Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

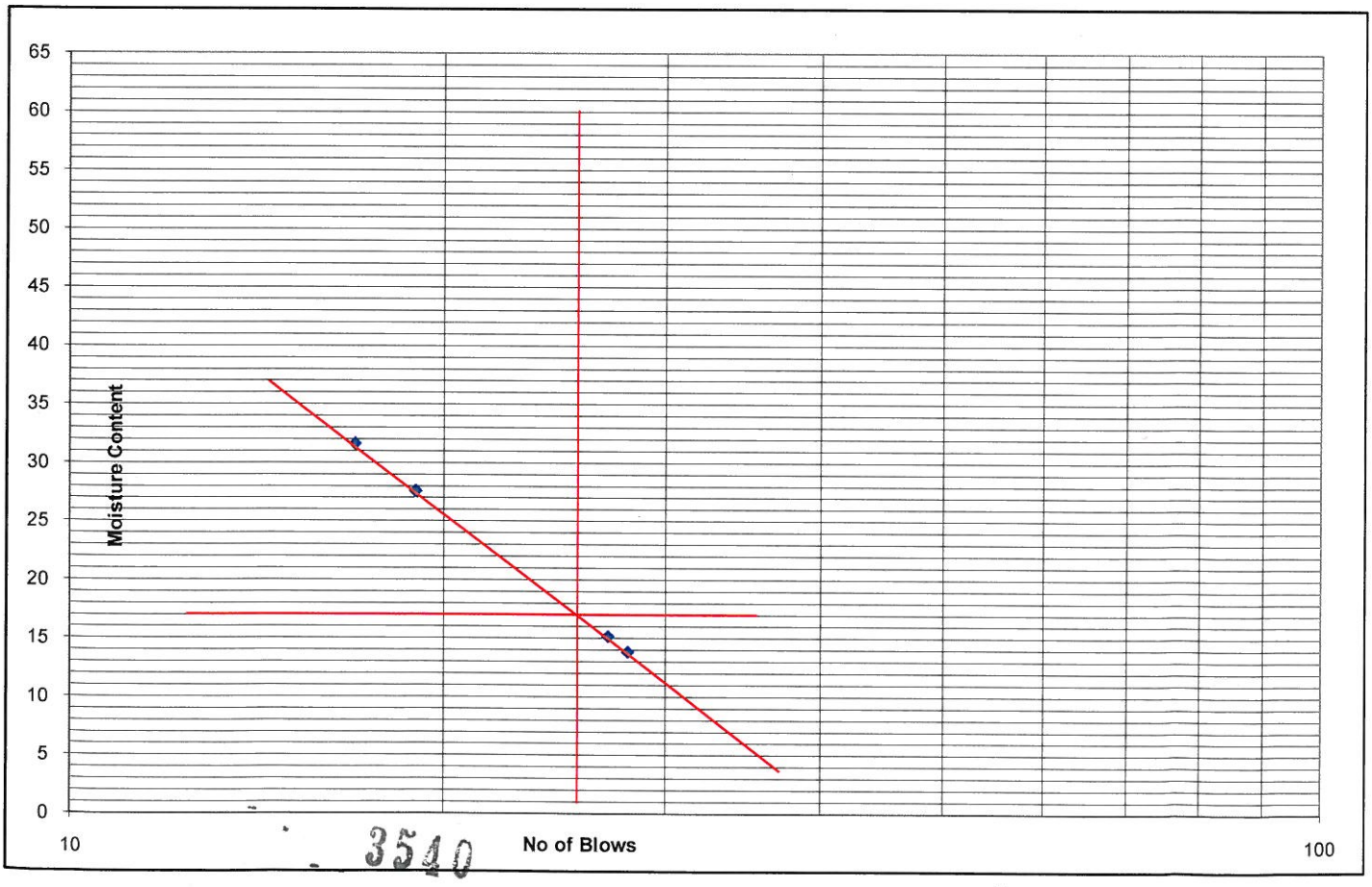
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	24.0m	Tested by	:	D.Mohanty

Number of Blows	28	27	19	17	Plastic Limit	
Container No.	A19	A20	A21	A22	NP	
Container Weight (gm) (W1)	30.48	36.37	35.44	34.61		
Container + Wt. of wet soil (gm) (W2)	83.66	96.68	99.73	104.25		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.18	88.74	85.83	87.52		
Wt. Of water (gm) (W2-W1)-(W3-W1)	6.48	7.95	13.90	16.73		
Wt. of oven dry soil (gm) (W3-W1)	46.70	52.37	50.39	52.91		
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**13.87**	**15.18**	**27.59**	**31.61**		

Result Summary

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



3540

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

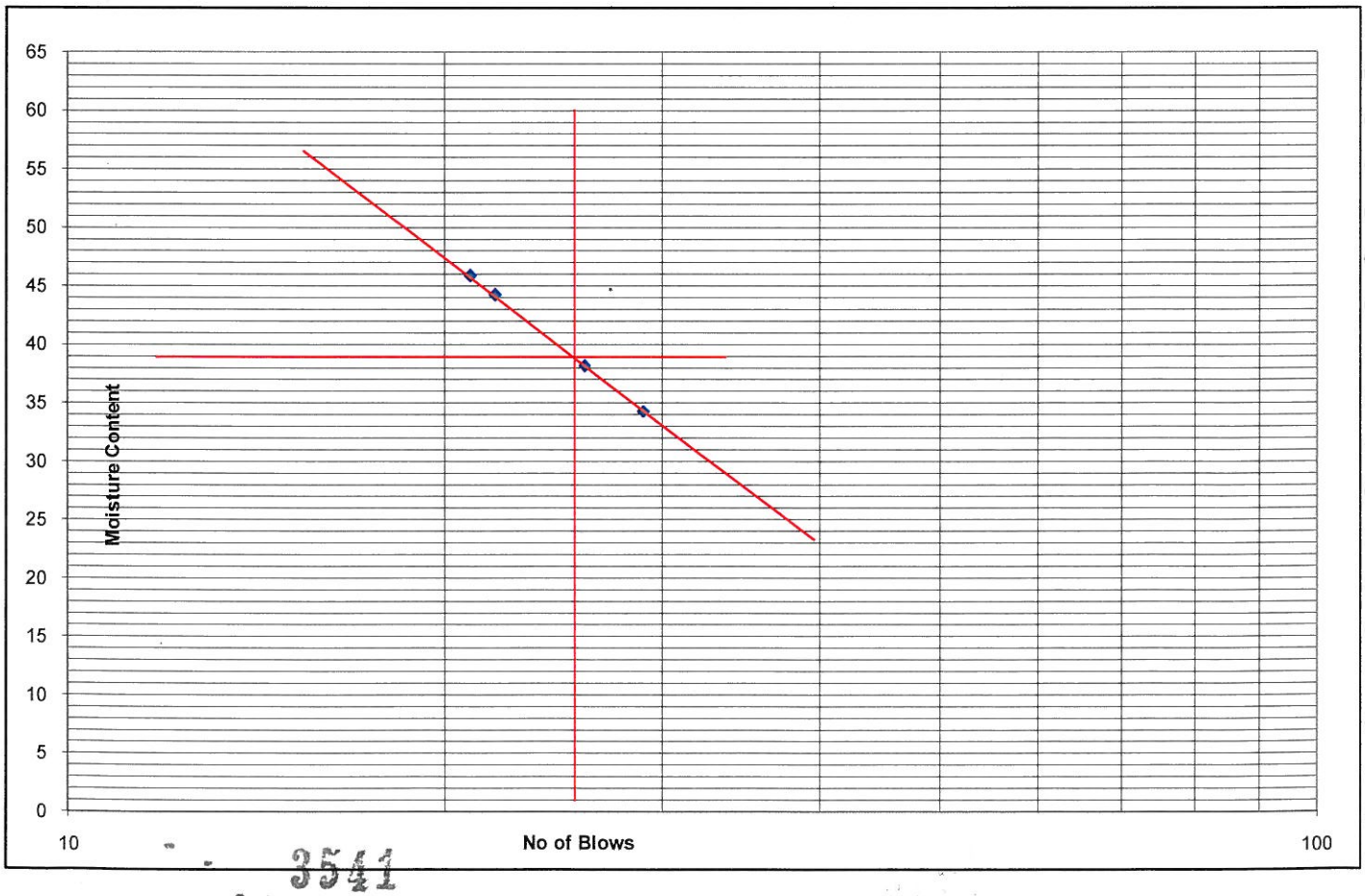
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	27.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	22	21	Plastic Limit	
Container No.	A7	A8	A9	A10	A11	A12
Container Weight (gm) (W1)	36.24	35.69	32.84	33.18	31.85	34.26
Container + Wt. of wet soil (gm) (W2)	91.63	109.36	109.40	112.26	97.95	96.84
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.49	89.01	85.92	87.39	87.76	87.86
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.14	20.35	23.48	24.87	10.18	8.98
Wt. of oven dry soil (gm) (W3-W1)	41.25	53.32	53.08	54.21	55.91	53.60
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**34.28**	**38.17**	**44.23**	**45.87**	**18.21**	**16.76**

