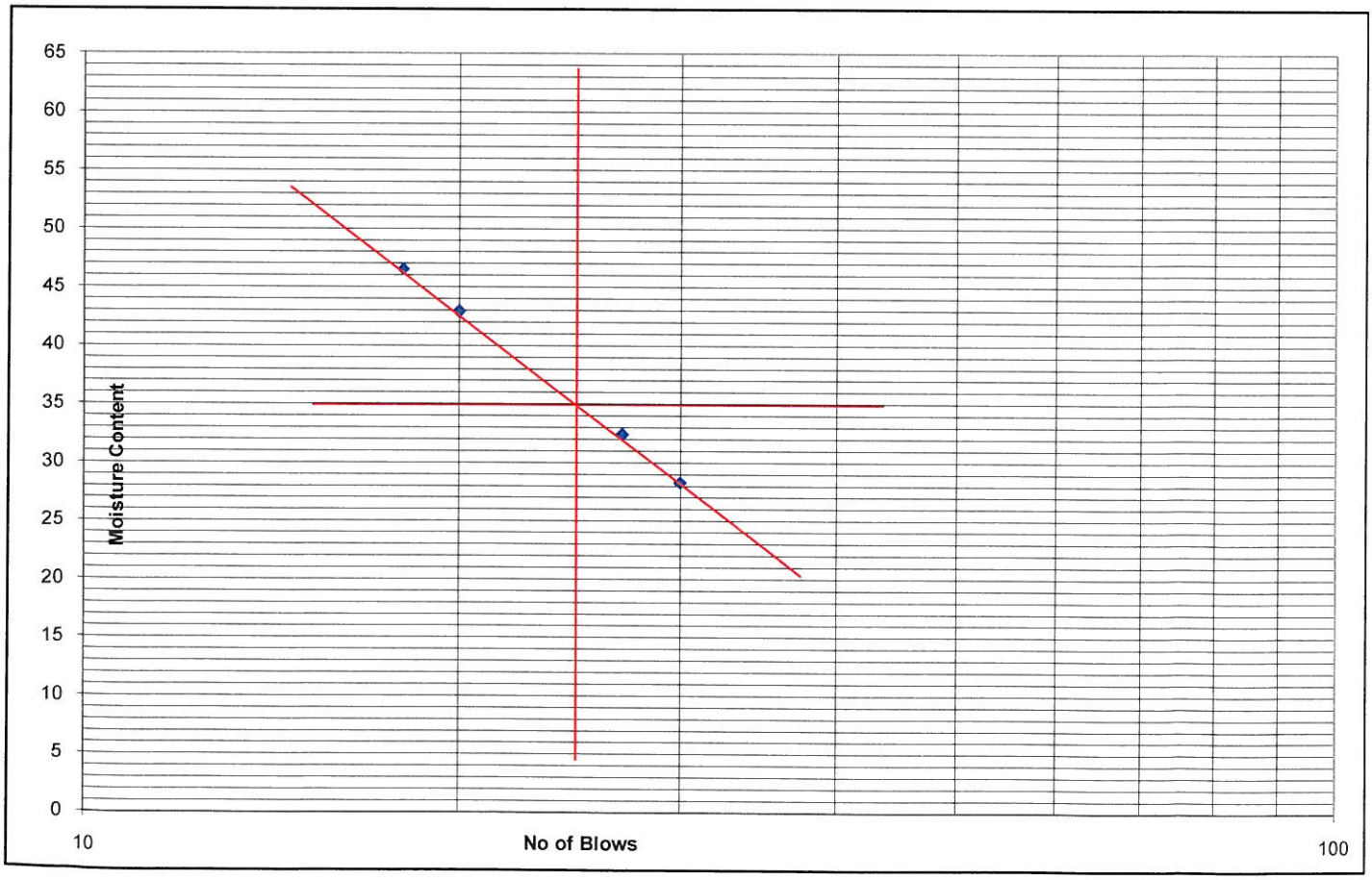
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	27.0m	Tested by	:	K.C.Sahoo

