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	:	UDS	Date of Testing	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	0.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 5.39

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	1.26	1.26	1.26	98.74
0.425	0.72	0.72	1.98	98.02
0.075	3.41	3.41	5.39	94.61
Total	100.00			

Gravel Content (%)= **0.00**

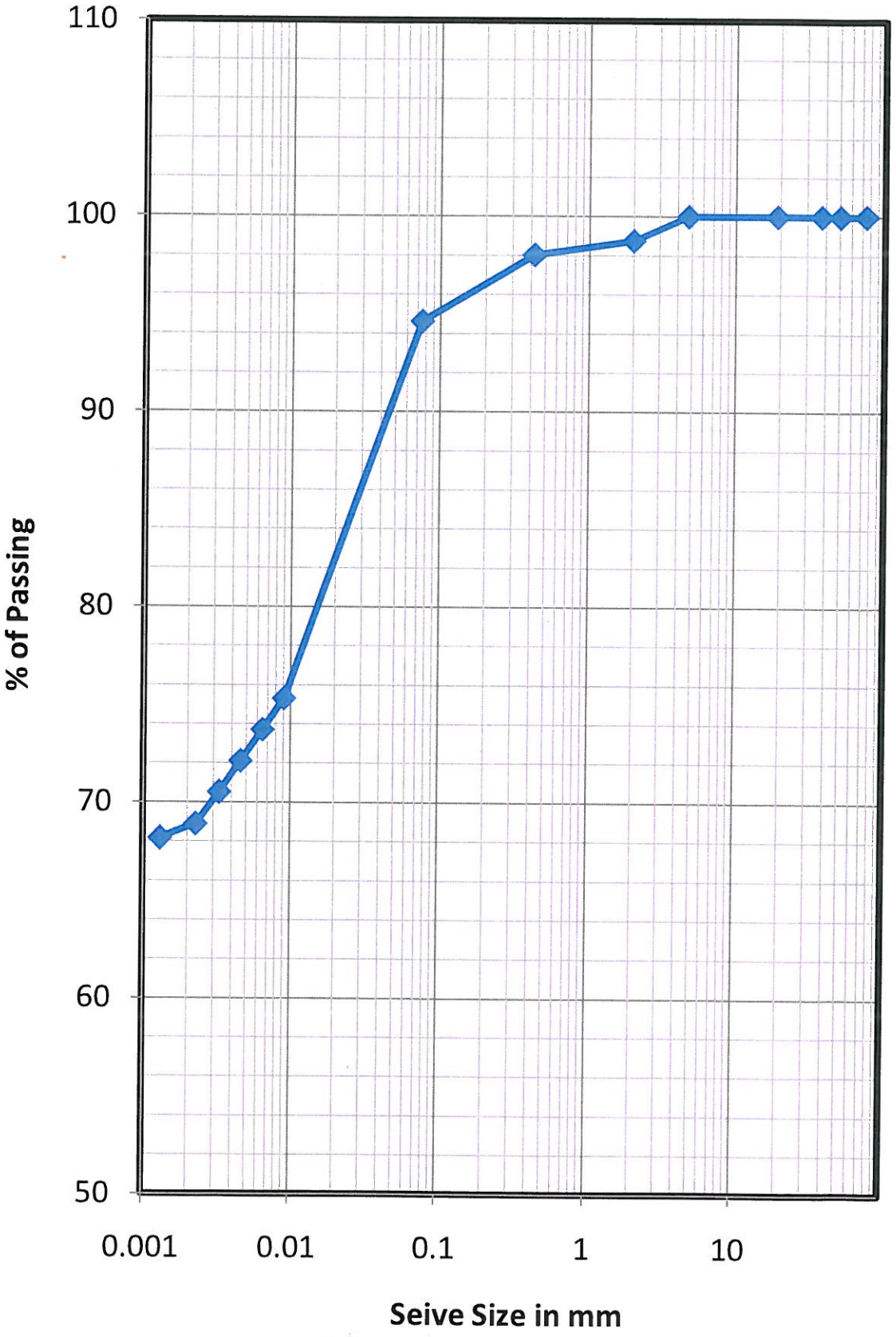
Sand Content (%) = 5.39 **Silt and clay %** 94.61

Remarks :-

Lab Manager Checked By

4242

Grain Size Distribution Curve
BH-1, D-0.5m



4243

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	1.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 6.24

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	0.96	0.96	0.96	99.04
0.425	2.87	2.87	3.83	96.17
0.075	2.41	2.41	6.24	93.76
Total	100.00			

Gravel Content (%)= **0.00**

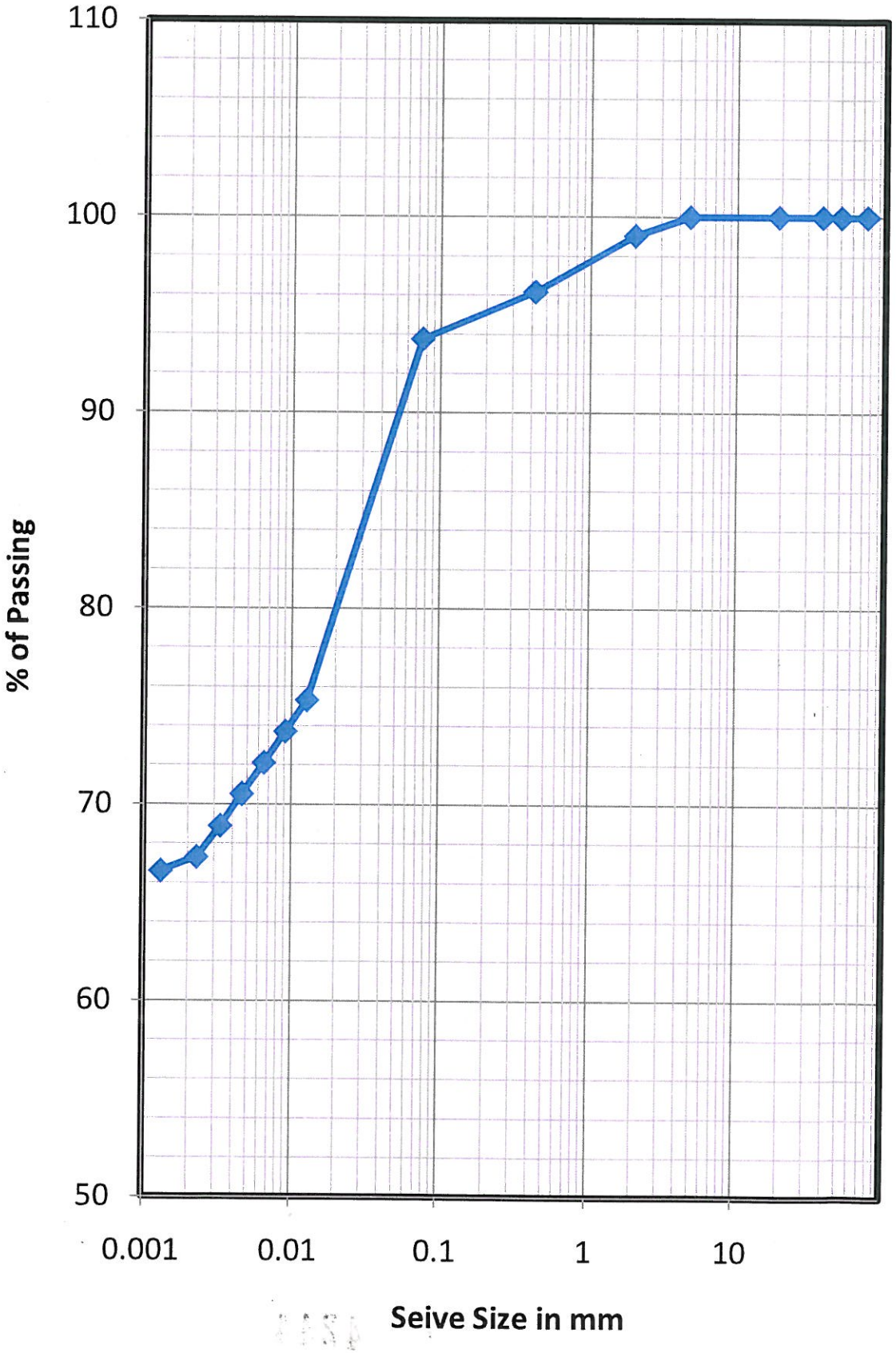
Sand Content (%) = 6.24 **Silt and clay %** 93.76

Remarks :-

Lab Manager Checked By

4241

Grain Size Distribution Curve
BH-1, D-1.5m



4245

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	3.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 62.81

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	21.34	21.34	21.34	78.66
0.425	38.06	38.06	59.40	40.60
0.075	3.41	3.41	62.81	37.19
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 62.81 **Silt and clay %** 37.19

Remarks :-

Lab Manager Checked By

4246

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	4.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 9.12

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	2.81	2.81	2.81	97.19
2.00	2.43	2.43	5.24	94.76
0.425	3.02	3.02	8.26	91.74
0.075	0.85	0.85	9.11	90.89
Total	100.00			

Gravel Content (%)= **2.81**

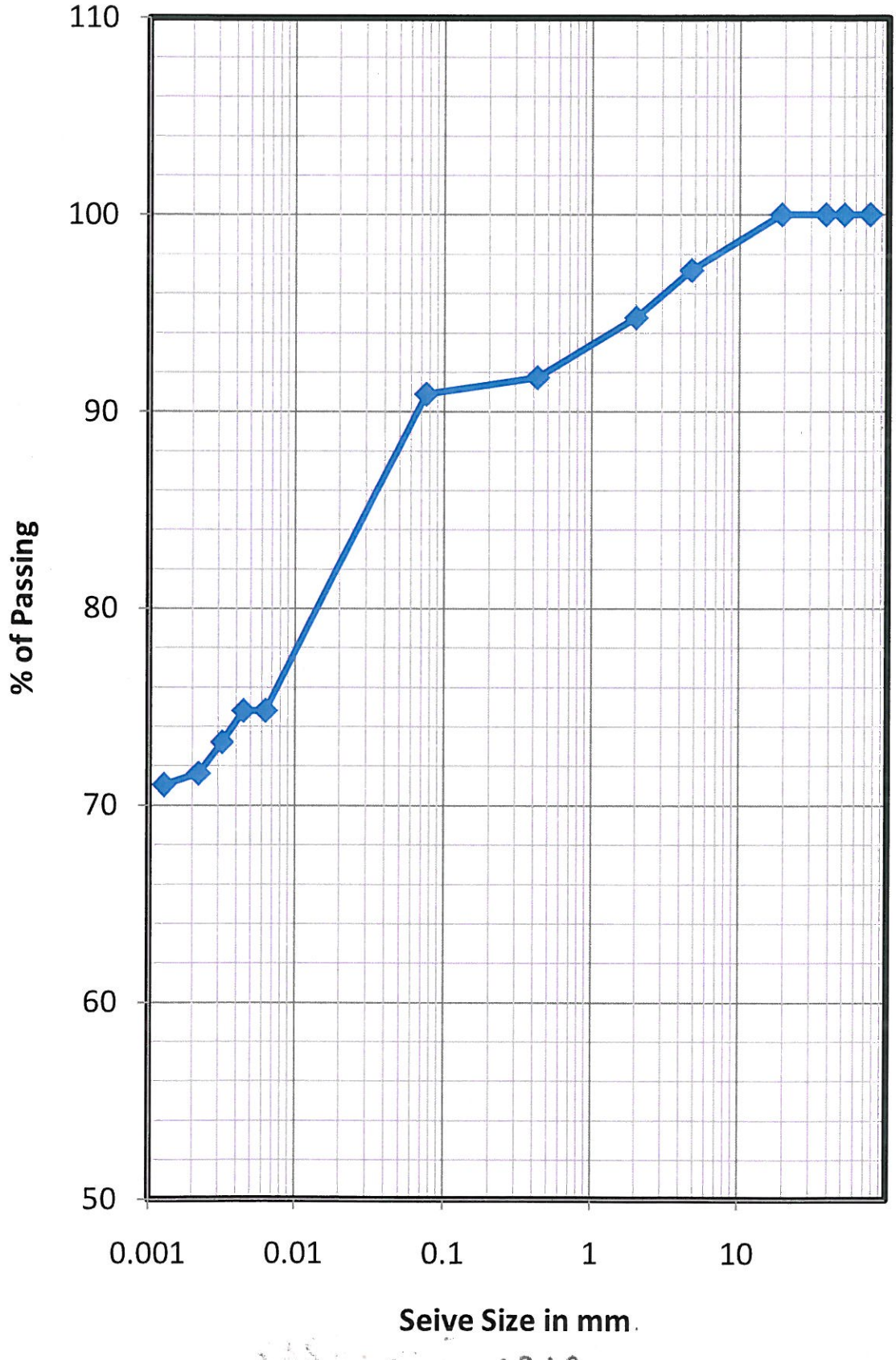
Sand Content (%) = 6.30 **Silt and clay %** 90.89

Remarks :-

Lab Manager Checked By

4247

Grain Size Distribution Curve
BH-1, D-4.5m



4213

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	6.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 7.40

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	1.42	1.42	1.42	98.58
2.00	2.26	2.26	3.68	96.32
0.425	2.44	2.44	6.12	93.88
0.075	1.28	1.28	7.40	92.60
Total	100.00			

Gravel Content (%)= **1.42**

Sand Content (%) = 5.98 **Silt and clay %** 92.60

Remarks :-

Lab Manager Checked By

4243

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	6.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 9.15

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	2.72	2.72	2.72	97.28
2.00	2.45	2.45	5.17	94.83
0.425	2.02	2.02	7.19	92.81
0.075	1.96	1.96	9.15	90.85
Total	100.00			

Gravel Content (%)= **2.72**

Sand Content (%) = 6.43 **Silt and clay %** 90.85

Remarks :-

Lab Manager 4250 Checked By

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	7.5m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 11.51

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	2.55	2.55	2.55	97.45
2.00	1.23	1.23	3.78	96.22
0.425	4.89	4.89	8.67	91.33
0.075	2.84	2.84	11.51	88.49
Total	100.00			

Gravel Content (%)= **2.55**

Sand Content (%) = 8.96 **Silt and clay %** 88.49

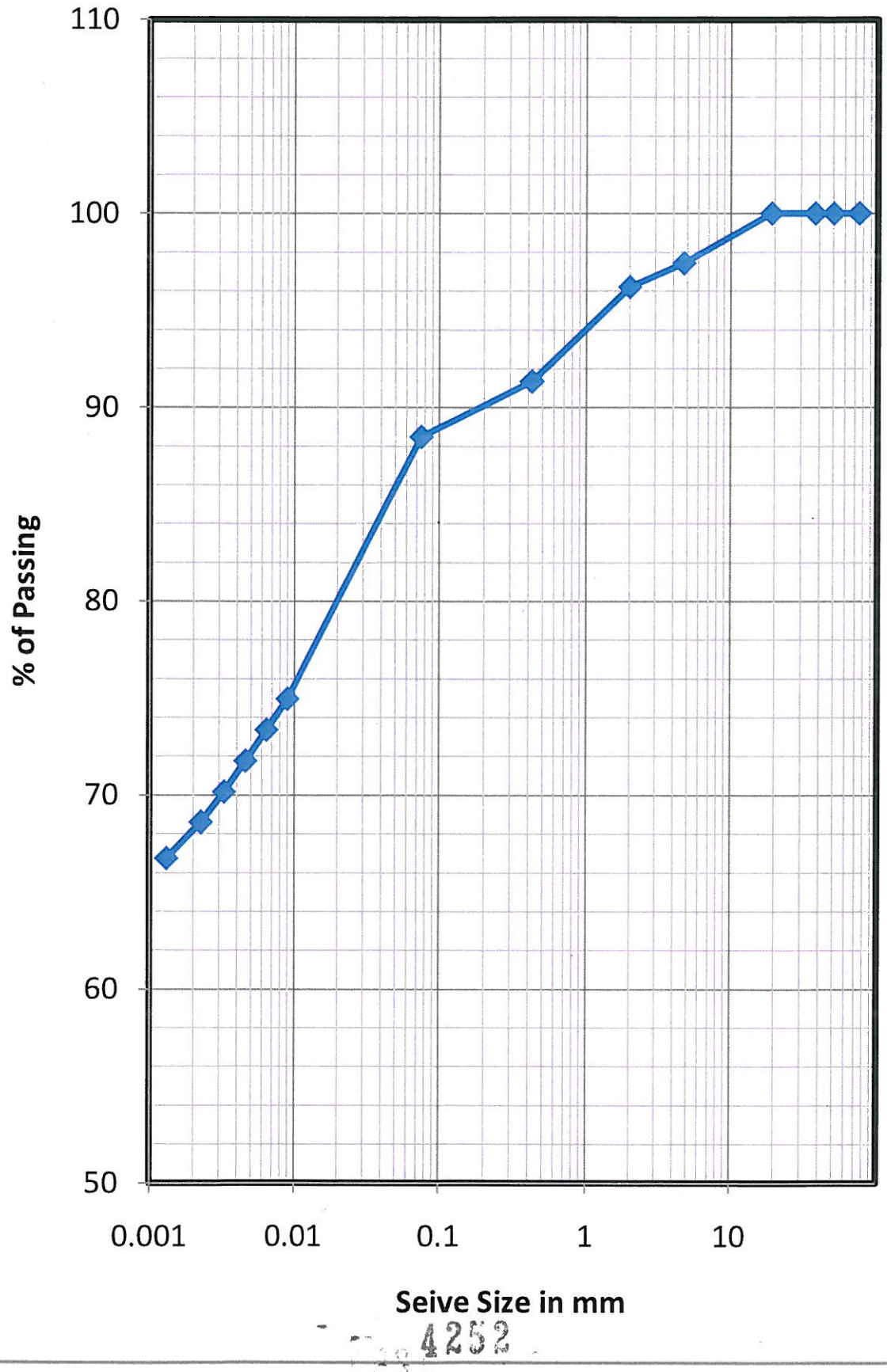
Remarks :-

Lab Manager

4251

Checked By

Grain Size Distribution Curve
BH-1, D-7.5m



4252

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	9.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 67.80

