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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	18.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.16

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	0.56	0.56	0.56	99.44
0.425	0.42	0.42	0.98	99.02
0.075	0.18	0.18	1.16	98.84
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.16 **Silt and clay %** 98.84

Remarks :-

3969

Lab Manager

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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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	19.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.43

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	0.70	0.70	0.70	99.30
0.425	0.51	0.51	1.21	98.79
0.075	0.22	0.22	1.43	98.57
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.43 **Silt and clay %** 98.57

Remarks :-

3970

Lab Manager Checked By

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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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	21.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.67

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	0.79	0.79	0.79	99.21
0.425	0.62	0.62	1.41	98.59
0.075	0.26	0.26	1.67	98.33
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.67 **Silt and clay %** 98.33

Remarks :-

3971

Lab Manager

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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	:	UDS	Date of Testing	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	22.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.25

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	0.47	0.47	1.06	98.94
0.075	0.19	0.19	1.25	98.75
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.25 **Silt and clay %** 98.75

Remarks :-

3972

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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	:	UDS	Date of Testing	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	25.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.38

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	0.61	0.61	0.61	99.39
0.425	0.55	0.55	1.16	98.84
0.075	0.22	0.22	1.38	98.62
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.38 **Silt and clay %** 98.62

Remarks :-

3973

Lab Manager Checked By

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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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	27.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.68

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	0.79	0.79	0.79	99.21
0.425	0.67	0.67	1.46	98.54
0.075	0.23	0.23	1.69	98.31
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.69 **Silt and clay %** 98.31

Remarks :-

3971

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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	:	10.10.12
Location	:	BH-6(Markanda 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) :- 1.50

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	0.69	0.69	0.69	99.31
0.425	0.60	0.60	1.29	98.71
0.075	0.21	0.21	1.50	98.50
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.50 **Silt and clay %** 98.50

Remarks :-

3973

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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	:	10.10.12
Location	:	BH-6(Markanda 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) :- 14.96

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	6.91	6.91	6.91	93.09
0.425	5.85	5.85	12.76	87.24
0.075	2.20	2.20	14.96	85.04
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 14.96 **Silt and clay %** 85.04

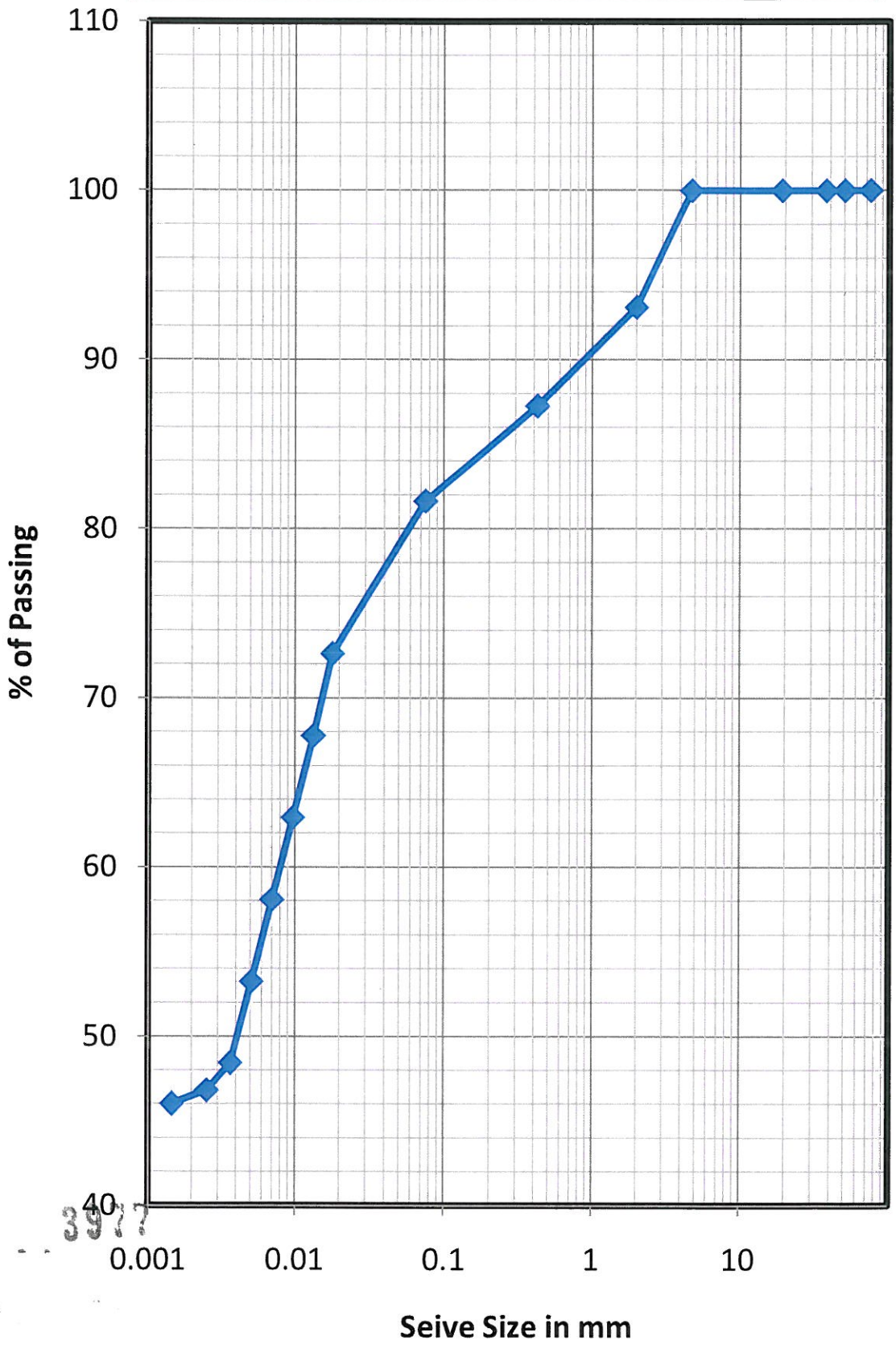
Remarks :-

3976

Lab Manager

Checked By

Grain Size Distribution Curve
BH-6,D-34.5m



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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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	39.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 16.51

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	7.57	7.57	7.57	92.43
0.425	6.07	6.07	13.64	86.36
0.075	2.88	2.88	16.52	83.48
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 16.52 **Silt and clay %** 83.48

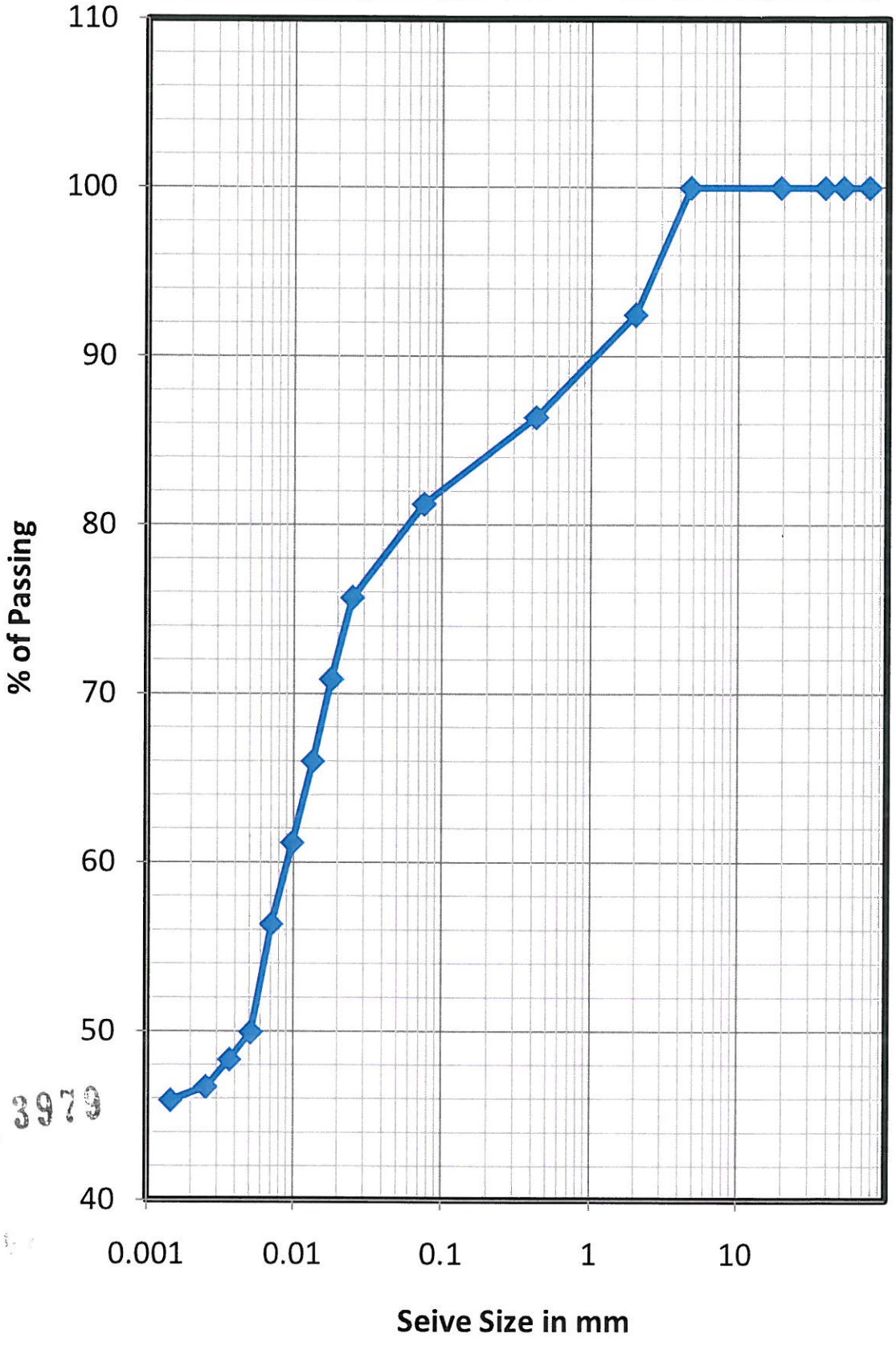
Remarks :-

3978

Lab Manager

Checked By

Grain Size Distribution Curve
BH-6,D-39.0m



3979

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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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	42.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 14.87

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	6.37	6.37	6.37	93.63
0.425	5.93	5.93	12.30	87.70
0.075	2.57	2.57	14.87	85.13
Total	100.00			

Gravel Content (%)= **0.00**

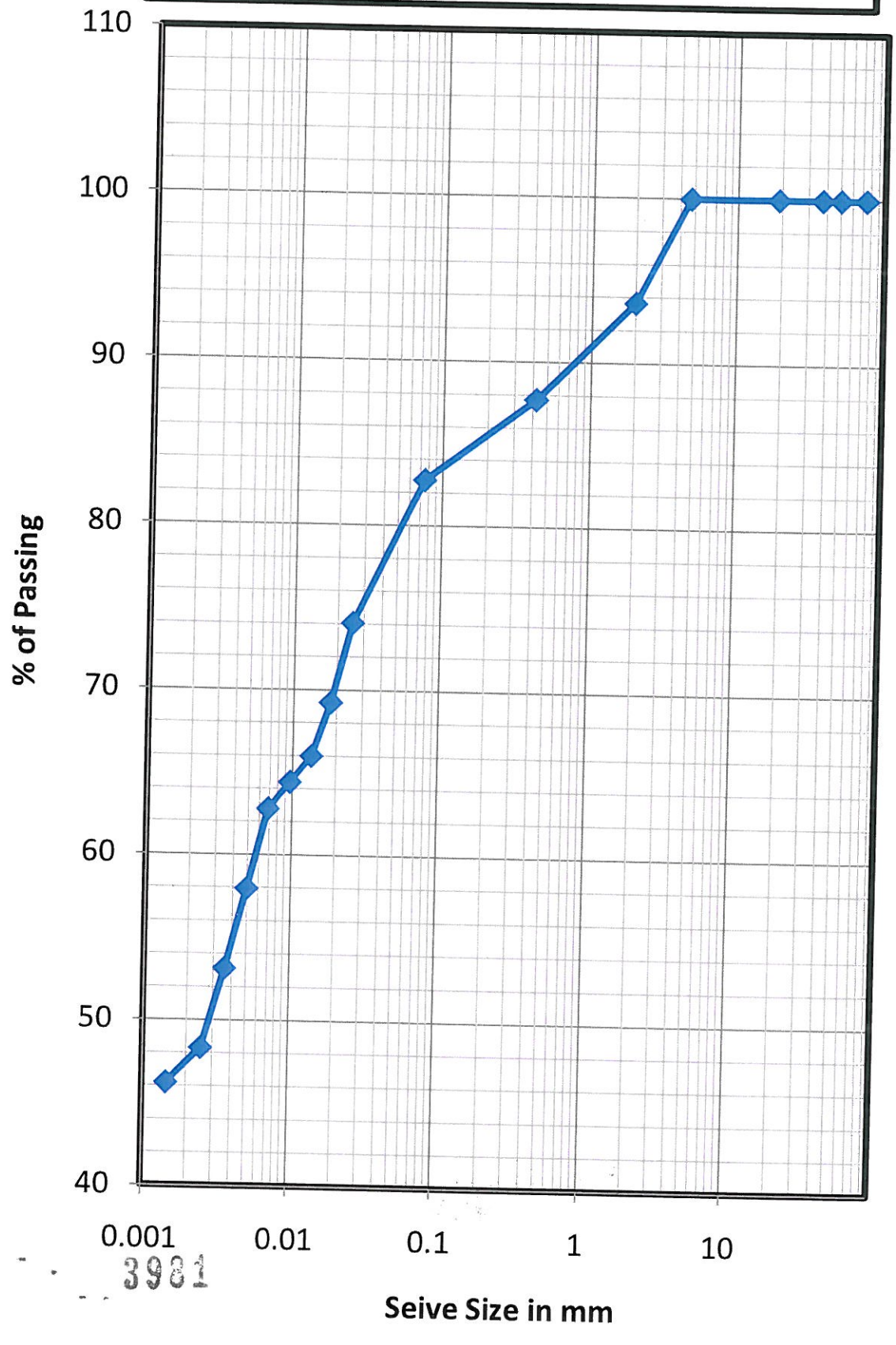
Sand Content (%) = 14.87 **Silt and clay %** 85.13

Remarks :-

3980

Lab Manager Checked By

Grain Size Distribution Curve
BH-6,D-42.0m



3981

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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	:	10.10.12
Location	:	BH-6(Markanda 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) :- 17.29

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	7.43	7.43	7.43	92.57
0.425	6.58	6.58	14.01	85.99
0.075	3.28	3.28	17.29	82.71
Total	100.00			

