Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	21.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5007

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	24.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5003

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	27.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5009

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	28.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5010

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	30.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5011

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5012

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	34.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5013

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	36.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5014

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	37.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	40.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5016

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	42.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5017

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	46.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5013

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.09.12
Location	:	BH-4(Yamuna River-Saharanpur)	Sampled by	:	T.K.Das
Depth	:	50.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.52	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.72	
5	Weight of dry soil (W2-W1)in gm	6.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.26	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

5019

ARKI TECHNO CONSULTANTS (I) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF BULK DENSITY & MOISTURE CONTENT OF SOIL SAMPLE

Client : DFCC

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

Location : BH-4(Yamuna River-Ambala)

Sl No.	BH No.	Depth in m	Type of Sample	Date of Testing	Weight of Container in gm	Diameter of Sample in cm	Length of Sample in cm	Volume of Sample in cc	Weight of Container + Wet Soil in gm	Weight of Container + Dry soil in gm	Weight of Dry soil in gm	Weight of water in gm	Moisture Content in %	Bulk Density in gm/cc	Dry Density in gm/cc
1	BH-4(Yamuna River-Ambala)	1.5	SPT	29.10.12	65.5	3.8	7	79.39	209.20	193.74	128.24	15.45	12.05	1.81	1.62
2		3.0	SPT	29.10.12	60.26	3.8	7	79.39	204.75	189.48	129.22	15.27	11.82	1.82	1.63
3		4.5	SPT	29.10.12	61.74	3.8	7	79.39	206.23	191.21	129.47	15.02	11.60	1.82	1.63
4		6.0	SPT	29.10.12	63.19	3.8	7	79.39	208.47	192.75	129.56	15.73	12.14	1.83	1.63
5		7.5	SPT	29.10.12	64.22	3.8	7	79.39	211.09	196.23	132.01	14.86	11.26	1.85	1.66
6		10.5	SPT	29.10.12	62.54	3.8	7	79.39	210.21	195.15	132.61	15.05	11.35	1.86	1.67
7		15.0	SPT	29.10.12	63.12	3.8	7	79.39	208.40	192.51	129.39	15.89	12.28	1.83	1.63
8		18.0	SPT	29.10.12	60.68	3.8	7	79.39	207.55	191.62	130.94	15.94	12.17	1.85	1.65
9		21.0	SPT	29.10.12	61.31	3.8	7	79.39	209.77	193.96	132.65	15.81	11.92	1.87	1.67
10		24.0	SPT	29.10.12	62.29	3.8	7	79.39	209.96	194.69	132.40	15.27	11.53	1.86	1.67
11		27.0	SPT	29.10.12	64.16	3.8	7	79.39	213.41	196.90	132.74	16.51	12.44	1.88	1.67
12		28.5	SPT	29.10.12	62.81	3.8	7	79.39	212.86	197.53	134.72	15.33	11.38	1.89	1.70
13		30.0	SPT	29.10.12	61.35	3.8	7	79.39	221.72	197.81	136.46	23.91	17.52	2.02	1.72
14		33.0	SPT	29.10.12	63.54	3.8	7	79.39	224.70	201.94	138.40	22.77	16.45	2.03	1.74
15		34.5	SPT	29.10.12	64.89	3.8	7	79.39	222.08	204.46	139.57	17.63	12.63	1.98	1.76
16		36.0	SPT	29.10.12	60.87	3.8	7	79.39	218.86	201.33	140.46	17.53	12.48	1.99	1.77
17		37.5	SPT	29.10.12	62.36	3.8	7	79.39	209.23	194.30	131.94	14.93	11.32	1.85	1.66
18		40.5	SPT	29.10.12	64.55	3.8	7	79.39	233.65	204.05	139.50	29.60	21.22	2.13	1.76
19		42.0	SPT	29.10.12	62.71	3.8	7	79.39	232.60	209.59	146.88	23.02	15.67	2.14	1.85
20		46.5	SPT	29.10.12	63.40	3.8	7	79.39	229.33	212.47	149.07	16.86	11.31	2.09	1.88
21		50.0	SPT	29.10.12	62.31	3.8	7	79.39	229.03	211.83	149.52	17.20	11.50	2.10	1.88

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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	1.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 83.35

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	1.73	1.73	1.73	98.27
2.00	32.56	32.56	34.29	65.71
0.425	28.89	28.89	63.18	36.82
0.075	20.17	20.17	83.35	16.65
Total	100.00			

Gravel Content (%)= **1.73**

Sand Content (%) = 81.62 **Silt and clay %** 16.65

Remarks :-

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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	3.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 87.24

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	1.81	1.81	1.81	98.19
2.00	33.36	33.36	35.17	64.83
0.425	29.56	29.56	64.73	35.27
0.075	22.51	22.51	87.24	12.76
Total	100.00			

Gravel Content (%)= **1.81**

Sand Content (%) = 85.43 **Silt and clay %** 12.76

Remarks :-

5032

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	4.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 86.97

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	2.23	2.23	2.23	97.77
2.00	32.36	32.36	34.59	65.41
0.425	29.68	29.68	64.27	35.73
0.075	22.70	22.70	86.97	13.03
Total	100.00			

Gravel Content (%)= **2.23**

Sand Content (%) = 84.74 **Silt and clay %** 13.03

Remarks :-

5033

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	6.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 85.58

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	1.97	1.97	1.97	98.03
2.00	33.69	33.69	35.66	64.34
0.425	29.11	29.11	64.77	35.23
0.075	20.81	20.81	85.58	14.42
Total	100.00			

Gravel Content (%)= **1.97**

Sand Content (%) = 83.61 **Silt and clay %** 14.42

Remarks :-

5024

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	9.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 84.59

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	1.86	1.86	1.86	98.14
2.00	32.25	32.25	34.11	65.89
0.425	28.52	28.52	62.63	37.37
0.075	21.96	21.96	84.59	15.41
Total	100.00			

Gravel Content (%)= **1.86**

Sand Content (%) = 82.73 **Silt and clay %** 15.41

Remarks :-

5033

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	13.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 89.99

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	11.73	11.73	11.73	88.27
2.00	30.52	30.52	42.25	57.75
0.425	26.25	26.25	68.50	31.50
0.075	21.49	21.49	89.99	10.01
Total	100.00			

Gravel Content (%)= **11.73**

Sand Content (%) = 78.26 **Silt and clay %** 10.01

Remarks :-

5020

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	16.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 90.75

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	14.21	14.21	14.21	85.79
2.00	30.85	30.85	45.06	54.94
0.425	26.59	26.59	71.65	28.35
0.075	19.10	19.10	90.75	9.25
Total	100.00			

Gravel Content (%)= **14.21**

Sand Content (%) = 76.54 **Silt and clay %** 9.25

Remarks :-

5037

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	18.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 88.99

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	2.26	2.26	2.26	97.74
2.00	35.52	35.52	37.78	62.22
0.425	30.12	30.12	67.90	32.10
0.075	21.09	21.09	88.99	11.01
Total	100.00			

Gravel Content (%)= **2.26**

Sand Content (%) = 86.73 **Silt and clay %** 11.01

Remarks :-

5028

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	22.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 99.46

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	16.73	16.73	16.73	83.27
2.00	33.52	33.52	50.25	49.75
0.425	29.85	29.85	80.10	19.90
0.075	19.36	19.36	99.46	0.54
Total	100.00			

Gravel Content (%)= **16.73**

Sand Content (%) = 82.73 **Silt and clay %** 0.54

Remarks :-

5023

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	24.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 88.45

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	3.81	3.81	3.81	96.19
2.00	34.59	34.59	38.40	61.60
0.425	29.85	29.85	68.25	31.75
0.075	20.20	20.20	88.45	11.55
Total	100.00			

Gravel Content (%)= **3.81**

Sand Content (%) = 84.64 **Silt and clay %** 11.55

Remarks :-

5030

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	30.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 96.59

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	14.86	14.86	14.86	85.14
2.00	32.40	32.40	47.26	52.74
0.425	27.85	27.85	75.11	24.89
0.075	21.48	21.48	96.59	3.41
Total	100.00			

Gravel Content (%)= **14.86**

Sand Content (%) = 81.73 **Silt and clay %** 3.41

Remarks :-

5031

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	33.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 41.71

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	10.36	10.36	10.36	89.64
2.00	15.02	15.02	25.38	74.62
0.425	11.41	11.41	36.79	63.21
0.075	4.92	4.92	41.71	58.29
Total	100.00			

Gravel Content (%)= **10.36**

Sand Content (%) = 31.35 **Silt and clay %** 58.29

Remarks :-

5032

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	39.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 36.97

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	8.73	8.73	8.73	91.27
2.00	13.61	13.61	22.34	77.66
0.425	9.15	9.15	31.49	68.51
0.075	5.48	5.48	36.97	63.03
Total	100.00			

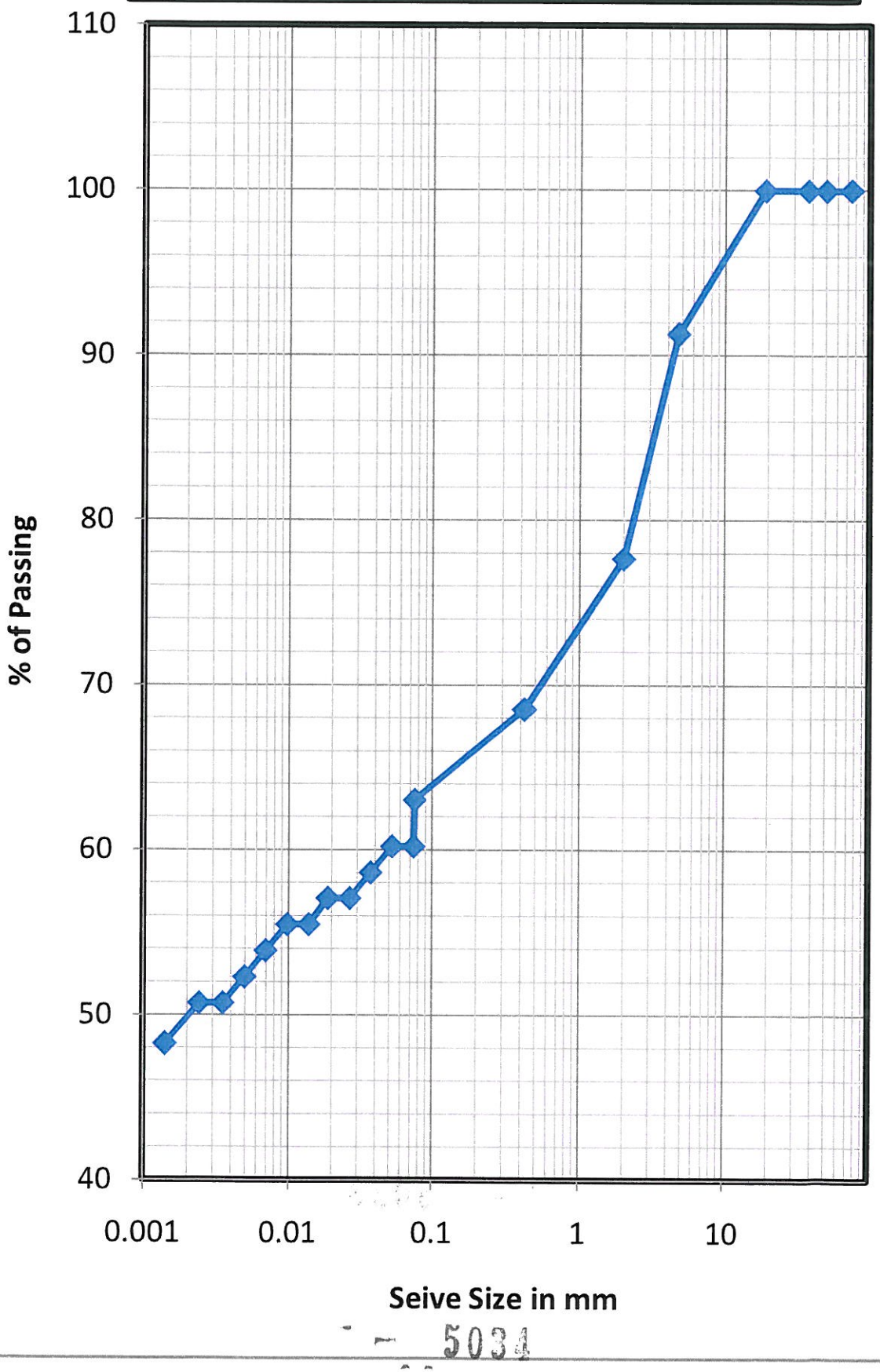
Gravel Content (%)= **8.73**

Sand Content (%) = 28.24 **Silt and clay %** 63.03

Remarks :-

5033

Grain Size Distribution Curve
BH-5,D-39.0m



5034

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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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	42.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 74.54