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	11.42	11.42	11.42	88.58
0.425	50.55	50.55	61.97	38.03
0.075	5.83	5.83	67.80	32.20
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 67.80 **Silt and clay %** 32.20

Remarks :-

Lab Manager Checked By

4253

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	12.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 66.19

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	9.65	9.65	9.65	90.35
0.425	32.01	32.01	41.66	58.34
0.075	24.53	24.53	66.19	33.81
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 66.19 **Silt and clay %** 33.81

Remarks :-

Lab Manager Checked By

4254

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	13.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.32

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	0.13	0.13	0.21	99.79
0.075	0.11	0.11	0.32	99.68
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.32 **Silt and clay %** 99.68

Remarks :-

Lab Manager

Checked By

4255

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	:	UDS	Date of Testing	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	14.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.16

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	0.06	0.06	0.06	99.94
0.425	0.06	0.06	0.12	99.88
0.075	0.04	0.04	0.16	99.84
Total	100.00			

Gravel Content (%)= **0.00**

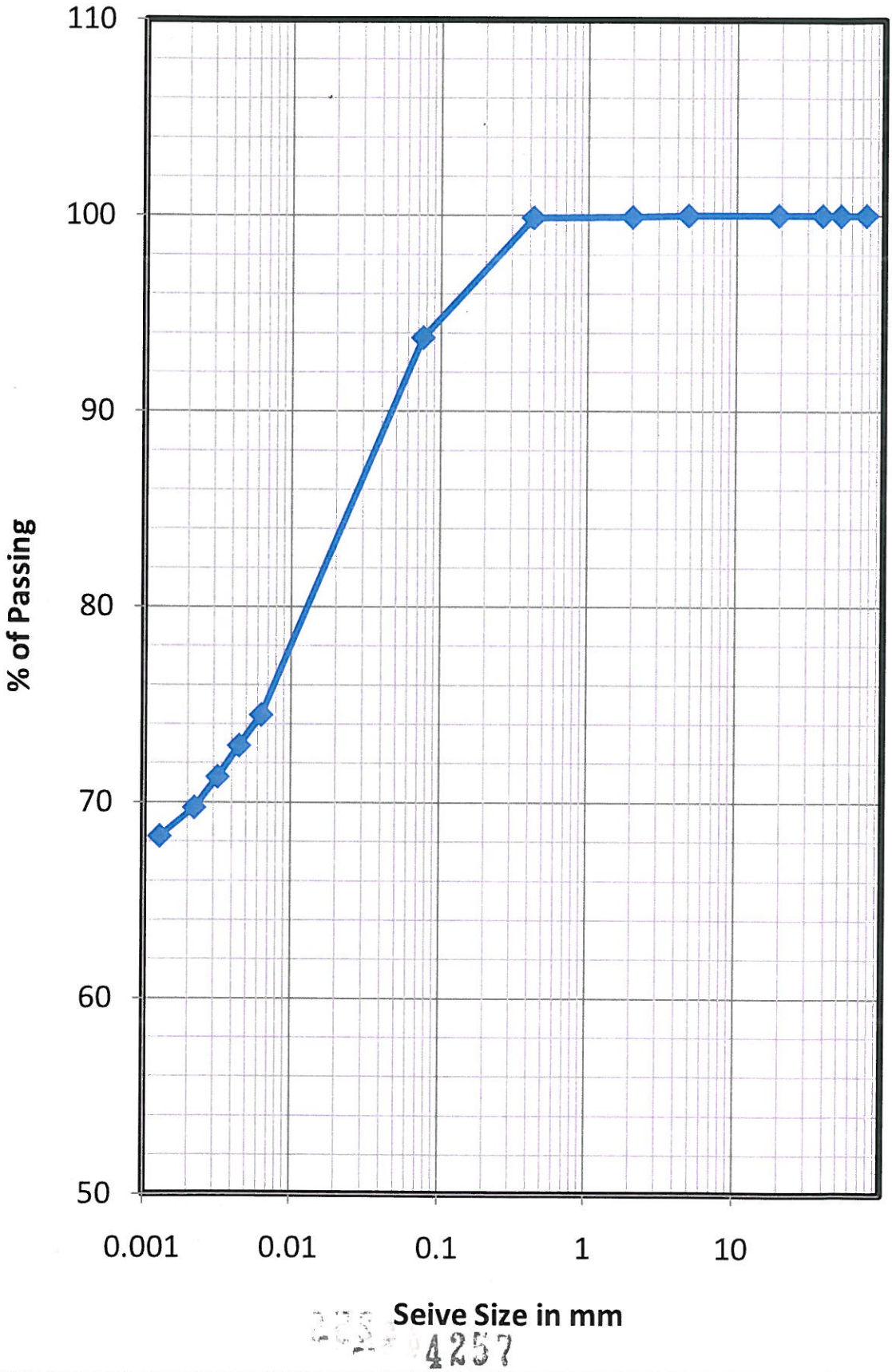
Sand Content (%) = 0.16 **Silt and clay %** 99.84

Remarks :-

Lab Manager Checked By

4255

Grain Size Distribution Curve
BH-1, D-14.0m



4257

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	17.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.29

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	0.06	0.06	0.06	99.94
0.425	0.09	0.09	0.15	99.85
0.075	0.14	0.14	0.29	99.71
Total	100.00			

Gravel Content (%)= **0.00**

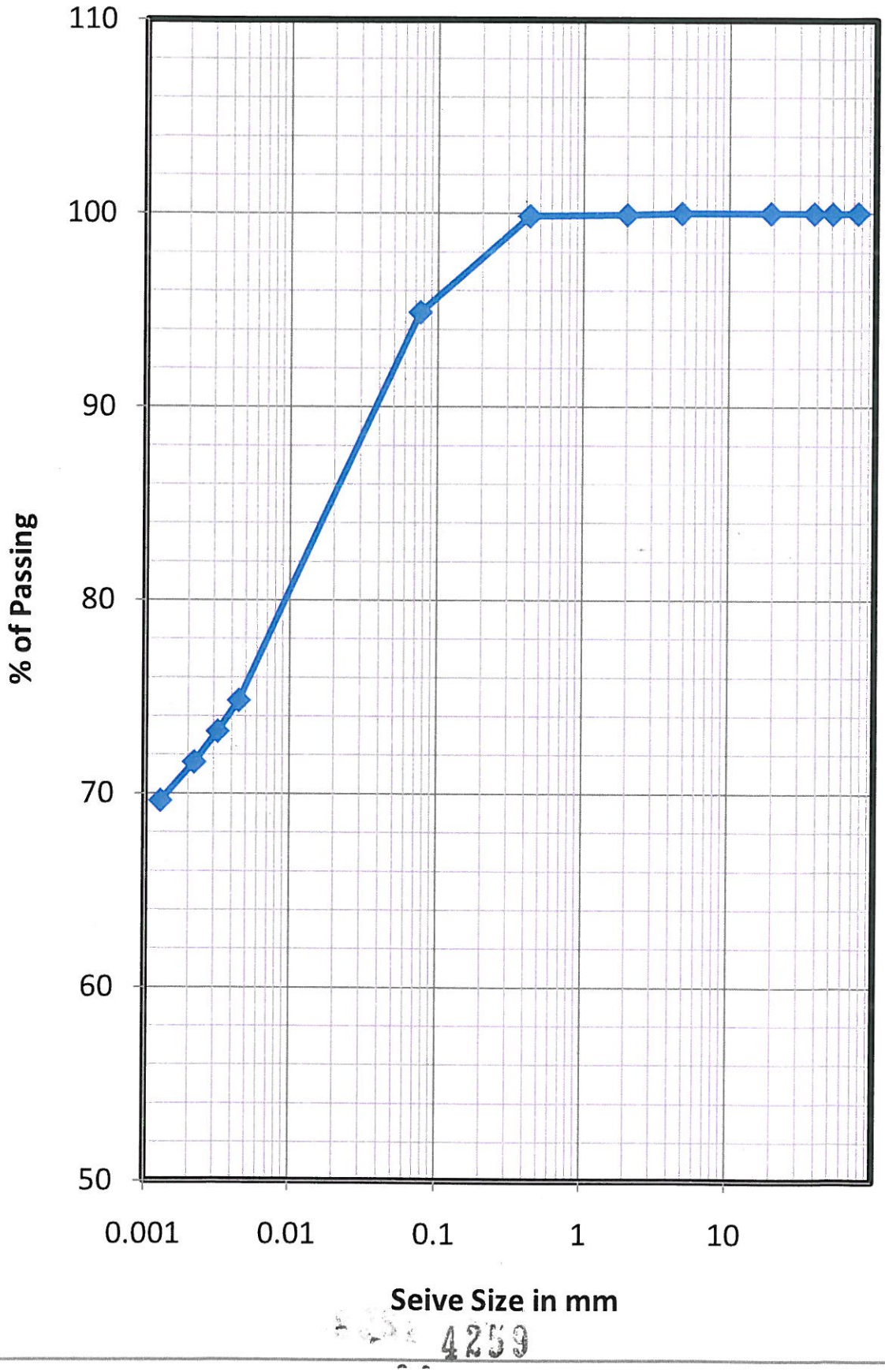
Sand Content (%) = 0.29 **Silt and clay %** 99.71

Remarks :-

Lab Manager Checked By

4253

Grain Size Distribution Curve
BH-1, D-17.0m



4259

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	20.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.41

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	0.17	0.17	0.17	99.83
0.425	0.04	0.04	0.21	99.79
0.075	0.20	0.20	0.41	99.59
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.41 **Silt and clay %** 99.59

Remarks :-

Lab Manager Checked By

4250

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	24.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.25

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	0.03	0.03	0.03	99.97
0.425	0.14	0.14	0.17	99.83
0.075	0.08	0.08	0.25	99.75
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.25 **Silt and clay %** 99.75

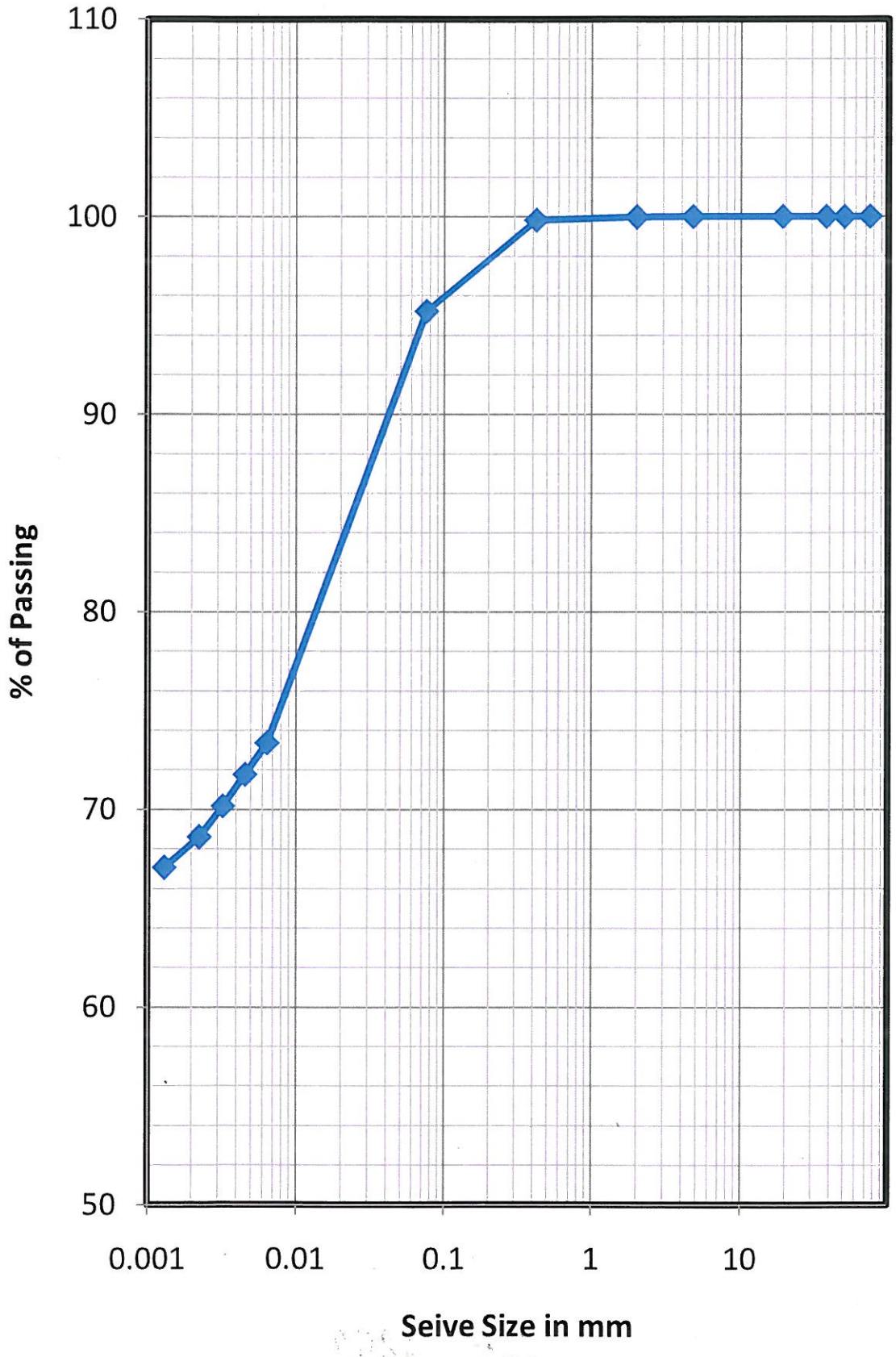
Remarks :-

Lab Manager

Checked By

4261

Grain Size Distribution Curve
BH-1, D-24.0m



4262

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	26.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.63

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	0.19	0.19	0.19	99.81
0.425	0.30	0.30	0.49	99.51
0.075	0.14	0.14	0.63	99.37
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.63 **Silt and clay %** 99.37