Gravel Content (%)= **0.00**

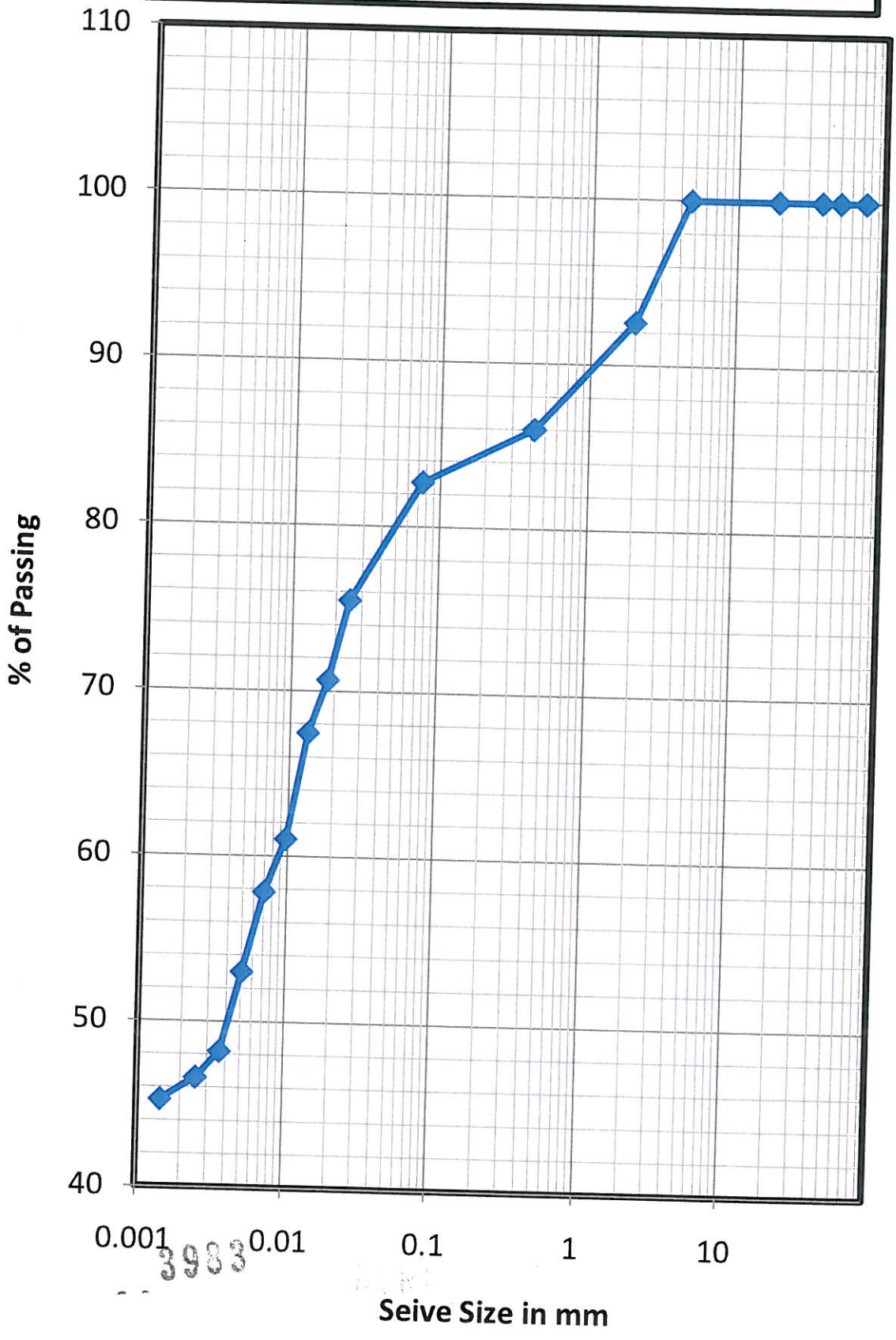
Sand Content (%) = 17.29 **Silt and clay %** 82.71

Remarks :-

3982

Lab Manager Checked By

Grain Size Distribution Curve
BH-6,D-45.0m



3983

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ARKITECHNO

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	:	10.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	48.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 15.64

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	7.13	7.13	7.13	92.87
0.425	5.63	5.63	12.76	87.24
0.075	2.88	2.88	15.64	84.36
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 15.64 **Silt and clay %** 84.36

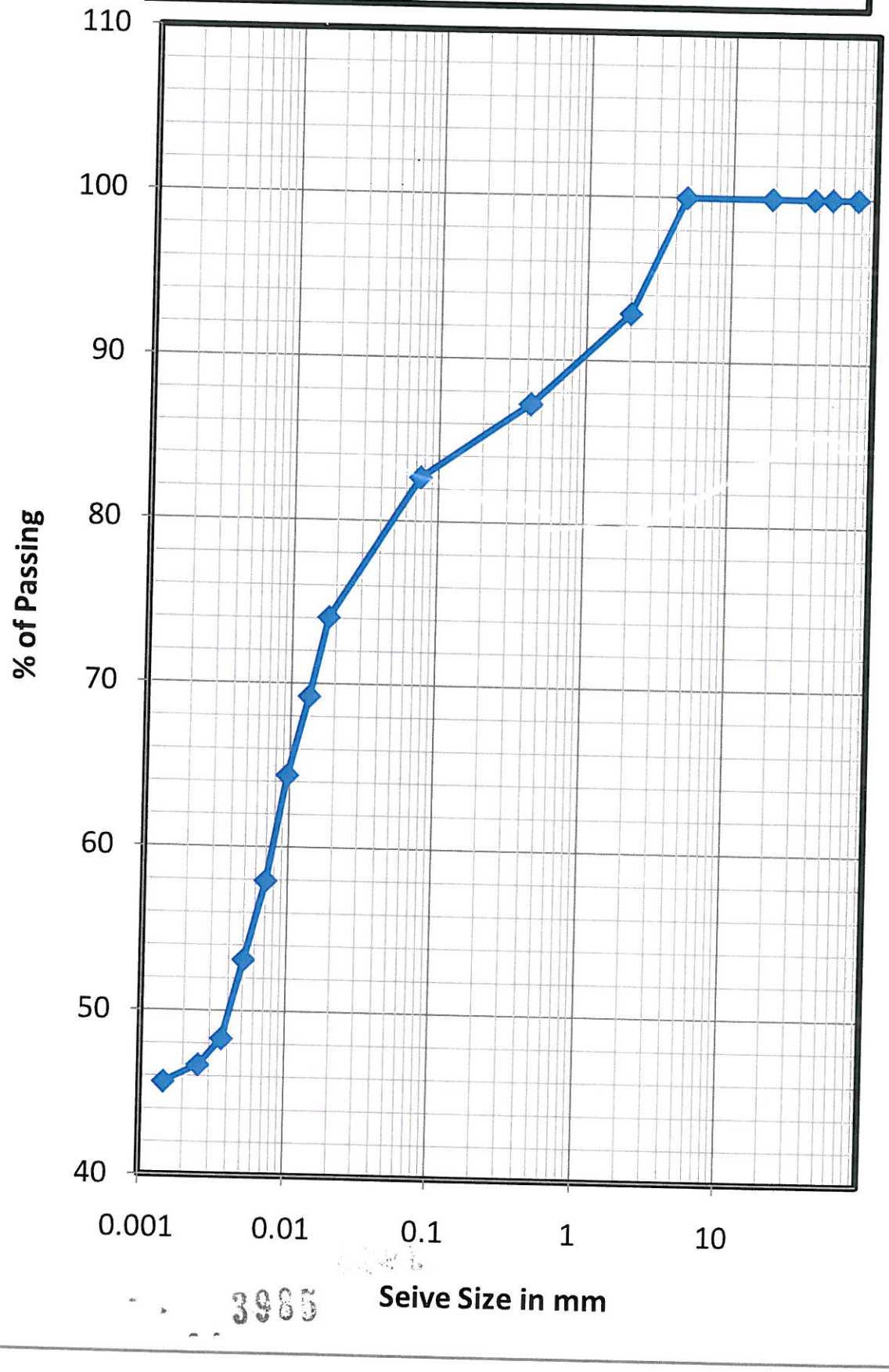
Remarks :-

3984

Lab Manager

Checked By

Grain Size Distribution Curve
BH-6,D-48.0m



3985

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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	:	10.10.12
Location	:	BH-6(Markanda 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) :- 16.48

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	7.51	7.51	7.51	92.49
0.425	6.82	6.82	14.33	85.67
0.075	2.15	2.15	16.48	83.52
Total	100.00			

Gravel Content (%)= **0.00**

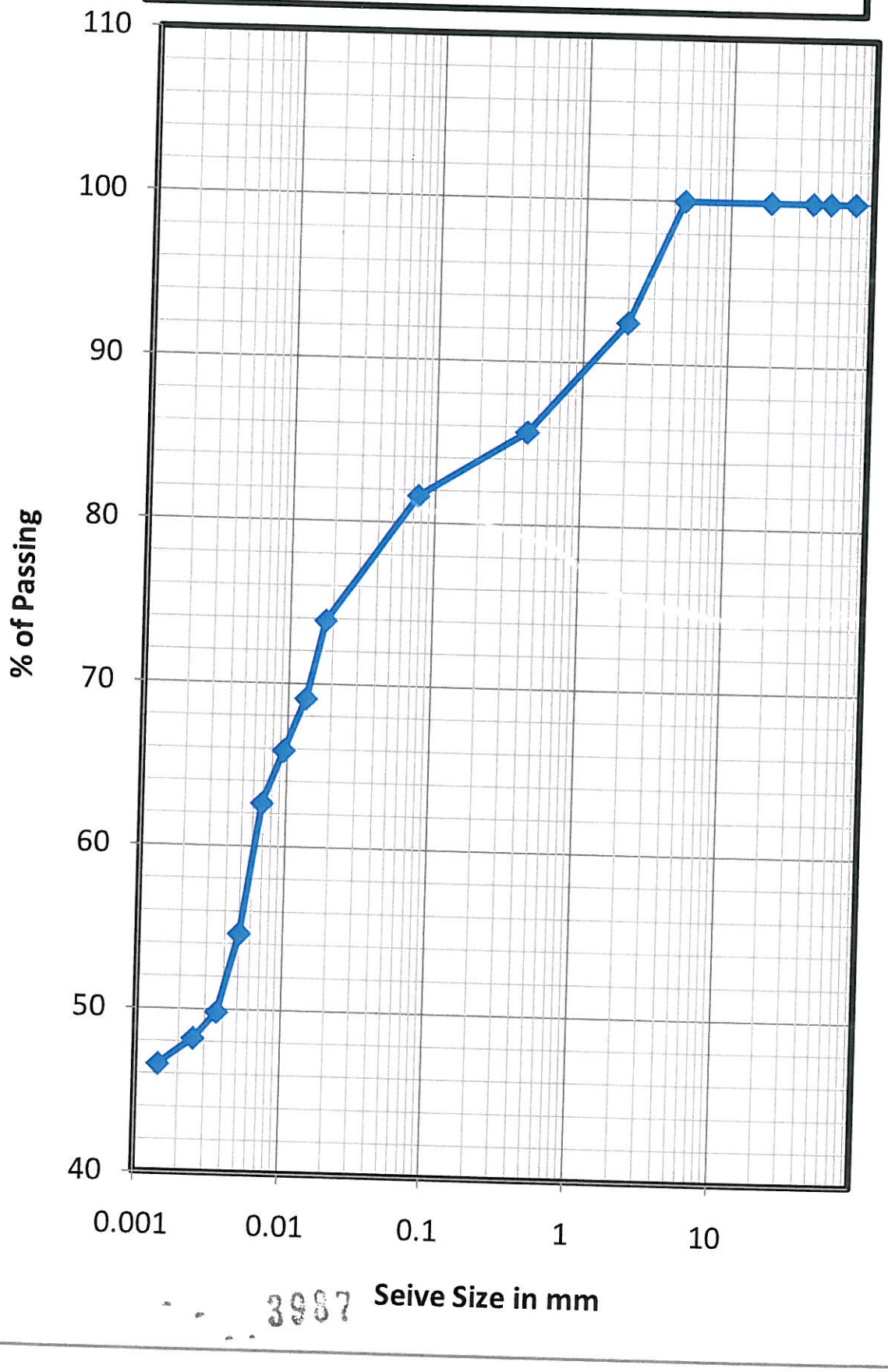
Sand Content (%) = 16.48 **Silt and clay %** 83.52

Remarks :-

3986

Lab Manager Checked By

Grain Size Distribution Curve
BH-6,D-50.0m



3987

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 10.5m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.72
(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	

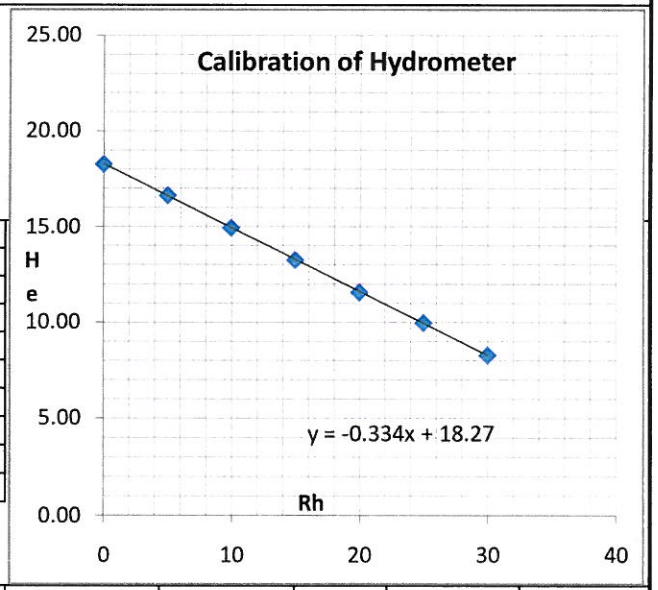
Rh = hydrometer Reading

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	28.73	29	-2.0	8.67	29.23	0.538	0.000008341	0.012277647	0.00660190	26.73	3.246	86.78	85.66
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012277647	0.00468887	26.50	3.246	86.03	84.93
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012277647	0.00334702	26.00	3.246	84.41	83.33
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012277647	0.00238876	25.50	3.246	82.78	81.72
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012277647	0.00170456	25.00	3.246	81.16	80.12
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012277647	0.00125602	24.50	3.246	79.54	78.52
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012277647	0.00089598	24.00	3.246	77.91	76.92
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012277647	0.00063905	23.50	3.246	76.29	75.31
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012277647	0.00045573	23.00	3.246	74.67	73.71
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012277647	0.00032495	22.50	3.246	73.04	72.11
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011888750	0.00022433	22.00	3.246	71.42	70.51
	1440	23.40	32	-2.0	10.45	23.90	0.011	0.000007821	0.011888750	0.000130778	21.40	3.246	69.47	68.58

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 12.0m

Date of Testing : 11.10.12

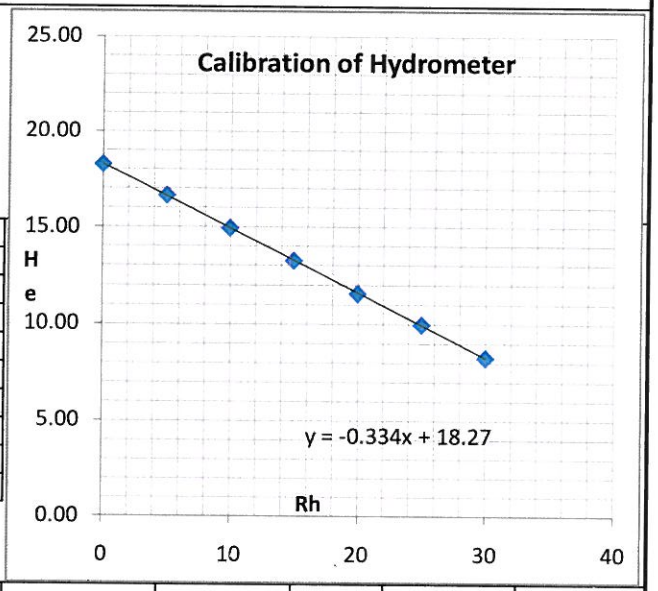
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.54
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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