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	3.26	3.26	3.26	96.74
2.00	29.56	29.56	32.82	67.18
0.425	25.50	25.50	58.32	41.68
0.075	16.22	16.22	74.54	25.46
Total	100.00			

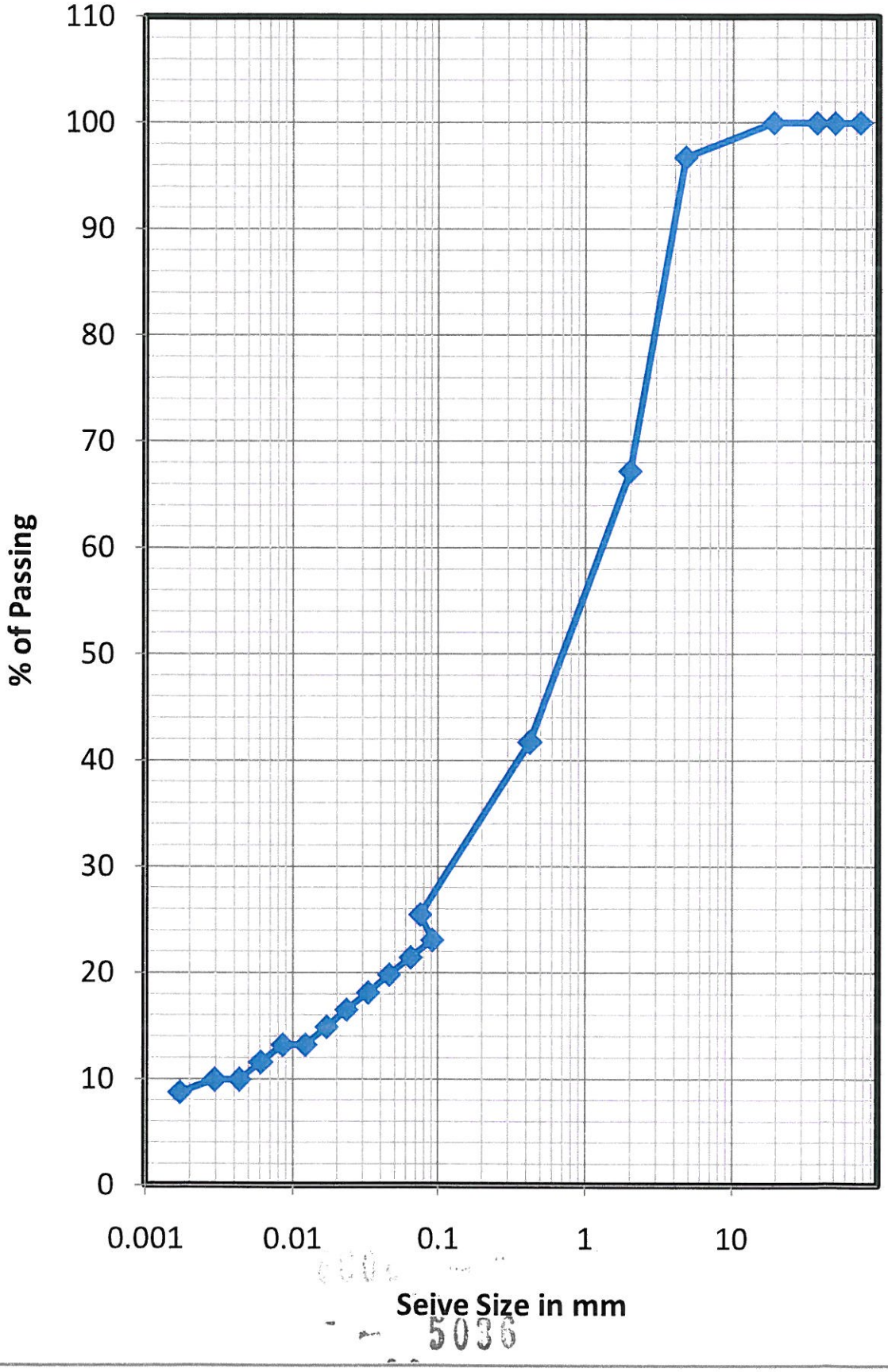
Gravel Content (%)= **3.26**

Sand Content (%) = 71.28 **Silt and clay %** 25.46

Remarks :-

5035

Grain Size Distribution Curve
BH-5,D-42.0m



5036

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-5(Yamuna River- Ambala)

Sampled by : Binayak Swain

Depth : 39.0m

Date of Testing : 08.05.2013

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		63.03
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		18.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		31.5
(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	

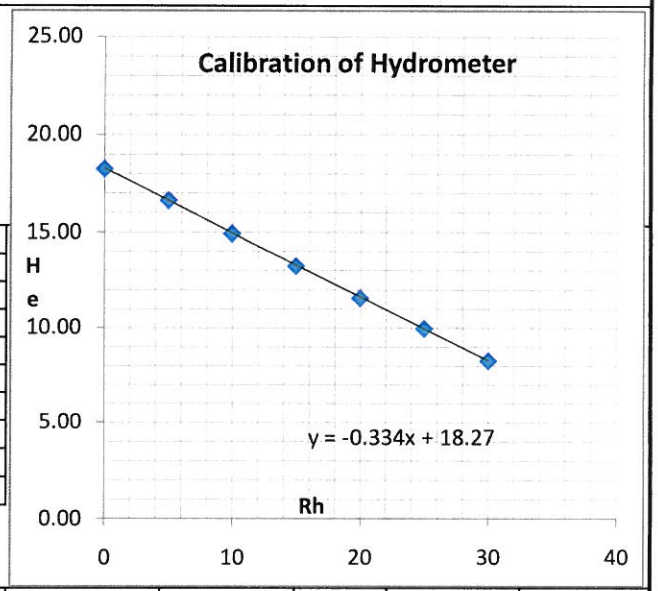
CALIBRATION OF HYDROMETER

(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	21.00	29	-2.0	11.26	21.50	0.613	0.000008341	0.012096818	0.00740973	19.00	5.029	95.55	60.22
	1	21.00	29	-2.0	11.26	21.50	0.433	0.000008341	0.012096818	0.00523947	19.00	5.029	95.55	60.22
	2	20.50	29	-2.0	11.42	21.00	0.309	0.000008341	0.012096818	0.00373225	18.50	5.029	93.03	58.64
	4	20.00	29	-2.0	11.59	20.50	0.220	0.000008341	0.012096818	0.00265832	18.00	5.029	90.52	57.05
	8	20.00	29	-2.0	11.59	20.50	0.155	0.000008341	0.012096818	0.00187972	18.00	5.029	90.52	57.05
	15	19.50	29	-2.0	11.76	20.00	0.114	0.000008341	0.012096818	0.00138261	17.50	5.029	88.00	55.47
	30	19.50	29	-2.0	11.76	20.00	0.081	0.000008341	0.012096818	0.00097765	17.50	5.029	88.00	55.47
	60	19.00	29	-2.0	11.92	19.50	0.058	0.000008341	0.012096818	0.00069619	17.00	5.029	85.49	53.88
	120	18.50	29	-2.0	12.09	19.00	0.041	0.000008341	0.012096818	0.00049572	16.50	5.029	82.97	52.30
	240	18.00	29	-2.0	12.26	18.50	0.029	0.000008341	0.012096818	0.00035294	16.00	5.029	80.46	50.71
	480	18.00	32	-2.0	12.26	18.50	0.021	0.000007821	0.011713648	0.00024166	16.00	5.029	80.46	50.71
	1440	17.21	32	-2.0	12.52	17.71	0.012	0.000007821	0.011713648	0.000141010	15.21	5.029	76.50	48.22

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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-5(Yamuna River- Ambala)

Sampled by : Binayak Swain

Depth : 42.0m

Date of Testing : 08.05.2013

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		25.46
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		37.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		12.7
(V)	Specific gravity of soil grains, Gs		2.54
(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	

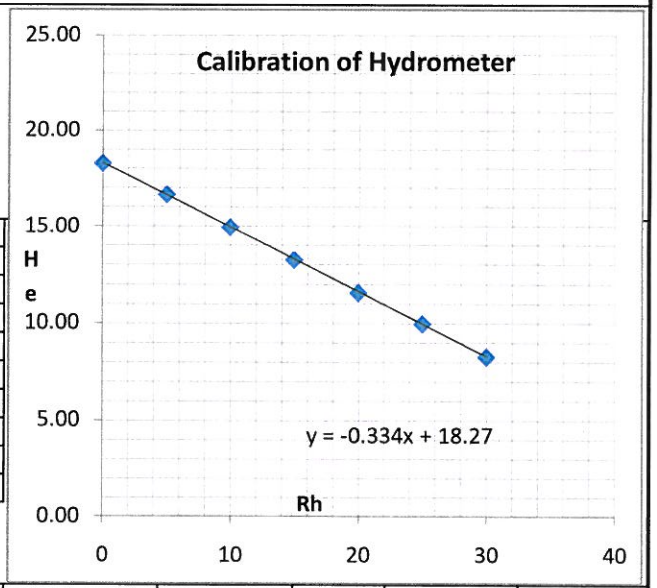
Rh = hydrometer Reading

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	9.00	29	-2.0	15.26	9.50	0.713	0.000008341	0.012747025	0.00909248	7.00	12.956	90.69	23.09
	1	8.50	29	-2.0	15.43	9.00	0.507	0.000008341	0.012747025	0.00646443	6.50	12.956	84.22	21.44
	2	8.00	29	-2.0	15.60	8.50	0.361	0.000008341	0.012747025	0.00459571	6.00	12.956	77.74	19.79
	4	7.50	29	-2.0	15.77	8.00	0.256	0.000008341	0.012747025	0.00326701	5.50	12.956	71.26	18.14
	8	7.00	29	-2.0	15.93	7.50	0.182	0.000008341	0.012747025	0.00232233	5.00	12.956	64.78	16.49
	15	6.50	29	-2.0	16.10	7.00	0.134	0.000008341	0.012747025	0.00170485	4.50	12.956	58.30	14.84
	30	6.00	29	-2.0	16.27	6.50	0.095	0.000008341	0.012747025	0.00121175	4.00	12.956	51.83	13.19
	60	6.00	29	-2.0	16.27	6.50	0.067	0.000008341	0.012747025	0.00085684	4.00	12.956	51.83	13.19
	120	5.50	29	-2.0	16.43	6.00	0.048	0.000008341	0.012747025	0.00060898	3.50	12.956	45.35	11.55
	240	5.00	29	-2.0	16.60	5.50	0.034	0.000008341	0.012747025	0.00043279	3.00	12.956	38.87	9.90
	480	5.00	32	-2.0	16.60	5.50	0.024	0.000007821	0.012343260	0.00029634	3.00	12.956	38.87	9.90
	1440	4.64	32	-2.0	16.72	5.14	0.014	0.000007821	0.012343260	0.000171704	2.64	12.956	34.25	8.72

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

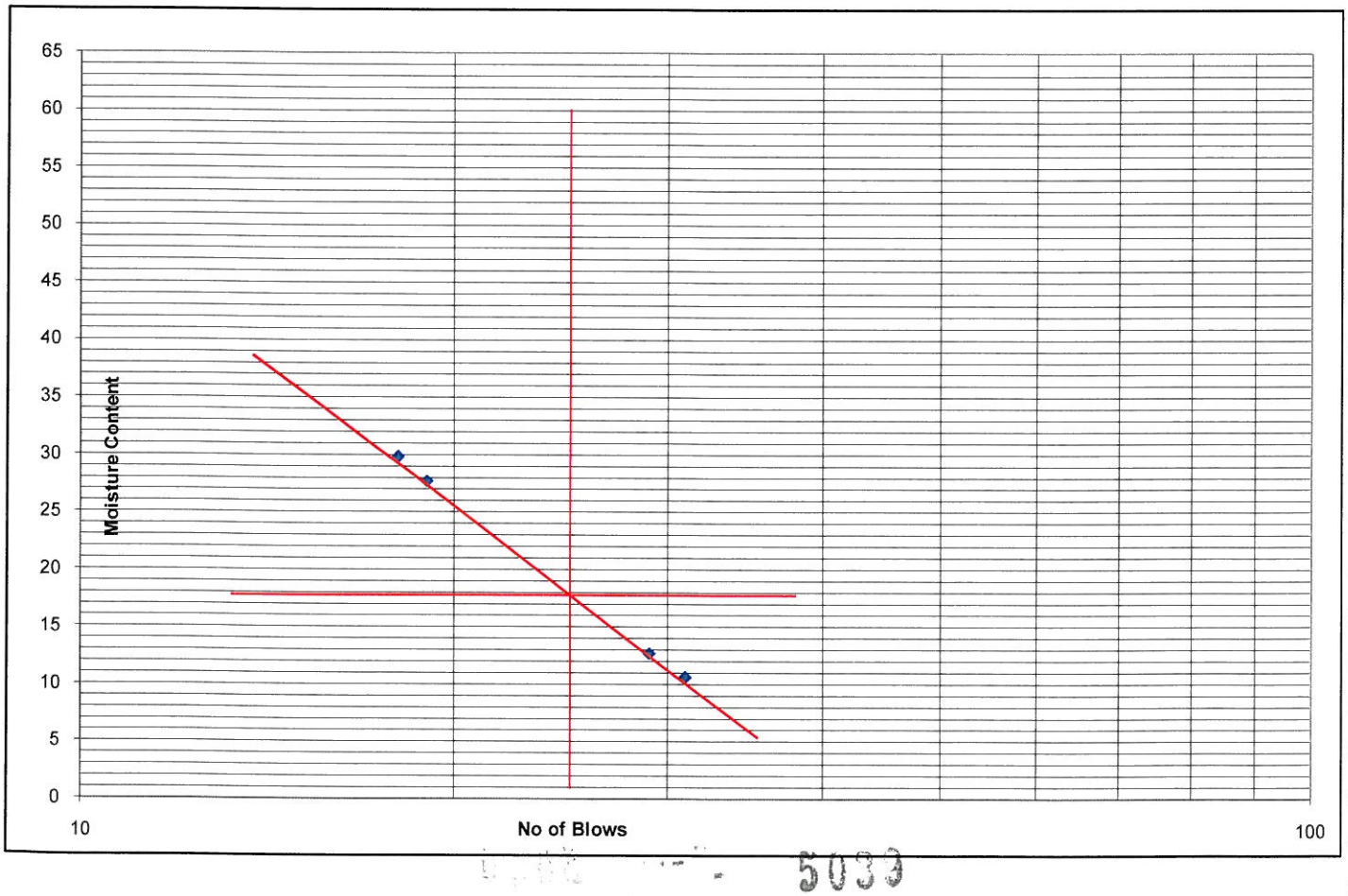
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	1.5m	Tested by	:	D.Mohanty