Result Summary

Liquid Limit (WL)	39	%
Plastic Limit (Wp)	17	%
Plasticity Index (Ip)	22	%



3541

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

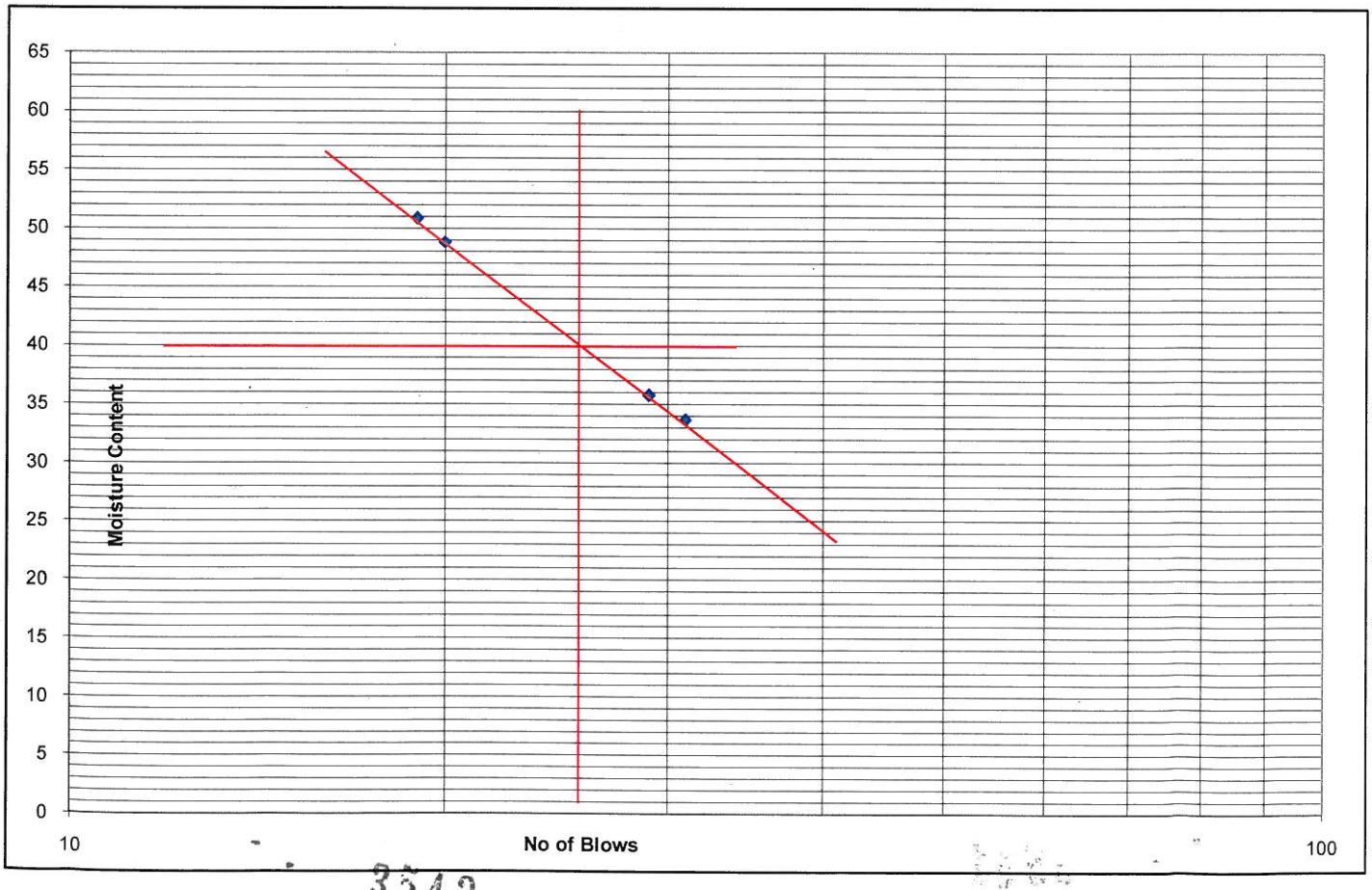
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	33.0m	Tested by	:	D.Mohanty

Number of Blows	31	29	20	19	Plastic Limit	
Container No.	A25	A26	A27	A28	A29	A30
Container Weight (gm) (W1)	35.83	33.36	31.2	39.42	34.86	30.76
Container + Wt. of wet soil (gm) (W2)	91.63	109.05	112.63	111.78	98.84	99.77
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.58	89.10	85.92	87.39	87.95	88.06
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.05	19.95	26.71	24.39	10.89	11.72
Wt. of oven dry soil (gm) (W3-W1)	41.75	55.74	54.72	47.97	53.09	57.30
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.66**	**35.79**	**48.81**	**50.84**	**20.51**	**20.45**