CALIBRATION OF HYDROMETER

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.31	29	-2.0	8.48	29.81	0.532	0.000008341	0.012240833	0.00650819	27.31	3.245	88.62	87.33
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.245	87.61	86.34
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012240833	0.00330559	26.50	3.245	85.99	84.74
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012240833	0.00235960	26.00	3.245	84.37	83.14
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012240833	0.00168404	25.50	3.245	82.75	81.54
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012240833	0.00124110	25.00	3.245	81.12	79.94
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012240833	0.00088548	24.50	3.245	79.50	78.34
	60	26.00	29	-2.0	9.59	26.50	0.052	0.000008341	0.012240833	0.00063165	24.00	3.245	77.88	76.74
	120	25.50	29	-2.0	9.75	26.00	0.037	0.000008341	0.012240833	0.00045052	23.50	3.245	76.26	75.14
	240	25.00	29	-2.0	9.92	25.50	0.026	0.000008341	0.012240833	0.00032128	23.00	3.245	74.63	73.54
	480	24.50	32	-2.0	10.09	25.00	0.019	0.000007821	0.011853101	0.00022183	22.50	3.245	73.01	71.95
	1440	23.96	32	-2.0	10.27	24.46	0.011	0.000007821	0.011853101	0.000129206	21.96	3.245	71.27	70.23

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

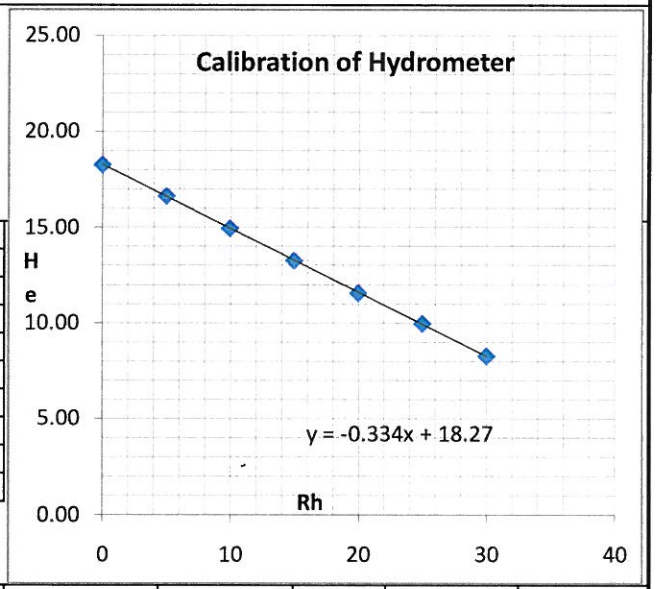
Location : BH-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 13.5m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		98.25
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.66
(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	29.07	29	-2.0	8.56	29.57	0.534	0.000008341	0.012277647	0.00655854	27.07	3.262	88.30	86.75
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012277647	0.00468887	26.50	3.262	86.44	84.93
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012277647	0.00334702	26.00	3.262	84.81	83.33
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012277647	0.00238876	25.50	3.262	83.18	81.72
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012277647	0.00170456	25.00	3.262	81.55	80.12
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012277647	0.00125602	24.50	3.262	79.92	78.52
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012277647	0.00089598	24.00	3.262	78.29	76.92
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012277647	0.00063905	23.50	3.262	76.65	75.31
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012277647	0.00045573	23.00	3.262	75.02	73.71
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012277647	0.00032495	22.50	3.262	73.39	72.11
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011888750	0.00022433	22.00	3.262	71.76	70.51
	1440	23.86	32	-2.0	10.30	24.36	0.011	0.000007821	0.011888750	0.000129817	21.86	3.262	71.30	70.05

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 16.5m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.18
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

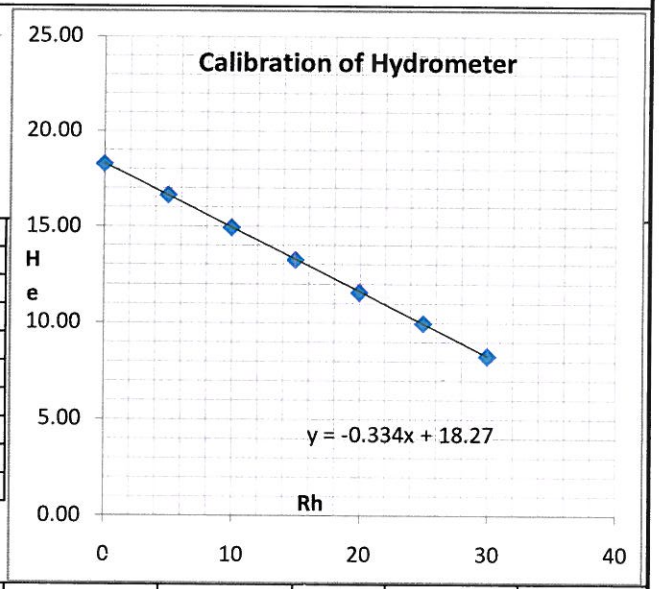
Rh = hydrometer Reading

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	29.63	29	-2.0	8.37	30.13	0.528	0.000008341	0.012240833	0.00646705	27.63	3.257	89.99	88.35
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.257	89.56	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.257	89.56	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.257	87.94	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.257	87.94	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.257	87.94	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.257	86.31	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.257	86.31	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.257	86.31	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.257	84.68	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.257	84.68	83.14
	1440	27.82	32	-2.0	8.98	28.32	0.010	0.000007821	0.011853101	0.000120823	25.82	3.257	84.10	82.57

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 18.0m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.84
(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	

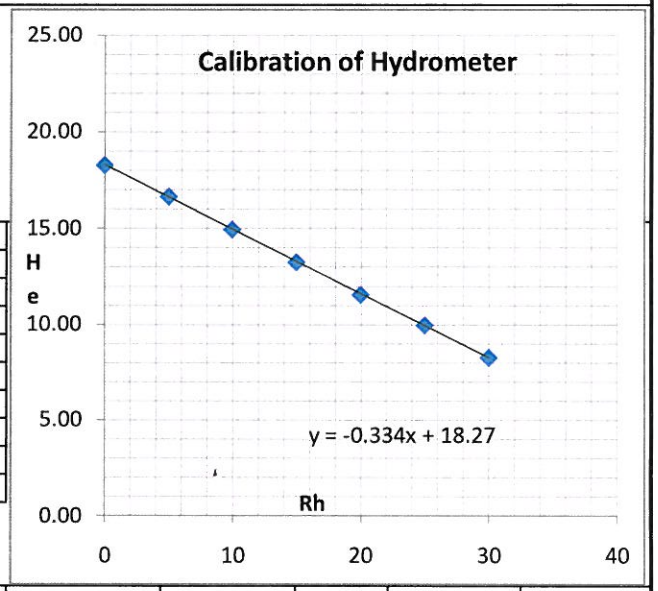
CALIBRATION OF HYDROMETER

(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	29.49	29	-2.0	8.42	29.99	0.530	0.000008341	0.012240833	0.00648508	27.49	3.235	88.93	87.90
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.235	87.35	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.235	87.35	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.235	85.73	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.235	85.73	84.74
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.235	85.73	84.74
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.235	84.11	83.14
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.235	84.11	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.235	84.11	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.235	82.50	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.235	82.50	81.54
	1440	27.19	32	-2.0	9.19	27.69	0.010	0.000007821	0.011853101	0.000122234	25.19	3.235	81.50	80.55

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 19.5m

Date of Testing : 11.10.12

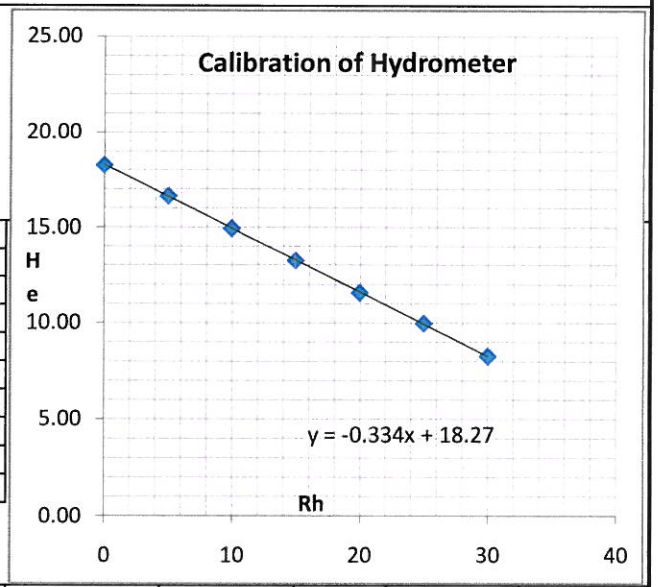
Tested by : K.C.Sahoo

(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		2.68
(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	29.19	29	-2.0	8.52	29.69	0.533	0.000008341	0.012204347	0.00650410	27.19	3.237	88.01	86.75
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.237	87.39	86.14
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.237	87.39	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.237	85.77	84.55
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012204347	0.00164787	26.50	3.237	85.77	84.55
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012204347	0.00120343	26.50	3.237	85.77	84.55
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012204347	0.00085904	26.00	3.237	84.16	82.95
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012204347	0.00060743	26.00	3.237	84.16	82.95
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012204347	0.00042952	26.00	3.237	84.16	82.95
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012204347	0.00030655	25.50	3.237	82.54	81.36
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011817771	0.00020989	25.50	3.237	82.54	81.36
	1440	27.39	32	-2.0	9.12	27.89	0.010	0.000007821	0.011817771	0.000121432	25.39	3.237	82.18	81.00

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 21.0m

Date of Testing : 11.10.12

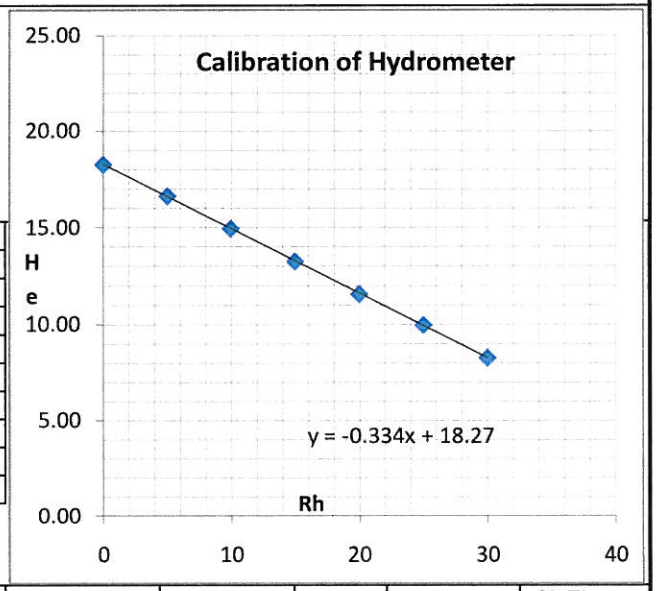
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.33
(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	

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	29.65	29	-2.0	8.37	30.15	0.528	0.000008341	0.012240833	0.00646447	27.65	3.252	89.92	88.41
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.252	89.43	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.252	89.43	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.252	87.80	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.252	87.80	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.252	87.80	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.252	86.18	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.252	86.18	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.252	86.18	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.252	84.55	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.252	84.55	83.14
	1440	27.77	32	-2.0	8.99	28.27	0.010	0.000007821	0.011853101	0.000120935	25.77	3.252	83.81	82.41

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

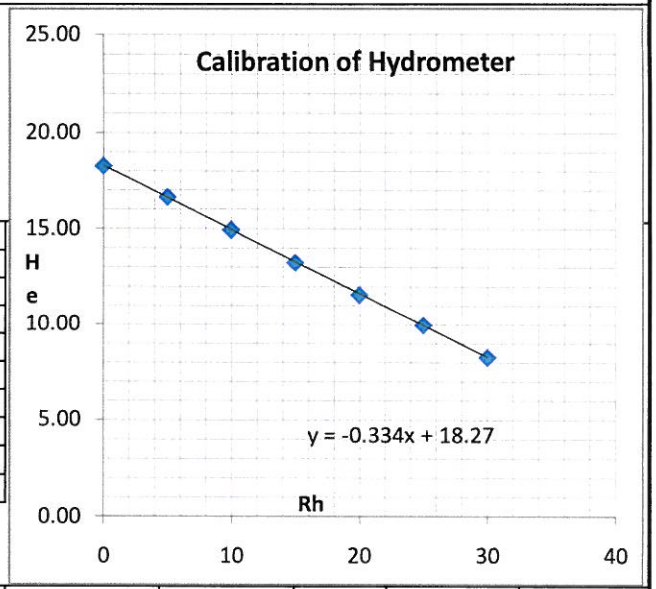
Location : BH-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 22.5m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		98.75
(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		2.68
(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	29.74	29	-2.0	8.34	30.24	0.527	0.000008341	0.012204347	0.00643361	27.74	3.231	89.62	88.50
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.231	88.85	87.74
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012204347	0.00323223	27.50	3.231	88.85	87.74
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012204347	0.00230810	27.00	3.231	87.23	86.14
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012204347	0.00163207	27.00	3.231	87.23	86.14
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012204347	0.00119190	27.00	3.231	87.23	86.14
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012204347	0.00085096	26.50	3.231	85.62	84.55
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012204347	0.00060172	26.50	3.231	85.62	84.55
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012204347	0.00042548	26.50	3.231	85.62	84.55
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012204347	0.00030372	26.00	3.231	84.00	82.95
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011817771	0.00020796	26.00	3.231	84.00	82.95
	1440	27.81	32	-2.0	8.98	28.31	0.010	0.000007821	0.011817771	0.000120481	25.81	3.231	83.40	82.36

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 : UDS

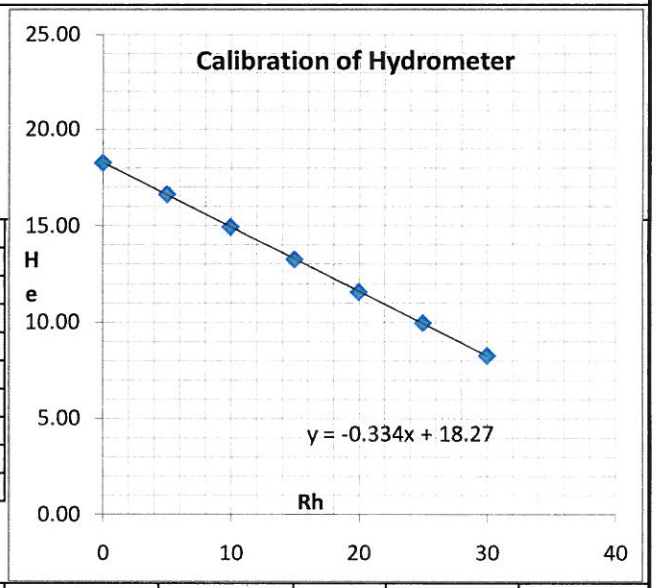
Location : BH-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 25.5m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		98.62
(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	29.30	29	-2.0	8.48	29.80	0.532	0.000008341	0.012240833	0.00650947	27.30	3.242	88.52	87.29
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012240833	0.00462999	27.00	3.242	87.54	86.34
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012240833	0.00327390	27.00	3.242	87.54	86.34
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012240833	0.00233741	26.50	3.242	85.92	84.74
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012240833	0.00165280	26.50	3.242	85.92	84.74
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012240833	0.00121849	26.00	3.242	84.30	83.14
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012240833	0.00086161	26.00	3.242	84.30	83.14
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012240833	0.00061493	25.50	3.242	82.68	81.54
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012240833	0.00043482	25.50	3.242	82.68	81.54
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012240833	0.00031028	25.00	3.242	81.06	79.94
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007821	0.011853101	0.00021245	25.00	3.242	81.06	79.94
	1440	26.90	32	-2.0	9.29	27.40	0.010	0.000007821	0.011853101	0.000122886	24.90	3.242	80.72	79.61