Number of Blows	31	29	19	18	Plastic Limit	
Container No.	C7	C8	C9	C10		
Container Weight (gm) (W1)	32.58	37.21	33.14	35.42		
Container + Wt. of wet soil (gm) (W2)	82.64	95.49	100.57	102.71		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.81	6.57	14.63	15.45		
Wt. of oven dry soil (gm) (W3-W1)	45.26	51.71	52.80	51.83		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.62**	**12.71**	**27.71**	**29.81**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

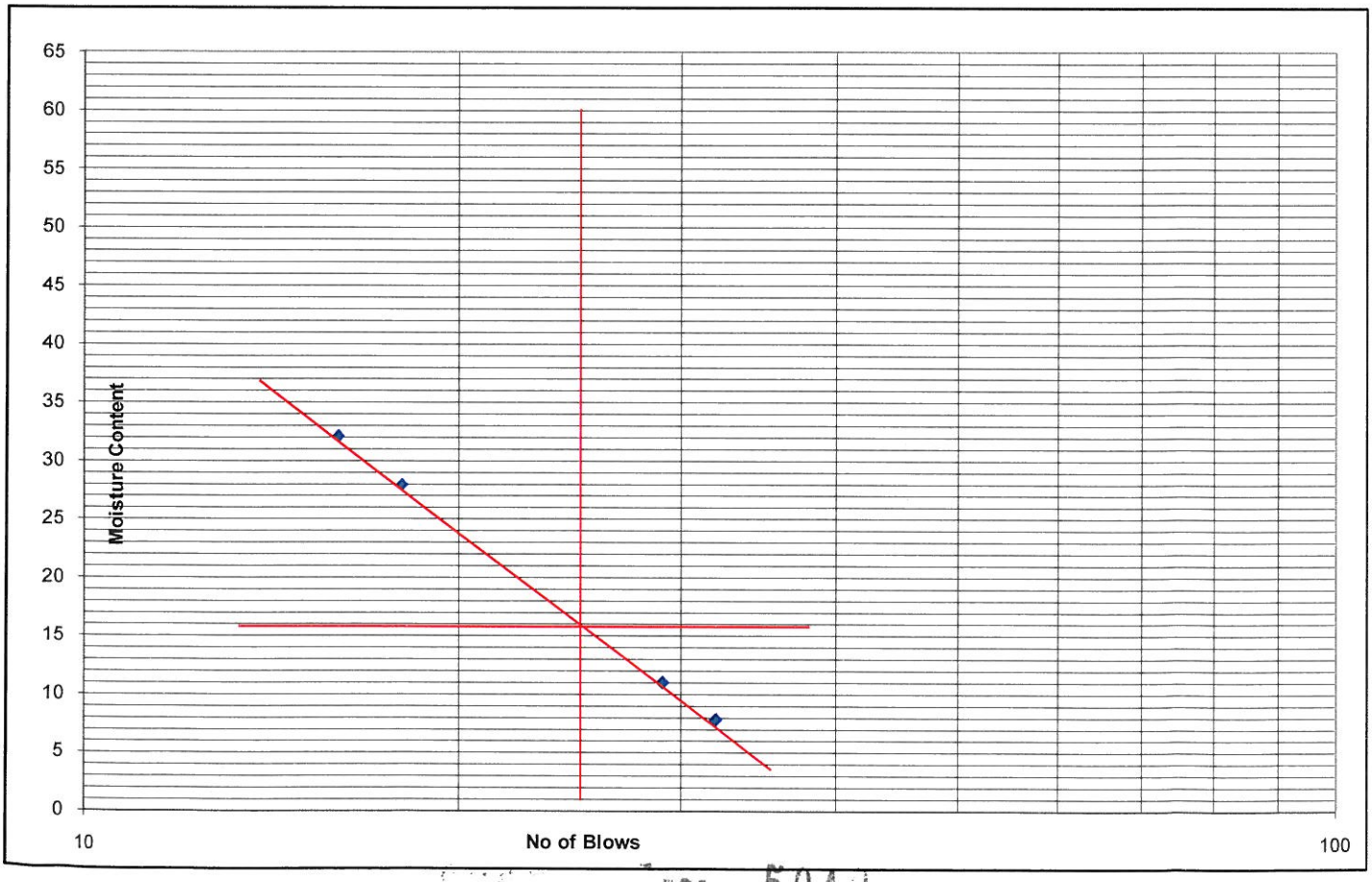
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	3.0m	Tested by	:	D.Mohanty

Number of Blows	32	29	18	16	Plastic Limit	
Container No.	D1	D2	D3	D4		
Container Weight (gm) (W1)	31.25	32.42	33.65	34.47		
Container + Wt. of wet soil (gm) (W2)	81.50	95.15	100.57	104.19		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.66	6.23	14.63	16.94		
Wt. of oven dry soil (gm) (W3-W1)	46.59	56.50	52.29	52.78		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.85**	**11.03**	**27.98**	**32.09**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

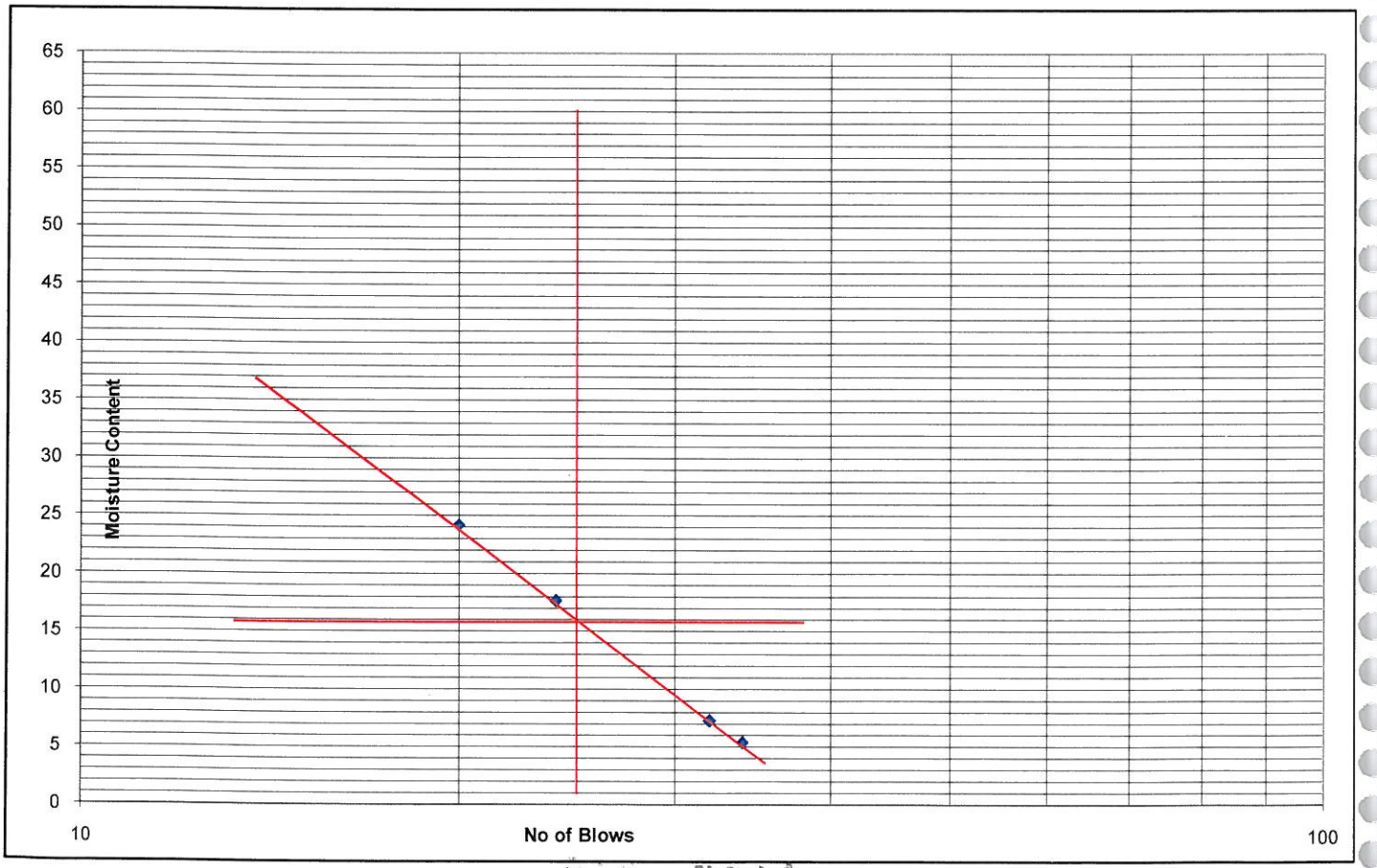
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	4.5m	Tested by	:	D.Mohanty

Number of Blows	34	32	24	20	Plastic Limit	
Container No.	F1	F2	F3	F4		
Container Weight (gm) (W1)	30.25	33.24	34.18	32.74		
Container + Wt. of wet soil (gm) (W2)	80.40	92.98	95.08	100.44		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.57	4.06	9.14	13.18		
Wt. of oven dry soil (gm) (W3-W1)	47.59	55.68	51.76	54.51		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**5.39**	**7.29**	**17.65**	**24.18**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