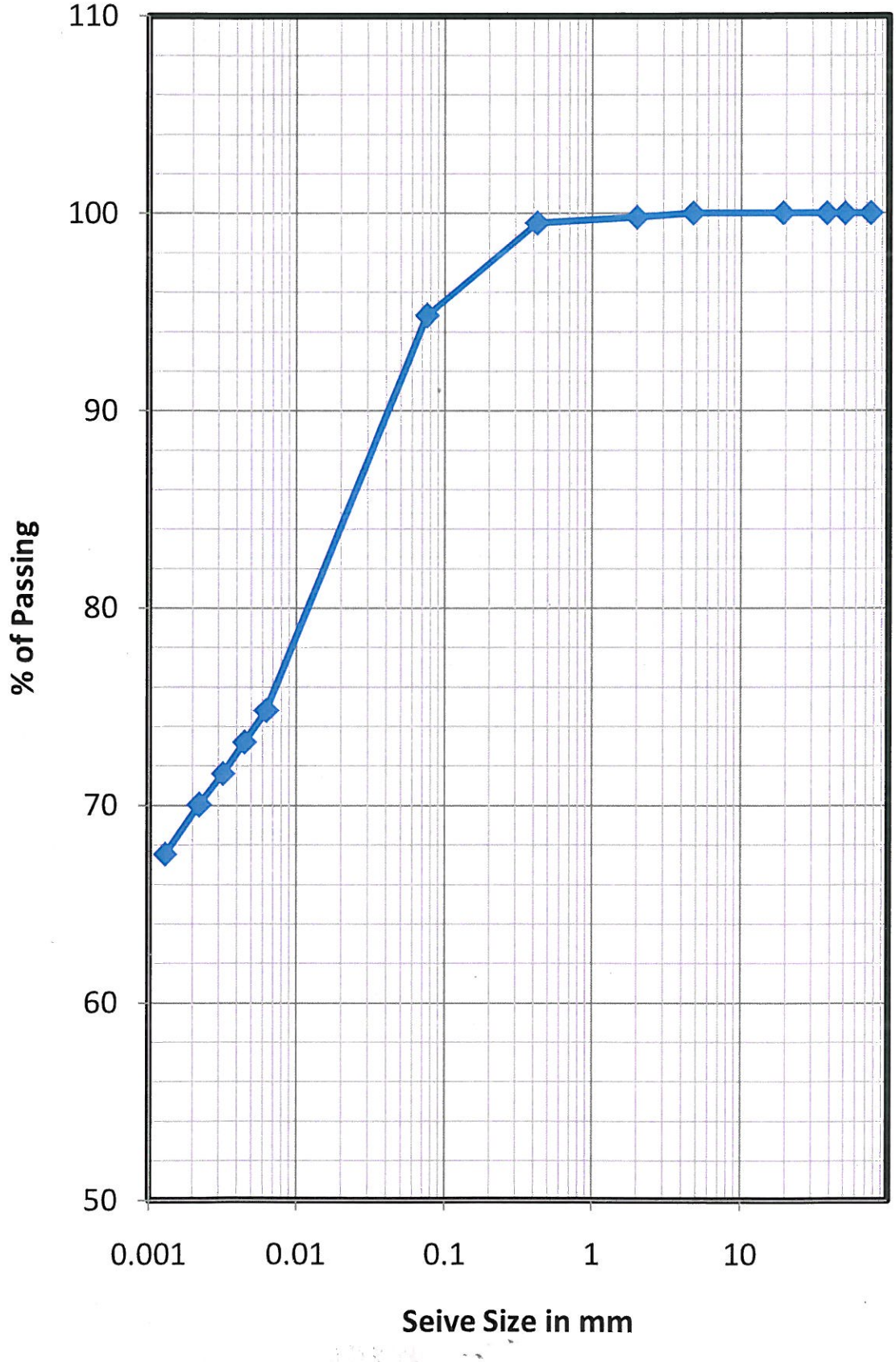
Remarks :-

Lab Manager

Checked By

4263

Grain Size Distribution Curve
BH-1, D-26.0m



4264

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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	:	12.09.12
Location	:	BH-1(Tangri 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) :- 0.47

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	0.24	0.24	0.32	99.68
0.075	0.15	0.15	0.47	99.53
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.47 **Silt and clay %** 99.53

Remarks :-

Lab Manager

Checked By

4265

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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	:	12.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	32.0m	Tested by	:	K.C Sahoo

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

Weight of oven dried sample after washing (gm) :- 0.32

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	0.07	0.07	0.07	99.93
0.425	0.19	0.19	0.26	99.74
0.075	0.06	0.06	0.32	99.68
Total	100.00			

Gravel Content (%)= **0.00**

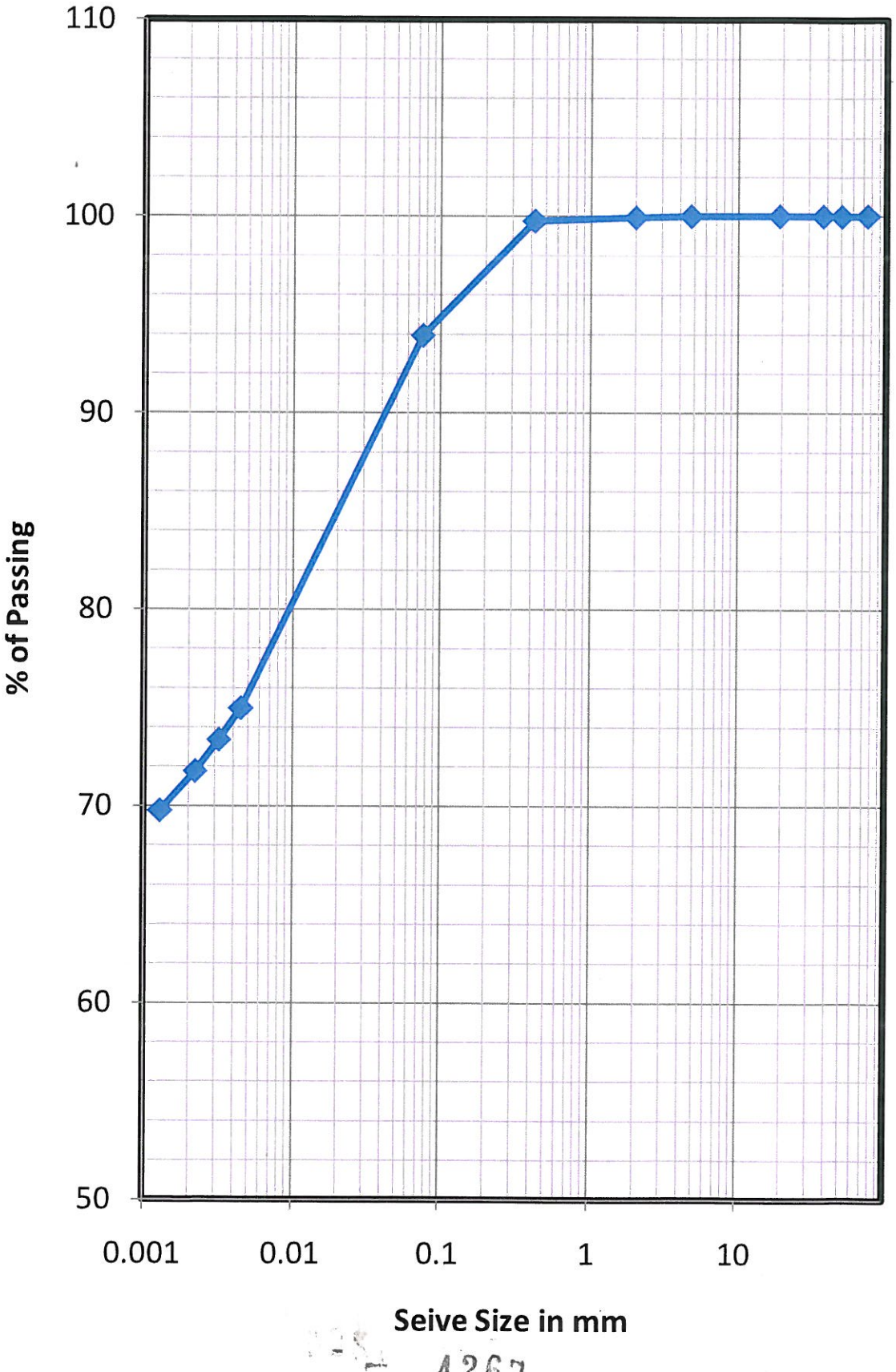
Sand Content (%) = 0.32 **Silt and clay %** 99.68

Remarks :-

Lab Manager Checked By

4266

Grain Size Distribution Curve
BH-1, D-32.0m



4267

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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	:	12.09.12
Location	:	BH-1(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) :- 0.52

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	0.16	0.16	0.16	99.84
0.425	0.27	0.27	0.43	99.57
0.075	0.09	0.09	0.52	99.48
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.52 **Silt and clay %** 99.48

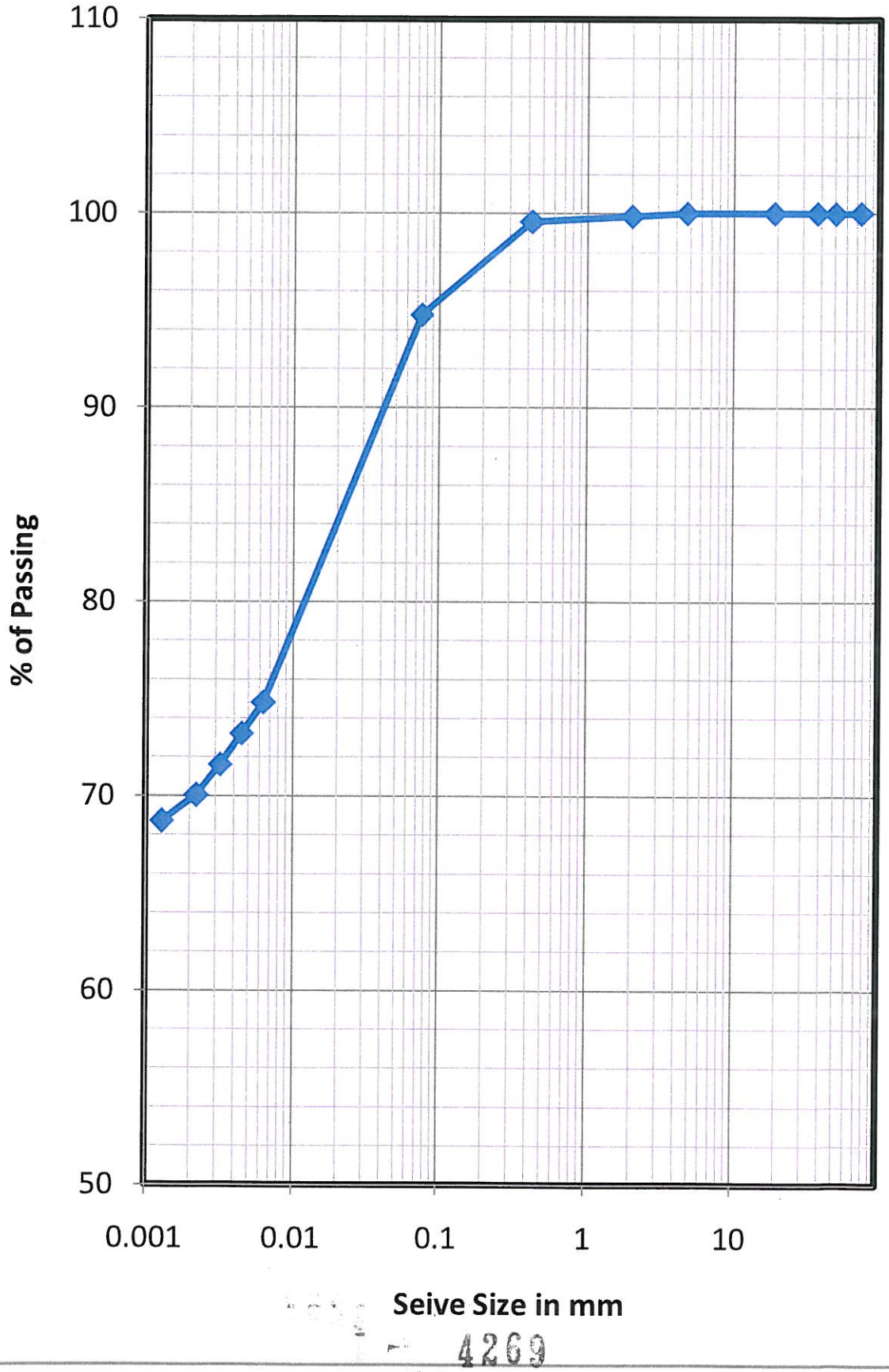
Remarks :-

Lab Manager

4268

Checked By

Grain Size Distribution Curve
BH-1, D-33.0m



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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	:	12.09.12
Location	:	BH-1(Tangri 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) :- 0.18

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	0.07	0.07	0.07	99.93
0.425	0.02	0.02	0.09	99.91
0.075	0.09	0.09	0.18	99.82
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.18 **Silt and clay %** 99.82

Remarks :-

Lab Manager Checked By

4270

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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	:	12.09.12
Location	:	BH-1(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) :- 6.27

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	1.46	1.46	1.46	98.54
0.425	1.59	1.59	3.05	96.95
0.075	3.22	3.22	6.27	93.73
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 6.27 **Silt and clay %** 93.73

Remarks :-

Lab Manager

Checked By

4271

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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	:	12.09.12
Location	:	BH-1(Tangri 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) :- 5.89

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	1.44	1.44	1.44	98.56
0.425	2.76	2.76	4.20	95.80
0.075	1.69	1.69	5.89	94.11
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 5.89 **Silt and clay %** 94.11

Remarks :-

Lab Manager

4272

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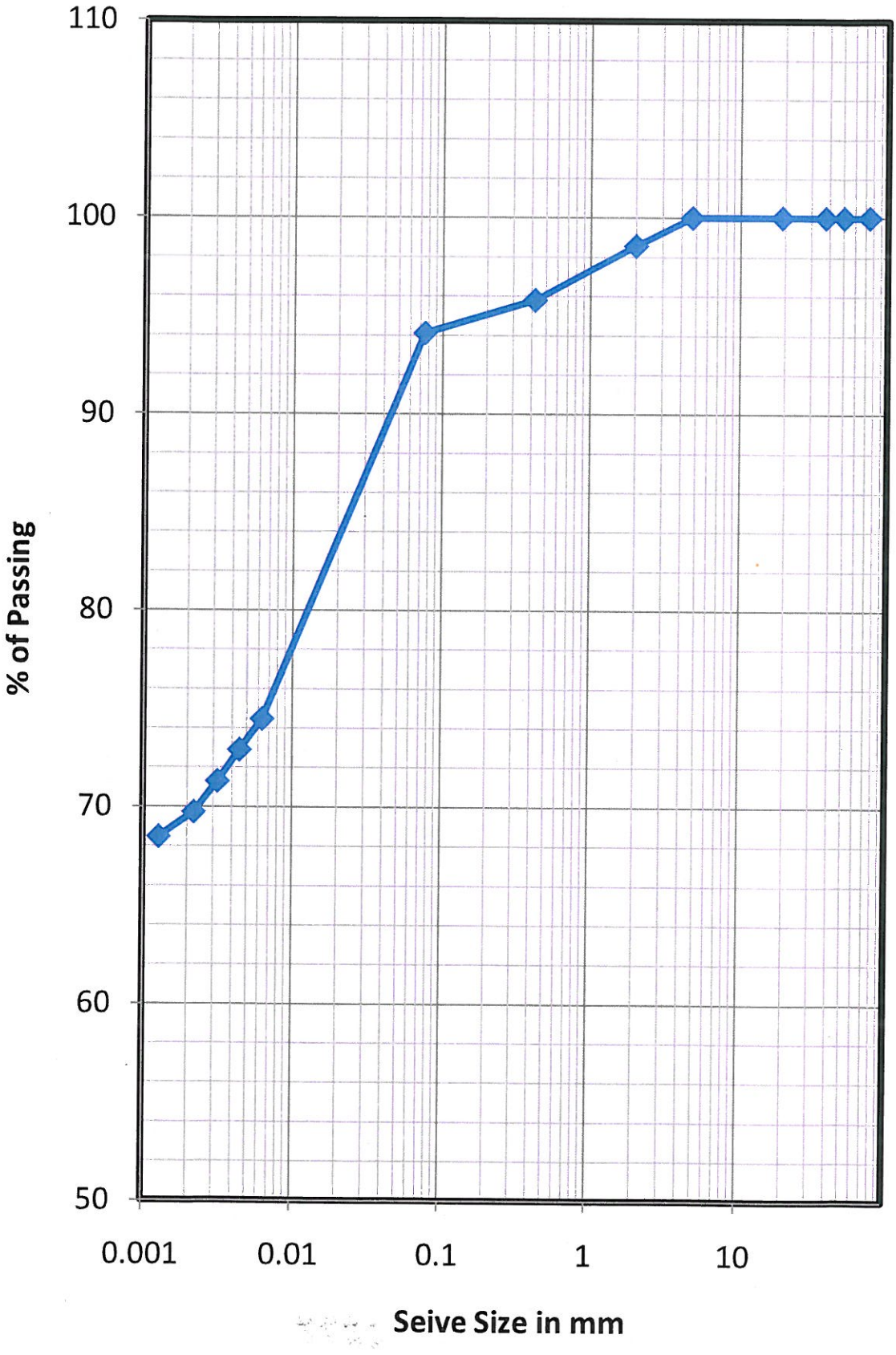
Grain Size Distribution Curve
BH-1, D-48.0m