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	C31	C32	C33	C34	C35	C36
Container Weight (gm) (W1)	30.8	38.08	32.47	31.56	37.73	30.99
Container + Wt. of wet soil (gm) (W2)	92.26	104.50	108.53	113.14	89.24	89.34
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.71	88.25	85.69	87.23	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.56	16.25	22.84	25.91	7.61	8.67
Wt. of oven dry soil (gm) (W3-W1)	47.91	50.17	53.22	55.67	43.90	49.68
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**28.30**	**32.40**	**42.91**	**46.54**	**17.33**	**17.45**

Result Summary

Liquid Limit (WL)	35	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	18	%



4411

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

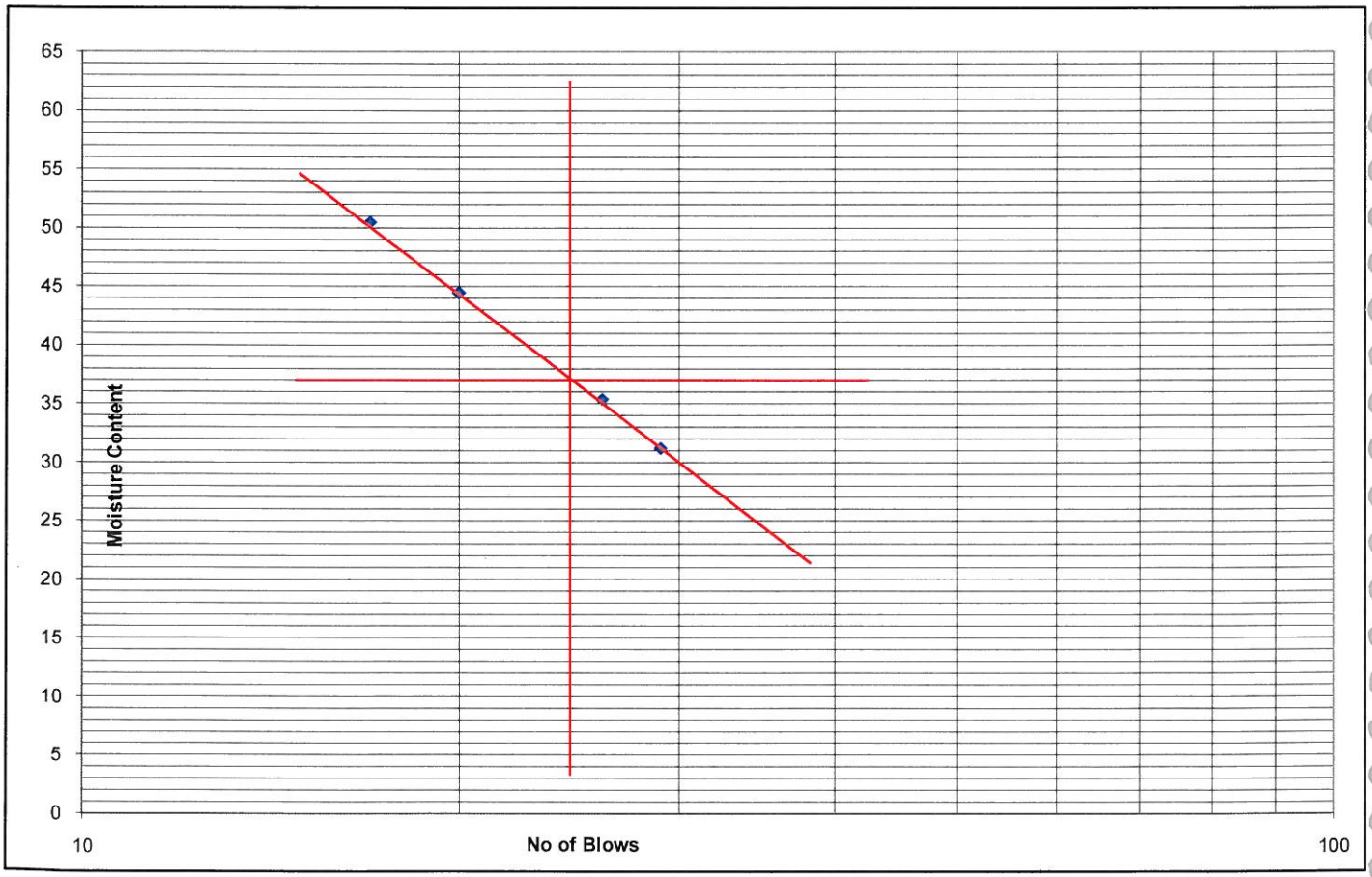
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	28.5m	Tested by	:	K.C.Sahoo