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 27.0m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.31
(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	

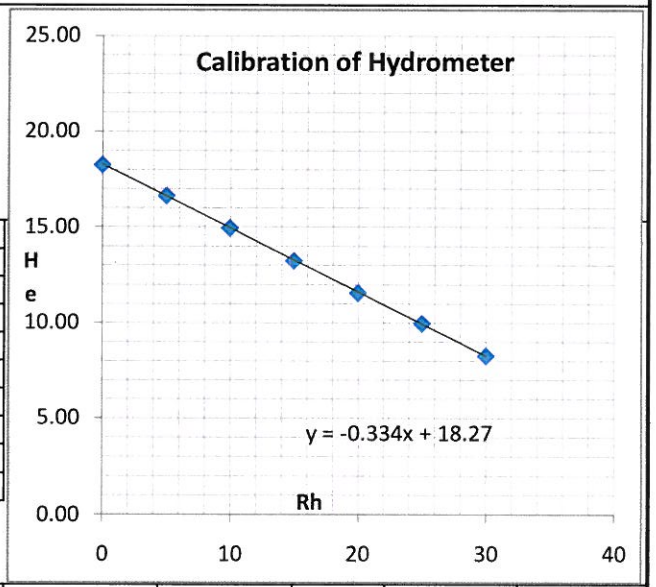
CALIBRATION OF HYDROMETER

(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	29.17	29	-2.0	8.53	29.67	0.533	0.000008341	0.012277647	0.00654573	27.17	3.260	88.57	87.07
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012277647	0.00464392	27.00	3.260	88.02	86.53
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012277647	0.00328374	27.00	3.260	88.02	86.53
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012277647	0.00234444	26.50	3.260	86.39	84.93
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012277647	0.00165777	26.50	3.260	86.39	84.93
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.260	86.39	84.93
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012277647	0.00086420	26.00	3.260	84.76	83.33
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.260	84.76	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.260	84.76	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.260	83.13	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.260	83.13	81.72
	1440	27.28	32	-2.0	9.16	27.78	0.010	0.000007821	0.011888750	0.000122394	25.28	3.260	82.42	81.03

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 30.0m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		98.50
(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)		49.3
(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	

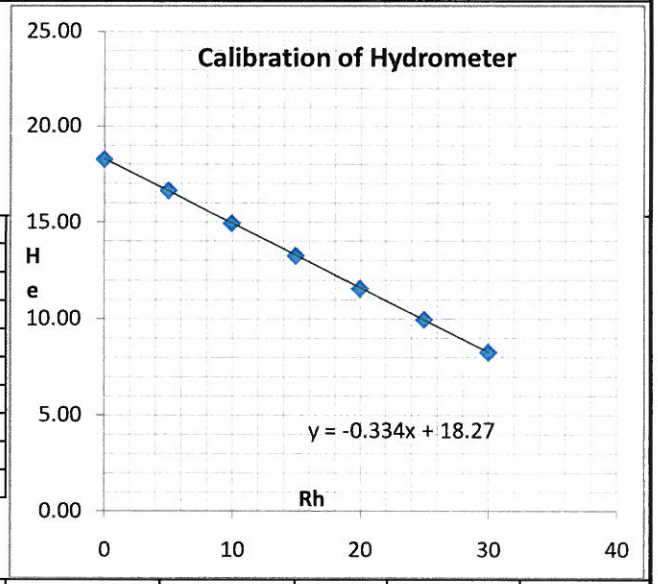
CALIBRATION OF HYDROMETER

(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	29.86	29	-2.0	8.30	30.36	0.526	0.000008341	0.012240833	0.00643731	27.86	3.246	90.44	89.09
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.246	89.27	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.246	89.27	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.246	87.65	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.246	87.65	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.246	87.65	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.246	86.03	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.246	86.03	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.246	86.03	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.246	84.40	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.246	84.40	83.14
	1440	27.54	32	-2.0	9.07	28.04	0.010	0.000007821	0.011853101	0.000121447	25.54	3.246	82.92	81.68

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 34.5m

Date of Testing : 11.10.12

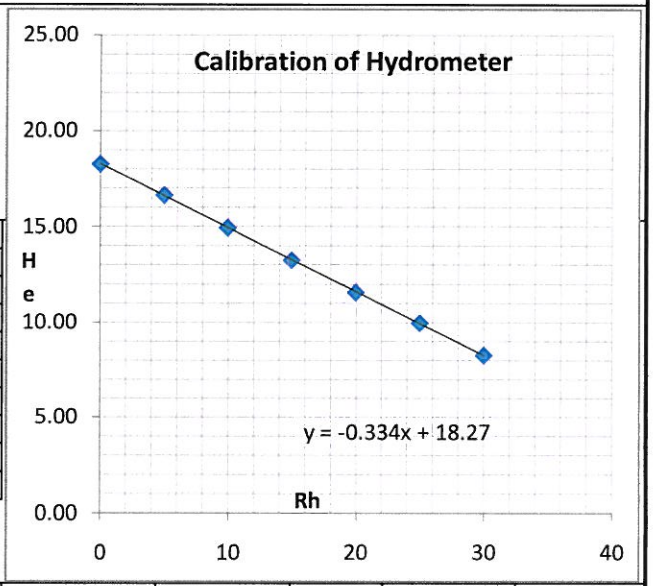
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		85.04
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		7.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		42.5
(V)	Specific gravity of soil grains, Gs		2.63
(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	28.35	29	-2.0	8.80	28.85	0.542	0.000008341	0.012390116	0.00671059	26.35	3.795	100.00	85.04
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012390116	0.00477676	26.00	3.795	98.66	83.90
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012390116	0.00340916	25.50	3.795	96.76	82.29
	4	26.00	29	-2.0	9.59	26.50	0.200	0.000008341	0.012390116	0.00247622	24.00	3.795	91.07	77.45
	8	24.50	29	-2.0	10.09	25.00	0.145	0.000008341	0.012390116	0.00179612	22.50	3.795	85.38	72.61
	15	23.00	29	-2.0	10.59	23.50	0.108	0.000008341	0.012390116	0.00134388	21.00	3.795	79.69	67.77
	30	21.50	29	-2.0	11.09	22.00	0.078	0.000008341	0.012390116	0.00097249	19.50	3.795	74.00	62.93
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012390116	0.00070302	18.00	3.795	68.30	58.09
	120	18.50	29	-2.0	12.09	19.00	0.041	0.000008341	0.012390116	0.00050774	16.50	3.795	62.61	53.25
	240	17.00	29	-2.0	12.59	17.50	0.030	0.000008341	0.012390116	0.00036639	15.00	3.795	56.92	48.40
	480	16.50	32	-2.0	12.76	17.00	0.021	0.000007821	0.011997656	0.00025253	14.50	3.795	55.02	46.79
	1440	16.25	32	-2.0	12.84	16.75	0.012	0.000007821	0.011997656	0.000146270	14.25	3.795	54.08	45.99

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

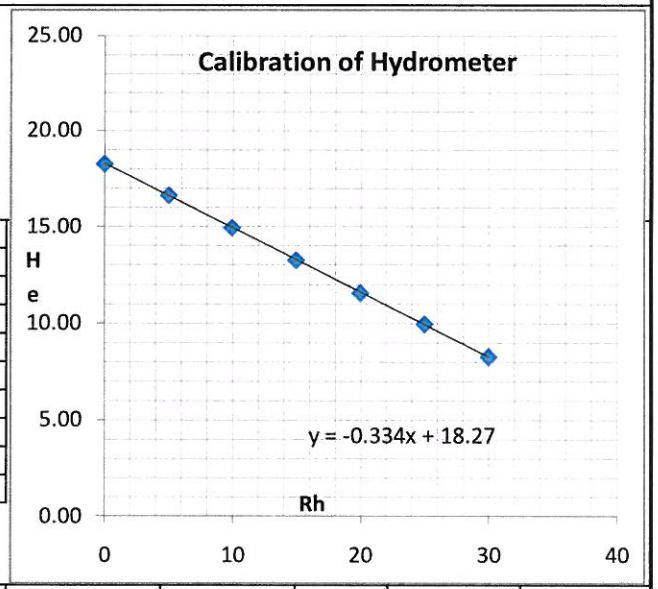
Location : BH-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 39.0m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		83.48
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		8.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		41.7
(V)	Specific gravity of soil grains, Gs		2.64
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	27.93	29	-2.0	8.94	28.43	0.546	0.000008341	0.012352284	0.00674363	25.93	3.857	100.00	83.48
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012352284	0.00480656	25.50	3.857	98.34	82.10
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012352284	0.00342984	25.00	3.857	96.42	80.49
	4	25.50	29	-2.0	9.75	26.00	0.202	0.000008341	0.012352284	0.00249007	23.50	3.857	90.63	75.66
	8	24.00	29	-2.0	10.25	24.50	0.146	0.000008341	0.012352284	0.00180540	22.00	3.857	84.85	70.83
	15	22.50	29	-2.0	10.76	23.00	0.109	0.000008341	0.012352284	0.00135030	20.50	3.857	79.06	66.00
	30	21.00	29	-2.0	11.26	21.50	0.079	0.000008341	0.012352284	0.00097679	19.00	3.857	73.28	61.17
	60	19.50	29	-2.0	11.76	20.00	0.057	0.000008341	0.012352284	0.00070590	17.50	3.857	67.49	56.34
	120	17.50	29	-2.0	12.43	18.00	0.042	0.000008341	0.012352284	0.00051313	15.50	3.857	59.78	49.90
	240	17.00	29	-2.0	12.59	17.50	0.030	0.000008341	0.012352284	0.00036527	15.00	3.857	57.85	48.29
	480	16.50	32	-2.0	12.76	17.00	0.021	0.000007821	0.011961022	0.00025176	14.50	3.857	55.92	46.68
	1440	16.25	32	-2.0	12.84	16.75	0.012	0.000007821	0.011961022	0.000145831	14.25	3.857	54.95	45.87

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 42.0m

Date of Testing : 11.10.12

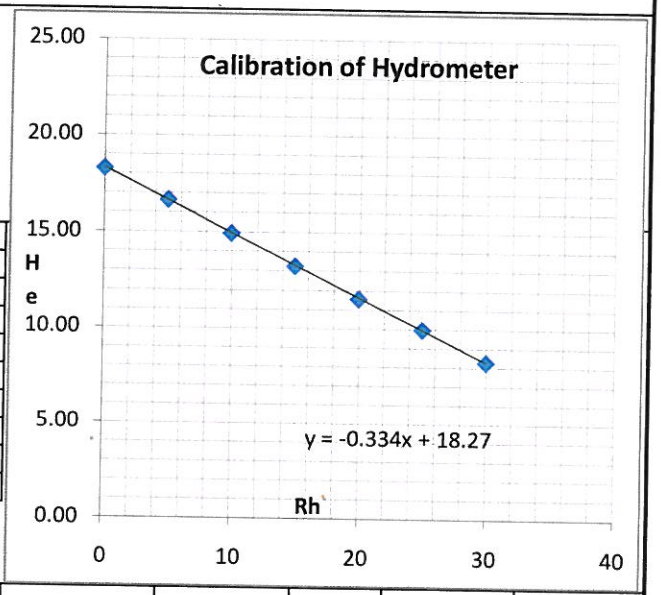
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		85.13
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		7.4
(IV)	Mass of dry soil passing 75 micron Wh (gm)		42.6
(V)	Specific gravity of soil grains, Gs		2.64
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

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

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	28.44	29	-2.0	8.77	28.94	0.541	0.000008341	0.012352284	0.00667877	26.44	3.782	100.00	85.13
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012352284	0.00476218	26.00	3.782	98.33	83.71
	2	26.50	29	-2.0	9.42	27.00	0.280	0.000008341	0.012352284	0.00346066	24.50	3.782	92.66	78.88
	4	25.00	29	-2.0	9.92	25.50	0.203	0.000008341	0.012352284	0.00251129	23.00	3.782	86.98	74.05
	8	23.50	29	-2.0	10.42	24.00	0.147	0.000008341	0.012352284	0.00182004	21.50	3.782	81.31	69.22
	15	22.50	29	-2.0	10.76	23.00	0.109	0.000008341	0.012352284	0.00135030	20.50	3.782	77.53	66.00
	30	22.00	29	-2.0	10.92	22.50	0.078	0.000008341	0.012352284	0.00096219	20.00	3.782	75.64	64.39
	60	21.50	29	-2.0	11.09	22.00	0.056	0.000008341	0.012352284	0.00068555	19.50	3.782	73.75	62.78
	120	20.00	29	-2.0	11.59	20.50	0.040	0.000008341	0.012352284	0.00049559	18.00	3.782	68.07	57.95
	240	18.50	29	-2.0	12.09	19.00	0.029	0.000008341	0.012352284	0.00035793	16.50	3.782	62.40	53.12
	480	17.00	32	-2.0	12.59	17.50	0.021	0.000007821	0.011961022	0.00025010	15.00	3.782	56.73	48.29
	1440	16.34	32	-2.0	12.81	16.84	0.012	0.000007821	0.011961022	0.000145648	14.34	3.782	54.25	46.18

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 45.0m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		82.71
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		8.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		41.4
(V)	Specific gravity of soil grains, Gs		2.65
(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	

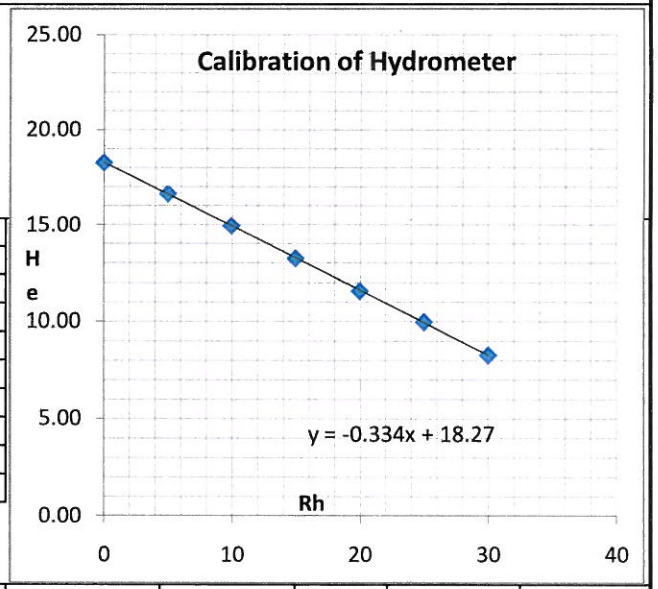
Rh = hydrometer Reading

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	27.75	29	-2.0	9.00	28.25	0.548	0.000008341	0.012314796	0.00674574	25.75	3.884	100.00	82.71
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012314796	0.00479197	25.50	3.884	99.03	81.91
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012314796	0.00341944	25.00	3.884	97.09	80.30
	4	25.50	29	-2.0	9.75	26.00	0.202	0.000008341	0.012314796	0.00248251	23.50	3.884	91.26	75.48
	8	24.00	29	-2.0	10.25	24.50	0.146	0.000008341	0.012314796	0.00179992	22.00	3.884	85.44	70.67
	15	23.00	29	-2.0	10.59	23.50	0.108	0.000008341	0.012314796	0.00133571	21.00	3.884	81.56	67.45
	30	21.00	29	-2.0	11.26	21.50	0.079	0.000008341	0.012314796	0.00097383	19.00	3.884	73.79	61.03
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012314796	0.00069874	18.00	3.884	69.90	57.82
	120	18.50	29	-2.0	12.09	19.00	0.041	0.000008341	0.012314796	0.00050465	16.50	3.884	64.08	53.00
	240	17.00	29	-2.0	12.59	17.50	0.030	0.000008341	0.012314796	0.00036416	15.00	3.884	58.25	48.18
	480	16.50	32	-2.0	12.76	17.00	0.021	0.000007821	0.011924722	0.00025099	14.50	3.884	56.31	46.58
	1440	16.09	32	-2.0	12.90	16.59	0.012	0.000007821	0.011924722	0.000145691	14.09	3.884	54.71	45.25