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ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : UDS

Location : BH-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 0.5m

Date of Testing : 13.09.12

Tested by : K.C Sahoo

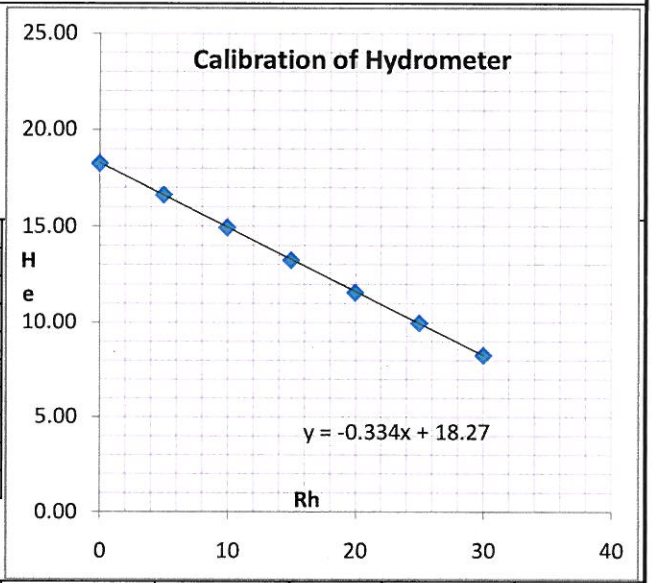
(I)	Percentage of 75 micron passing (from sieve analysis)		94.61
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		2.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		47.3
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	28.67	29	-2.0	8.69	29.17	0.538	0.000008341	0.012277647	0.00660952	26.67	3.387	90.34	85.47
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012277647	0.00473340	26.00	3.387	88.07	83.33
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012277647	0.00337821	25.50	3.387	86.38	81.72
	4	27.00	29	-2.0	9.25	27.50	0.196	0.000008341	0.012277647	0.00241061	25.00	3.387	84.69	80.12
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012277647	0.00171988	24.50	3.387	82.99	78.52
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012277647	0.00126711	24.00	3.387	81.30	76.92
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012277647	0.00090375	23.50	3.387	79.60	75.31
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012277647	0.00064450	23.00	3.387	77.91	73.71
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012277647	0.00045955	22.50	3.387	76.22	72.11
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012277647	0.00032763	22.00	3.387	74.52	70.51
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011888750	0.00022615	21.50	3.387	72.83	68.90
	1440	23.26	32	-2.0	10.50	23.76	0.011	0.000007821	0.011888750	0.000131058	21.26	3.387	72.03	68.15

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 1.5m

Date of Testing : 13.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		93.76
(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	

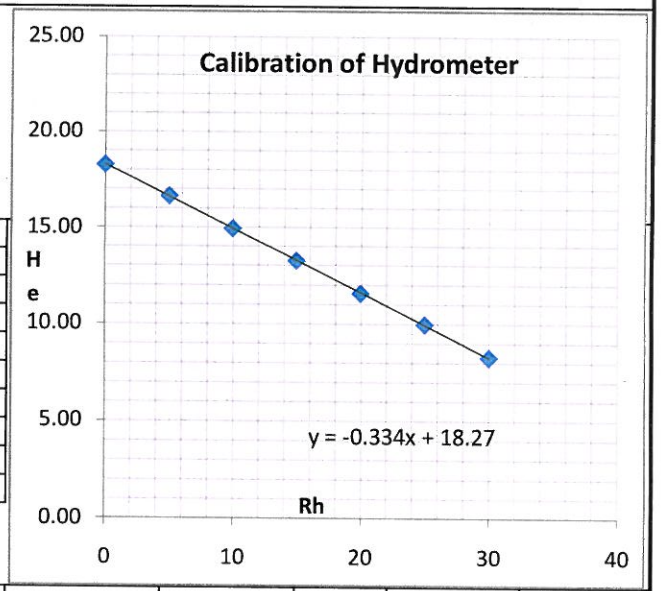
CALIBRATION OF HYDROMETER

(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	28.01	29	-2.0	8.91	28.51	0.545	0.000008341	0.012277647	0.00669279	26.01	3.418	88.91	83.36
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012277647	0.00477751	25.50	3.418	87.16	81.72
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012277647	0.00340912	25.00	3.418	85.45	80.12
	4	26.50	29	-2.0	9.42	27.00	0.198	0.000008341	0.012277647	0.00243227	24.50	3.418	83.74	78.52
	8	26.00	29	-2.0	9.59	26.50	0.141	0.000008341	0.012277647	0.00173505	24.00	3.418	82.03	76.92
	15	25.50	29	-2.0	9.75	26.00	0.104	0.000008341	0.012277647	0.00127809	23.50	3.418	80.33	75.31
	30	25.00	29	-2.0	9.92	25.50	0.074	0.000008341	0.012277647	0.00091145	23.00	3.418	78.62	73.71
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012277647	0.00064990	22.50	3.418	76.91	72.11
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012277647	0.00046334	22.00	3.418	75.20	70.51
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012277647	0.00033028	21.50	3.418	73.49	68.90
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007821	0.011888750	0.00022795	21.00	3.418	71.78	67.30
	1440	22.78	32	-2.0	10.66	23.28	0.011	0.000007821	0.011888750	0.000132063	20.78	3.418	71.03	66.60

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 4.5m

Date of Testing : 13.09.12

Tested by : K.C Sahoo

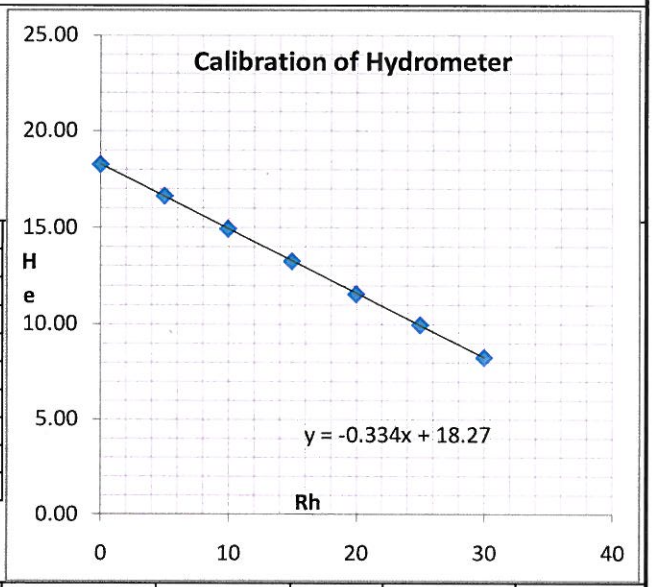
(I)	Percentage of 75 micron passing (from sieve analysis)		90.89
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		4.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		45.4
(V)	Specific gravity of soil grains, Gs		2.69
(VI)	Top Meniscus reading 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	27.84	29	-2.0	8.97	28.34	0.547	0.000008341	0.012168186	0.00665421	25.84	3.503	90.50	82.26
	1	27.50	29	-2.0	9.09	28.00	0.389	0.000008341	0.012168186	0.00473492	25.50	3.503	89.31	81.18
	2	27.00	29	-2.0	9.25	27.50	0.278	0.000008341	0.012168186	0.00337873	25.00	3.503	87.56	79.59
	4	26.50	29	-2.0	9.42	27.00	0.198	0.000008341	0.012168186	0.00241059	24.50	3.503	85.81	77.99
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012168186	0.00170454	24.50	3.503	85.81	77.99
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012168186	0.00125581	24.00	3.503	84.06	76.40
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012168186	0.00088799	24.00	3.503	84.06	76.40
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012168186	0.00063335	23.50	3.503	82.31	74.81
	120	25.50	29	-2.0	9.75	26.00	0.037	0.000008341	0.012168186	0.00044785	23.50	3.503	82.31	74.81
	240	25.00	29	-2.0	9.92	25.50	0.026	0.000008341	0.012168186	0.00031937	23.00	3.503	80.56	73.22
	480	24.50	32	-2.0	10.09	25.00	0.019	0.000007821	0.011782756	0.00022051	22.50	3.503	78.81	71.63
	1440	24.31	32	-2.0	10.15	24.81	0.011	0.000007821	0.011782756	0.000127707	22.31	3.503	78.15	71.03

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 7.5m

Date of Testing : 13.09.12

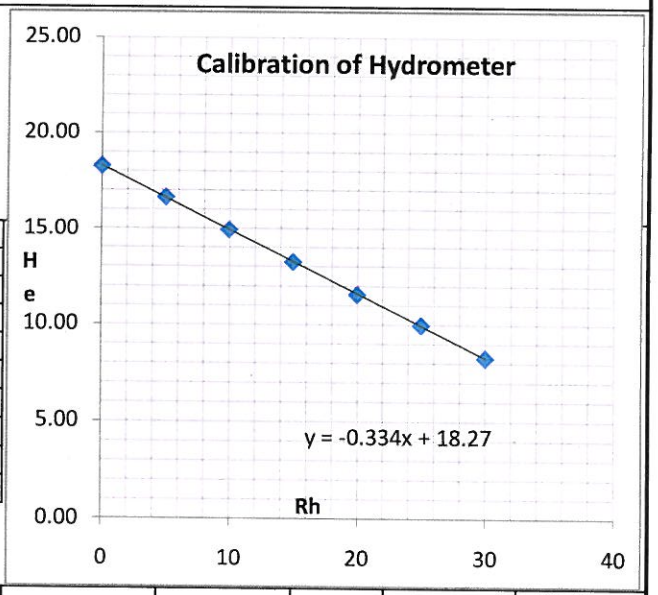
Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		88.49
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		5.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		44.2
(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	0.00643417	27.74	3.605	100.00	88.49
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.605	99.15	87.74
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.605	97.35	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.605	95.54	84.55
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.605	91.94	81.36
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012204347	0.00124852	24.50	3.605	88.33	78.17
	30	25.50	29	-2.0	9.75	26.00	0.074	0.000008341	0.012204347	0.00089835	23.50	3.605	84.73	74.98
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012204347	0.00064065	23.00	3.605	82.93	73.38
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012204347	0.00045680	22.50	3.605	81.12	71.79
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012204347	0.00032567	22.00	3.605	79.32	70.19
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011817771	0.00022480	21.50	3.605	77.52	68.60
	1440	22.92	32	-2.0	10.61	23.42	0.011	0.000007821	0.011817771	0.000130979	20.92	3.605	75.44	66.76

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 13.0m

Date of Testing : 13.09.12

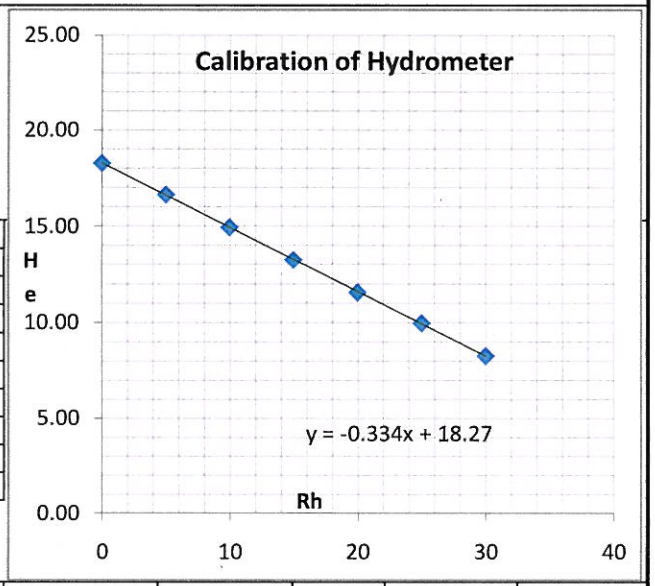
Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.68
(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		2.7
(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	0.012132344	0.00637384	27.91	3.187	88.94	88.66
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012132344	0.00454410	27.50	3.187	87.63	87.35
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012132344	0.00321316	27.50	3.187	87.63	87.35
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012132344	0.00229448	27.00	3.187	86.04	85.76
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012132344	0.00162244	27.00	3.187	86.04	85.76
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012132344	0.00119633	26.50	3.187	84.45	84.18
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012132344	0.00084594	26.50	3.187	84.45	84.18
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012132344	0.00060385	26.00	3.187	82.85	82.59
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012132344	0.00042698	26.00	3.187	82.85	82.59
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012132344	0.00030474	25.50	3.187	81.26	81.00
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011748049	0.00020866	25.50	3.187	81.26	81.00
	1440	27.30	32	-2.0	9.15	27.80	0.010	0.000007821	0.011748049	0.000120906	25.30	3.187	80.63	80.37

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 14.0m

Date of Testing : 13.09.12

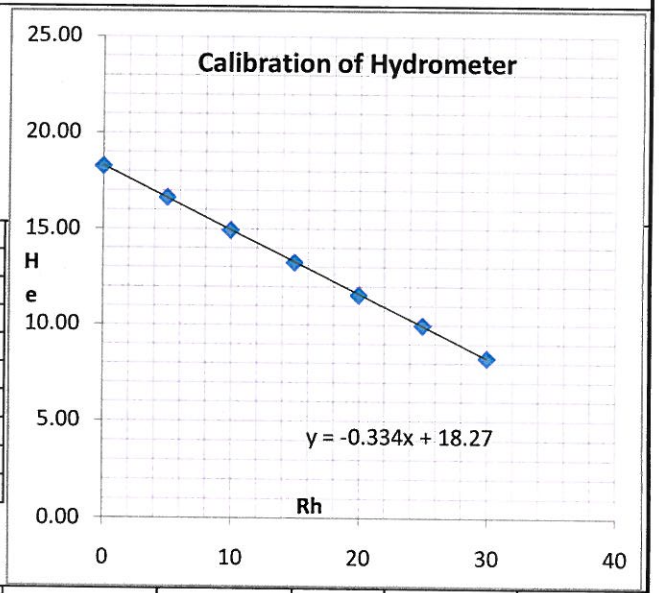
Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.84
(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		2.71
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

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

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.78	29	-2.0	8.32	30.28	0.527	0.000008341	0.012096818	0.00637181	27.78	3.175	88.19	88.05
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012096818	0.00453079	27.50	3.175	87.30	87.16
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012096818	0.00323538	27.00	3.175	85.72	85.58
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012096818	0.00230991	26.50	3.175	84.13	83.99
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012096818	0.00164886	26.00	3.175	82.54	82.41
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012096818	0.00122650	25.00	3.175	79.37	79.24
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012096818	0.00088278	24.00	3.175	76.19	76.07
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012096818	0.00062964	23.50	3.175	74.60	74.49
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012096818	0.00044901	23.00	3.175	73.02	72.90
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012096818	0.00032016	22.50	3.175	71.43	71.32
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011713648	0.00022103	22.00	3.175	69.84	69.73
	1440	23.54	32	-2.0	10.41	24.04	0.011	0.000007821	0.011713648	0.000128564	21.54	3.175	68.38	68.27

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 17.0m

Date of Testing : 13.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.71
(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	