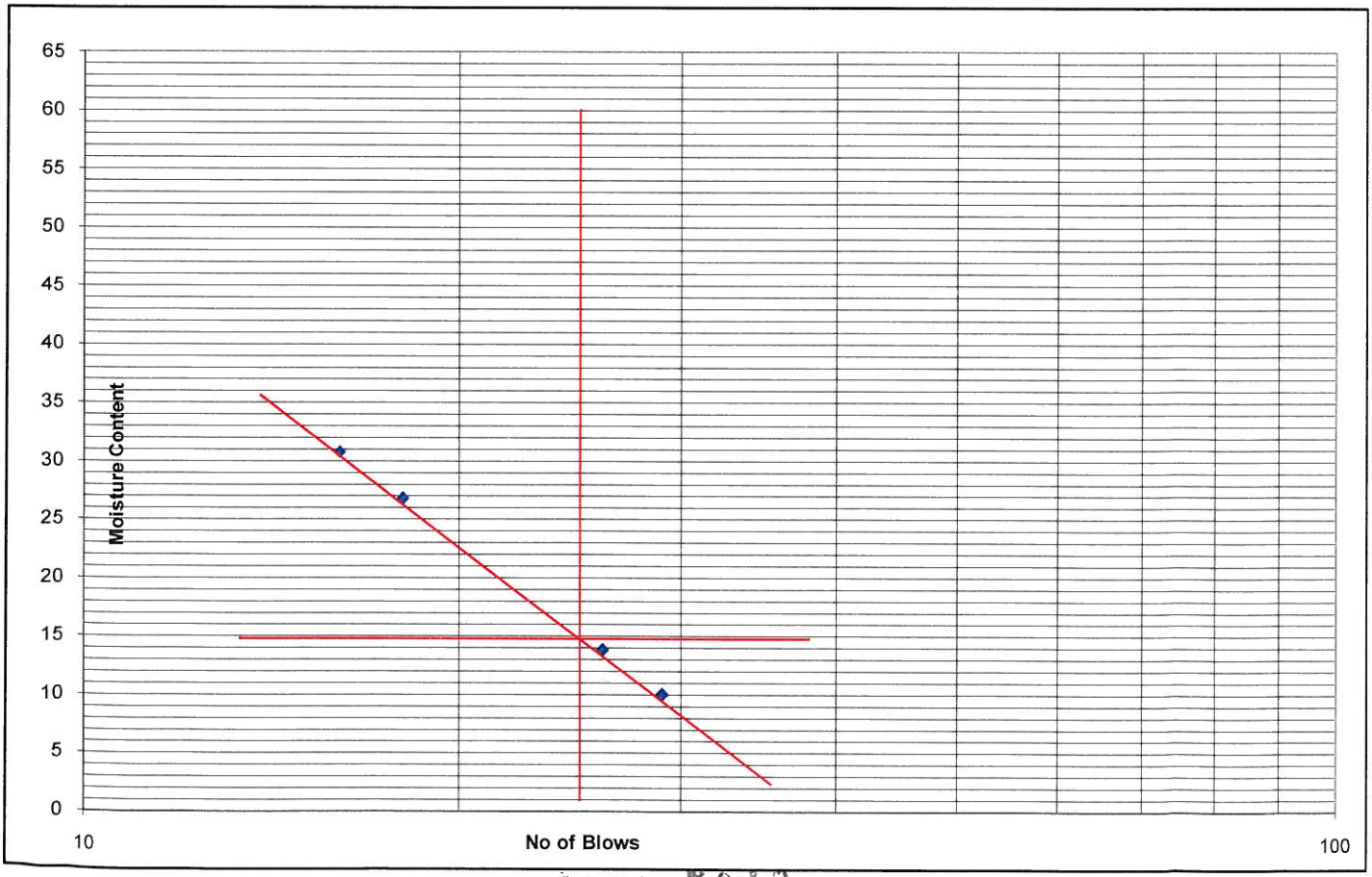
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	6.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	18	16	Plastic Limit	
Container No.	S1	S2	S3	S4		
Container Weight (gm) (W1)	31.48	35.18	34.61	32.85		
Container + Wt. of wet soil (gm) (W2)	82.48	96.36	99.70	104.00		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.65	7.44	13.76	16.75		
Wt. of oven dry soil (gm) (W3-W1)	46.36	53.74	51.33	54.40		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.02**	**13.85**	**26.80**	**30.78**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

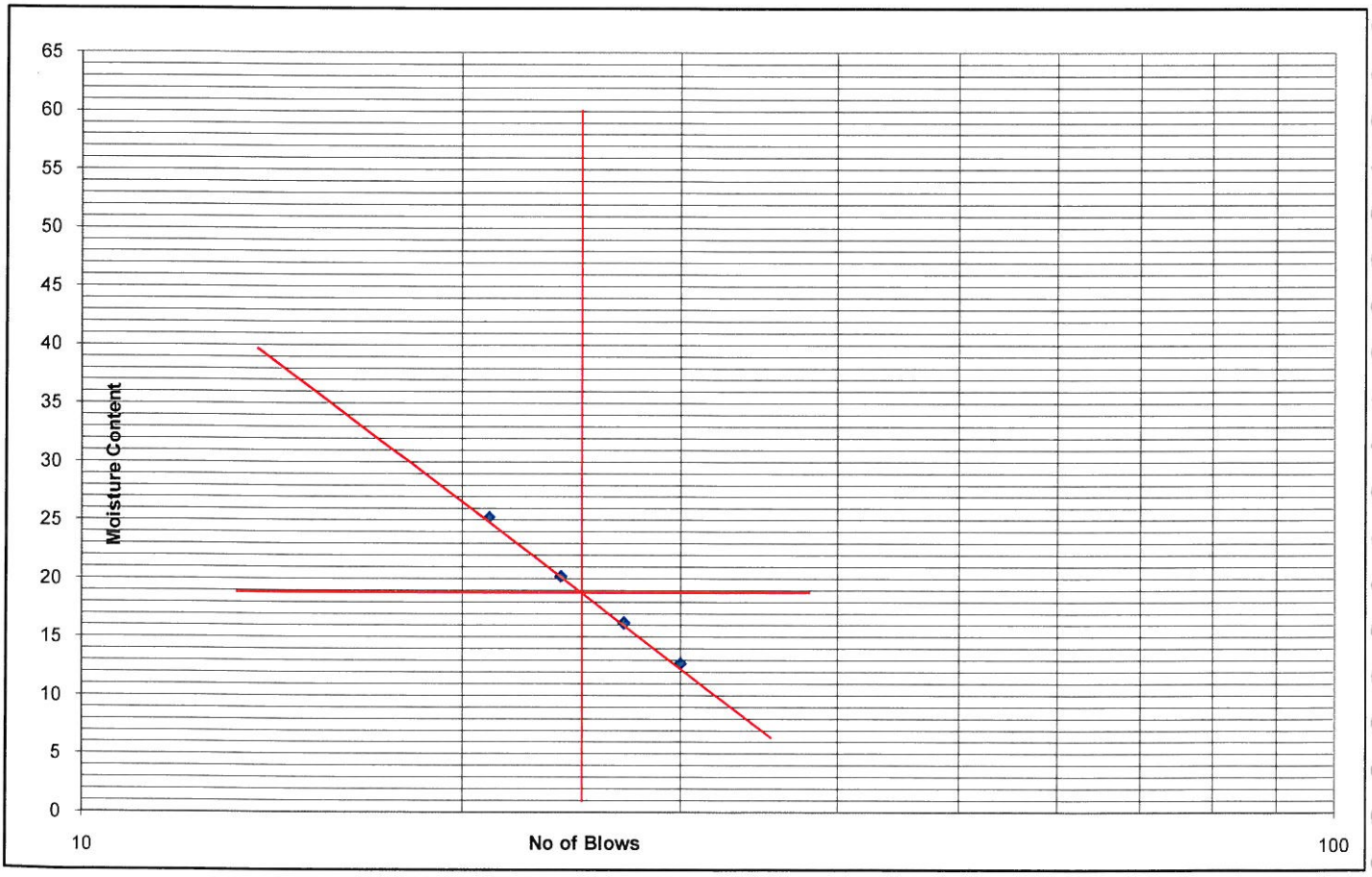
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	9.0m	Tested by	:	D.Mohanty

Number of Blows	30	27	24	21	Plastic Limit	
Container No.	W1	W2	W3	W4		
Container Weight (gm) (W1)	32.52	34.15	33.63	35.58		
Container + Wt. of wet soil (gm) (W2)	83.62	97.79	96.52	100.32		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	5.78	8.88	10.57	13.07		
Wt. of oven dry soil (gm) (W3-W1)	45.32	54.77	52.31	51.67		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**12.75**	**16.21**	**20.21**	**25.29**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

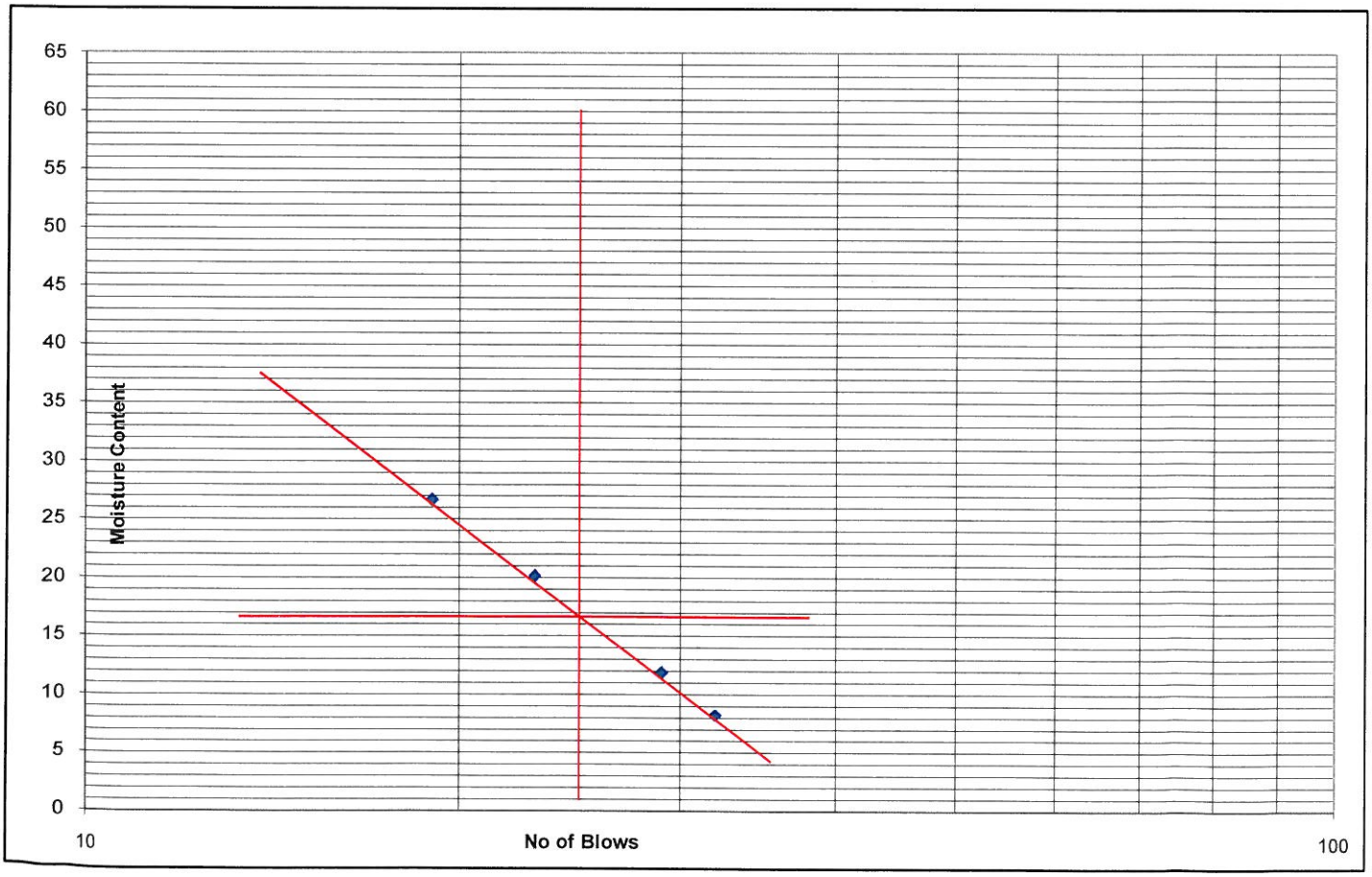
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	13.5m	Tested by	:	D.Mohanty

Number of Blows	32	29	23	19	Plastic Limit	
Container No.	I1	I2	I3	I4		
Container Weight (gm) (W1)	34.25	35.26	36.62	37.41		
Container + Wt. of wet soil (gm) (W2)	81.43	95.29	95.87	100.55		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.60	6.37	9.93	13.30		
Wt. of oven dry soil (gm) (W3-W1)	43.59	53.66	49.32	49.84		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.25**	**11.88**	**20.13**	**26.68**		

Result Summary

Liquid Limit (WL)	17	%
Plastic Limit (Wp)	NP	
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	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	18.0m	Tested by	:	D.Mohanty

Number of Blows	34	31	24	21	Plastic Limit	
Container No.	E1	E2	E3	E4		
Container Weight (gm) (W1)	32.26	3.41	34.58	33.29		
Container + Wt. of wet soil (gm) (W2)	80.21	96.20	94.89	99.24		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.37	7.29	8.95	11.99		
Wt. of oven dry soil (gm) (W3-W1)	45.58	85.51	51.36	53.96		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**5.21**	**8.52**	**17.42**	**22.21**		

Result Summary

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

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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