Number of Blows	29	26	20	17	Plastic Limit	
Container No.	C37	C38	C39	C40	C41	C42
Container Weight (gm) (W1)	38.52	37.22	39.43	30.5	37.6	35.55
Container + Wt. of wet soil (gm) (W2)	92.22	105.93	106.17	115.35	89.79	88.87
Wt of Container + Wt. of oven dry soil (gm) (W3)	79.45	87.98	85.63	86.90	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	12.77	17.95	20.54	28.45	8.15	8.19
Wt. of oven dry soil (gm) (W3-W1)	40.93	50.76	46.20	56.40	44.03	45.12
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.20**	**35.37**	**44.46**	**50.44**	**18.52**	**18.16**

Result Summary

Liquid Limit (WL)	37	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	19	%



4412

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

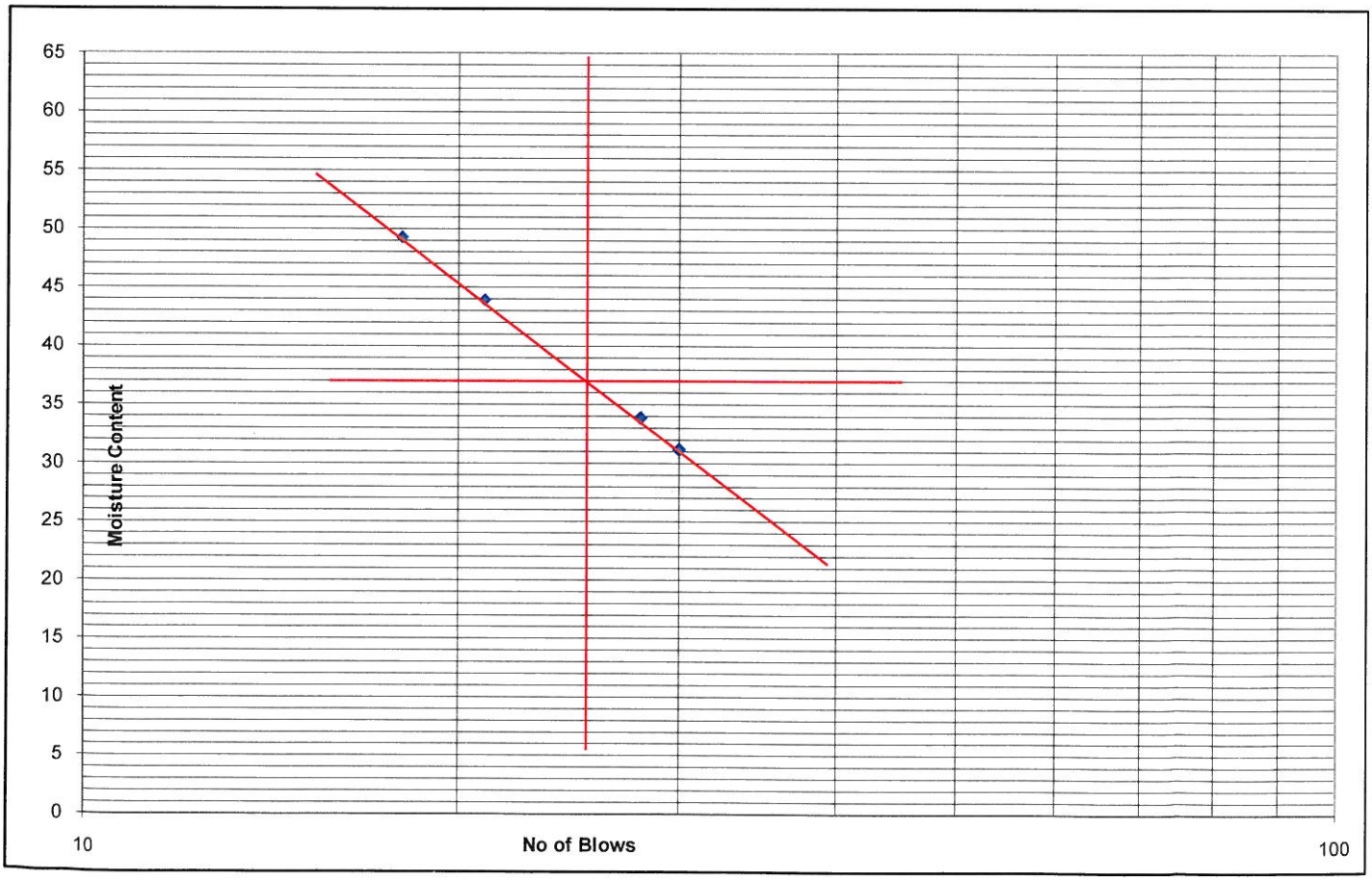
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	30.0m	Tested by	:	K.C.Sahoo