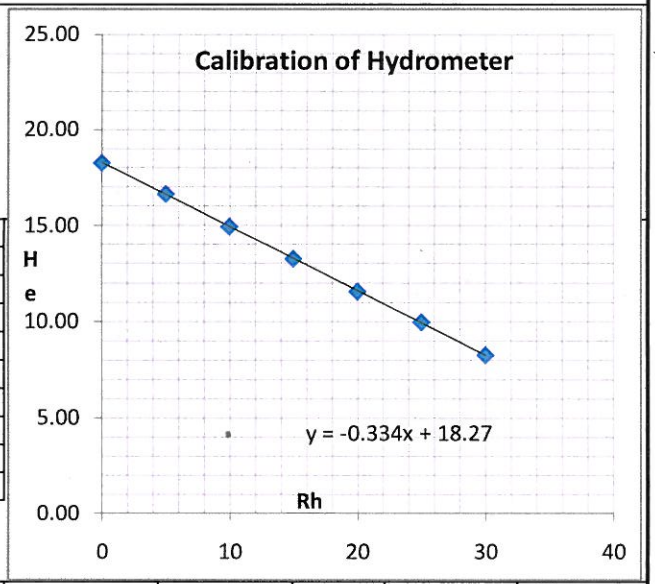
CALIBRATION OF HYDROMETER

(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 (l)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.52	29	-2.0	8.41	30.02	0.529	0.000008341	0.012168186	0.00644275	27.52	3.193	87.86	87.61
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012168186	0.00460251	27.00	3.193	86.20	85.95
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012168186	0.00328597	26.50	3.193	84.61	84.36
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012168186	0.00234560	26.00	3.193	83.01	82.77
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012168186	0.00167405	25.50	3.193	81.41	81.18
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012168186	0.00123374	25.00	3.193	79.82	79.59
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012168186	0.00088022	24.50	3.193	78.22	77.99
	60	26.00	29	-2.0	9.59	26.50	0.052	0.000008341	0.012168186	0.00062790	24.00	3.193	76.62	76.40
	120	25.50	29	-2.0	9.75	26.00	0.037	0.000008341	0.012168186	0.00044785	23.50	3.193	75.03	74.81
	240	25.00	29	-2.0	9.92	25.50	0.026	0.000008341	0.012168186	0.00031937	23.00	3.193	73.43	73.22
	480	24.50	32	-2.0	10.09	25.00	0.019	0.000007821	0.011782756	0.00022051	22.50	3.193	71.84	71.63
	1440	23.87	32	-2.0	10.30	24.37	0.011	0.000007821	0.011782756	0.000128635	21.87	3.193	69.82	69.62

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 24.0m

Date of Testing : 13.09.12

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		2.68
(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	

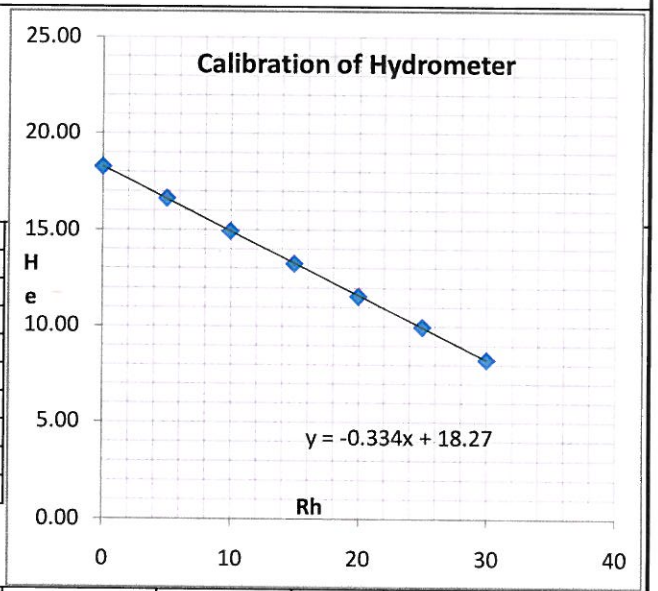
CALIBRATION OF HYDROMETER

(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	29.64	29	-2.0	8.37	30.14	0.528	0.000008341	0.012204347	0.00644648	27.64	3.198	88.41	88.18
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.198	86.36	86.14
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012204347	0.00329574	26.50	3.198	84.76	84.55
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012204347	0.00235257	26.00	3.198	83.16	82.95
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.198	81.56	81.36
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012204347	0.00123740	25.00	3.198	79.96	79.76
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012204347	0.00089063	24.00	3.198	76.76	76.57
	60	25.00	29	-2.0	9.92	25.50	0.052	0.000008341	0.012204347	0.00064065	23.00	3.198	73.56	73.38
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012204347	0.00045680	22.50	3.198	71.97	71.79
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012204347	0.00032567	22.00	3.198	70.37	70.19
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007821	0.011817771	0.00022480	21.50	3.198	68.77	68.60
	1440	23.02	32	-2.0	10.58	23.52	0.011	0.000007821	0.011817771	0.000130791	21.02	3.198	67.22	67.05

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

ARKITECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : UDS

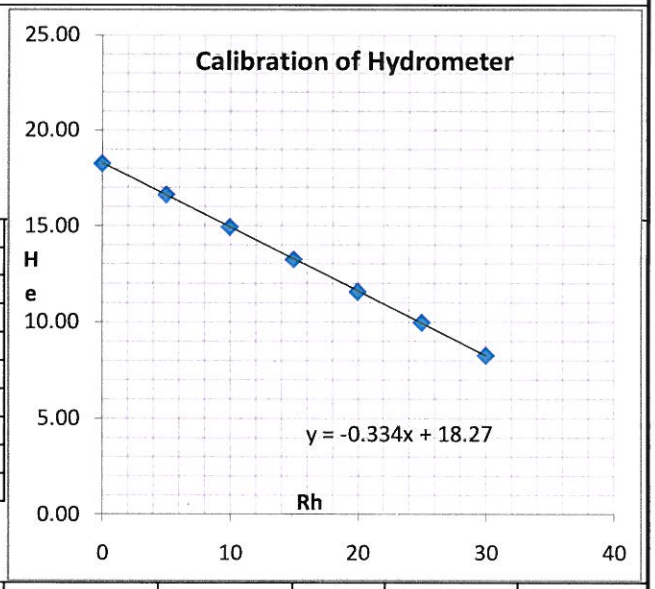
Location : BH-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 26.0m

Date of Testing : 13.09.12

Tested by : K.C Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		99.37
(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	

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

Rh = hydrometer Reading

H = height corresponding to Rh

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

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.31	29	-2.0	8.48	29.81	0.532	0.000008341	0.012168186	0.00646956	27.31	3.204	87.49	86.94
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012168186	0.00464707	26.50	3.204	84.90	84.36
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012168186	0.00331718	26.00	3.204	83.29	82.77
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012168186	0.00236746	25.50	3.204	81.69	81.18
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012168186	0.00168936	25.00	3.204	80.09	79.59
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012168186	0.00124482	24.50	3.204	78.49	77.99
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012168186	0.00088799	24.00	3.204	76.89	76.40
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012168186	0.00063335	23.50	3.204	75.28	74.81
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012168186	0.00045166	23.00	3.204	73.68	73.22
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012168186	0.00032205	22.50	3.204	72.08	71.63
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011782756	0.00022233	22.00	3.204	70.48	70.04
	1440	23.21	32	-2.0	10.52	23.71	0.011	0.000007821	0.011782756	0.000129997	21.21	3.204	67.96	67.53

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : UDS

Location : BH-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 32.0m

Date of Testing : 13.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		99.68
(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	

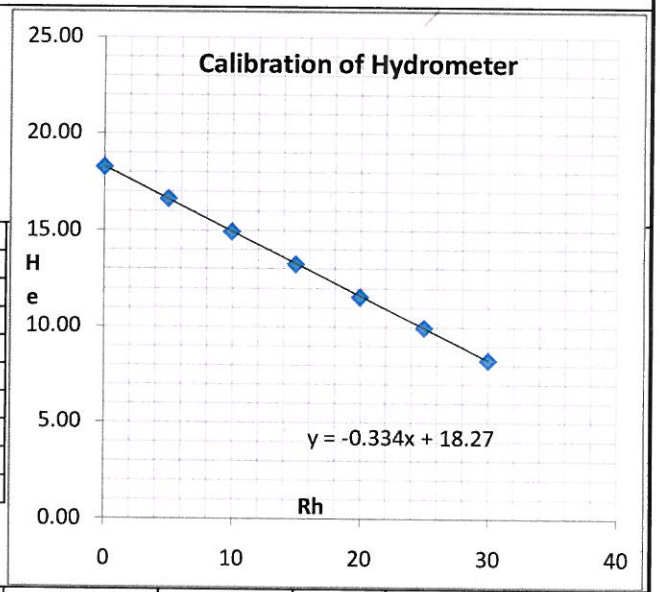
CALIBRATION OF HYDROMETER

(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	29.46	29	-2.0	8.43	29.96	0.530	0.000008341	0.012204347	0.00646959	27.46	3.201	87.89	87.61
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.201	86.42	86.14
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012204347	0.00329574	26.50	3.201	84.82	84.55
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012204347	0.00235257	26.00	3.201	83.22	82.95
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.201	81.62	81.36
	15	27.00	29	-2.0	9.25	27.50	0.101	0.000008341	0.012204347	0.00123740	25.00	3.201	80.02	79.76
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012204347	0.00088284	24.50	3.201	78.42	78.17
	60	26.00	29	-2.0	9.59	26.50	0.052	0.000008341	0.012204347	0.00062977	24.00	3.201	76.82	76.57
	120	25.50	29	-2.0	9.75	26.00	0.037	0.000008341	0.012204347	0.00044918	23.50	3.201	75.22	74.98
	240	25.00	29	-2.0	9.92	25.50	0.026	0.000008341	0.012204347	0.00032032	23.00	3.201	73.62	73.38
	480	24.50	32	-2.0	10.09	25.00	0.019	0.000007821	0.011817771	0.00022117	22.50	3.201	72.02	71.79
	1440	23.87	32	-2.0	10.30	24.37	0.011	0.000007821	0.011817771	0.000129020	21.87	3.201	69.99	69.77

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

Depth : 33.0m

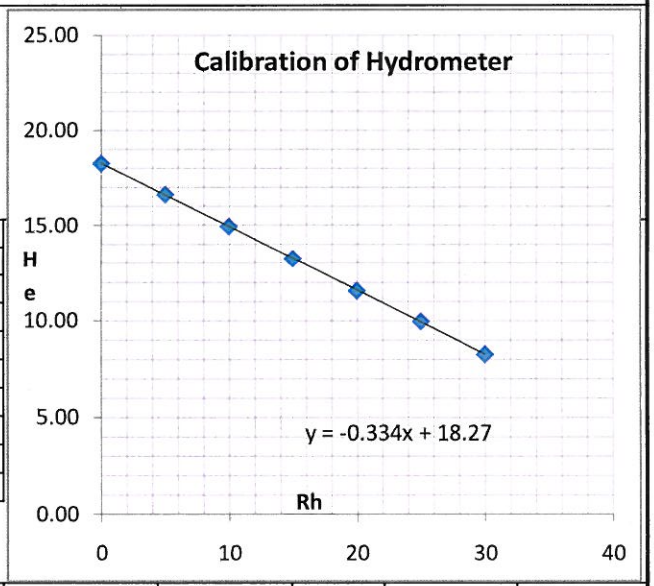
Type of Sample : SPT

Date of Testing : 13.09.12

Location : BH-1(Tangri River-Saharanpur)

Tested by : K.C Sahoo

Sampled by : T. K. Das



(I)	Percentage of 75 micron passing (from sieve analysis)		99.48
(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	

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	29.22	29	-2.0	8.51	29.72	0.533	0.000008341	0.012168186	0.00648102	27.22	3.200	87.11	86.65
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012168186	0.00464707	26.50	3.200	84.80	84.36
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012168186	0.00331718	26.00	3.200	83.20	82.77
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012168186	0.00236746	25.50	3.200	81.60	81.18
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012168186	0.00168936	25.00	3.200	80.00	79.59
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012168186	0.00124482	24.50	3.200	78.40	77.99
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012168186	0.00088799	24.00	3.200	76.80	76.40
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012168186	0.00063335	23.50	3.200	75.20	74.81
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012168186	0.00045166	23.00	3.200	73.60	73.22
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012168186	0.00032205	22.50	3.200	72.00	71.63
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011782756	0.00022233	22.00	3.200	70.40	70.04
	1440	23.58	32	-2.0	10.39	24.08	0.011	0.000007821	0.011782756	0.000129236	21.58	3.200	69.06	68.70

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-1(Tangri River-Saharanpur)

Sampled by : T. K. Das

Depth : 48.0.0m

Date of Testing : 13.09.12

Tested by : K.C Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		94.11
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		2.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		47.1
(V)	Specific gravity of soil grains, Gs		2.71
(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	

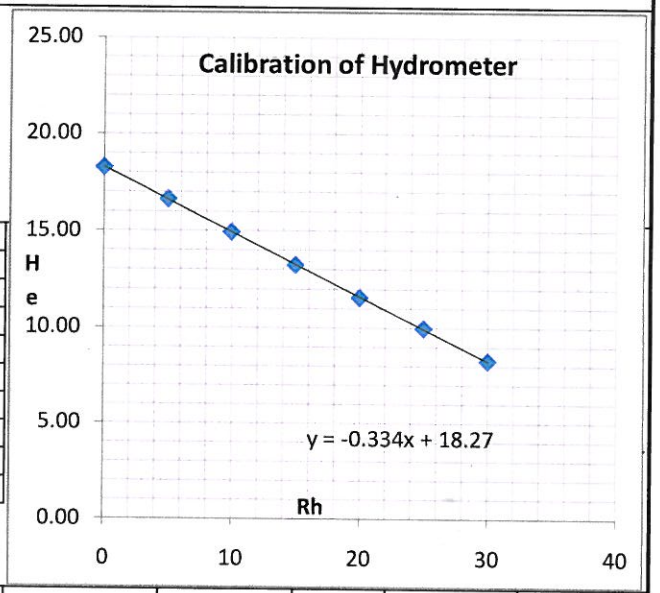
CALIBRATION OF HYDROMETER

(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	28.37	29	-2.0	8.79	28.87	0.541	0.000008341	0.012096818	0.00654959	26.37	3.368	88.81	83.58
	1	28.00	29	-2.0	8.92	28.50	0.386	0.000008341	0.012096818	0.00466369	26.00	3.368	87.57	82.41
	2	27.50	29	-2.0	9.09	28.00	0.275	0.000008341	0.012096818	0.00332846	25.50	3.368	85.88	80.82
	4	27.00	29	-2.0	9.25	27.50	0.196	0.000008341	0.012096818	0.00237511	25.00	3.368	84.20	79.24
	8	26.50	29	-2.0	9.42	27.00	0.140	0.000008341	0.012096818	0.00169454	24.50	3.368	82.52	77.65
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012096818	0.00123752	24.50	3.368	82.52	77.65
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012096818	0.00088278	24.00	3.368	80.83	76.07
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012096818	0.00062964	23.50	3.368	79.15	74.49
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012096818	0.00044901	23.00	3.368	77.46	72.90
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012096818	0.00032016	22.50	3.368	75.78	71.32
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007821	0.011713648	0.00022103	22.00	3.368	74.10	69.73
	1440	23.60	32	-2.0	10.39	24.10	0.011	0.000007821	0.011713648	0.000128433	21.60	3.368	72.76	68.47