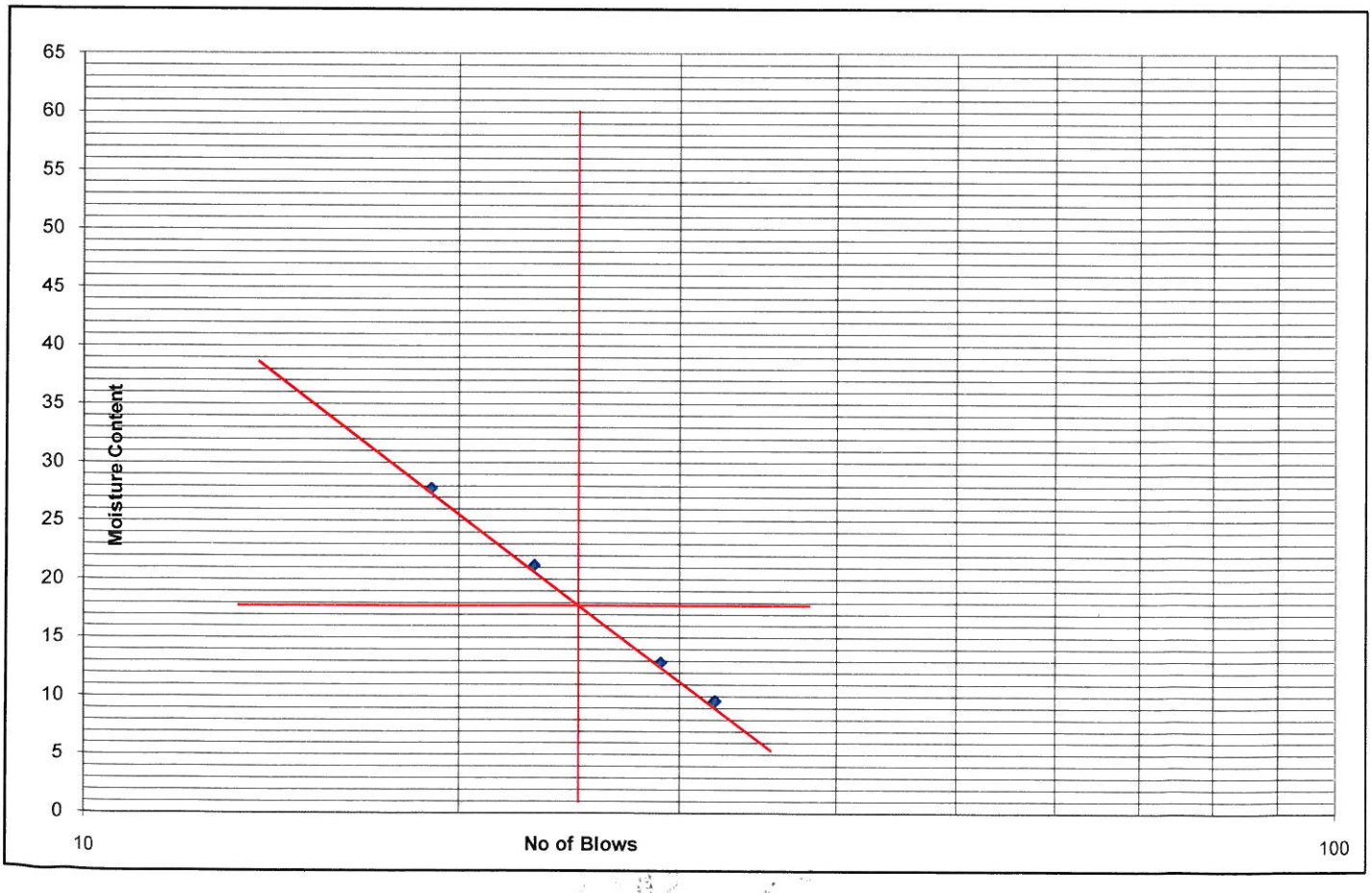
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	22.5m	Tested by	:	D.Mohanty

Number of Blows	32	29	23	19	Plastic Limit	
Container No.	Y1	Y2	Y3	Y4		
Container Weight (gm) (W1)	33.36	32.45	31.85	30.27		
Container + Wt. of wet soil (gm) (W2)	82.11	96.20	97.42	103.10		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.27	7.29	11.47	15.85		
Wt. of oven dry soil (gm) (W3-W1)	44.48	56.47	54.09	56.98		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**9.61**	**12.90**	**21.21**	**27.81**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

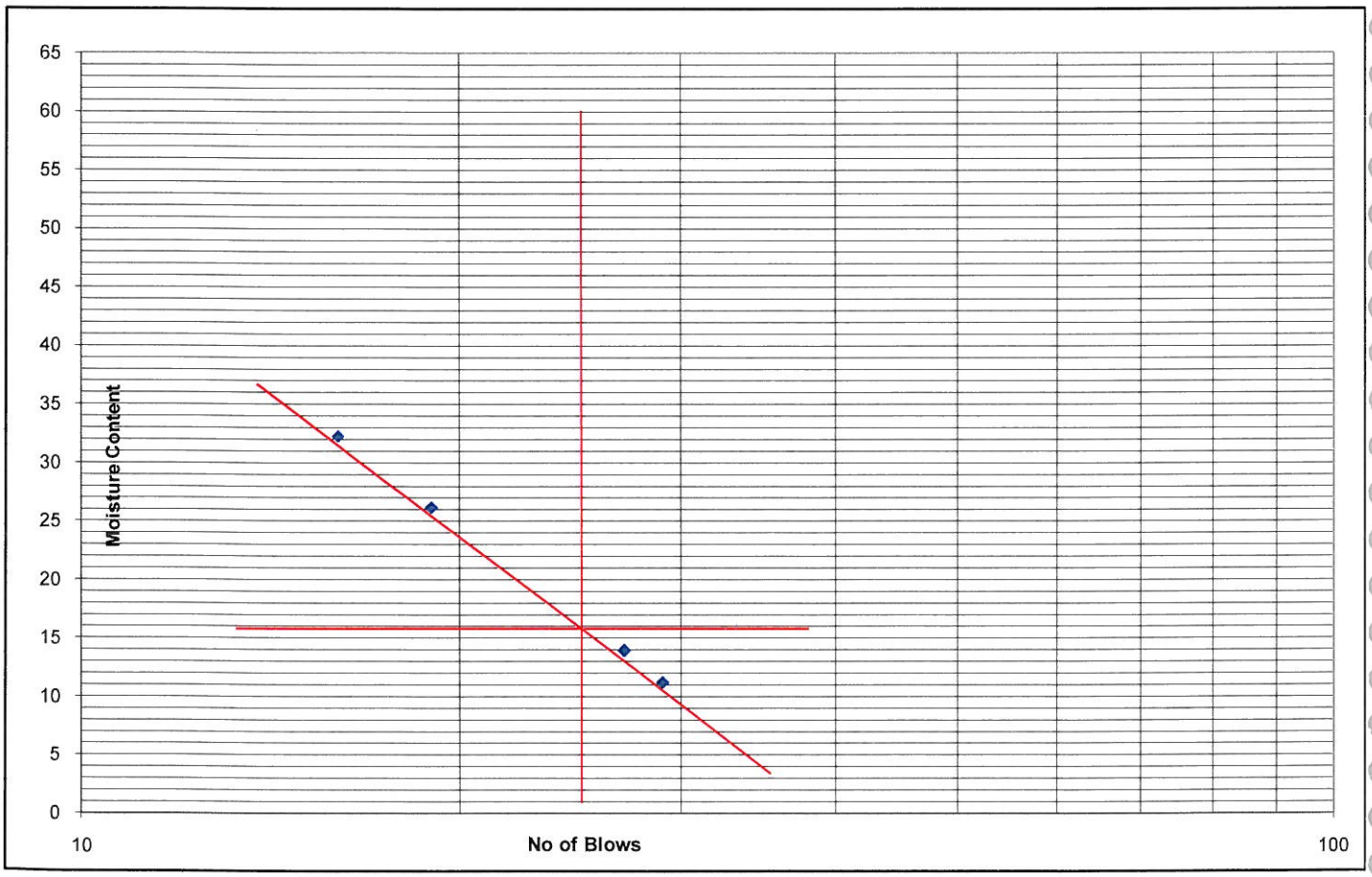
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	30.0m	Tested by	:	D.Mohanty

Number of Blows	29	27	16	19	Plastic Limit	
Container No.	R1	R2	R3	R4		
Container Weight (gm) (W1)	35.41	36.62	34.15	33.52		
Container + Wt. of wet soil (gm) (W2)	82.59	96.20	102.65	101.32		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.76	7.29	16.71	14.07		
Wt. of oven dry soil (gm) (W3-W1)	42.43	52.30	51.79	53.73		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**11.21**	**13.93**	**32.26**	**26.18**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

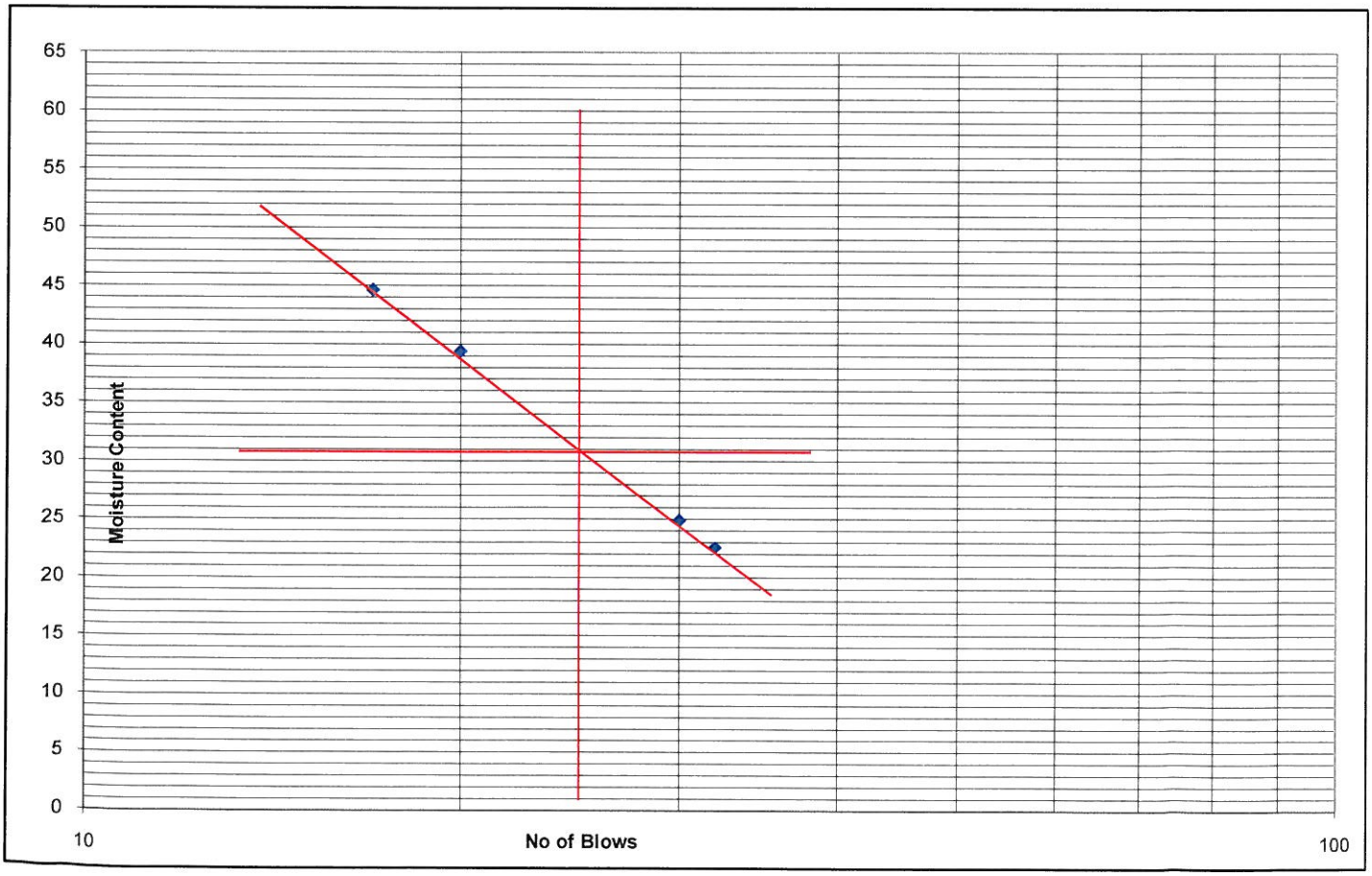
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	33.0m	Tested by	:	D.Mohanty

Number of Blows	32	30	20	17	Plastic Limit	
Container No.	Q1	Q2	Q3	Q4	Q5	Q6
Container Weight (gm) (W1)	30.12	31.25	33.36	32.41	34.52	35.15
Container + Wt. of wet soil (gm) (W2)	88.62	103.27	106.64	111.72	84.92	97.80
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25	77.84	88.92
Wt. Of water (gm) (W2-W1)-(W3-W1)	10.78	14.35	20.70	24.47	7.08	8.89
Wt. of oven dry soil (gm) (W3-W1)	47.72	57.67	52.58	54.84	43.32	53.77
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**22.59**	**24.89**	**39.36**	**44.61**	**16.34**	**16.53**