Number of Blows	30	28	21	18	Plastic Limit	
Container No.	C1	C2	C3	C4	C5	C6
Container Weight (gm) (W1)	33.6	34.2	36.7	32.65	31.26	30.12
Container + Wt. of wet soil (gm) (W2)	92.54	106.19	107.22	113.86	91.38	90.50
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.01	18.21	21.53	26.81	9.75	9.83
Wt. of oven dry soil (gm) (W3-W1)	44.93	53.78	48.99	54.40	50.37	50.55
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.18**	**33.86**	**43.95**	**49.28**	**19.35**	**19.45**

Result Summary

Liquid Limit (WL)	37	%
Plastic Limit (Wp)	19	%
Plasticity Index (Ip)	18	%



4413

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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

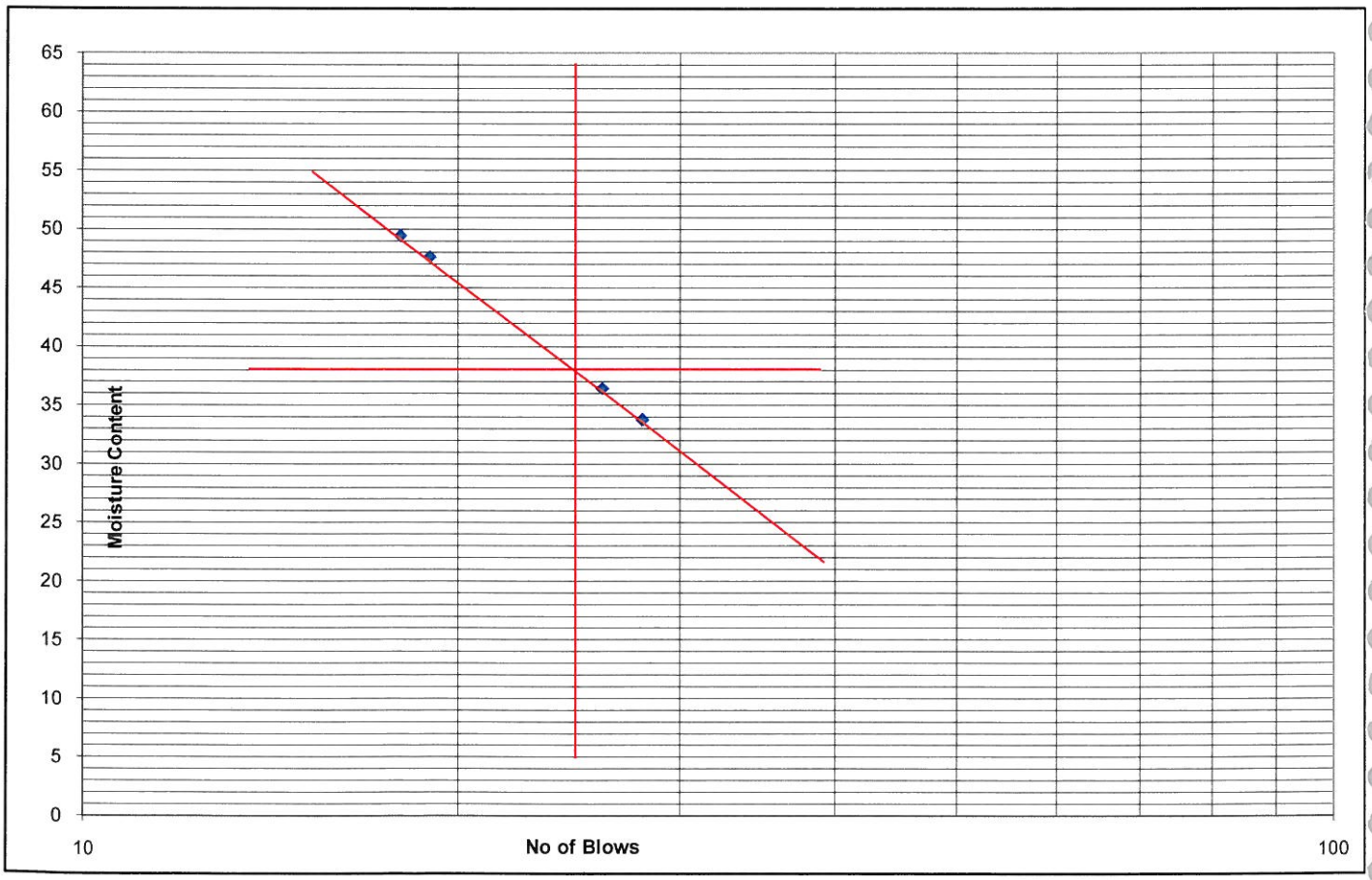
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	31.5m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C7	C8	C9	C10	C11	C12
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42	31.85	36.97
Container + Wt. of wet soil (gm) (W2)	93.97	106.07	110.32	112.80	91.32	89.20
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.47	87.68	85.41	87.21	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.49	18.39	24.90	25.60	9.69	8.53
Wt. of oven dry soil (gm) (W3-W1)	45.89	50.47	52.27	51.79	49.78	43.70
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.76**	**36.44**	**47.64**	**49.43**	**19.46**	**19.51**

Result Summary

Liquid Limit (WL)	38	%
Plastic Limit (Wp)	19	%
Plasticity Index (Ip)	19	%



4414

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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

Location : BH-2(Tangri River-Saharanpur)