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-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 48.0m

Date of Testing : 11.10.12

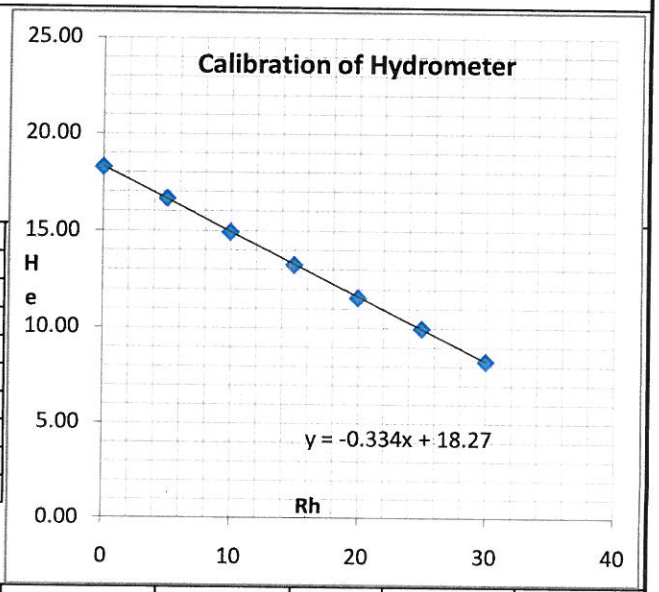
Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		84.36
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		7.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		42.2
(V)	Specific gravity of soil grains, Gs		2.64
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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	28.20	29	-2.0	8.85	28.70	0.543	0.000008341	0.012352284	0.00670912	26.20	3.816	100.00	84.36
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012352284	0.00480656	25.50	3.816	97.32	82.10
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012352284	0.00342984	25.00	3.816	95.41	80.49
	4	26.50	29	-2.0	9.42	27.00	0.198	0.000008341	0.012352284	0.00244706	24.50	3.816	93.50	78.88
	8	25.00	29	-2.0	9.92	25.50	0.144	0.000008341	0.012352284	0.00177575	23.00	3.816	87.78	74.05
	15	23.50	29	-2.0	10.42	24.00	0.108	0.000008341	0.012352284	0.00132917	21.50	3.816	82.05	69.22
	30	22.00	29	-2.0	10.92	22.50	0.078	0.000008341	0.012352284	0.00096219	20.00	3.816	76.33	64.39
	60	20.00	29	-2.0	11.59	20.50	0.057	0.000008341	0.012352284	0.00070087	18.00	3.816	68.70	57.95
	120	18.50	29	-2.0	12.09	19.00	0.041	0.000008341	0.012352284	0.00050619	16.50	3.816	62.97	53.12
	240	17.00	29	-2.0	12.59	17.50	0.030	0.000008341	0.012352284	0.00036527	15.00	3.816	57.25	48.29
	480	16.50	32	-2.0	12.76	17.00	0.021	0.000007821	0.011961022	0.00025176	14.50	3.816	55.34	46.68
	1440	16.17	32	-2.0	12.87	16.67	0.012	0.000007821	0.011961022	0.000145972	14.17	3.816	54.09	45.63

Lab Manager

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N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : SPT

Location : BH-6(Markanda River- Saharanpur)

Sampled by : T.K.Das

Depth : 50.0m

Date of Testing : 11.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		83.52
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		8.2
(IV)	Mass of dry soil passing 75 micron Wh (gm)		41.8
(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	

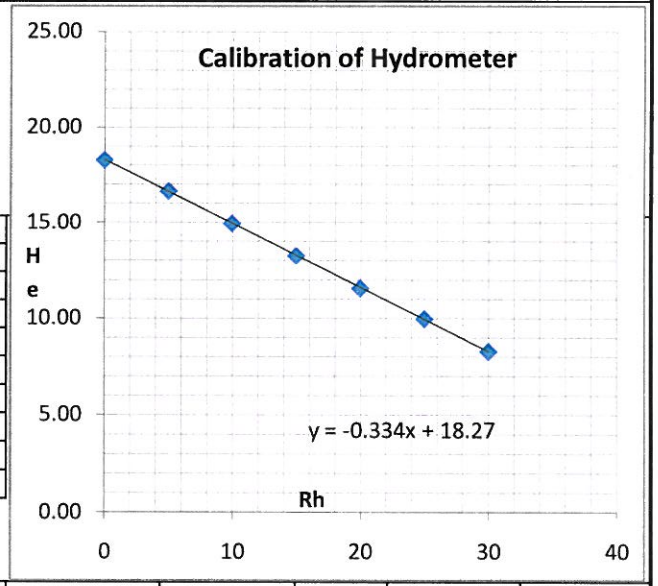
CALIBRATION OF HYDROMETER

(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	28.00	29	-2.0	8.92	28.50	0.545	0.000008341	0.012314796	0.00671410	26.00	3.846	100.00	83.52
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012314796	0.00479197	25.50	3.846	98.07	81.91
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012314796	0.00341944	25.00	3.846	96.15	80.30
	4	26.50	29	-2.0	9.42	27.00	0.198	0.000008341	0.012314796	0.00243963	24.50	3.846	94.23	78.70
	8	25.00	29	-2.0	9.92	25.50	0.144	0.000008341	0.012314796	0.00177036	23.00	3.846	88.46	73.88
	15	23.50	29	-2.0	10.42	24.00	0.108	0.000008341	0.012314796	0.00132514	21.50	3.846	82.69	69.06
	30	22.50	29	-2.0	10.76	23.00	0.077	0.000008341	0.012314796	0.00095191	20.50	3.846	78.84	65.85
	60	21.50	29	-2.0	11.09	22.00	0.056	0.000008341	0.012314796	0.00068347	19.50	3.846	75.00	62.64
	120	19.00	29	-2.0	11.92	19.50	0.041	0.000008341	0.012314796	0.00050115	17.00	3.846	65.38	54.61
	240	17.50	29	-2.0	12.43	18.00	0.029	0.000008341	0.012314796	0.00036174	15.50	3.846	59.61	49.79
	480	17.00	32	-2.0	12.59	17.50	0.021	0.000007821	0.011924722	0.00024934	15.00	3.846	57.69	48.18
	1440	16.50	32	-2.0	12.76	17.00	0.012	0.000007821	0.011924722	0.000144908	14.50	3.846	55.77	46.58

Lab Manager

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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-6(Markanda River-Saharanpur)

Depth : 1.5m

Date Of Testing : 11.10.12

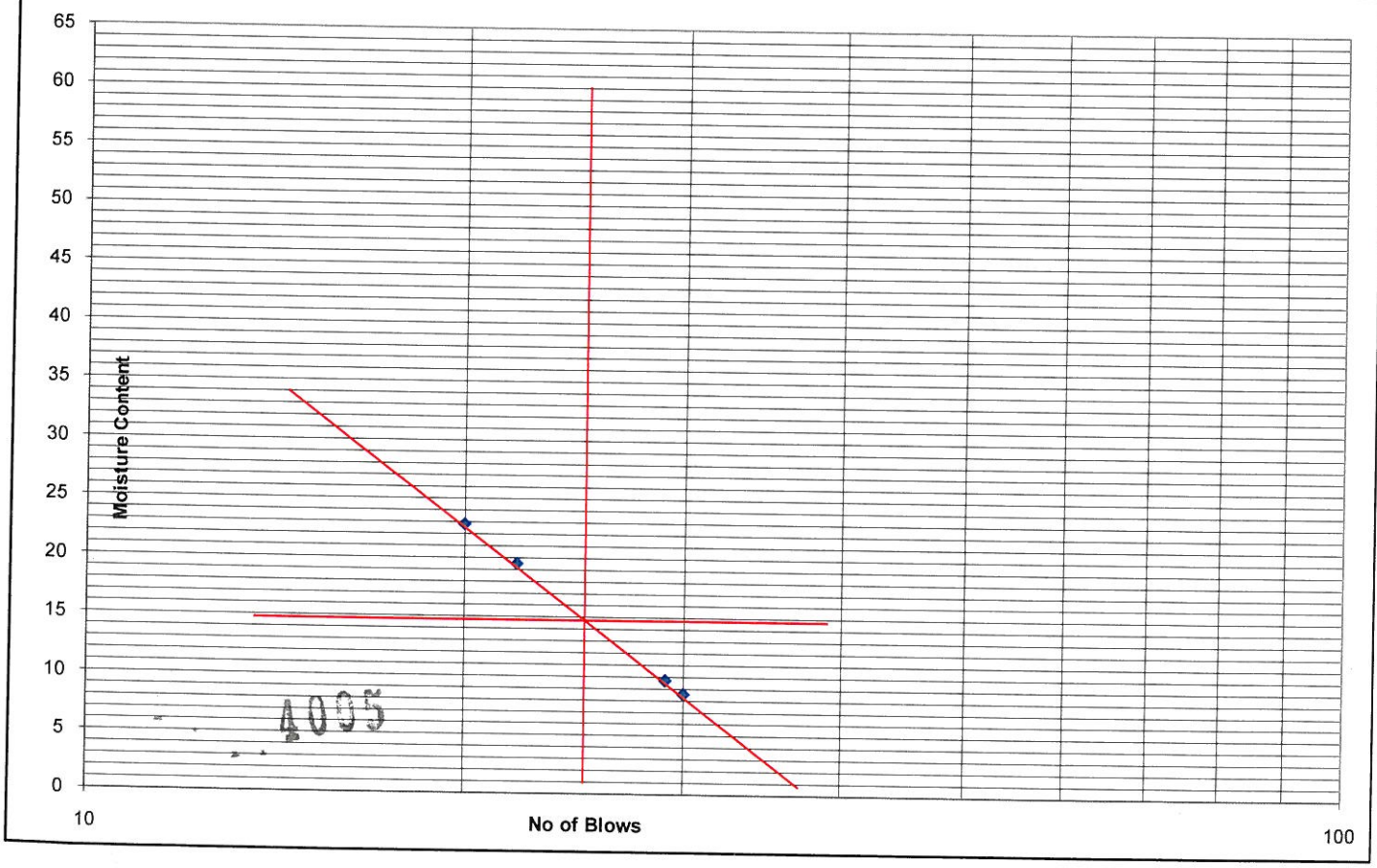
Sampled by : T.K.Das

Tested by : D.Mohanty

Number of Blows	30	29	22	20	Plastic Limit	
Container No.	D31	D32	D33	D34	NP	
Container Weight (gm) (W1)	30.8	35.29	32.47	31.56		
Container + Wt. of wet soil (gm) (W2)	81.73	93.38	96.01	99.74		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.72	88.24	85.65	87.06		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.02	5.14	10.36	12.68		
Wt. of oven dry soil (gm) (W3-W1)	46.92	52.95	53.18	55.50		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.56**	**9.71**	**19.48**	**22.85**		

Result Summary

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



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

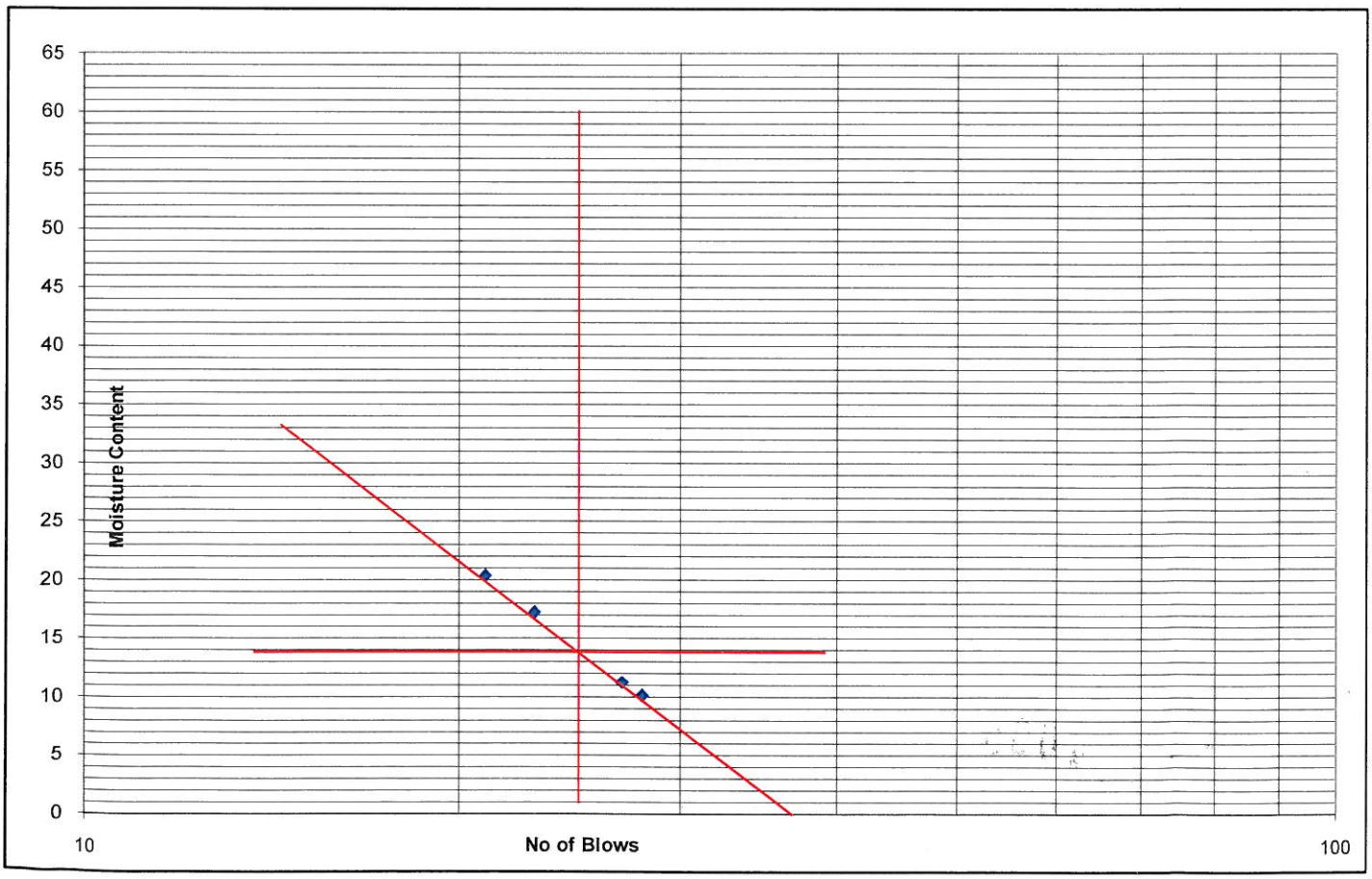
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	3.0m	Tested by	:	D.Mohanty