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

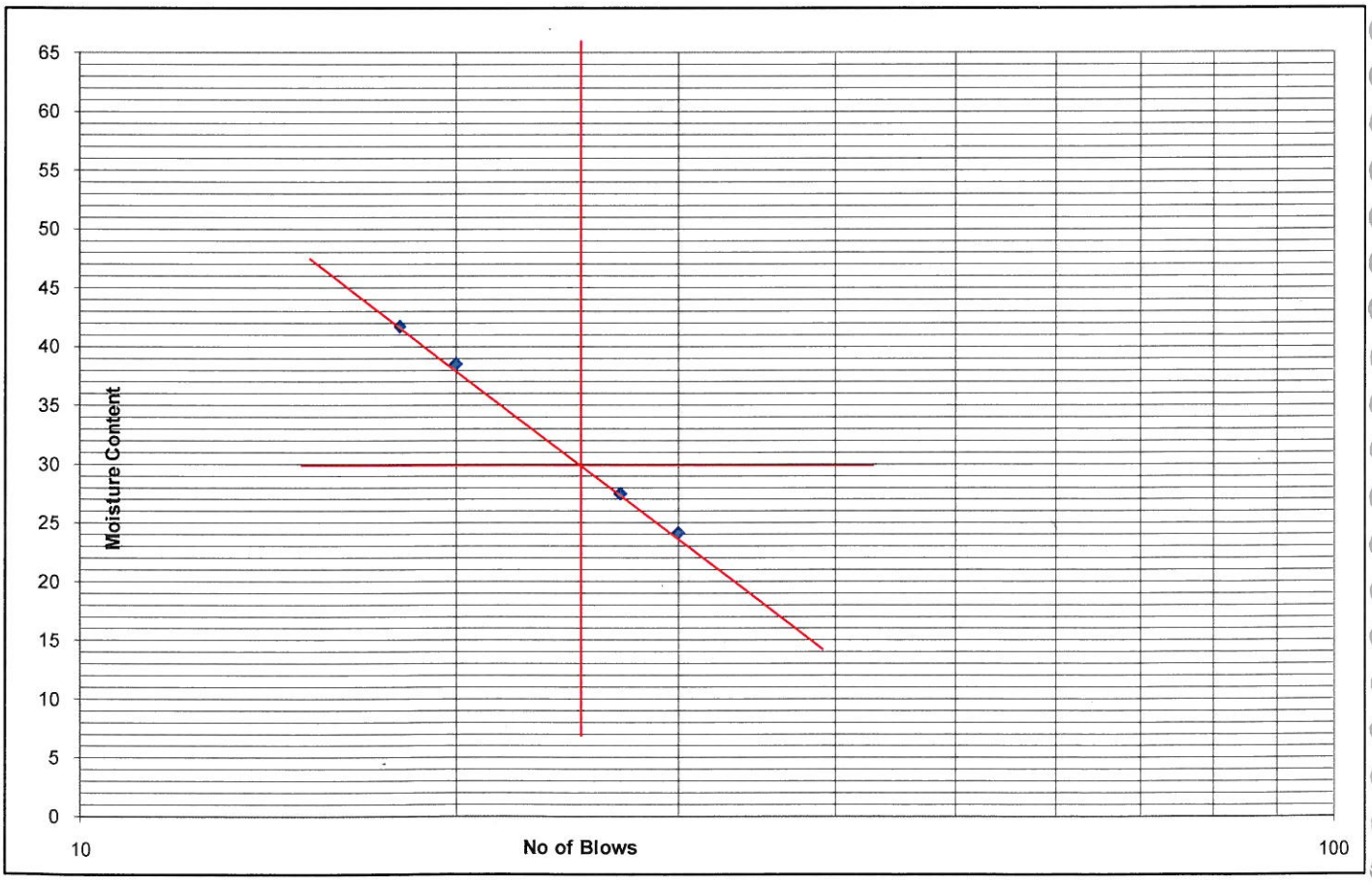
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	13.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	0.5m	Tested by	:	K.C.Sahoo

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	C3	C4	C5	C6	C7	C8
Container Weight (gm) (W1)	36.7	32.65	31.26	30.12	32.58	37.21
Container + Wt. of wet soil (gm) (W2)	88.63	103.18	106.66	110.79	90.14	88.18
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)	10.10	15.20	20.97	23.73	8.51	7.51
Wt. of oven dry soil (gm) (W3-W1)	41.83	55.33	54.43	56.93	49.05	43.46
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**24.14**	**27.48**	**38.52**	**41.69**	**17.34**	**17.28**

Result Summary

Liquid Limit (WL)	30	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	13	%



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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

Location : BH-1(Tangri River-Saharanpur)

Depth : 1.5m

Date Of Testing : 13.09.12

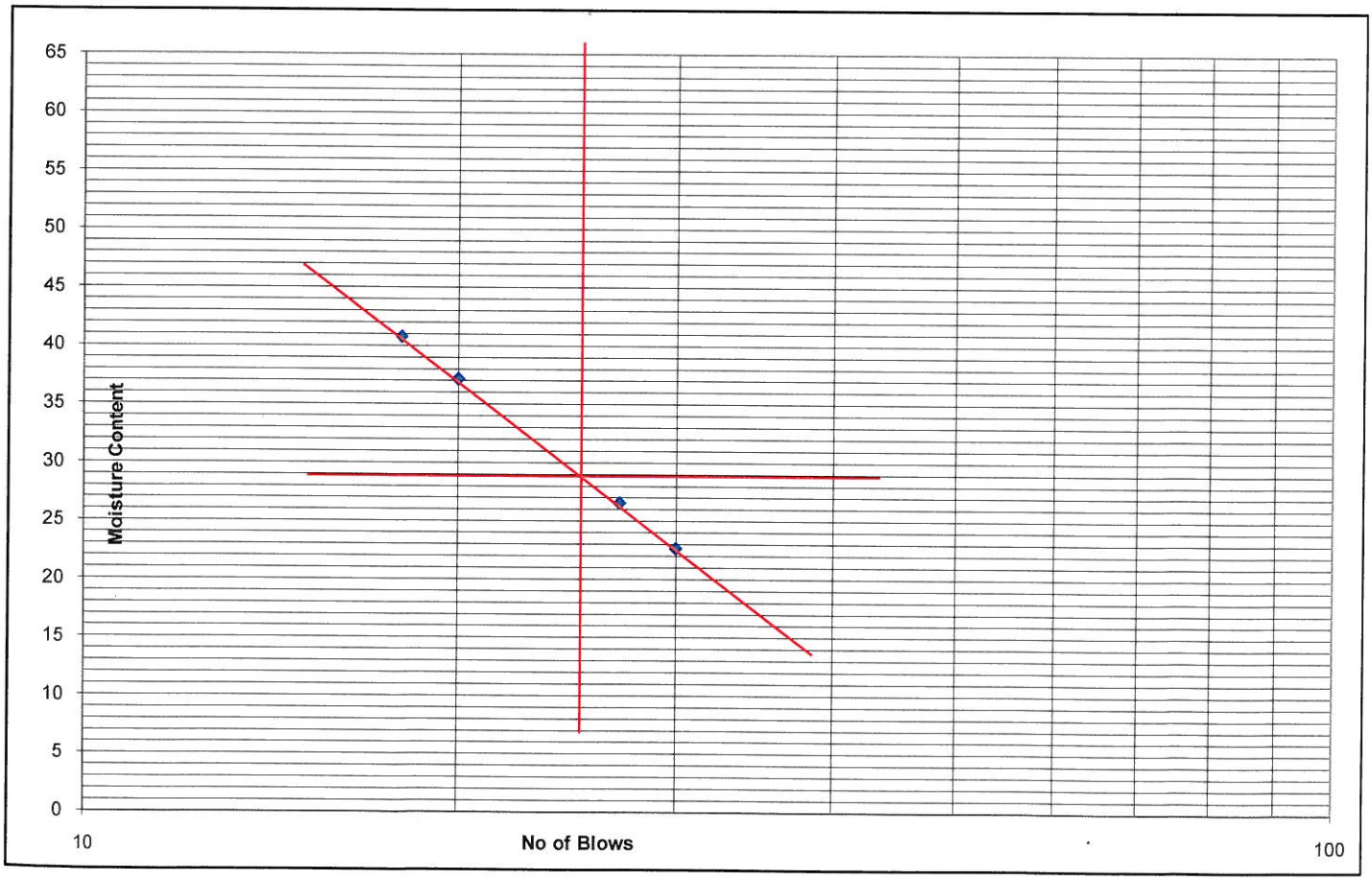
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	C9	C10	C11	C12	C13	C14
Container Weight (gm) (W1)	33.14	35.42	31.85	36.97	30.44	36.34
Container + Wt. of wet soil (gm) (W2)	88.83	101.95	105.70	107.46	90.00	87.98
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)	10.29	13.97	20.01	20.41	8.37	7.31
Wt. of oven dry soil (gm) (W3-W1)	45.39	52.56	53.84	50.08	51.19	44.33
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**22.68**	**26.58**	**37.16**	**40.76**	**16.35**	**16.48**

Result Summary

Liquid Limit (WL)	29	%
Plastic Limit (Wp)	16	%
Plasticity Index (Ip)	13	%



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Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

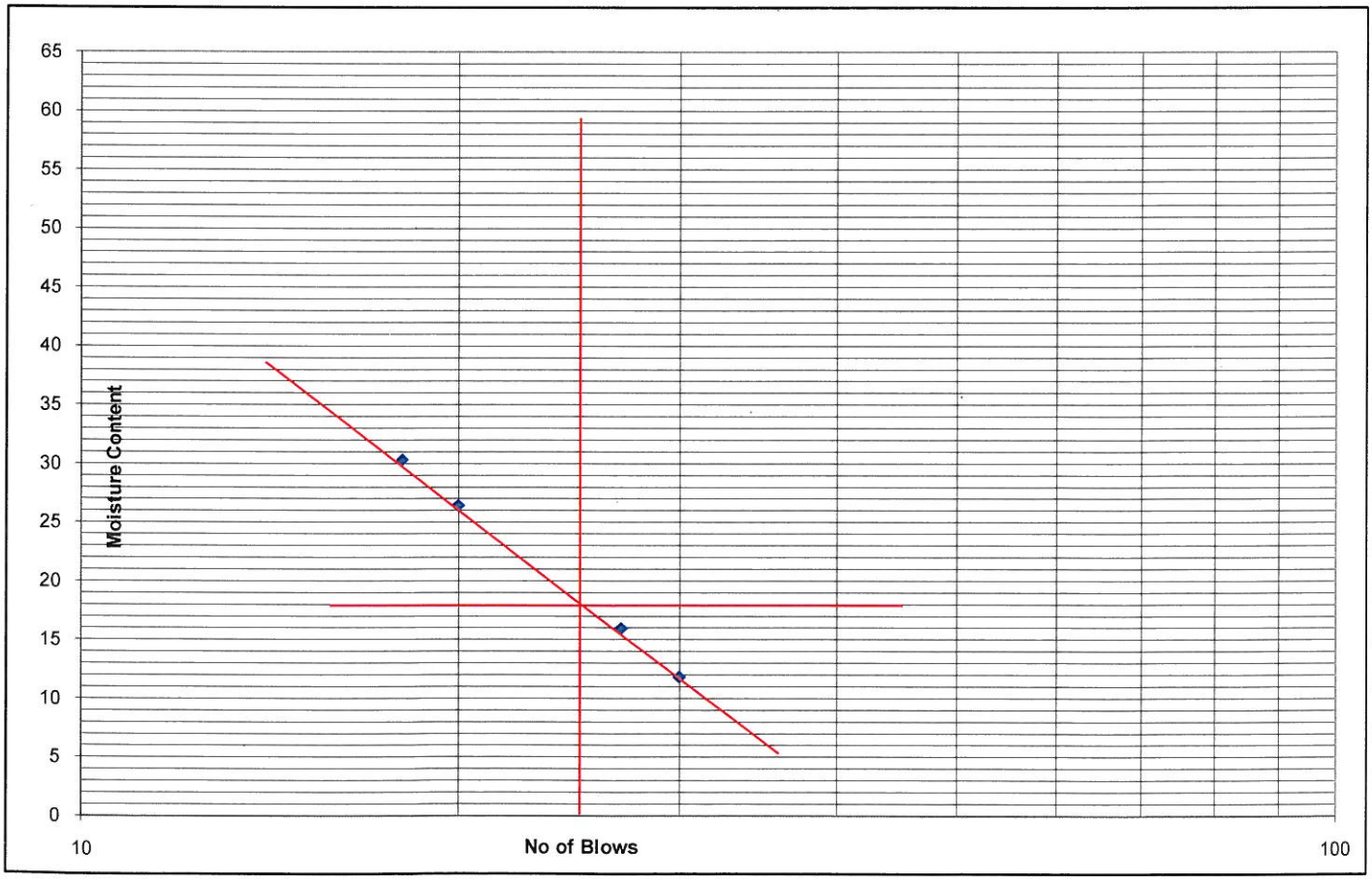
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	13.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	3.0m	Tested by	:	K.C.Sahoo

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	C15	C16	C17	C18	NP	
Container Weight (gm) (W1)	37.83	32.28	30.76	32.24		
Container + Wt. of wet soil (gm) (W2)	83.36	96.88	100.21	103.69		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.83	8.90	14.52	16.64		
Wt. of oven dry soil (gm) (W3-W1)	40.70	55.70	54.93	54.81		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**11.86**	**15.98**	**26.44**	**30.35**		

Result Summary

Liquid Limit (WL)	18	%
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

Location : BH-1(Tangri River-Saharanpur)

Depth : 4.5m

Date Of Testing : 13.09.12

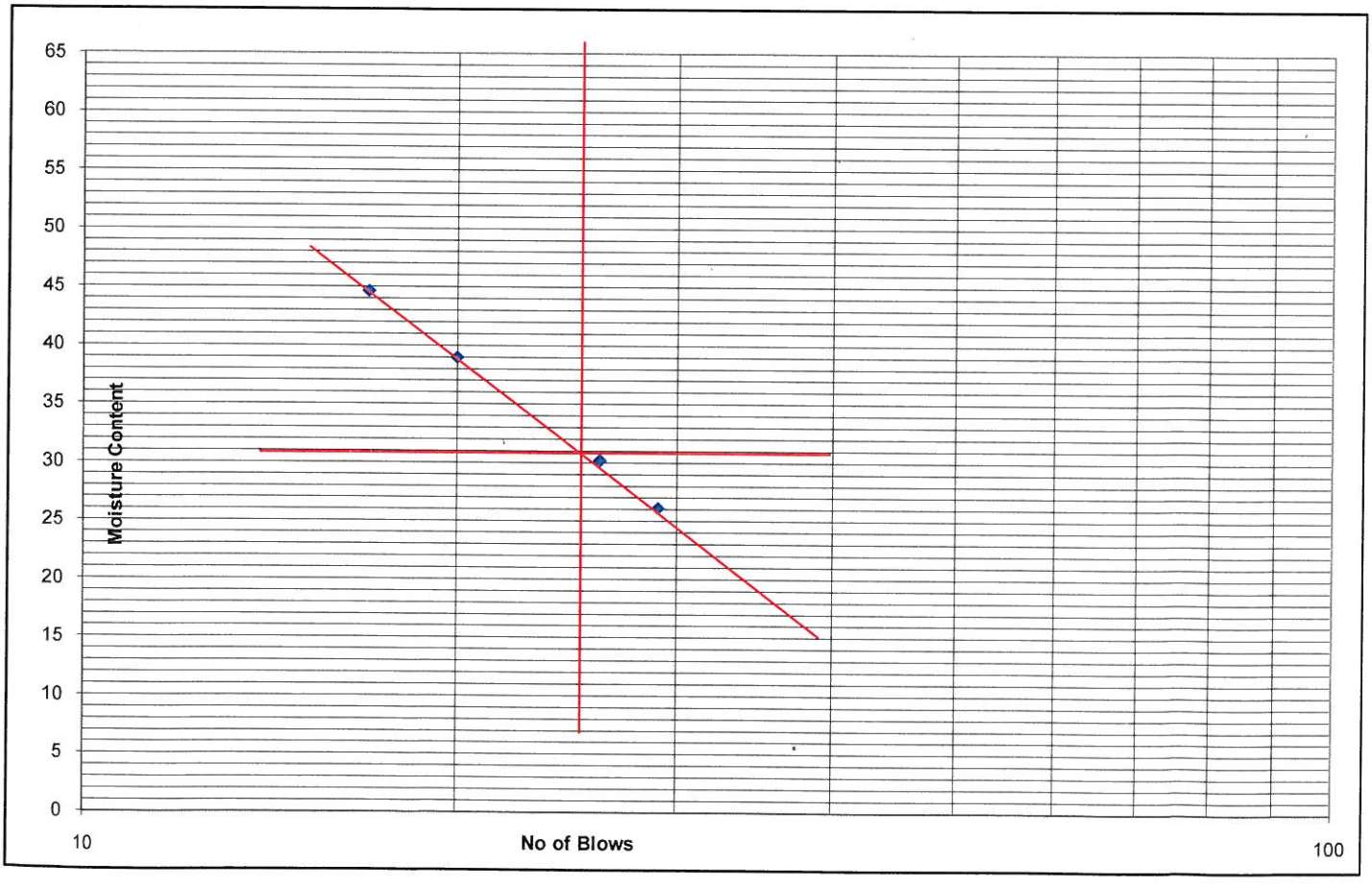
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	29	26	20	17	Plastic Limit	
Container No.	C19	C20	C21	C22	C23	C24
Container Weight (gm) (W1)	30.48	35.24	31.85	34.61	35.8	32.51
Container + Wt. of wet soil (gm) (W2)	91.09	103.89	106.68	110.46	89.66	88.93
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)	12.56	15.92	20.99	23.41	8.03	8.26
Wt. of oven dry soil (gm) (W3-W1)	48.05	52.74	53.84	52.44	45.83	48.16
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**26.13**	**30.18**	**38.98**	**44.64**	**17.52**	**17.15**