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

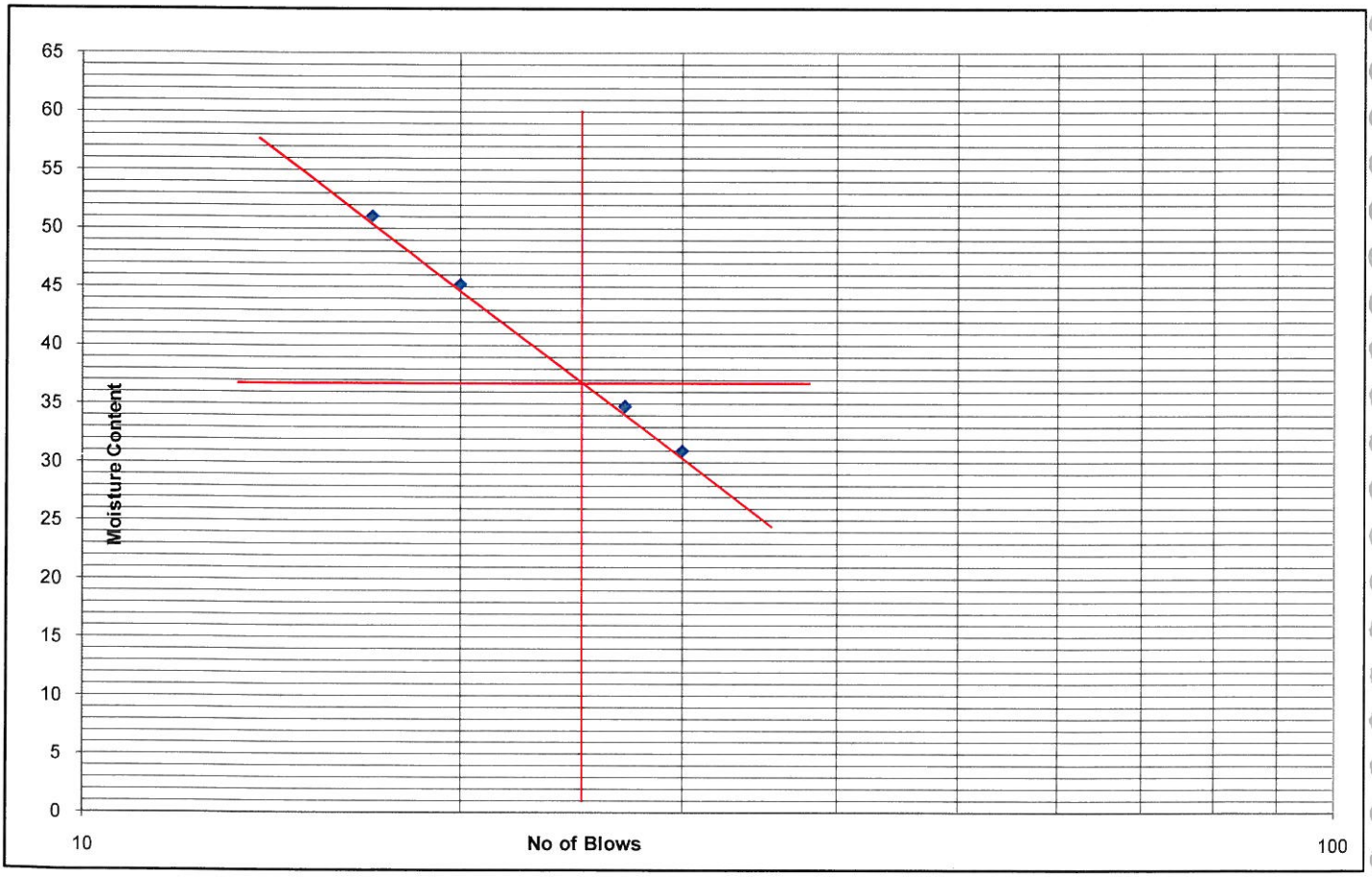
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	39.0m	Tested by	:	D.Mohanty

Number of Blows	30	27	20	17	Plastic Limit	
Container No.	A1	A2	A3	A4	A5	A6
Container Weight (gm) (W1)	31.25	32.36	34.74	35.59	30.17	33.33
Container + Wt. of wet soil (gm) (W2)	92.28	108.59	109.09	113.61	86.54	99.11
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25	77.84	88.92
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.44	19.67	23.15	26.36	8.70	10.19
Wt. of oven dry soil (gm) (W3-W1)	46.59	56.56	51.20	51.66	47.67	55.59
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**30.99**	**34.78**	**45.21**	**51.02**	**18.25**	**18.34**

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

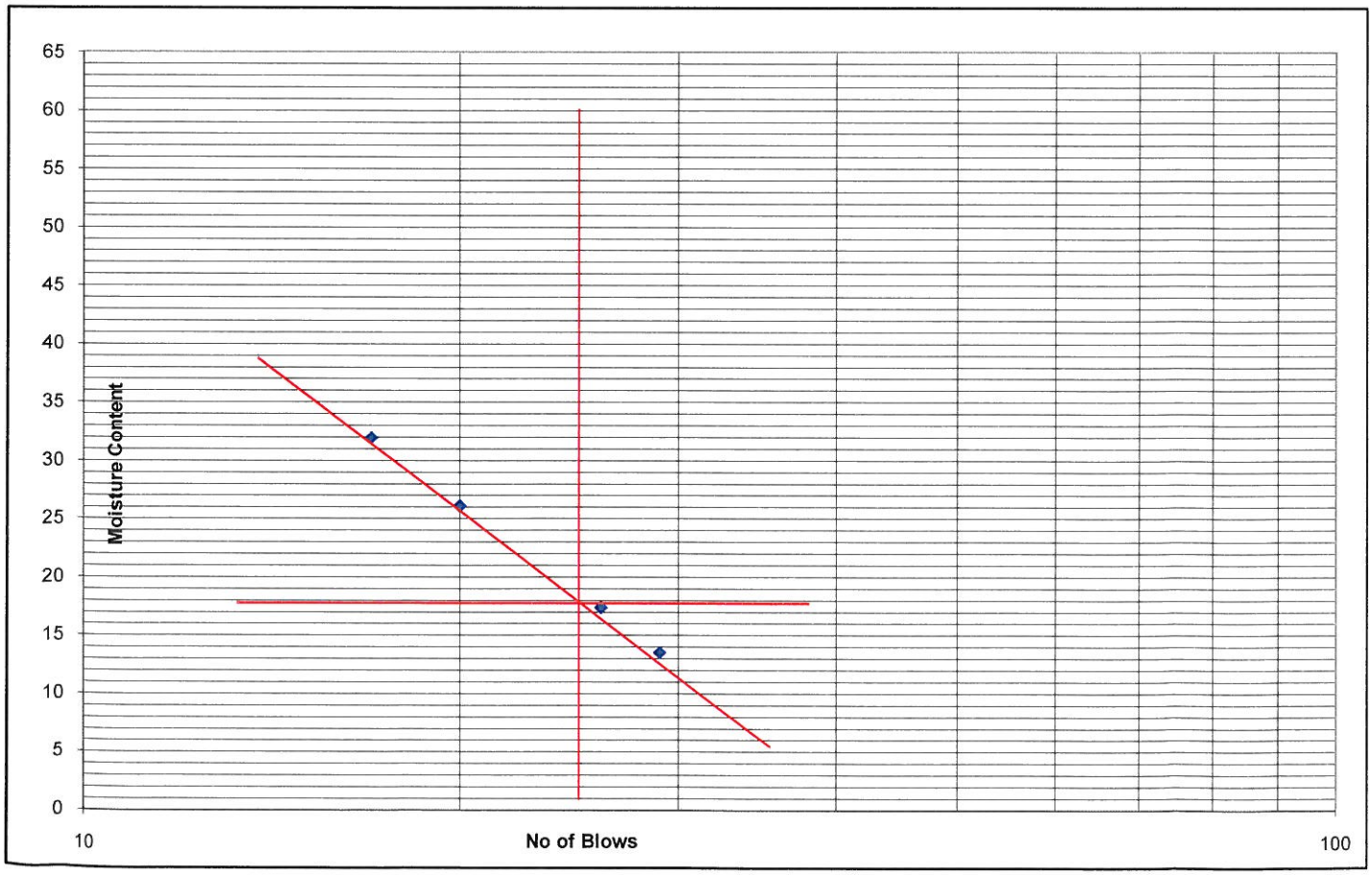
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	42.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	17	20	Plastic Limit	
Container No.	O1	O2	O3	O4	NP	
Container Weight (gm) (W1)	31.25	32.36	34.74	35.59		
Container + Wt. of wet soil (gm) (W2)	84.15	98.75	102.30	100.74		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	6.31	9.83	16.36	13.49		
Wt. of oven dry soil (gm) (W3-W1)	46.59	56.56	51.20	51.66		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**13.54**	**17.38**	**31.95**	**26.11**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	07.05.2013	
Type of Sample	: SPT	Tested by	:	D.Mohanty	
Location	: BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain	
Depth	: 39.0m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	12.5	2.50	25	18	50%
2	10	12.0	2.00	20		
3	10	11.0	1.00	10		

Remarks:

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	1.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	35.73	
3	Weight of bottle with soil and water W3 in gm	136.68	
4	Weight of bottle full of water W4 in gm	134.17	
5	Weight of dry soil (W2-W1)in gm	4.21	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.70	
7	Specific Gravity G = (5) / (6)	2.48	

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	4.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.52	
3	Weight of bottle with soil and water W3 in gm	134.52	
4	Weight of bottle full of water W4 in gm	131.51	
5	Weight of dry soil (W2-W1)in gm	5.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.99	
7	Specific Gravity G = (5) / (6)	2.51	

5053

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	13.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	35.52	
3	Weight of bottle with soil and water W3 in gm	136.94	
4	Weight of bottle full of water W4 in gm	134.52	
5	Weight of dry soil (W2-W1)in gm	4.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.58	
7	Specific Gravity G = (5) / (6)	2.53	

5054

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	24.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.31	
3	Weight of bottle with soil and water W3 in gm	135.52	
4	Weight of bottle full of water W4 in gm	132.64	
5	Weight of dry soil (W2-W1)in gm	4.79	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.91	
7	Specific Gravity G = (5) / (6)	2.51	

5055

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	33.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	35.52	
3	Weight of bottle with soil and water W3 in gm	134.25	
4	Weight of bottle full of water W4 in gm	131.74	
5	Weight of dry soil (W2-W1)in gm	4.00	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.49	
7	Specific Gravity G = (5) / (6)	2.68	

5056

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N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	07.05.2013
Type of Sample	:	SPT	Tested by	:	D.Mohanty
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	33.0m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	12.0	2.00	20	10	50%
2	10	11.0	1.00	10		
3	10	10.0	0.00	0		

Remarks:

5052

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	07.05.2013
Location	:	BH-5(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	42.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.12	
3	Weight of bottle with soil and water W3 in gm	135.24	
4	Weight of bottle full of water W4 in gm	132.45	
5	Weight of dry soil (W2-W1)in gm	4.60	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.81	
7	Specific Gravity G = (5) / (6)	2.54	

5058

ARKI TECHNO CONSULTANTS (I) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF BULK DENSITY & MOISTURE CONTENT OF SOIL SAMPLE

Client : DFCC

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

Location : BH-5(Yamuna River-Ambala)

Sl No.	BH No.	Depth in m	Type of Sample	Date of Testing	Weight of Container in gm	Diameter of Sample in cm	Length of Sample in cm	Volume of Sample in cc	Weight of Container + Wet Soil in gm	Weight of Container + Dry soil in gm	Weight of Dry soil in gm	Weight of water in gm	Moisture Content in %	Bulk Density in gm/cc	Dry Density in gm/cc
1	BH-5(Yamuna River-Ambala)	1.5	SPT	07.05.2013	62.34	3.8	7	79.39	203.65	193.97	131.63	9.69	7.36	1.78	1.66
2		3.0	SPT	07.05.2013	61.82	3.8	7	79.39	203.13	194.10	132.28	9.03	6.83	1.78	1.67
3		4.5	SPT	07.05.2013	60.71	3.8	7	79.39	202.02	192.43	131.72	9.59	7.28	1.78	1.66
4		6.0	SPT	07.05.2013	63.49	3.8	7	79.39	211.16	200.01	136.52	11.14	8.16	1.86	1.72
5		9.0	SPT	07.05.2013	60.77	3.8	7	79.39	204.47	193.91	133.14	10.56	7.93	1.81	1.68
6		13.5	SPT	07.05.2013	64.84	3.8	7	79.39	213.30	204.06	139.22	9.24	6.64	1.87	1.75
7		18.0	SPT	07.05.2013	65.31	3.8	7	79.39	211.39	196.58	131.27	14.81	11.28	1.84	1.65
8		24.0	SPT	07.05.2013	60.5	3.8	7	79.39	209.75	193.45	132.95	16.30	12.26	1.88	1.67
9		33.0	SPT	07.05.2013	61.31	3.8	7	79.39	218.50	193.64	132.33	24.86	18.79	1.98	1.67
10		42.0	SPT	07.05.2013	62.29	3.8	7	79.39	210.75	197.59	135.30	13.16	9.73	1.87	1.70