Result Summary

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



3542

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

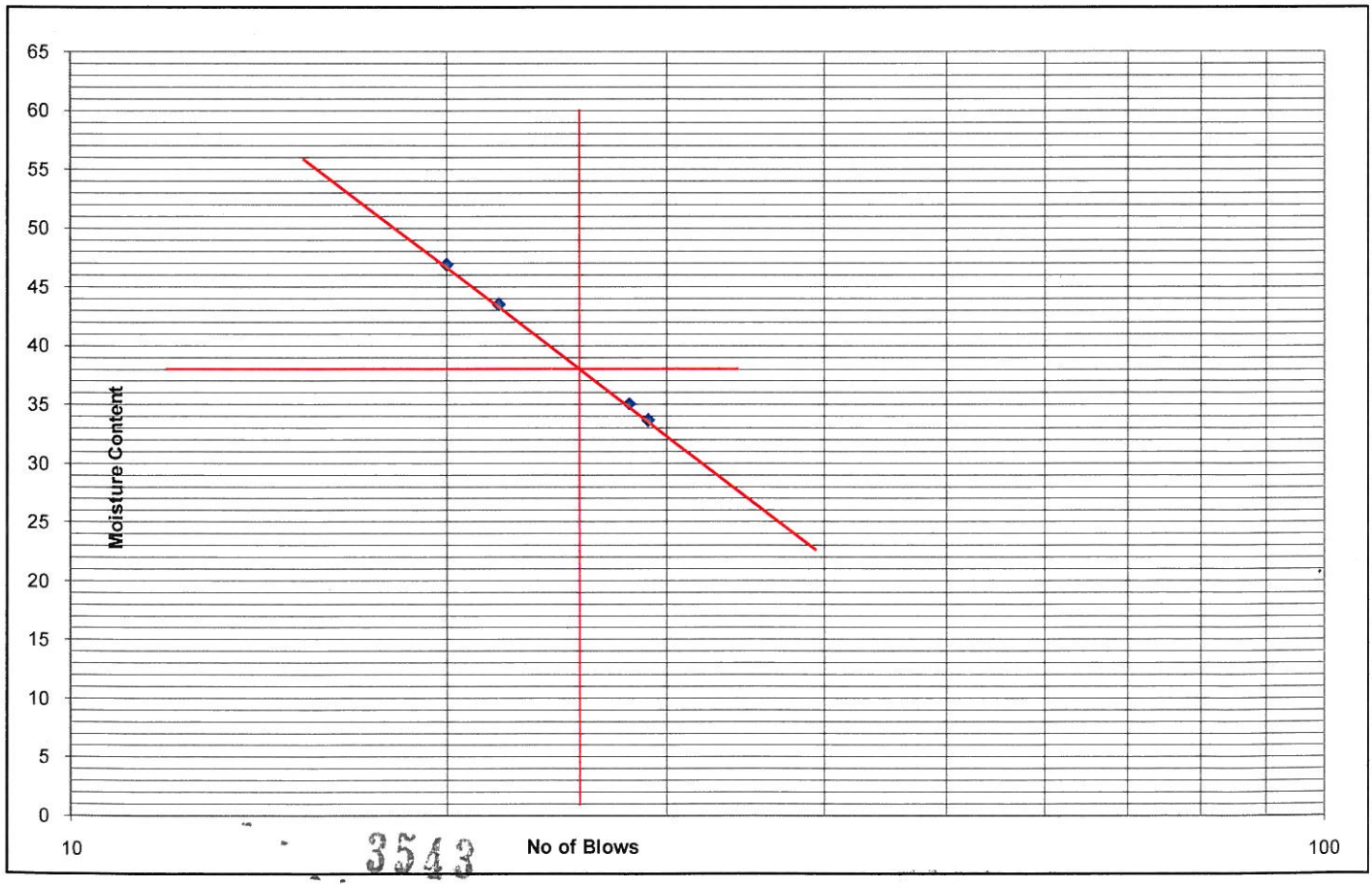
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	39.0m	Tested by	:	D.Mohanty

Number of Blows	29	28	22	20	Plastic Limit	
Container No.	A37	A38	A39	A40	A41	A42
Container Weight (gm) (W1)	30.18	33.67	35.48	31.39	32.16	35.55
Container + Wt. of wet soil (gm) (W2)	93.83	108.77	107.75	113.84	97.88	97.34
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.80	89.28	85.85	87.52	88.22	88.41
Wt. Of water (gm) (W2-W1)-(W3-W1)	16.03	19.50	21.90	26.32	9.66	8.93
Wt. of oven dry soil (gm) (W3-W1)	47.62	55.61	50.37	56.13	56.06	52.86
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**33.66**	**35.06**	**43.49**	**46.89**	**17.23**	**16.89**

Result Summary

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



3543

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

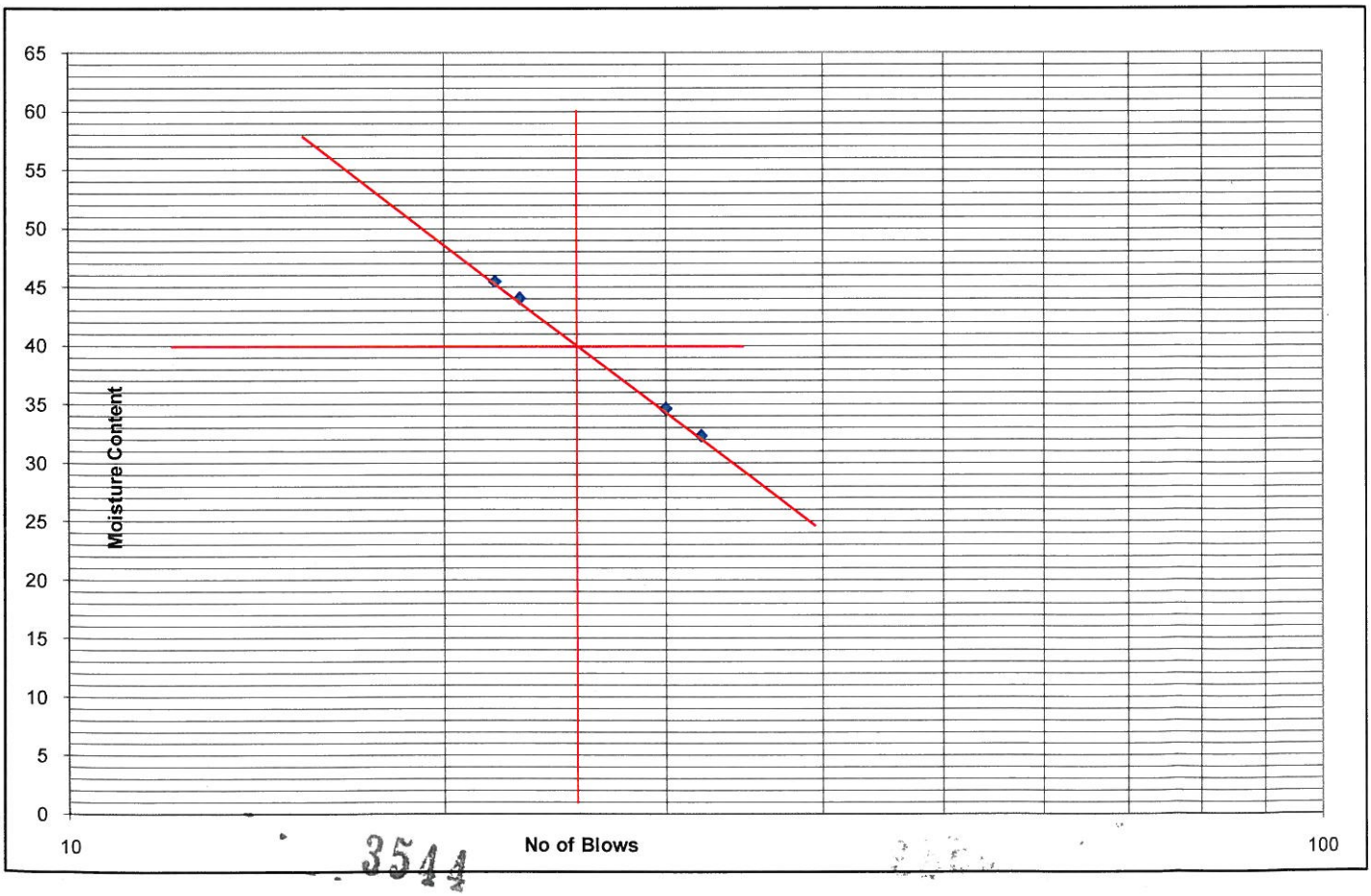
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	40.5m	Tested by	:	D.Mohanty

Number of Blows	32	30	23	22	Plastic Limit	
Container No.	A31	A32	A33	A34	A35	A36
Container Weight (gm) (W1)	35.64	34.29	32.47	31.56	30.22	33.47
Container + Wt. of wet soil (gm) (W2)	91.42	108.60	109.54	112.72	100.27	99.20
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.80	89.49	85.98	87.35	88.43	88.88
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.61	19.10	23.56	25.37	11.84	10.32
Wt. of oven dry soil (gm) (W3-W1)	42.16	55.20	53.51	55.79	58.21	55.41
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.29**	**34.61**	**44.03**	**45.47**	**20.34**	**18.62**