Result Summary

Liquid Limit (WL)	31	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	14	%



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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

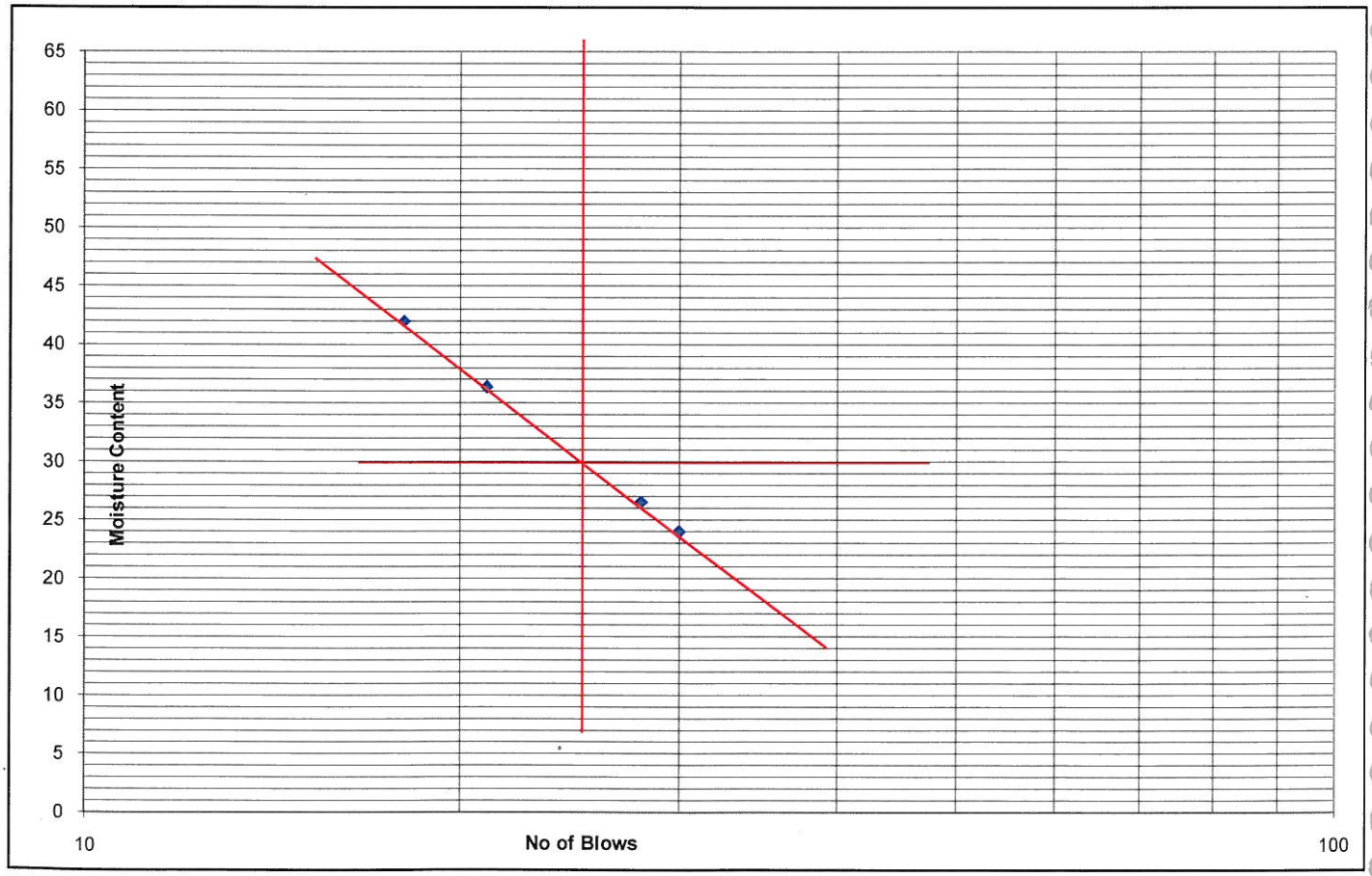
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	13.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	6.0m	Tested by	:	K.C.Sahoo

Number of Blows	30	28	21	18	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)	88.78	102.48	105.51	107.05	89.76	89.24
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)	10.25	14.51	19.82	20.00	8.13	8.57
Wt. of oven dry soil (gm) (W3-W1)	42.70	54.62	54.49	47.63	46.77	49.91
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**24.00**	**26.56**	**36.37**	**41.99**	**17.39**	**17.17**

Result Summary

Liquid Limit (WL)	30	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	13	%



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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

Location : BH-1(Tangri River-Saharanpur)

Depth : 6.5m

Date Of Testing : 13.09.12

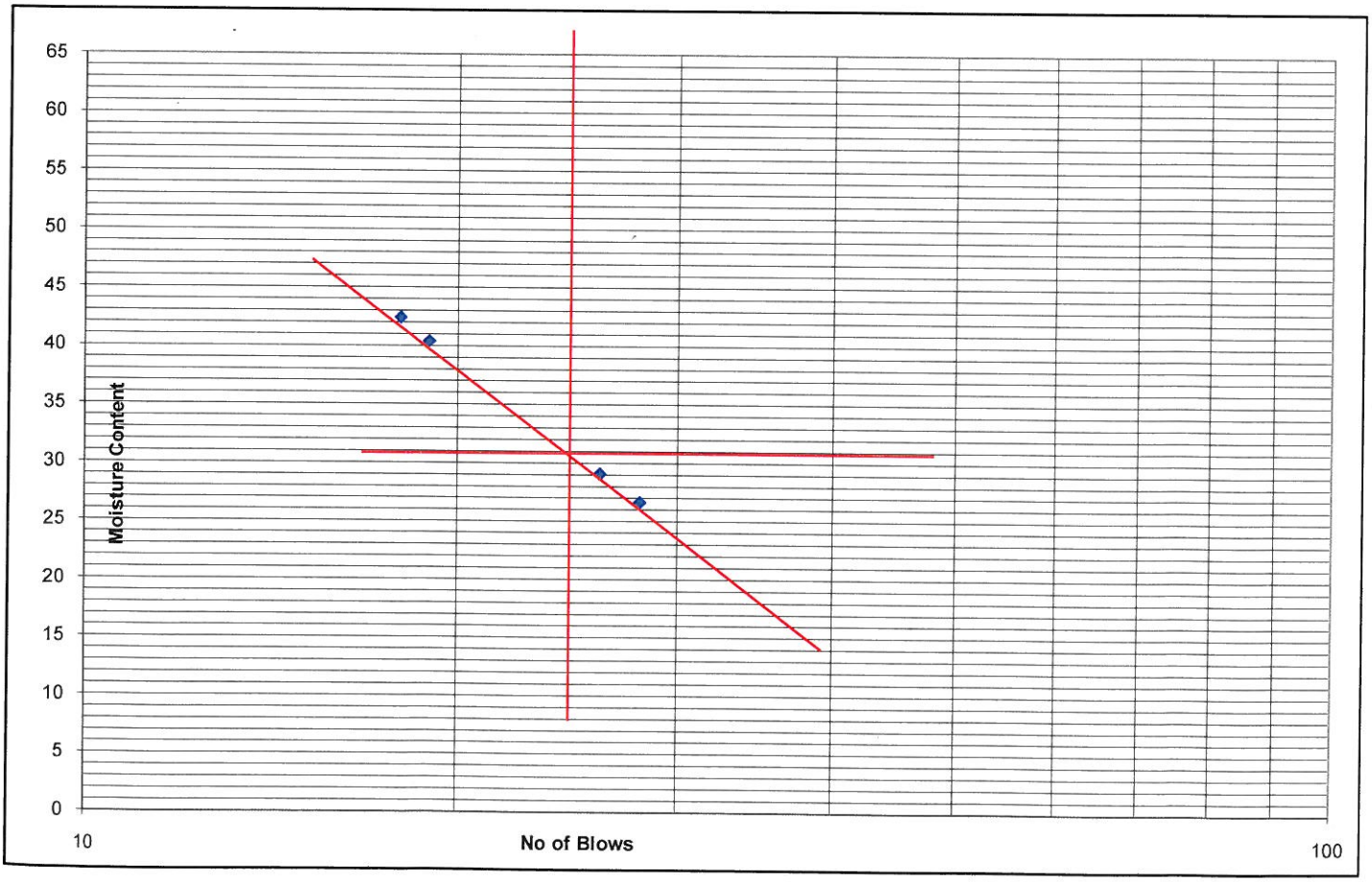
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	28	26	19	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)	91.24	102.48	107.19	110.57	88.84	88.68
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)	12.71	14.51	21.50	23.52	7.20	8.01
Wt. of oven dry soil (gm) (W3-W1)	47.73	49.90	53.22	55.49	43.90	49.68
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**26.62**	**29.07**	**40.40**	**42.38**	**16.41**	**16.12**

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

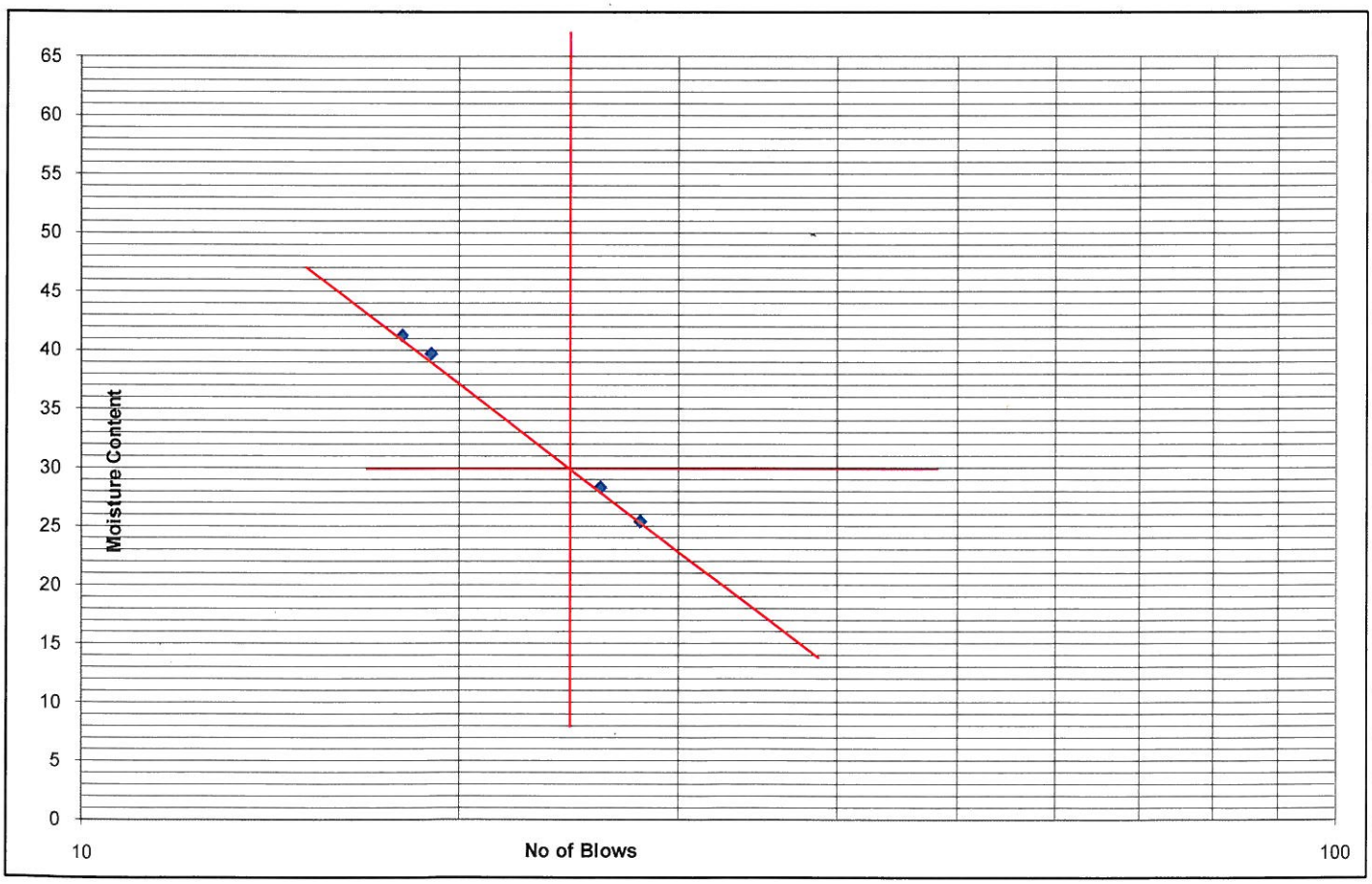
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	13.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	7.5m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	19	18	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)	88.70	102.35	104.05	110.36	88.39	87.68
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)	10.17	14.37	18.36	23.31	6.75	7.00
Wt. of oven dry soil (gm) (W3-W1)	40.01	50.76	46.26	56.55	44.03	45.12
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**25.42**	**28.31**	**39.68**	**41.22**	**15.34**	**15.52**

Result Summary

Liquid Limit (WL)	30	%
Plastic Limit (Wp)	15	%
Plasticity Index (Ip)	15	%



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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-1(Tangri River-Saharanpur)