Depth : 33.0m

Date Of Testing : 21.09.12

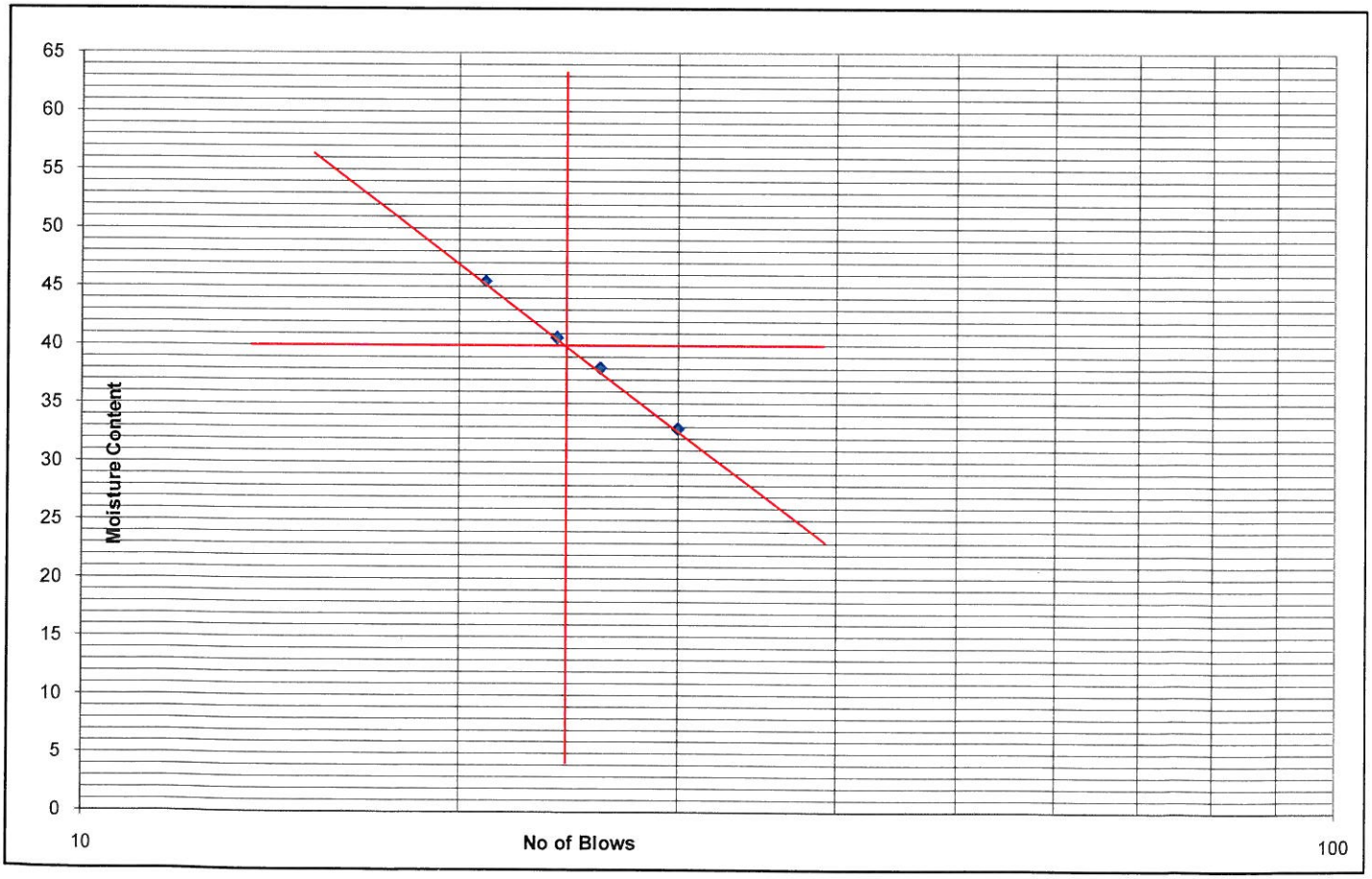
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	30	26	24	21	Plastic Limit	
Container No.	C13	C14	C15	C16	C17	C18
Container Weight (gm) (W1)	30.44	36.34	37.83	32.28	30.76	32.24
Container + Wt. of wet soil (gm) (W2)	94.54	108.31	105.14	111.67	92.13	90.43
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.68	88.48	85.69	86.86	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.86	19.84	19.45	24.82	10.49	9.75
Wt. of oven dry soil (gm) (W3-W1)	48.24	52.14	47.86	54.58	50.87	48.43
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.87**	**38.05**	**40.64**	**45.47**	**20.63**	**20.14**

Result Summary

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



4415

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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