Result Summary

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



3544

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

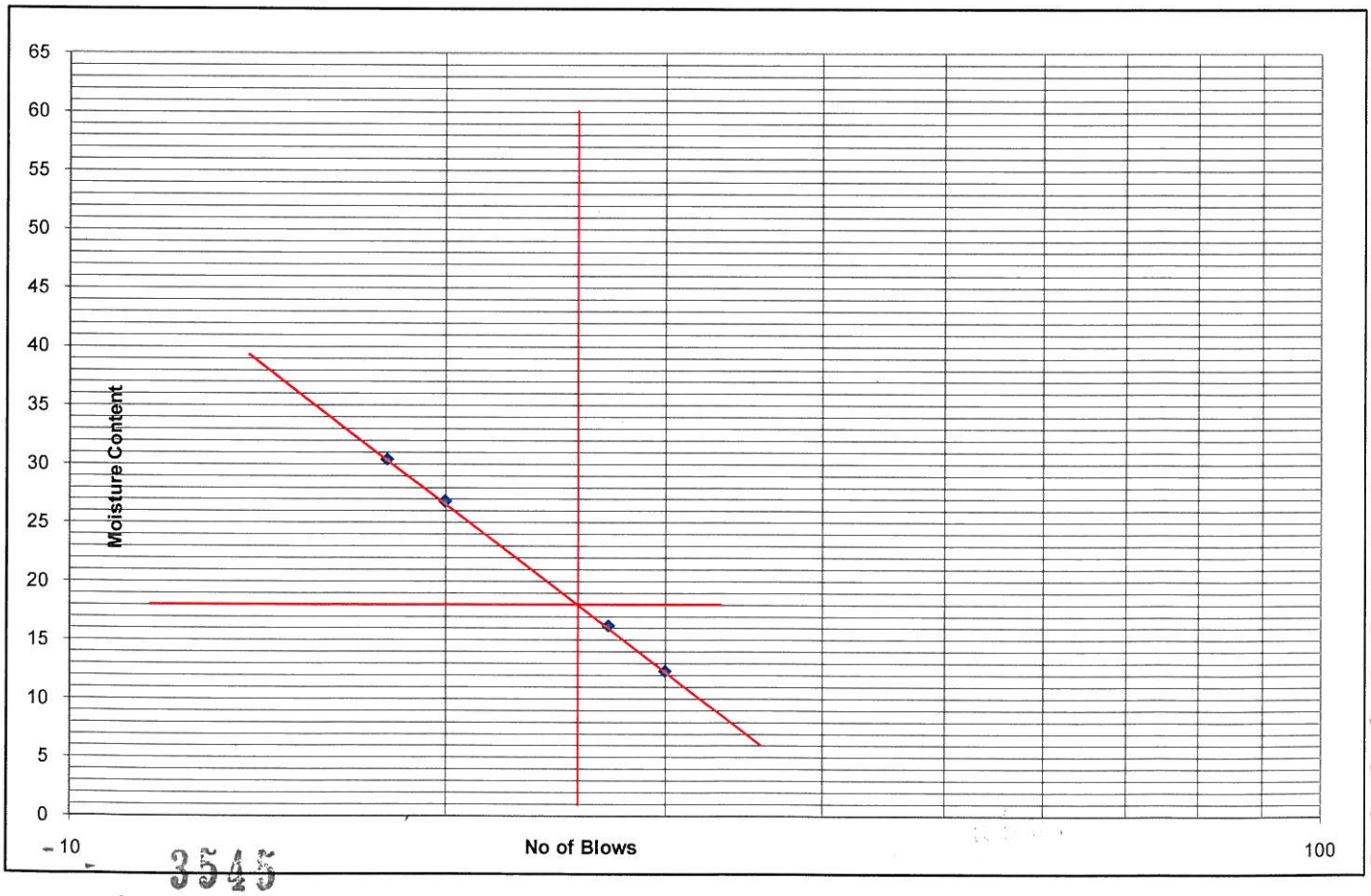
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	50.0m	Tested by	:	D.Mohanty

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	A23	A24	C23	C24	NP	
Container Weight (gm) (W1)	35.8	32.51	32.47	31.56		
Container + Wt. of wet soil (gm) (W2)	82.96	99.18	100.72	104.51		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.76	89.87	86.28	87.50		
Wt. Of water (gm) (W2-W1)-(W3-W1)	5.20	9.31	14.44	17.01		
Wt. of oven dry soil (gm) (W3-W1)	41.96	57.36	53.81	55.94		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**12.39**	**16.24**	**26.83**	**30.41**		

Result Summary

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



3545

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client : DFCC

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

Type of Sample : UDS

Location : BH-1(Markanda River-Ambala)

Depth : 7.5m

Date Of Testing : 27.09.12

Tested by : D.Mohanty

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	10.5	0.50	5	5	50%
2	10	10.5	0.50	5		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3546

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	27.09.12	
Type of Sample	: UDS	Tested by	:	D.Mohanty	
Location	: BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 10.5m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	10.5	0.50	5	5	50%
2	10	10.5	0.50	5		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3547

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges	Date Of Testing	:	27.09.12
Type of Sample	:	UDS	Tested by	:	D.Mohanty
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	13.5m	Weight of Sample	:	10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.0	1.00	10	8	50%
2	10	11.0	1.00	10		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3548

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	27.09.12	
Type of Sample	: UDS	Tested by	:	D.Mohanty	
Location	: BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 16.5m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.5	1.50	15	8	50%
2	10	10.5	0.50	5		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3549

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	27.09.12	
Type of Sample	: UDS	Tested by	:	D.Mohanty	
Location	: BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 19.5m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.0	1.00	10	8	50%
2	10	11.0	1.00	10		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3550

Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	27.09.12	
Type of Sample	: UDS	Tested by	:	D.Mohanty	
Location	: BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 22.5m	Weight of Sample	:	10gm	

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	11.5	1.50	15	8	50%
2	10	10.5	0.50	5		
3	10	10.5	0.50	5		

Remarks:

Lab Manager

Checked By:

3551

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client	: DFCC				
Project Name	: G.I For 3 Nos. Important Bridges	Date Of Testing	:	27.09.12	
Type of Sample	: SPT	Tested by	:	D.Mohanty	
Location	: BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 27.0m	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	16	50%
2	10	11	1.30	13		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

3552

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

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

AS PER IS: 2720 (PART - 40)

Client : DFCC

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

Type of Sample : SPT

Location : BH-1(Markanda River-Ambala)

Depth : 39.0m

Date Of Testing : 27.09.12

Tested by : D.Mohanty

Sampled by : T.K.Das

Weight of Sample : 10gm

SAMPLE NO.	VOLUME IN KEROSIN OIL Vk	VOLUME IN WATER Vd	SWELL (Vd-Vk)	SWELL INDEX = (Vd-Vk)/ (Vk)*100 (%)	AVERAGE SWELL %	SPECIFIC LIMIT
1	10	12.0	2.00	20	15	50%
2	10	11.5	1.50	15		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

3553

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-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
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	37.81	
3	Weight of bottle with soil and water W3 in gm	136.38	
4	Weight of bottle full of water W4 in gm	132.46	
5	Weight of dry soil (W2-W1)in gm	6.29	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.37	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3554

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	:	UDS	Date Of Testing	:	27.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	7.5m	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	37.23	
3	Weight of bottle with soil and water W3 in gm	137.23	
4	Weight of bottle full of water W4 in gm	133.67	
5	Weight of dry soil (W2-W1)in gm	5.71	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.15	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3555

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	:	UDS	Date Of Testing	:	27.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	10.5m	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	36.48	
3	Weight of bottle with soil and water W3 in gm	137.25	
4	Weight of bottle full of water W4 in gm	134.15	
5	Weight of dry soil (W2-W1)in gm	4.96	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.86	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3556