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	1.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 84.30

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	1.59	1.59	1.59	98.41
2.00	32.54	32.54	34.13	65.87
0.425	28.53	28.53	62.66	37.34
0.075	21.64	21.64	84.30	15.70
Total	100.00			

Gravel Content (%)= **1.59**

Sand Content (%) = 82.71 **Silt and clay %** 15.70

Remarks :-

5060

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	3.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 83.97

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	2.04	2.04	2.04	97.96
2.00	32.57	32.57	34.61	65.39
0.425	28.53	28.53	63.14	36.86
0.075	20.83	20.83	83.97	16.03
Total	100.00			

Gravel Content (%)= **2.04**

Sand Content (%) = 81.93 **Silt and clay %** 16.03

Remarks :-

5061

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	4.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 85.92

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	1.76	1.76	1.76	98.24
2.00	33.94	33.94	35.70	64.30
0.425	28.56	28.56	64.26	35.74
0.075	21.66	21.66	85.92	14.08
Total	100.00			

Gravel Content (%)= **1.76**

Sand Content (%) = 84.16 **Silt and clay %** 14.08

Remarks :-

5062

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	7.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 84.79

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	1.92	1.92	1.92	98.08
2.00	32.96	32.96	34.88	65.12
0.425	28.56	28.56	63.44	36.56
0.075	21.35	21.35	84.79	15.21
Total	100.00			

Gravel Content (%)= **1.92**

Sand Content (%) = 82.87 **Silt and clay %** 15.21

Remarks :-

5063

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	13.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 90.83

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	13.24	13.24	13.24	86.76
2.00	30.58	30.58	43.82	56.18
0.425	25.84	25.84	69.66	30.34
0.075	21.17	21.17	90.83	9.17
Total	100.00			

Gravel Content (%)= **13.24**

Sand Content (%) = 77.59 **Silt and clay %** 9.17

Remarks :-

5064

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date of Testing	:	13.05.2013
Type of Sample	:	SPT	Sampled by	:	Binayak Swain
Location	:	BH-6(Yamuna River-Ambala)	Tested by	:	D.Mohanty
Depth	:	15.0m			

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

Weight of oven dried sample after washing (gm) :- 91.05

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	12.68	12.68	12.68	87.32
2.00	31.52	31.52	44.20	55.80
0.425	26.85	26.85	71.05	28.95
0.075	20.00	20.00	91.05	8.95
Total	100.00			

Gravel Content (%)= **12.68**

Sand Content (%) = 78.37 **Silt and clay %** 8.95

Remarks :-

5005

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	18.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 85.14

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	1.64	1.64	1.64	98.36
2.00	33.67	33.67	35.31	64.69
0.425	28.41	28.41	63.72	36.28
0.075	21.42	21.42	85.14	14.86
Total	100.00			

Gravel Content (%)= **1.64**

Sand Content (%) = 83.50 **Silt and clay %** 14.86

Remarks :-

5066

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	21.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 84.32

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	1.83	1.83	1.83	98.17
2.00	33.67	33.67	35.50	64.50
0.425	28.41	28.41	63.91	36.09
0.075	20.41	20.41	84.32	15.68
Total	100.00			

Gravel Content (%)= **1.83**

Sand Content (%) = 82.49 **Silt and clay %** 15.68

Remarks :-

5062

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	30.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 40.83

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	9.86	9.86	9.86	90.14
2.00	15.53	15.53	25.39	74.61
0.425	11.10	11.10	36.49	63.51
0.075	4.34	4.34	40.83	59.17
Total	100.00			

Gravel Content (%)= **9.86**

Sand Content (%) = 30.97 **Silt and clay %** 59.17

Remarks :-

5068

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	33.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 39.39

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	10.25	10.25	10.25	89.75
2.00	14.32	14.32	24.57	75.43
0.425	9.85	9.85	34.42	65.58
0.075	4.97	4.97	39.39	60.61
Total	100.00			

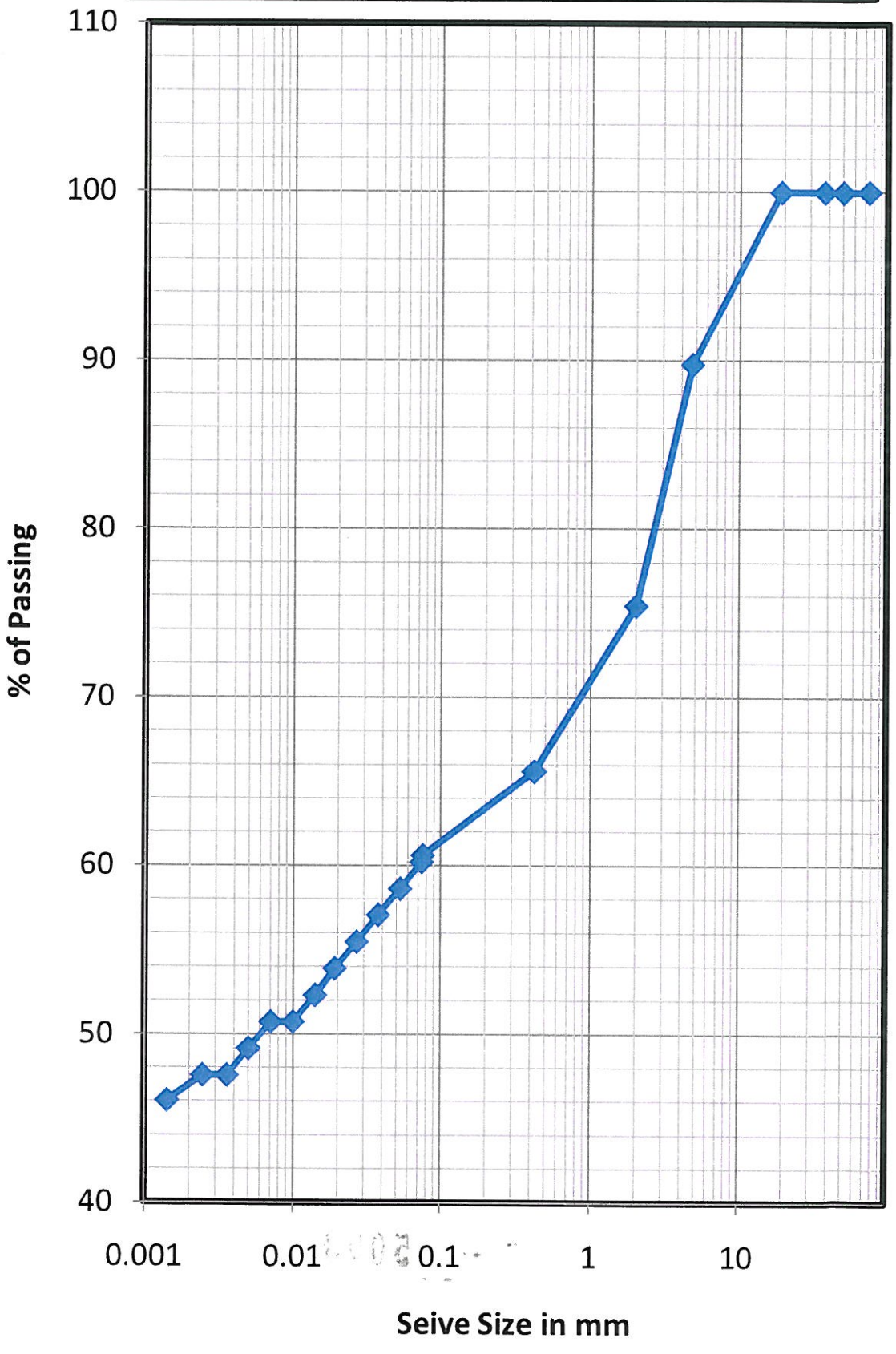
Gravel Content (%)= **10.25**

Sand Content (%) = 29.14 **Silt and clay %** 60.61

Remarks :-

5069

Grain Size Distribution Curve
BH-6,D-33.0m



5070

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	39.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 84.59

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	2.13	2.13	2.13	97.87
2.00	35.52	35.52	37.65	62.35
0.425	30.12	30.12	67.77	32.23
0.075	16.82	16.82	84.59	15.41
Total	100.00			

Gravel Content (%)= **2.13**

Sand Content (%) = 82.46 **Silt and clay %** 15.41

Remarks :-

5071

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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	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	42.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 85.57

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	1.96	1.96	1.96	98.04
2.00	34.21	34.21	36.17	63.83
0.425	28.54	28.54	64.71	35.29
0.075	20.86	20.86	85.57	14.43
Total	100.00			

Gravel Content (%)= **1.96**

Sand Content (%) = 83.61 **Silt and clay %** 14.43

Remarks :-

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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

Depth : 33.0m

Type of Sample : SPT

Date of Testing : 14.05.2013

Location : BH-6(Yamuna River- Ambala)

Tested by : D.Mohanty

Sampled by : Binayak Swain

(I)	Percentage of 75 micron passing (from sieve analysis)		60.61
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		19.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		30.3
(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	

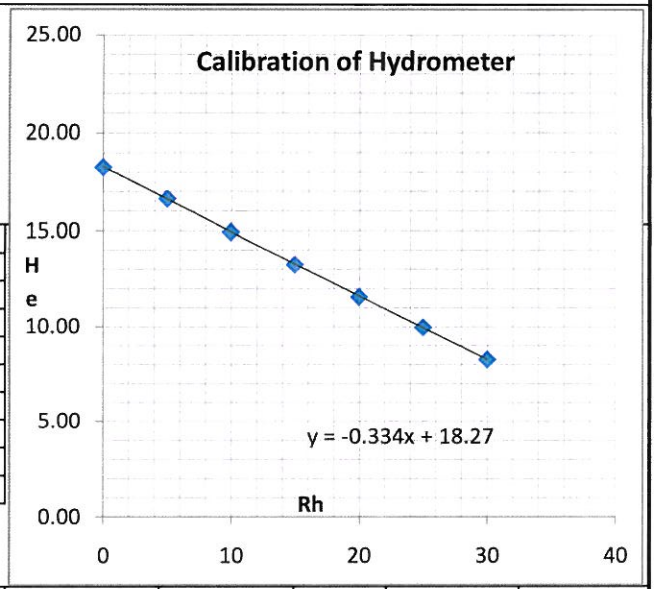
CALIBRATION OF HYDROMETER

(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	21.00	29	-2.0	11.26	21.50	0.613	0.000008341	0.012096818	0.00740973	19.00	5.229	99.36	60.22
	1	20.50	29	-2.0	11.42	21.00	0.436	0.000008341	0.012096818	0.00527820	18.50	5.229	96.75	58.64
	2	20.00	29	-2.0	11.59	20.50	0.311	0.000008341	0.012096818	0.00375943	18.00	5.229	94.13	57.05
	4	19.50	29	-2.0	11.76	20.00	0.221	0.000008341	0.012096818	0.00267740	17.50	5.229	91.52	55.47
	8	19.00	29	-2.0	11.92	19.50	0.158	0.000008341	0.012096818	0.00190661	17.00	5.229	88.90	53.88
	15	18.50	29	-2.0	12.09	19.00	0.116	0.000008341	0.012096818	0.00140211	16.50	5.229	86.29	52.30
	30	18.00	29	-2.0	12.26	18.50	0.083	0.000008341	0.012096818	0.00099826	16.00	5.229	83.67	50.71
	60	18.00	29	-2.0	12.26	18.50	0.058	0.000008341	0.012096818	0.00070588	16.00	5.229	83.67	50.71
	120	17.50	29	-2.0	12.43	18.00	0.042	0.000008341	0.012096818	0.00050252	15.50	5.229	81.06	49.13
	240	17.00	29	-2.0	12.59	17.50	0.030	0.000008341	0.012096818	0.00035772	15.00	5.229	78.44	47.54
	480	17.00	32	-2.0	12.59	17.50	0.021	0.000007821	0.011713648	0.00024493	15.00	5.229	78.44	47.54
	1440	16.53	32	-2.0	12.75	17.03	0.012	0.000007821	0.011713648	0.000142298	14.53	5.229	75.96	46.04

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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