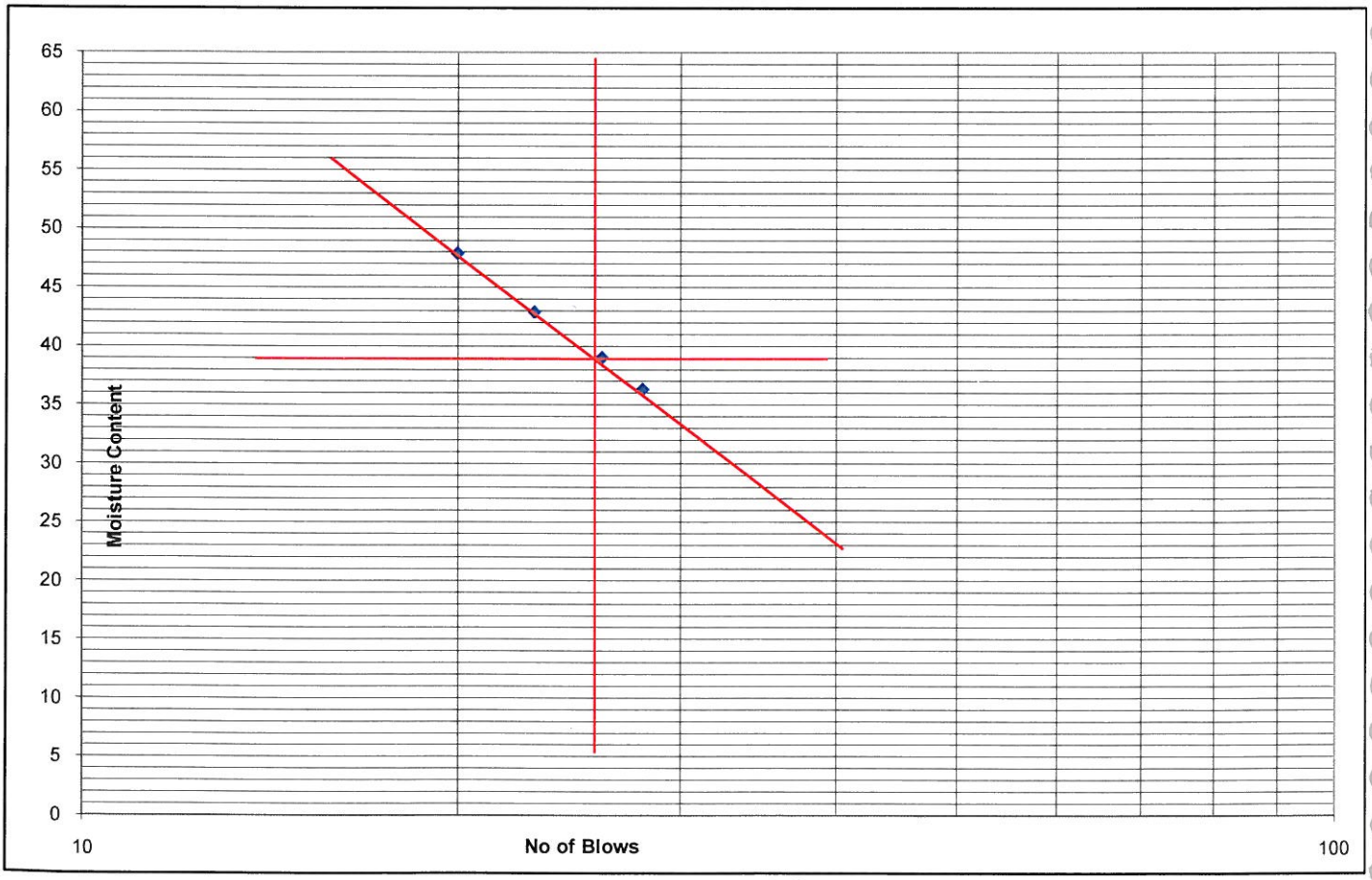
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	21.09.12
Location	:	BH-2(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	34.5m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	23	20	Plastic Limit	
Container No.	C19	C20	C21	C22	C23	C24
Container Weight (gm) (W1)	30.48	35.24	37.88	34.61	35.8	32.51
Container + Wt. of wet soil (gm) (W2)	95.98	108.55	106.18	112.16	90.99	90.49
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05	81.63	80.67
Wt. Of water (gm) (W2-W1)-(W3-W1)	17.45	20.57	20.49	25.11	9.35	9.82
Wt. of oven dry soil (gm) (W3-W1)	48.05	52.74	47.81	52.44	45.83	48.16
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**36.31**	**39.00**	**42.86**	**47.89**	**20.41**	**20.39**

Result Summary

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



4416