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-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	12.0m	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	37.06	
3	Weight of bottle with soil and water W3 in gm	136.83	
4	Weight of bottle full of water W4 in gm	133.37	
5	Weight of dry soil (W2-W1)in gm	5.54	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.08	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3557

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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-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	15.0m	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	36.97	
3	Weight of bottle with soil and water W3 in gm	138.19	
4	Weight of bottle full of water W4 in gm	134.79	
5	Weight of dry soil (W2-W1)in gm	5.45	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.05	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3558

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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-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	18.0m	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	37.43	
3	Weight of bottle with soil and water W3 in gm	137.91	
4	Weight of bottle full of water W4 in gm	134.23	
5	Weight of dry soil (W2-W1)in gm	5.91	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.23	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3559

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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	:	UDS	Date Of Testing	:	27.09.12
Location	:	BH-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	22.5m	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	36.21	
3	Weight of bottle with soil and water W3 in gm	136.89	
4	Weight of bottle full of water W4 in gm	133.96	
5	Weight of dry soil (W2-W1)in gm	4.69	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.76	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3560

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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-1(Markanda River-Ambala)	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	38.03	
3	Weight of bottle with soil and water W3 in gm	137.39	
4	Weight of bottle full of water W4 in gm	133.34	
5	Weight of dry soil (W2-W1)in gm	6.51	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.46	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3561

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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-1(Markanda River-Ambala)	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	36.95	
3	Weight of bottle with soil and water W3 in gm	136.73	
4	Weight of bottle full of water W4 in gm	133.33	
5	Weight of dry soil (W2-W1)in gm	5.43	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.03	
7	Specific Gravity G = (5) / (6)	2.68	

Lab Manager

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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-1(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	39.0m	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	137.49	
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	2.23	
7	Specific Gravity G = (5) / (6)	2.69	

Lab Manager

Checked By

3563

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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-1(Markanda River-Ambala)	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	38.19	
3	Weight of bottle with soil and water W3 in gm	138.81	
4	Weight of bottle full of water W4 in gm	134.65	
5	Weight of dry soil (W2-W1)in gm	6.67	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.51	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3564

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ARKITECHNO CONSULTANTS (INDIA) 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-1(Markanda 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-1(Markanda River-Ambala)	1.5	SPT	27.09.12	62.34	3.8	7	79.39	204.45	187.82	125.48	16.63	13.25	1.79	1.58
2		7.5	UDS	27.09.12	61.82	3.8	7	79.39	219.81	194.82	133.00	24.99	18.79	1.99	1.68
3		10.5	UDS	27.09.12	60.71	3.8	7	79.39	220.28	194.09	133.38	26.20	19.64	2.01	1.68
4		12.0	SPT	27.09.12	63.49	3.8	7	79.39	227.03	200.27	136.78	26.77	19.57	2.06	1.72
5		15.0	SPT	27.09.12	60.77	3.8	7	79.39	225.11	196.69	135.92	28.42	20.91	2.07	1.71
6		18.0	SPT	27.09.12	64.84	3.8	7	79.39	230.77	204.44	139.60	26.33	18.86	2.09	1.76
7		22.5	UDS	27.09.12	65.31	3.8	7	79.39	229.65	201.66	136.35	27.99	20.53	2.07	1.72
8		24.0	SPT	27.09.12	60.5	3.8	7	79.39	210.55	194.92	134.42	15.63	11.63	1.89	1.69
9		33.0	SPT	27.09.12	61.31	3.8	7	79.39	233.59	200.10	138.79	33.49	24.13	2.17	1.75
10		39.0	SPT	27.09.12	62.29	3.8	7	79.39	236.15	203.08	140.79	33.07	23.49	2.19	1.77
11		50.0	SPT	27.09.12	63.12	3.8	7	79.39	214.75	196.18	133.06	18.58	13.96	1.91	1.68

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 64.82

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	30.73	30.73	30.73	69.27
0.425	25.81	25.81	56.54	43.46
0.075	8.28	8.28	64.82	35.18
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 64.82 **Silt and clay %** 35.18

Remarks :-

3566

Lab Manager Checked By

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 77.41

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	36.23	36.23	36.23	63.77
0.425	30.87	30.87	67.10	32.90
0.075	10.31	10.31	77.41	22.59
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 77.41 **Silt and clay %** 22.59

Remarks :-

3567

Lab Manager 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	:	UDS	Date of Testing	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	10.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.05

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	0.00	0.00	0.00	100.00
2.00	0.54	0.54	0.54	99.46
0.425	0.39	0.39	0.93	99.07
0.075	0.12	0.12	1.05	98.95
Total	100.00			

Gravel Content (%)= **0.00**

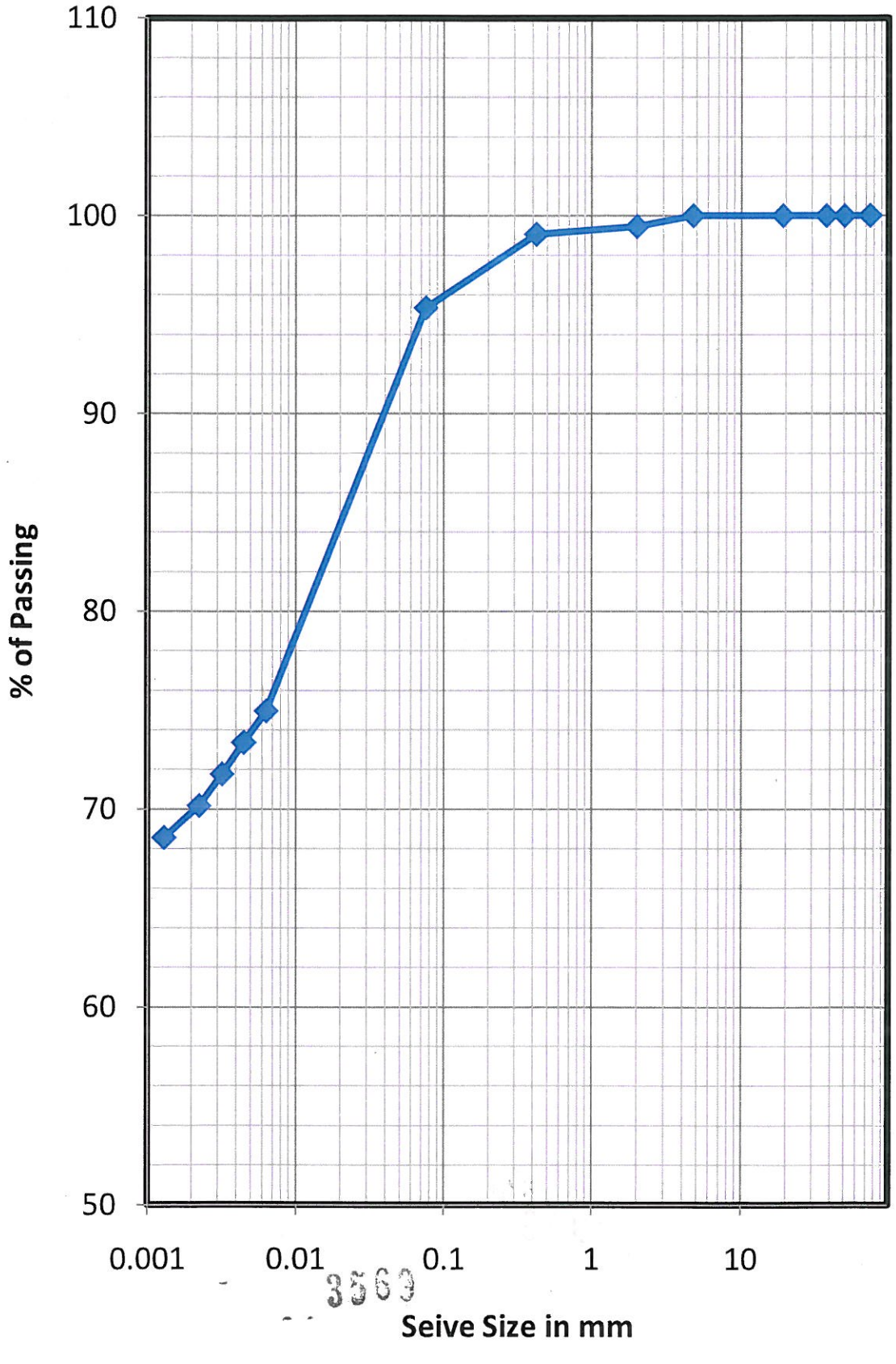
Sand Content (%) = 1.05 **Silt and clay %** 98.95