Number of Blows	28	27	23	21	Plastic Limit	
Container No.	D25	D26	D27	D28	NP	
Container Weight (gm) (W1)	33.58	34.18	32.29	34.64		
Container + Wt. of wet soil (gm) (W2)	82.21	94.34	94.84	97.73		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.72	88.24	85.65	87.06		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.48	6.10	9.19	10.67		
Wt. of oven dry soil (gm) (W3-W1)	44.14	54.06	53.36	52.42		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.15**	**11.28**	**17.23**	**20.35**		

Result Summary

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



4006

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

IS : 2720 (Part -5)

Client : DFCC

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

Type of Sample : SPT

Location : BH-6(Markanda River-Saharanpur)

Depth : 4.5m

Date Of Testing : 11.10.12

Sampled by : T.K.Das

Tested by : D.Mohanty

Number of Blows	29	26	20	19	Plastic Limit	
Container No.	D29	D30	D35	D36	NP	
Container Weight (gm) (W1)	36.84	30.87	33.66	30.99		
Container + Wt. of wet soil (gm) (W2)	81.90	96.40	97.79	101.20		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.88	88.58	85.87	87.33		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.02	7.83	11.92	13.87		
Wt. of oven dry soil (gm) (W3-W1)	41.04	57.71	52.21	56.34		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**9.79**	**13.56**	**22.84**	**24.61**		

Result Summary

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

4007

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

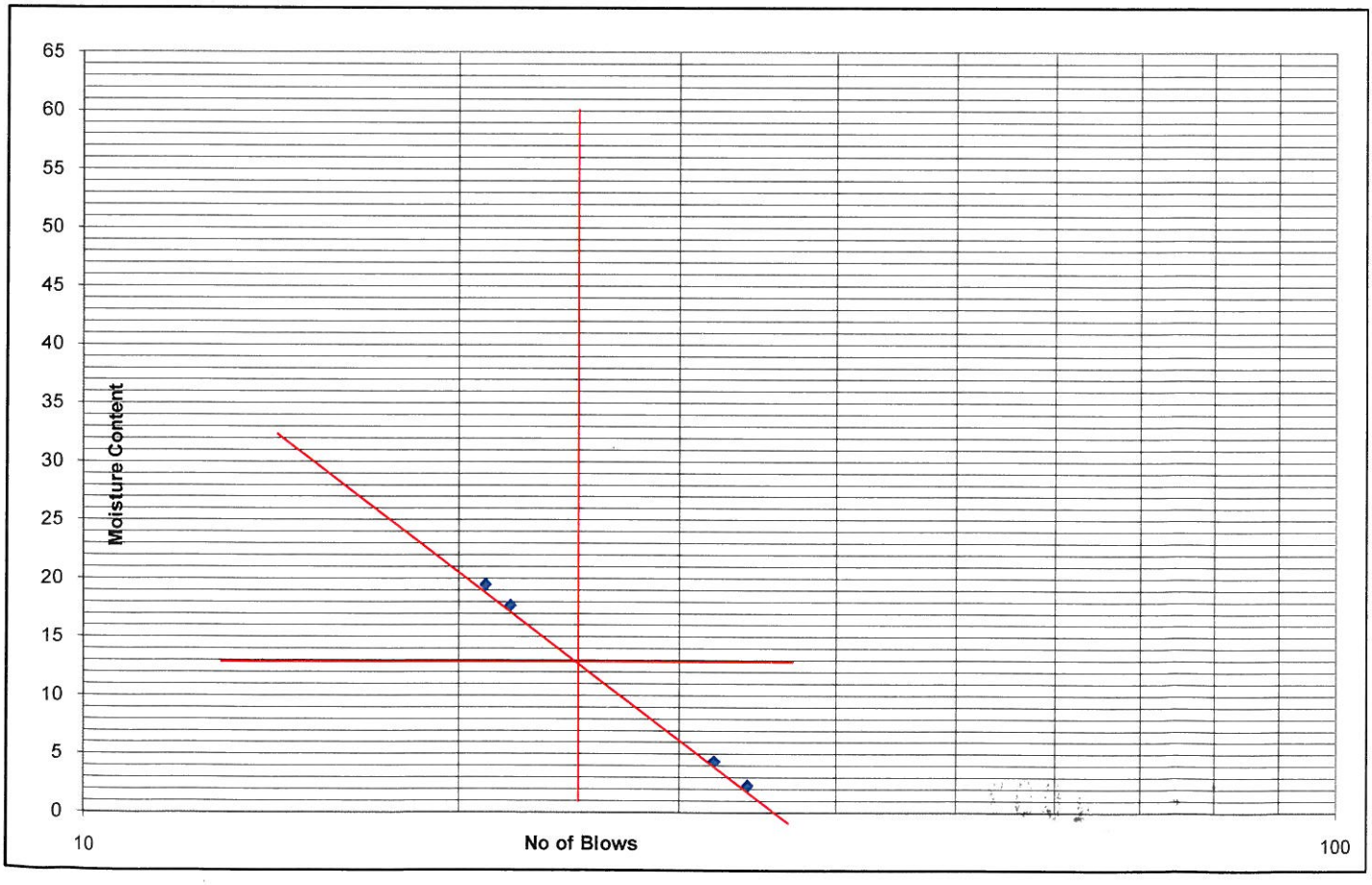
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	D.Mohanty

Number of Blows	34	32	22	21	Plastic Limit	
Container No.	D7	D8	D9	D10	NP	
Container Weight (gm) (W1)	35.82	31.27	34.13	32.45		
Container + Wt. of wet soil (gm) (W2)	78.94	91.12	95.60	98.55		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.97	88.60	86.35	87.80		
Wt. Of water (gm) (W2-W1)-(W3-W1)	0.97	2.52	9.25	10.75		
Wt. of oven dry soil (gm) (W3-W1)	42.15	57.33	52.22	55.35		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**2.31**	**4.39**	**17.72**	**19.43**		

Result Summary

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



4008

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

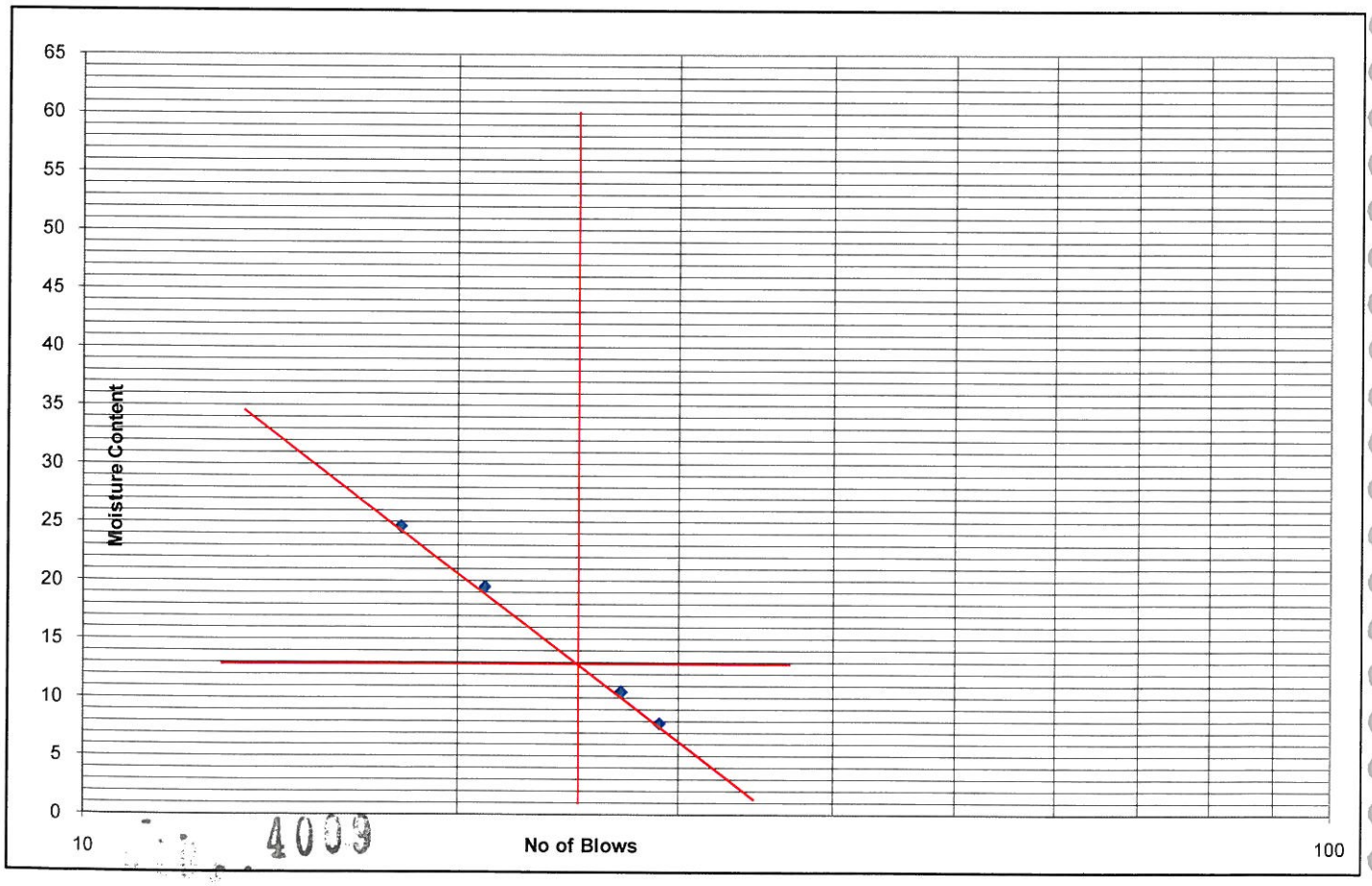
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	7.5m	Tested by	:	D.Mohanty

Number of Blows	29	27	21	18	Plastic Limit	
Container No.	D37	D38	D39	D40	NP	
Container Weight (gm) (W1)	36.57	32.26	31.04	30.5		
Container + Wt. of wet soil (gm) (W2)	81.15	94.53	97.26	102.16		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.91	88.60	86.49	88.01		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.24	5.93	10.77	14.15		
Wt. of oven dry soil (gm) (W3-W1)	41.34	56.34	55.45	57.51		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.84**	**10.52**	**19.43**	**24.61**		

Result Summary

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



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

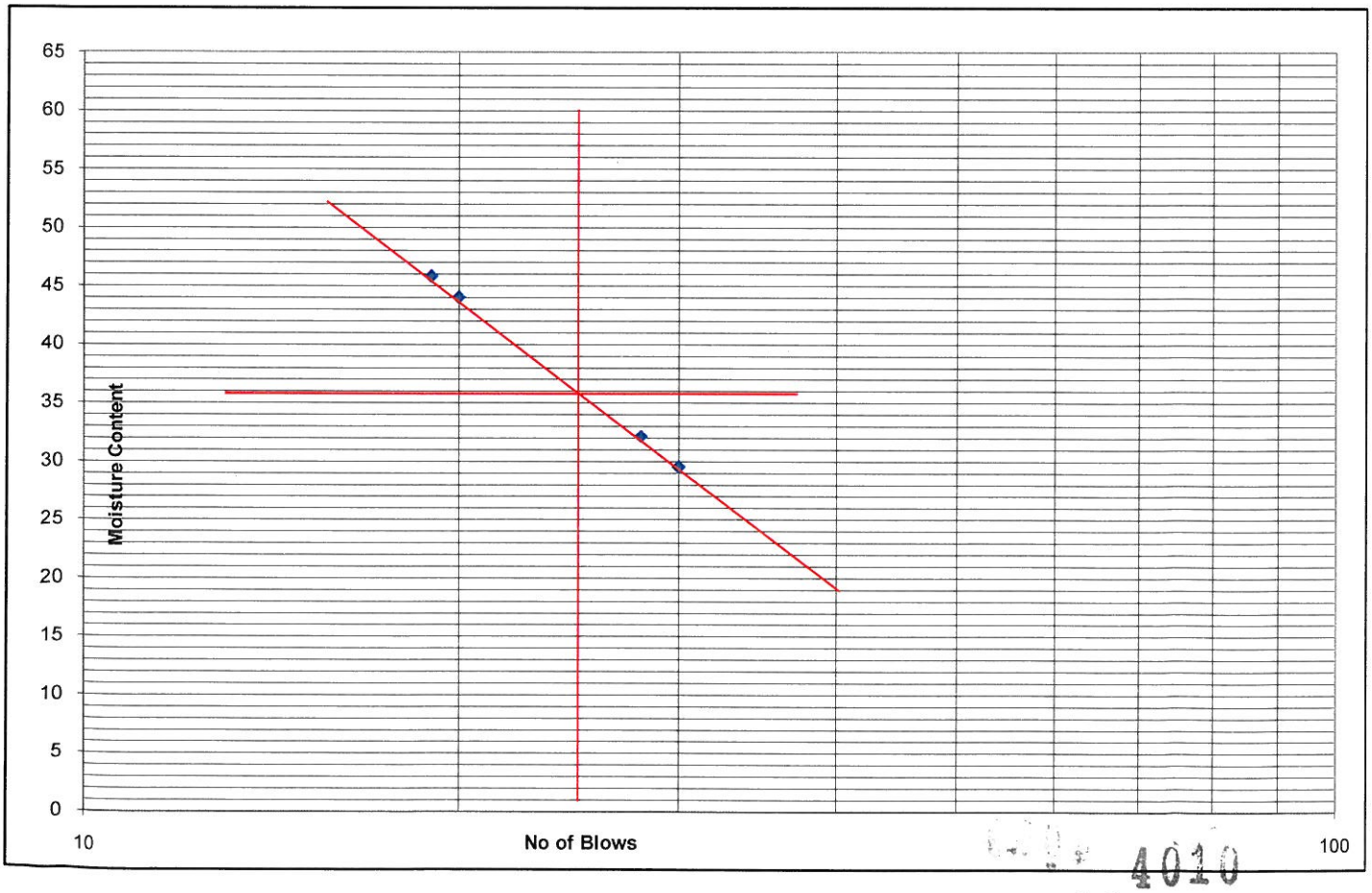
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	10.5m	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)	90.87	106.23	110.48	112.28	90.64	89.63
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.00	88.52	86.61	88.10	81.65	81.44
Wt. Of water (gm) (W2-W1)-(W3-W1)	12.87	17.71	23.86	24.18	8.98	8.19
Wt. of oven dry soil (gm) (W3-W1)	43.60	55.06	54.20	52.79	51.09	49.95
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**29.53**	**32.16**	**44.03**	**45.81**	**17.58**	**16.40**

Result Summary

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



4010

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-6(Markanda River-Saharanpur)