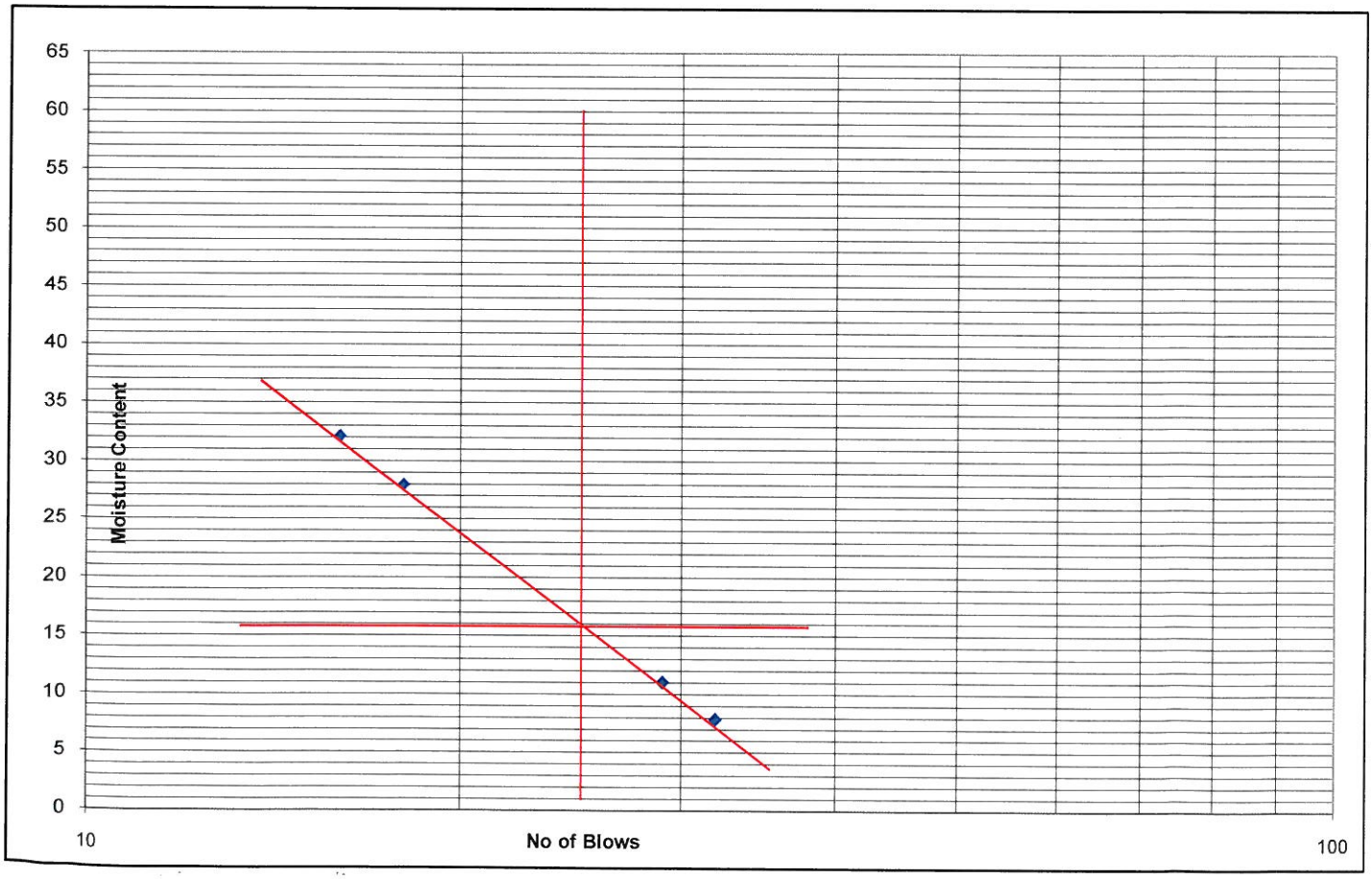
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	1.5m	Tested by	:	D.Mohanty

Number of Blows	32	29	18	16	Plastic Limit	
Container No.	D1	D2	D3	D4	NP	
Container Weight (gm) (W1)	31.25	32.42	33.65	34.47		
Container + Wt. of wet soil (gm) (W2)	81.50	95.15	100.57	104.19		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.66	6.23	14.63	16.94		
Wt. of oven dry soil (gm) (W3-W1)	46.59	56.50	52.29	52.78		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.85**	**11.03**	**27.98**	**32.09**		

Result Summary

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



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N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

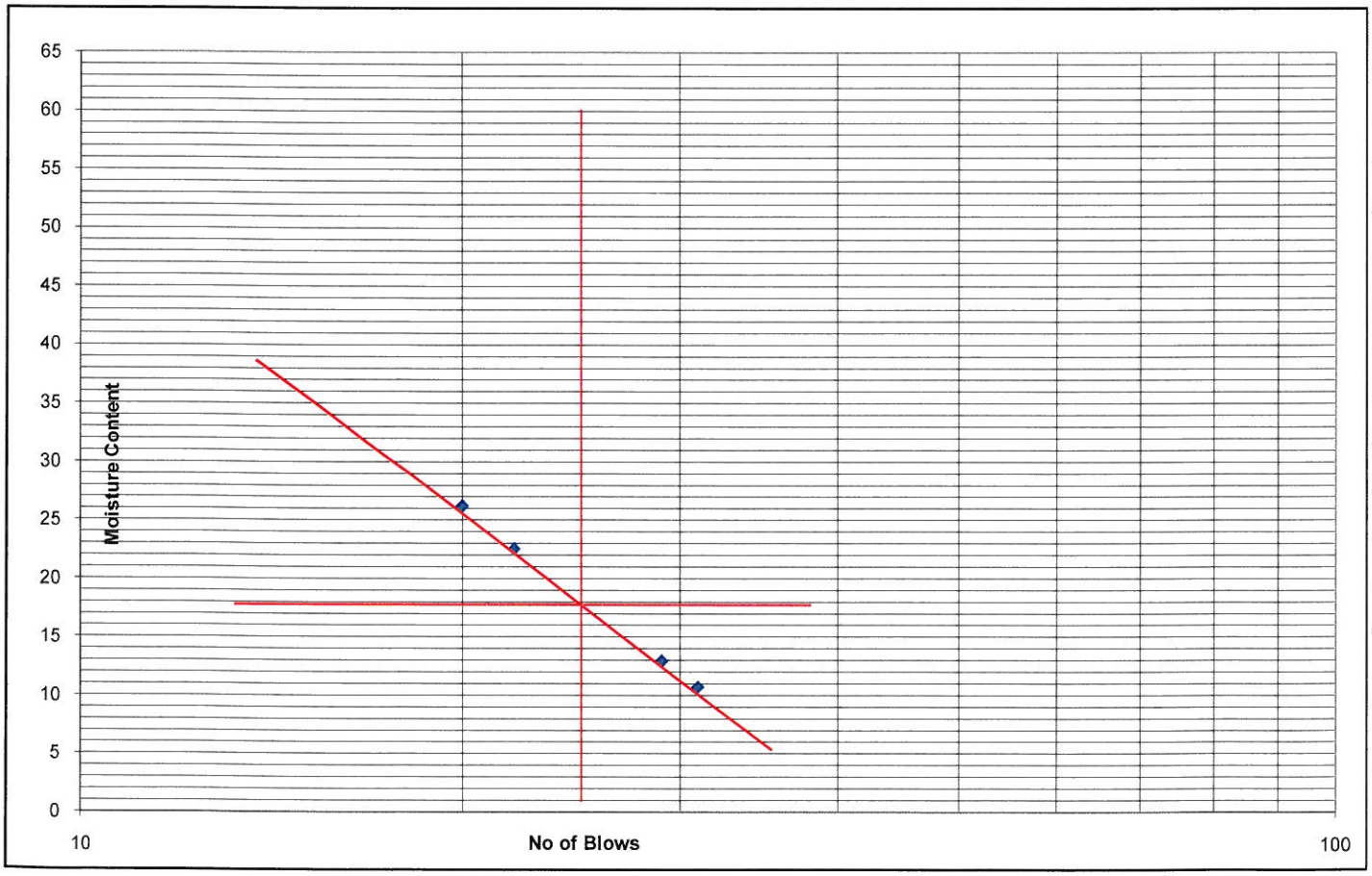
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	13.05.2013
Location	:	BH-6(Yamuna River-Ambala)	Sampled by	:	Binayak Swain
Depth	:	3.0m	Tested by	:	D.Mohanty

Number of Blows	31	29	22	20	Plastic Limit	
Container No.	F1	F2	F3	F4	NP	
Container Weight (gm) (W1)	34.52	35.65	36.15	37.12		
Container + Wt. of wet soil (gm) (W2)	82.50	95.82	97.16	100.39		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.66	6.90	11.21	13.14		
Wt. of oven dry soil (gm) (W3-W1)	43.32	53.27	49.79	50.13		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.75**	**12.95**	**22.52**	**26.20**		

Result Summary

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



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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(Yamuna River-Ambala)

Depth : 6.0m

Date Of Testing : 13.05.2013

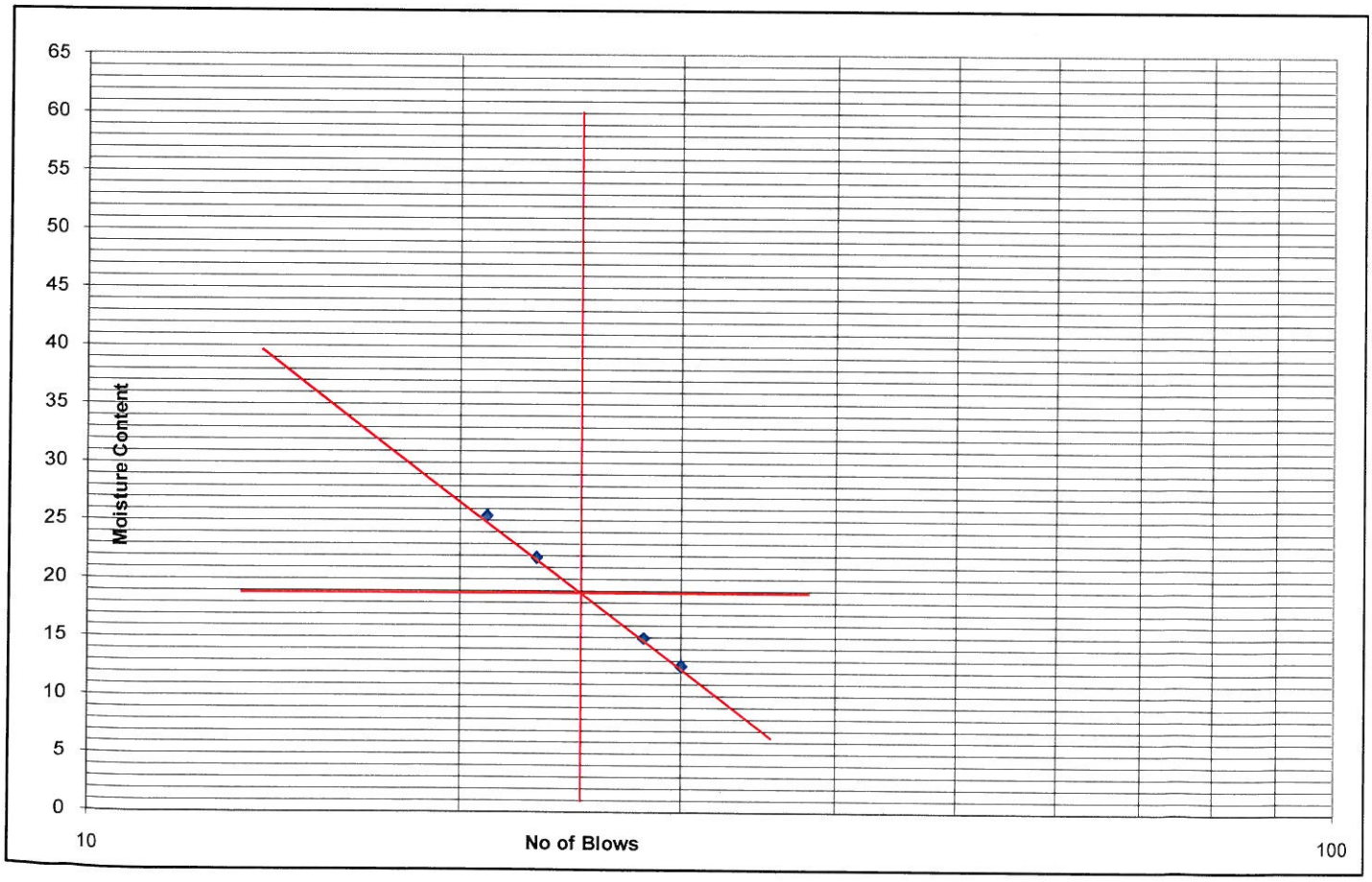
Sampled by : Binayak Swain

Tested by : D.Mohanty

Number of Blows	28	30	21	23	Plastic Limit	
Container No.	U1	U2	U3	U4	NP	
Container Weight (gm) (W1)	33.1	32.57	31.08	34.41		
Container + Wt. of wet soil (gm) (W2)	84.54	96.01	99.88	98.78		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.84	88.92	85.94	87.25		
Wt. Of water (gm) (W2-W1)-(W3-W1)	6.70	7.09	13.94	11.53		
Wt. of oven dry soil (gm) (W3-W1)	44.74	56.35	54.86	52.84		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**14.98**	**12.58**	**25.41**	**21.81**		

Result Summary

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



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