Remarks :-

3568

Lab Manager Checked By

Grain Size Distribution Curve
BH-2, D-10.5m



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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 0.86

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	0.43	0.43	0.43	99.57
0.425	0.34	0.34	0.77	99.23
0.075	0.09	0.09	0.86	99.14
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.86 **Silt and clay %** 99.14

Remarks :-

3570

Lab Manager

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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	15.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.11

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	0.55	0.55	0.55	99.45
0.425	0.42	0.42	0.97	99.03
0.075	0.14	0.14	1.11	98.89
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.11 **Silt and clay %** 98.89

Remarks :-

3571

Lab Manager 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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 0.89

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	0.41	0.41	0.41	99.59
0.425	0.38	0.38	0.79	99.21
0.075	0.10	0.10	0.89	99.11
Total	100.00			

Gravel Content (%)= **0.00**

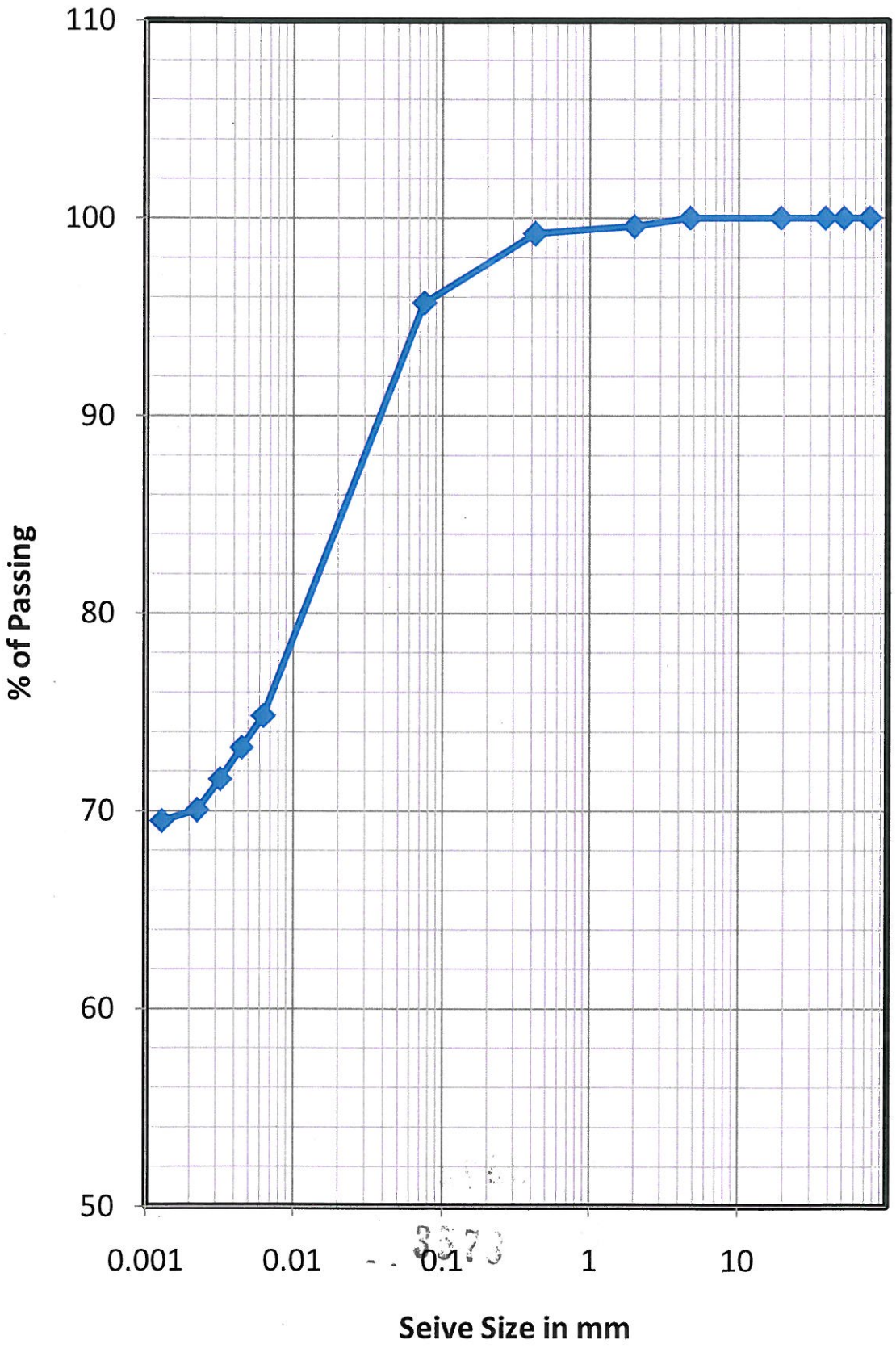
Sand Content (%) = 0.89 **Silt and clay %** 99.11

Remarks :-

3572

Lab Manager Checked By

Grain Size Distribution Curve
BH-2, D-18.0m



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	19.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 0.62

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	0.30	0.30	0.30	99.70
0.425	0.26	0.26	0.56	99.44
0.075	0.06	0.06	0.62	99.38
Total	100.00			