Depth : 12.0m

Date Of Testing : 11.10.12

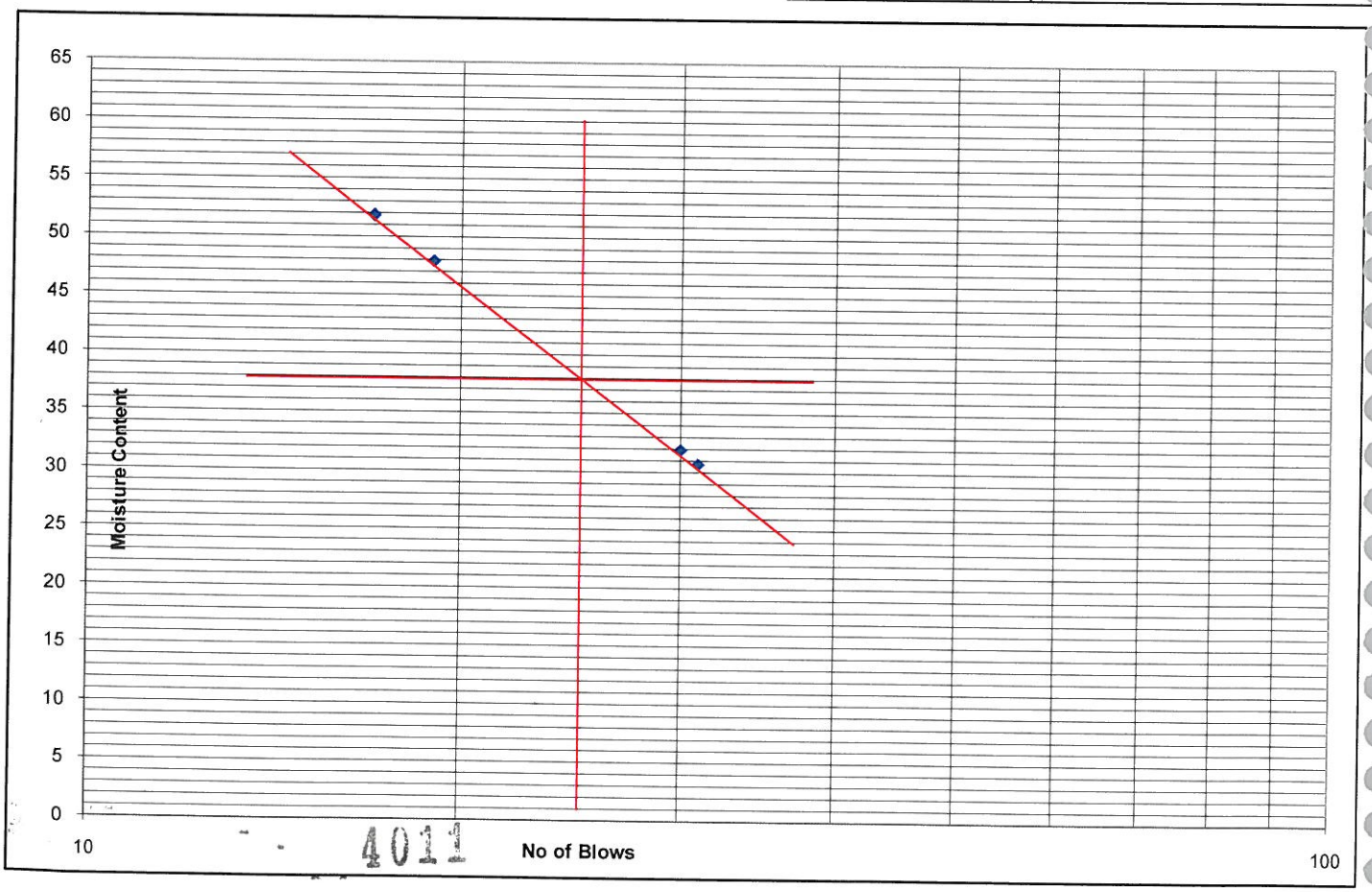
Sampled by : T.K.Das

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)	91.53	106.01	113.64	118.04	90.83	89.91
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.69	88.52	86.95	88.20	81.62	81.23
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.84	17.49	26.70	29.84	9.21	8.68
Wt. of oven dry soil (gm) (W3-W1)	45.11	54.83	55.71	57.62	46.94	45.94
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**30.68**	**31.89**	**47.92**	**51.79**	**19.62**	**18.89**

Result Summary

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



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

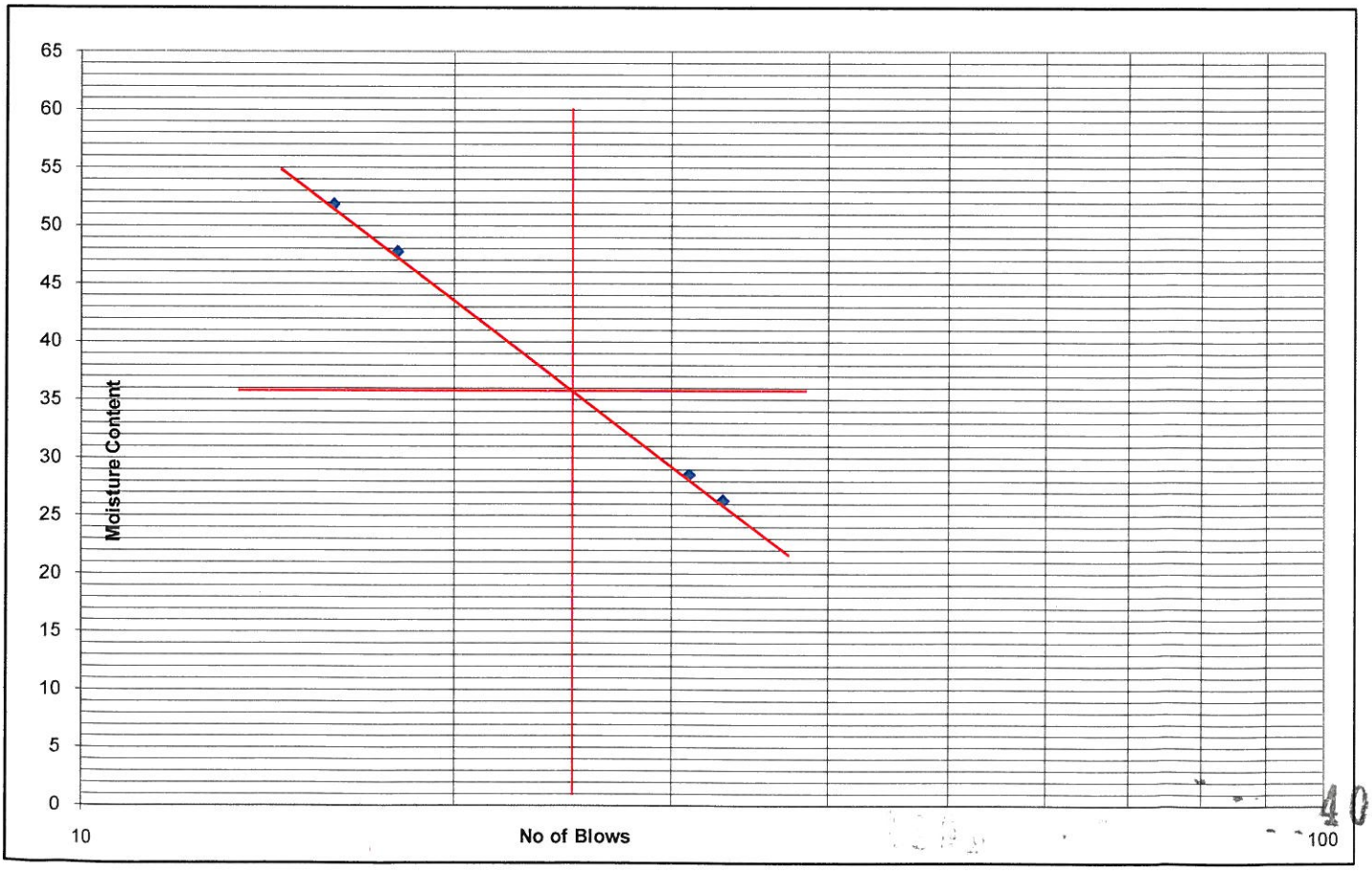
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	D.Mohanty

Number of Blows	33	31	18	16	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)	88.85	104.81	113.64	117.29	90.54	89.68
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.69	88.52	86.65	88.33	81.39	81.40
Wt. Of water (gm) (W2-W1)-(W3-W1)	11.16	16.29	26.99	28.97	9.16	8.27
Wt. of oven dry soil (gm) (W3-W1)	42.43	57.04	56.54	55.94	47.67	46.54
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**26.30**	**28.56**	**47.73**	**51.79**	**19.21**	**17.78**

Result Summary

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



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

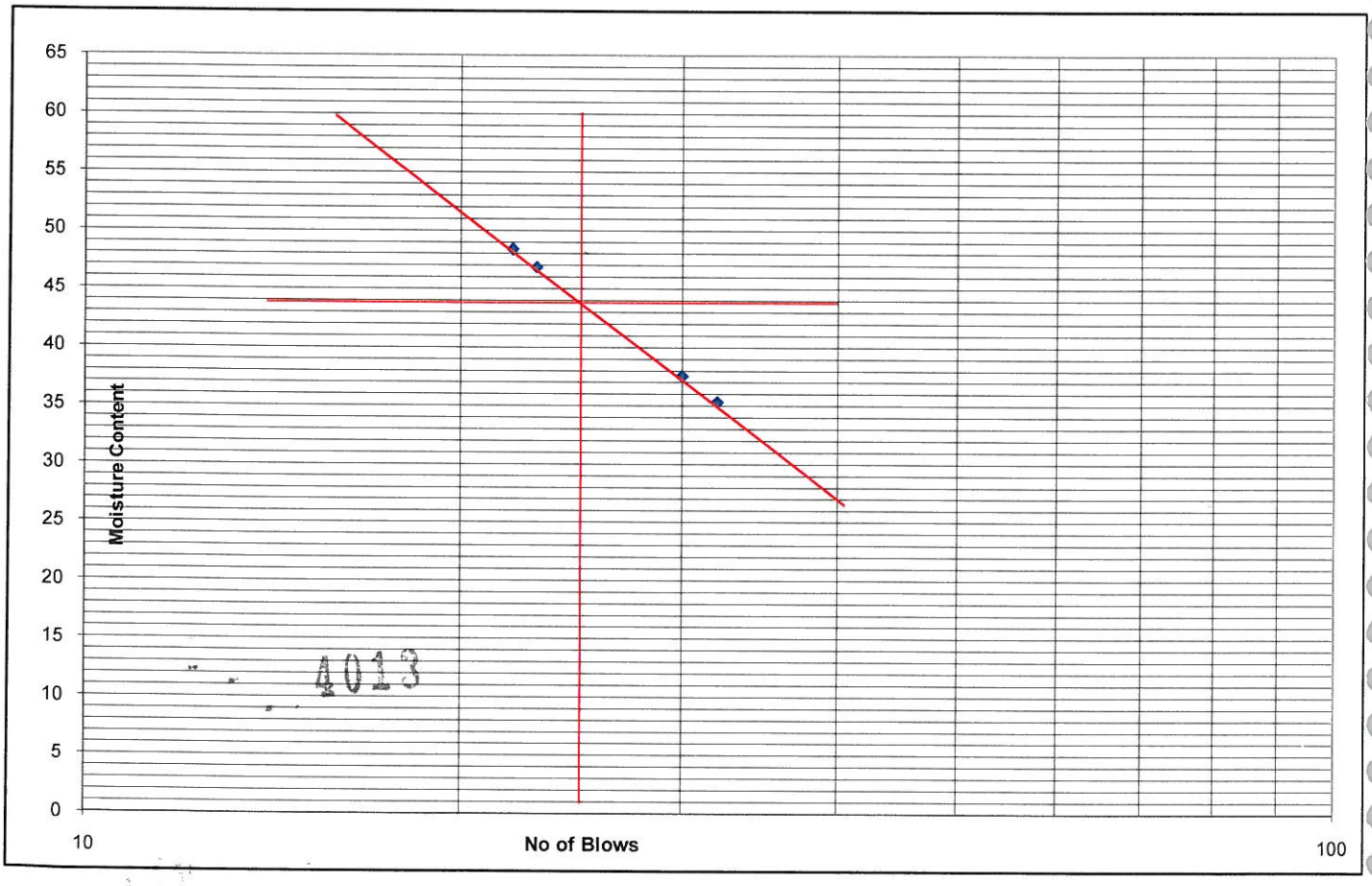
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	16.5m	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)	92.65	108.66	111.81	115.70	92.33	91.59
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.77	88.36	86.50	88.27	81.21	81.51
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.88	20.30	25.31	27.43	11.12	10.07
Wt. of oven dry soil (gm) (W3-W1)	42.13	54.07	54.03	56.71	50.99	48.04
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**35.32**	**37.54**	**46.85**	**48.37**	**21.81**	**20.97**

Result Summary

Liquid Limit (WL)	44	%
Plastic Limit (Wp)	21	%
Plasticity Index (Ip)	23	%



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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

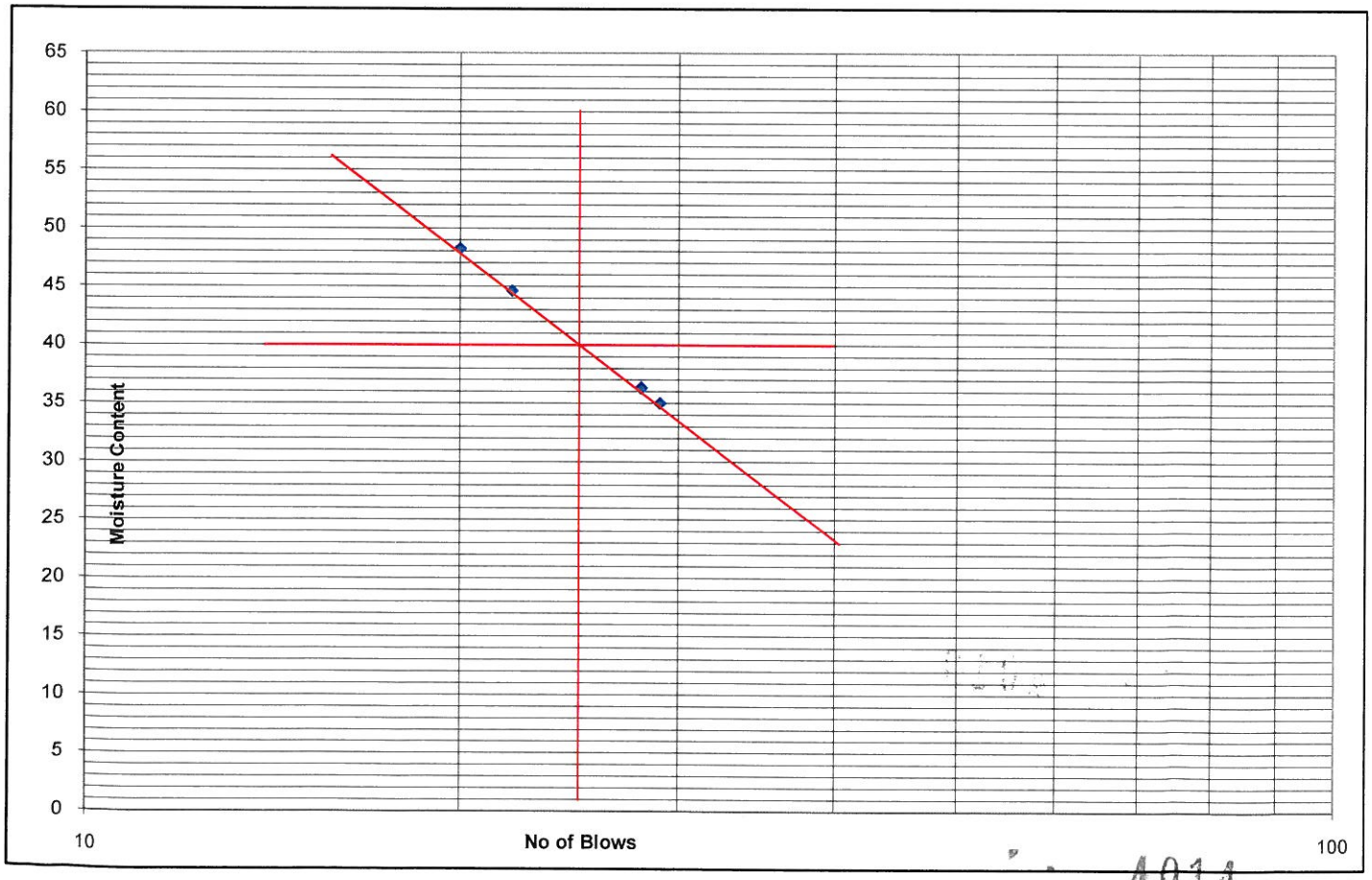
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	18.0m	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)	94.57	108.36	109.38	115.70	91.82	91.40
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.87	88.47	86.58	88.27	81.89	82.15
Wt. Of water (gm) (W2-W1)-(W3-W1)	16.70	19.90	22.80	27.43	9.93	9.25
Wt. of oven dry soil (gm) (W3-W1)	47.69	54.80	51.10	56.88	49.73	46.60
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**35.01**	**36.31**	**44.63**	**48.23**	**19.96**	**19.85**