Depth : 9.0m

Date Of Testing : 13.09.12

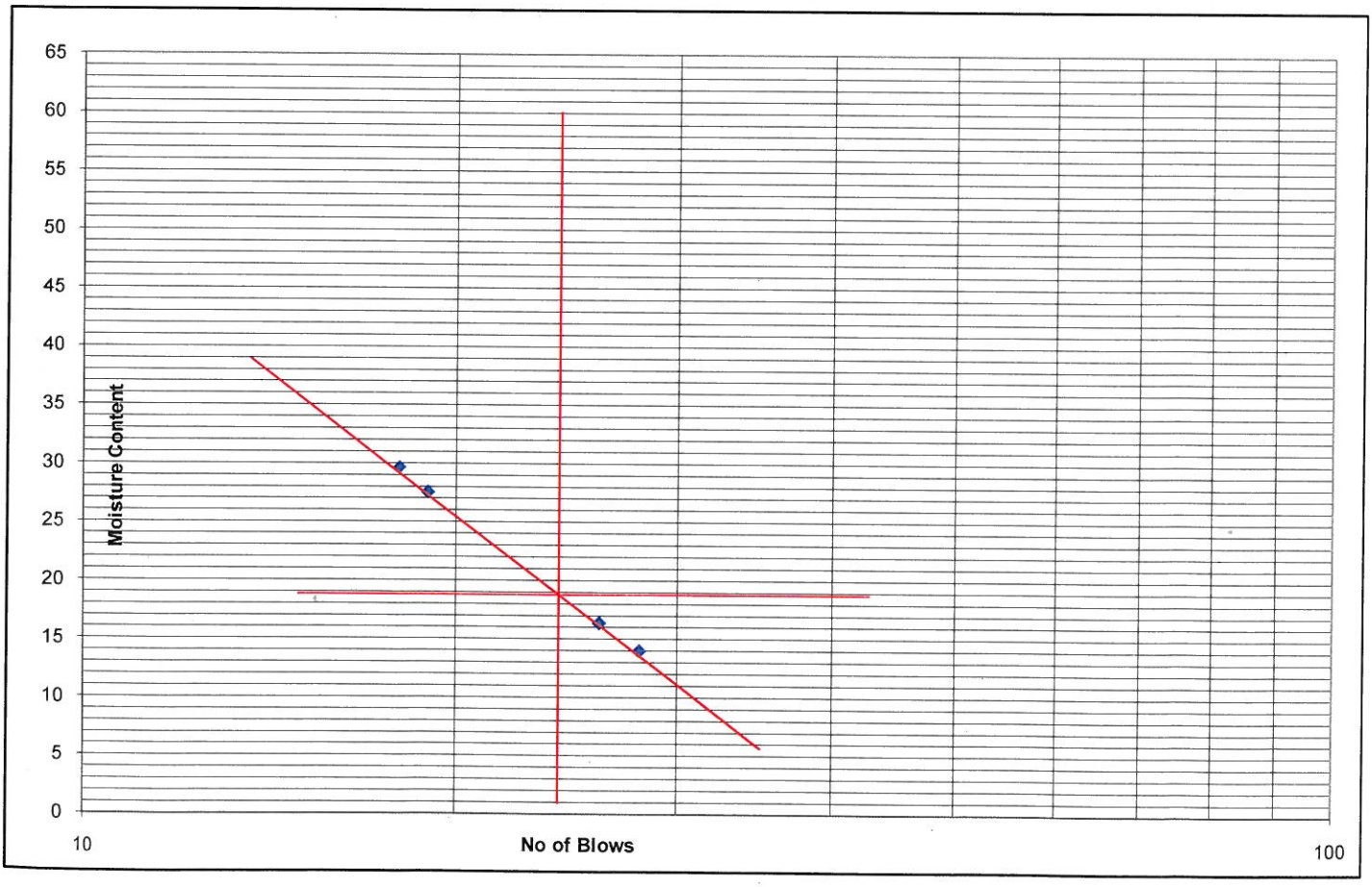
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C1	C2	C3	C4	NP	
Container Weight (gm) (W1)	33.6	34.2	36.7	32.65		
Container + Wt. of wet soil (gm) (W2)	84.82	96.78	99.18	103.20		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05		
Wt. Of water (gm) (W2-W1)-(W3-W1)	6.29	8.80	13.49	16.15		
Wt. of oven dry soil (gm) (W3-W1)	44.93	53.78	48.99	54.40		
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**14.00**	**16.37**	**27.54**	**29.68**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

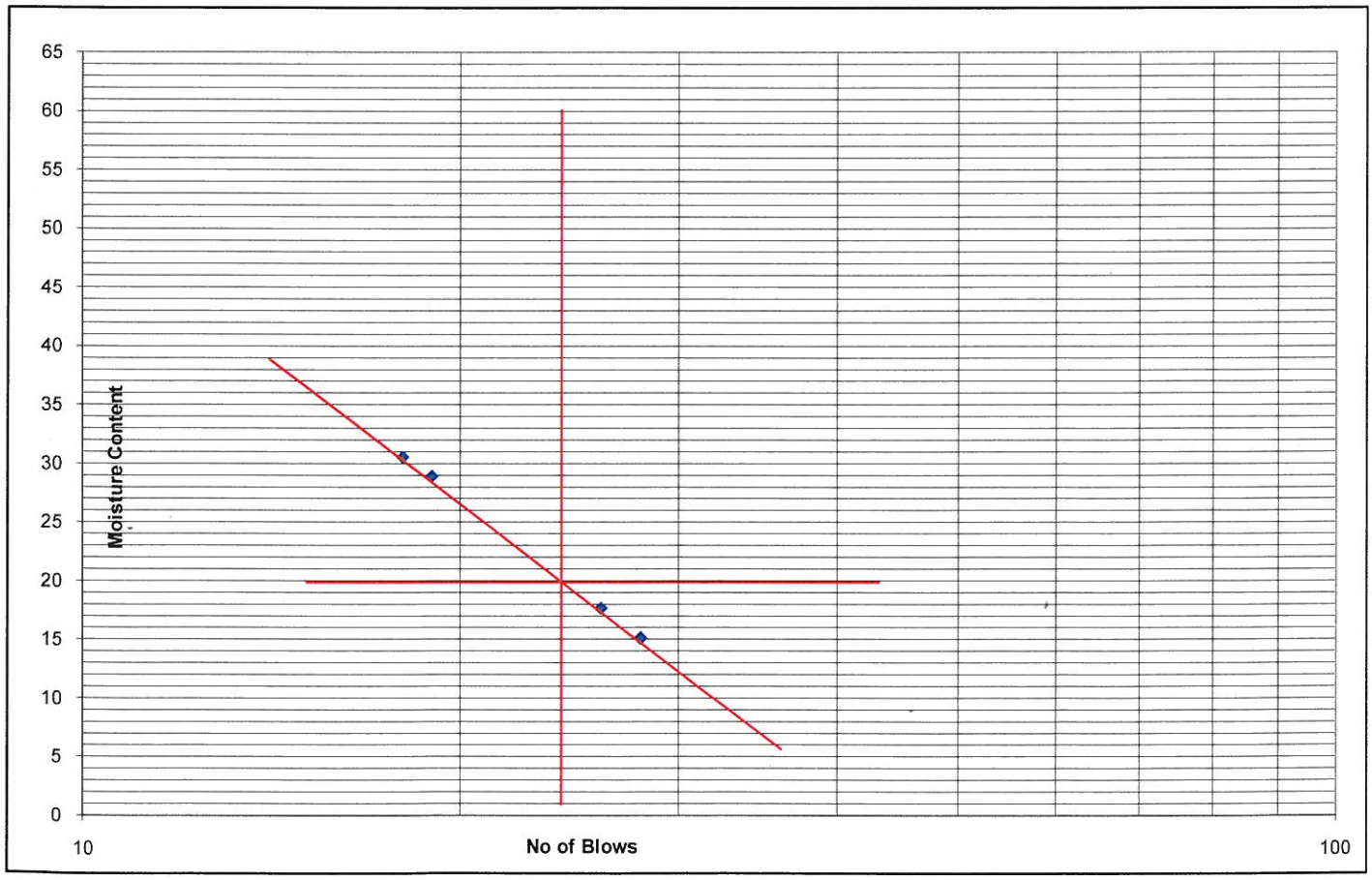
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	13.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	12.0m	Tested by	:	K.C.Sahoo

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	C5	C6	C7	C8	NP	
Container Weight (gm) (W1)	31.26	30.12	32.58	37.21		
Container + Wt. of wet soil (gm) (W2)	85.67	98.20	101.06	102.28		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.53	87.98	85.69	87.05		
Wt. Of water (gm) (W2-W1)-(W3-W1)	7.14	10.22	15.37	15.23		
Wt. of oven dry soil (gm) (W3-W1)	47.27	57.86	53.11	49.84		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**15.11**	**17.66**	**28.94**	**30.56**		

Result Summary

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



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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-1(Tangri River-Saharanpur)

Depth : 13.0m

Date Of Testing : 13.09.12

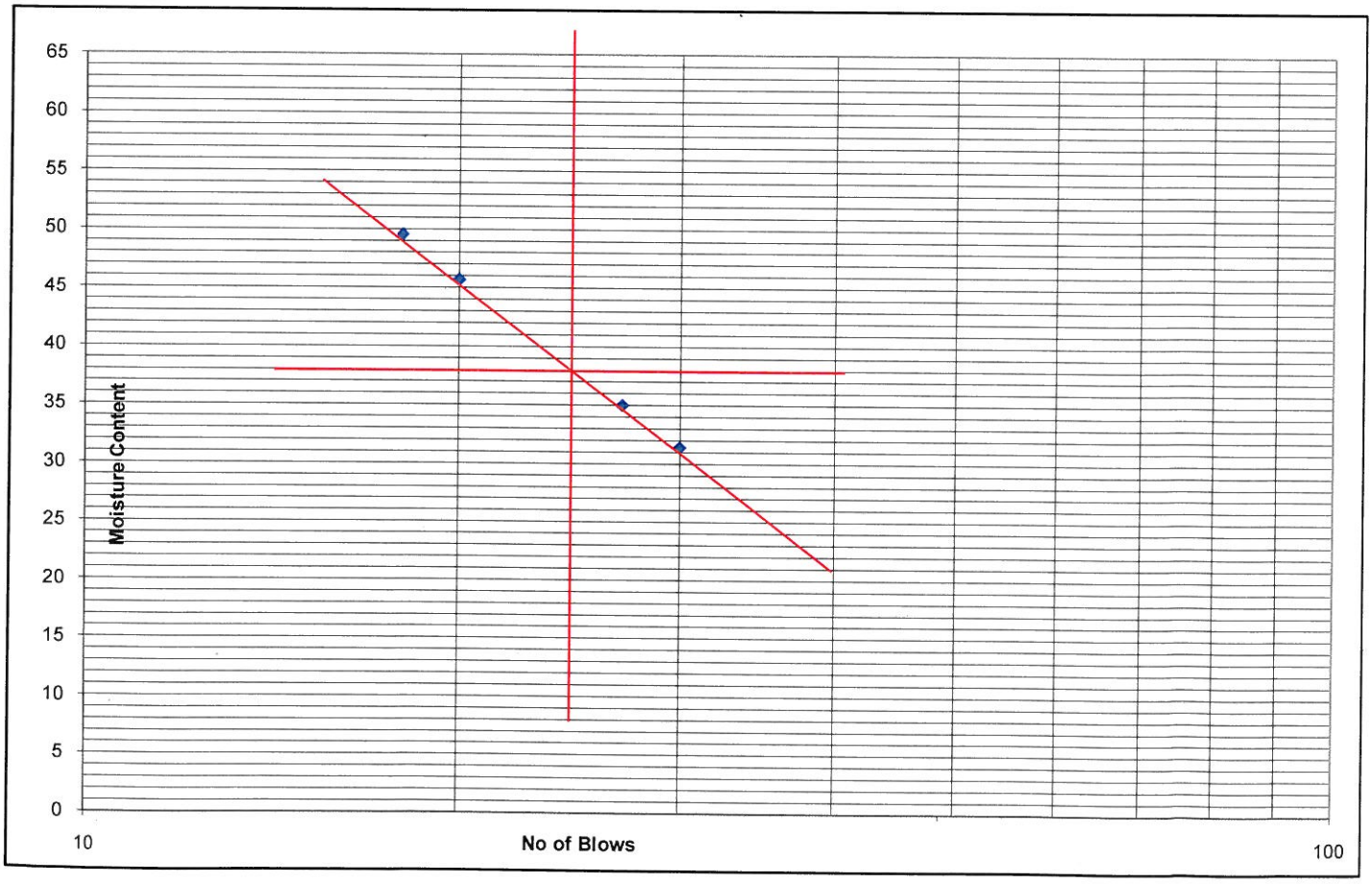
Sampled by : T. K. Das

Tested by : K.C.Sahoo

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	C9	C10	C11	C12	C13	C14
Container Weight (gm) (W1)	33.14	35.42	31.85	36.97	30.44	36.34
Container + Wt. of wet soil (gm) (W2)	92.79	106.37	110.27	111.86	90.51	88.32
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)	14.26	18.40	24.58	24.81	8.88	7.64
Wt. of oven dry soil (gm) (W3-W1)	45.39	52.56	53.84	50.08	51.19	44.33
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.42**	**35.00**	**45.65**	**49.53**	**17.34**	**17.24**

Result Summary

Liquid Limit (WL)	38	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	21	%



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

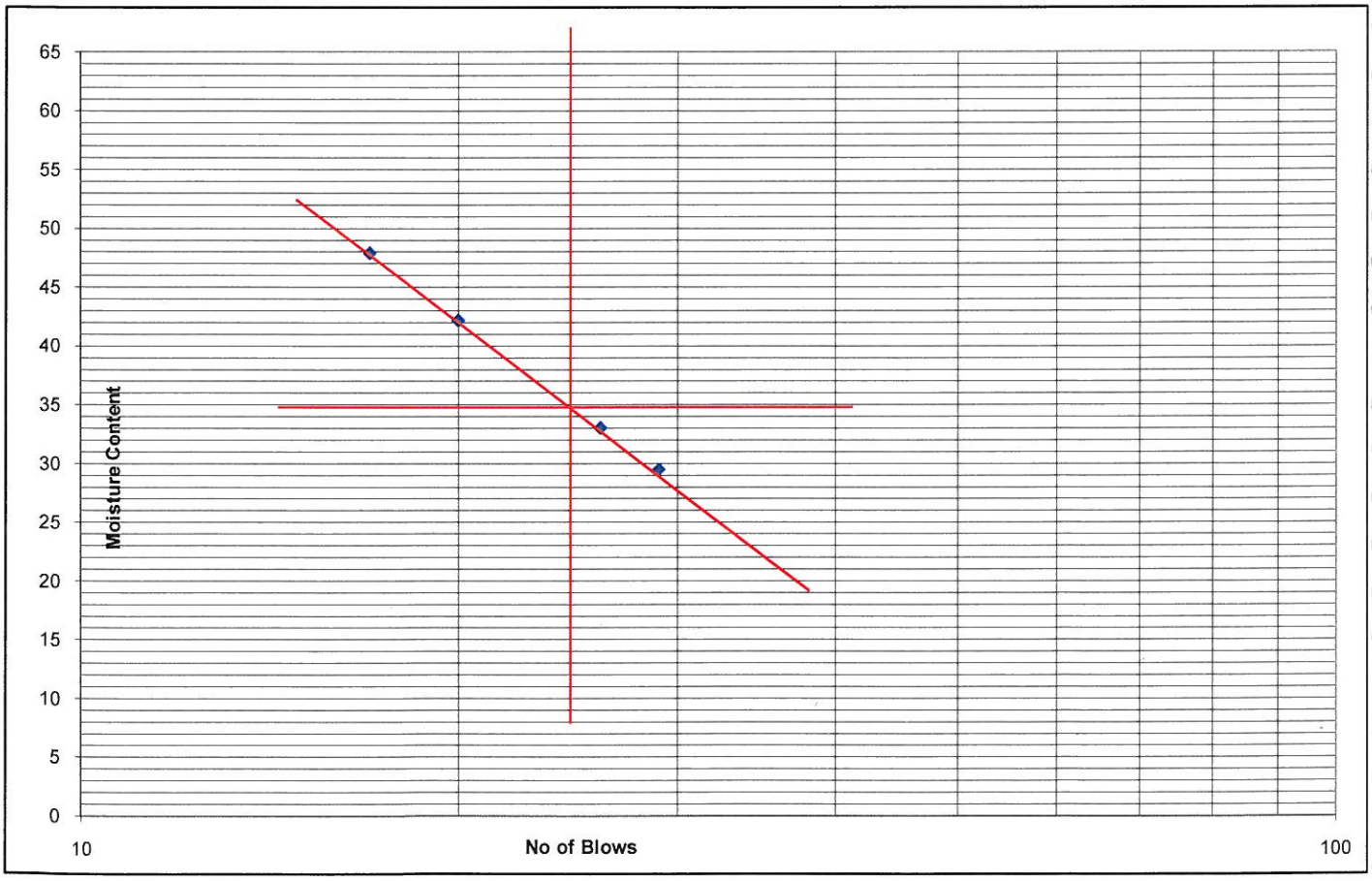
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date Of Testing	:	13.09.12
Location	:	BH-1(Tangri River-Saharanpur)	Sampled by	:	T. K. Das
Depth	:	14.0m	Tested by	:	K.C.Sahoo

Number of Blows	29	26	20	17	Plastic Limit	
Container No.	C15	C16	C17	C18	C19	C20
Container Weight (gm) (W1)	37.83	32.28	30.76	32.24	30.48	35.24
Container + Wt. of wet soil (gm) (W2)	90.55	106.37	108.86	113.30	90.45	88.60
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)	12.02	18.40	23.17	26.25	8.82	7.92
Wt. of oven dry soil (gm) (W3-W1)	40.70	55.70	54.93	54.81	51.15	45.43
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**29.52**	**33.03**	**42.18**	**47.89**	**17.25**	**17.44**

Result Summary

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



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