Gravel Content (%)= **0.00**

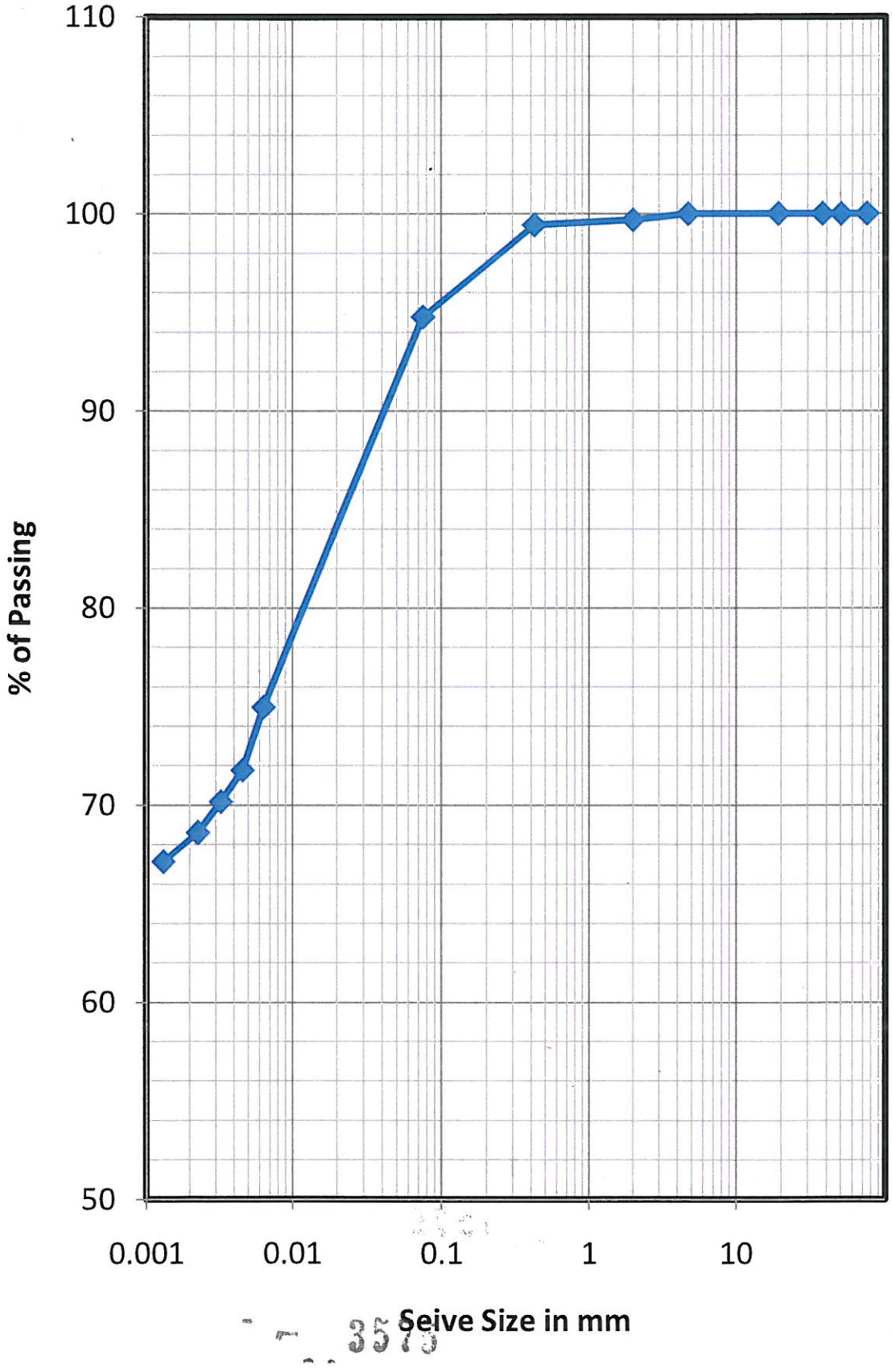
Sand Content (%) = 0.62 **Silt and clay %** 99.38

Remarks :-

3574

Lab Manager Checked By

Grain Size Distribution Curve
BH-2, D-19.5m



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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 0.53

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	0.27	0.27	0.27	99.73
0.425	0.22	0.22	0.49	99.51
0.075	0.04	0.04	0.53	99.47
Total	100.00			

Gravel Content (%)= **0.00**

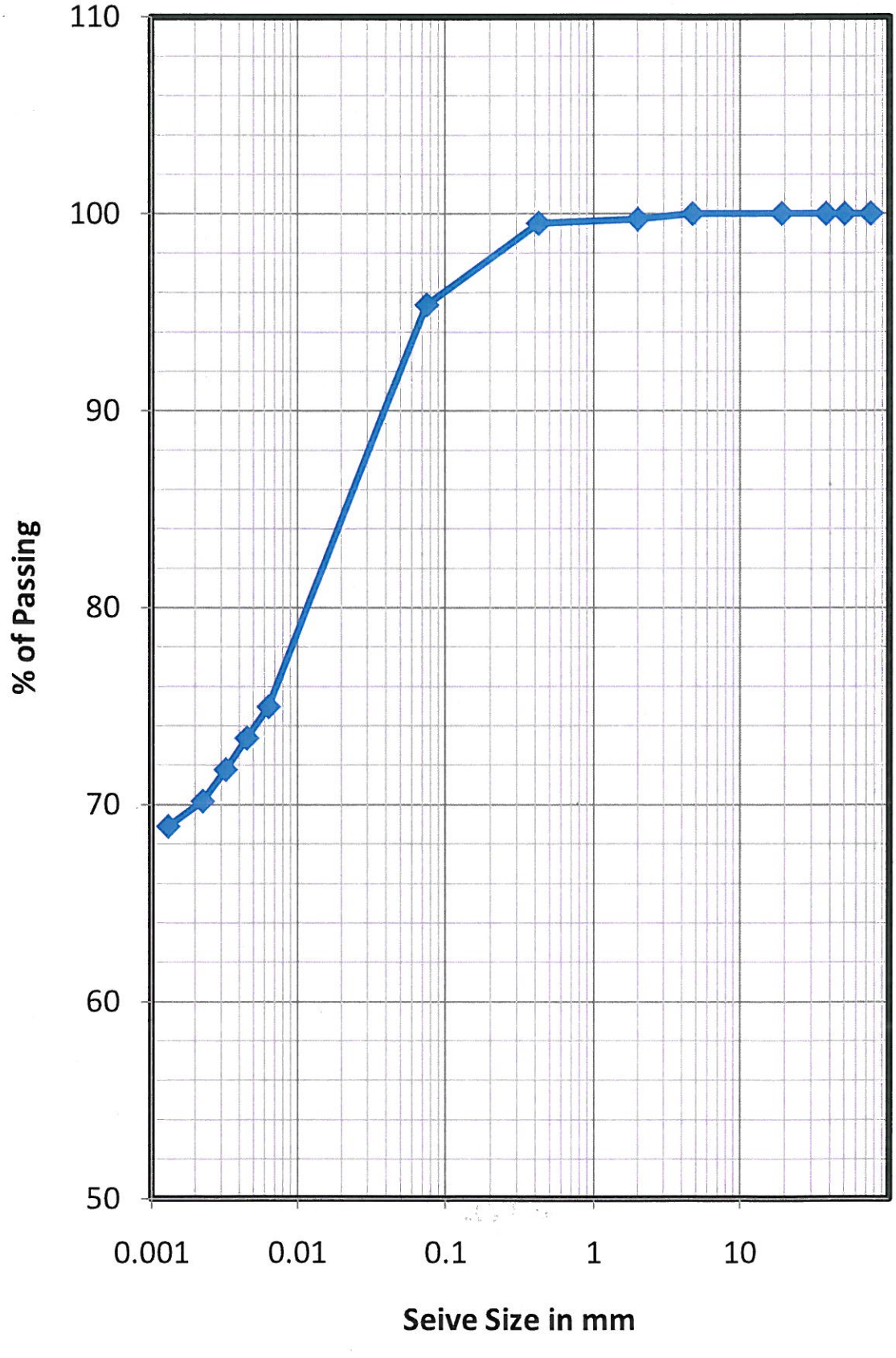
Sand Content (%) = 0.53 **Silt and clay %** 99.47

Remarks :-

3576

Lab Manager Checked By

Grain Size Distribution Curve
BH-2, D-21.0m



3577

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 0.27

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	0.14	0.14	0.14	99.86
0.425	0.12	0.12	0.26	99.74
0.075	0.02	0.02	0.28	99.72
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.28 **Silt and clay %** 99.72

Remarks :-

3578

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	25.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.17

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	0.57	0.57	0.57	99.43
0.425	0.49	0.49	1.06	98.94
0.075	0.11	0.11	1.17	98.83
Total	100.00			