Result Summary

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



4011

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

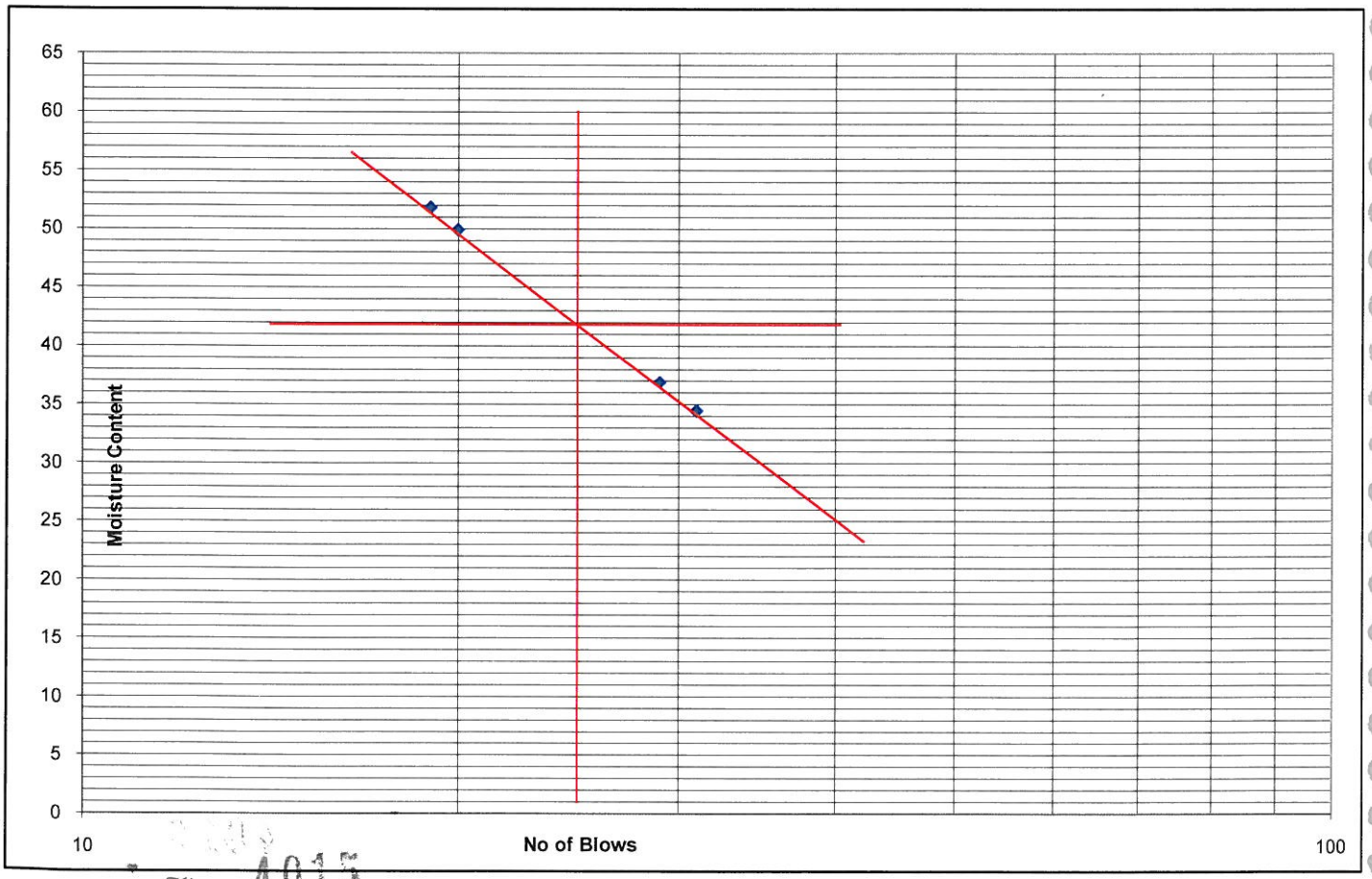
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	11.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	19.5m	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)	92.35	108.94	114.31	113.32	91.98	93.09
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.87	88.57	86.65	88.11	81.82	82.14
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.48	20.38	27.66	25.22	10.16	10.95
Wt. of oven dry soil (gm) (W3-W1)	42.04	55.21	55.45	48.69	46.96	51.38
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.45**	**36.91**	**49.88**	**51.79**	**21.64**	**21.32**

Result Summary

Liquid Limit (WL)	42	%
Plastic Limit (Wp)	21	%
Plasticity Index (Ip)	21	%



4015

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

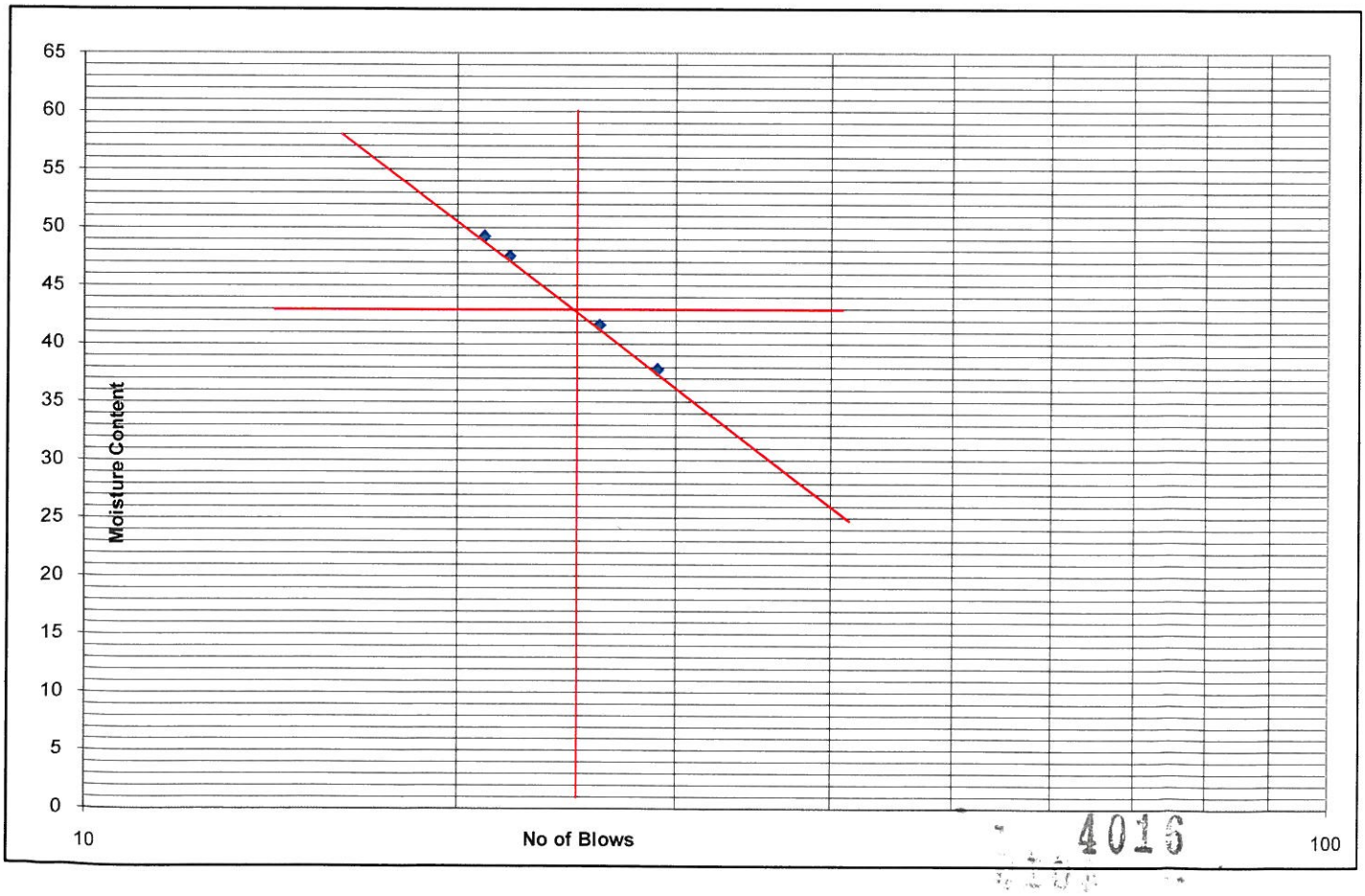
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	12.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	21.0m	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	110.85	112.34	115.30	92.98	92.01
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.17	88.77	86.73	88.21	81.90	82.05
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.84	22.08	25.61	27.08	11.08	9.96
Wt. of oven dry soil (gm) (W3-W1)	41.93	53.08	53.89	55.03	50.05	47.79
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**37.77**	**41.61**	**47.53**	**49.21**	**22.13**	**20.84**

Result Summary

Liquid Limit (WL)	43	%
Plastic Limit (Wp)	21	%
Plasticity Index (Ip)	22	%



4016

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

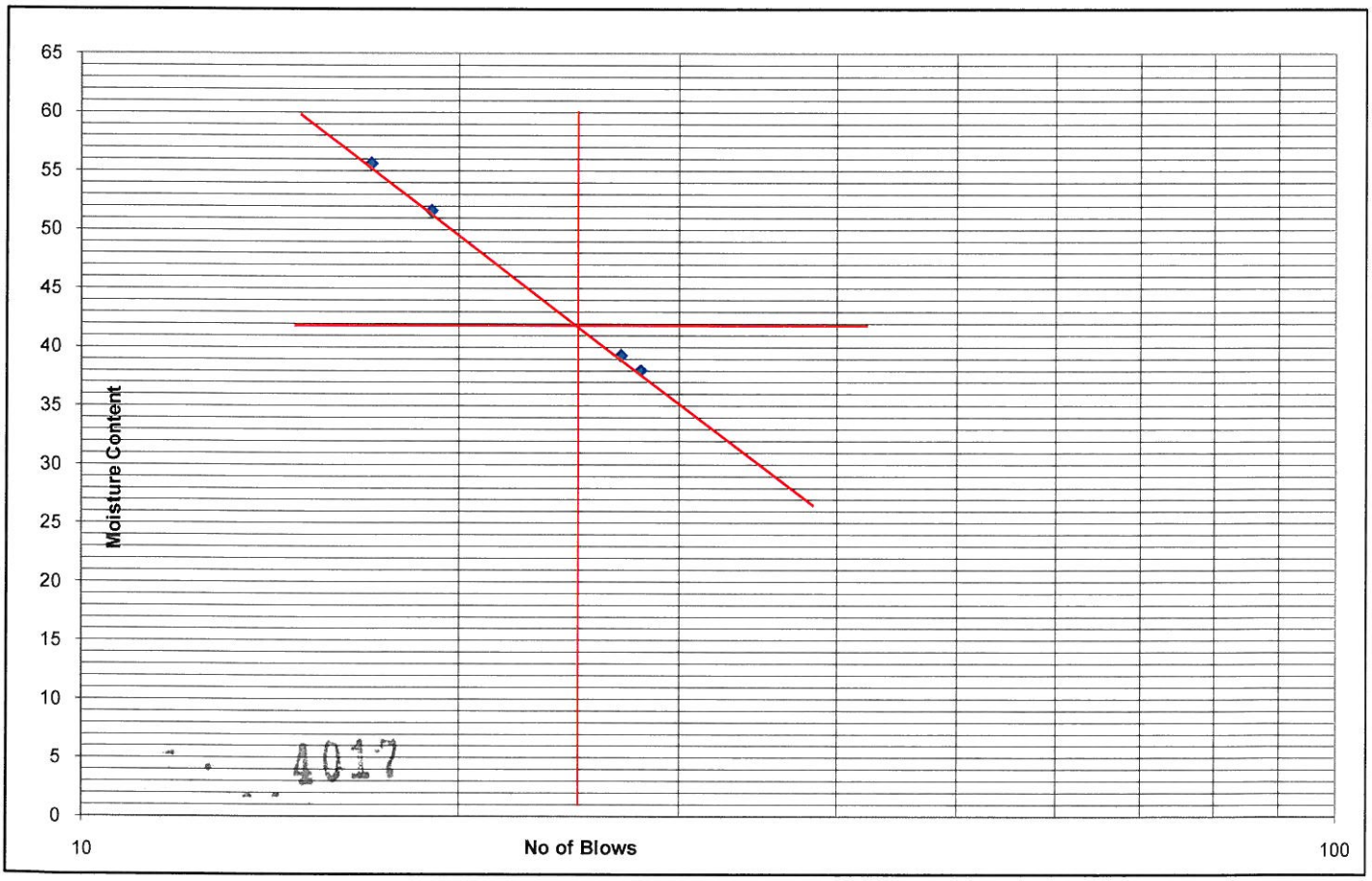
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	12.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	22.5m	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)	96.42	109.34	113.10	118.03	92.03	92.64
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.25	88.77	86.68	88.23	81.88	82.31
Wt. Of water (gm) (W2-W1)-(W3-W1)	18.16	20.58	26.42	29.81	10.15	10.33
Wt. of oven dry soil (gm) (W3-W1)	47.77	52.40	51.24	53.62	49.02	51.82
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**38.02**	**39.27**	**51.57**	**55.60**	**20.71**	**19.94**

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	12.10.12
Location	:	BH-6(Markanda River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	25.5m	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)	94.08	108.98	110.30	116.22	91.13	91.83
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.40	88.83	86.76	88.11	82.05	82.71
Wt. Of water (gm) (W2-W1)-(W3-W1)	15.68	20.15	23.54	28.11	9.07	9.13
Wt. of oven dry soil (gm) (W3-W1)	47.82	55.19	50.06	55.46	47.18	51.42
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.79**	**36.51**	**47.02**	**50.69**	**19.23**	**17.75**

Result Summary

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