Gravel Content (%)= **0.00**

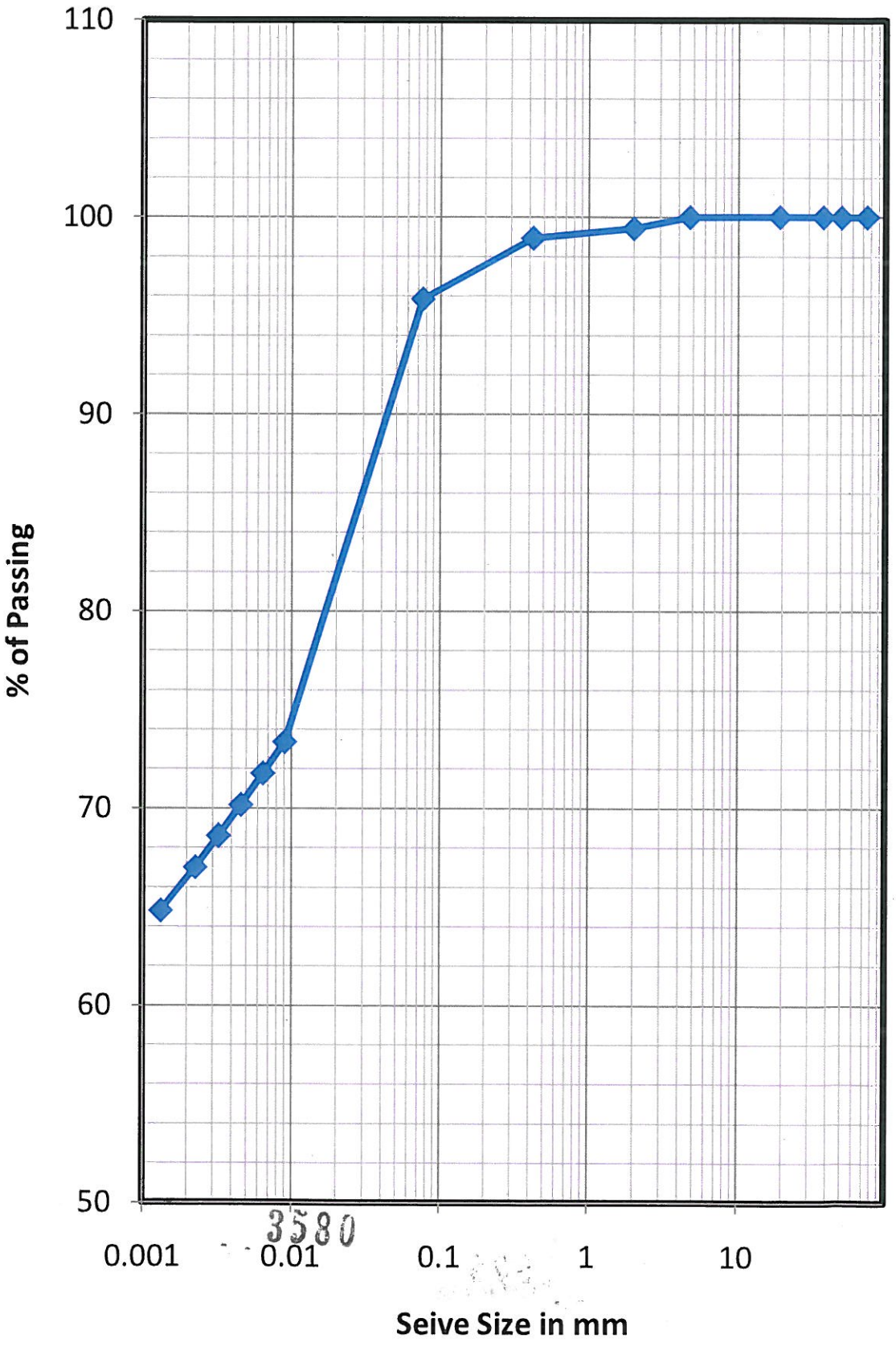
Sand Content (%) = 1.17 **Silt and clay %** 98.83

Remarks :-

3573

Lab Manager Checked By

Grain Size Distribution Curve
BH-2, D-25.5m



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ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 0.50

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.26	0.26	0.26	99.74
0.425	0.18	0.18	0.44	99.56
0.075	0.07	0.07	0.51	99.49
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.51 **Silt and clay %** 99.49

Remarks :-

3581

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	31.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 0.83

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	0.00	0.00	0.00	100.00
2.00	0.36	0.36	0.36	99.64
0.425	0.30	0.30	0.66	99.34
0.075	0.17	0.17	0.83	99.17
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.83 **Silt and clay %** 99.17

Remarks :-

3582

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	33.0m	Tested by	:	D.Mohanty

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

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

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.29	0.29	0.29	99.71
0.425	0.25	0.25	0.54	99.46
0.075	0.13	0.13	0.67	99.33
Total	100.00			

Gravel Content (%)= **0.00**

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

Remarks :-

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	40.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.08

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	0.50	0.50	0.50	99.50
0.425	0.41	0.41	0.91	99.09
0.075	0.17	0.17	1.08	98.92
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.08 **Silt and clay %** 98.92

Remarks :-

3581

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
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) :- 1.91

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	0.81	0.81	0.81	99.19
0.425	0.73	0.73	1.54	98.46
0.075	0.37	0.37	1.91	98.09
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.91 **Silt and clay %** 98.09

Remarks :-

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	48.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 2.26

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	1.02	1.02	1.02	98.98
0.425	0.89	0.89	1.91	98.09
0.075	0.35	0.35	2.26	97.74
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 2.26 **Silt and clay %** 97.74

Remarks :-

3586

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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	:	24.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	50.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 0.55

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	0.29	0.29	0.29	99.71
0.425	0.20	0.20	0.49	99.51
0.075	0.07	0.07	0.56	99.44
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.56 **Silt and clay %** 99.44

Remarks :-

3507

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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-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 10.5m

Date of Testing : 28.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.95
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.5
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.5
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

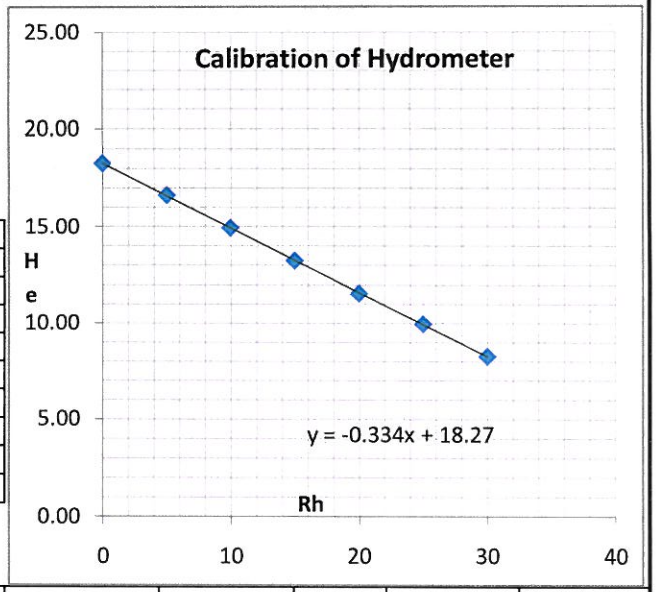
CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.98	29	-2.0	8.26	30.48	0.525	0.000008341	0.012204347	0.00640260	27.98	3.224	90.22	89.27
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.224	88.67	87.74
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.224	87.06	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.224	85.44	84.55
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012204347	0.00166352	26.00	3.224	83.83	82.95
	15	27.50	29	-2.0	9.09	28.00	0.100	0.000008341	0.012204347	0.00122618	25.50	3.224	82.22	81.36
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012204347	0.00088284	24.50	3.224	79.00	78.17
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.224	75.77	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.224	74.16	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.224	72.55	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007984	0.011940397	0.00022530	22.00	3.224	70.94	70.19
	1440	23.49	32	-2.0	10.43	23.99	0.011	0.000007984	0.011940397	0.000131164	21.49	3.224	69.28	68.55

Lab Manager

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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 : SPT

Location : BH-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 18.0m

Date of Testing : 28.09.12

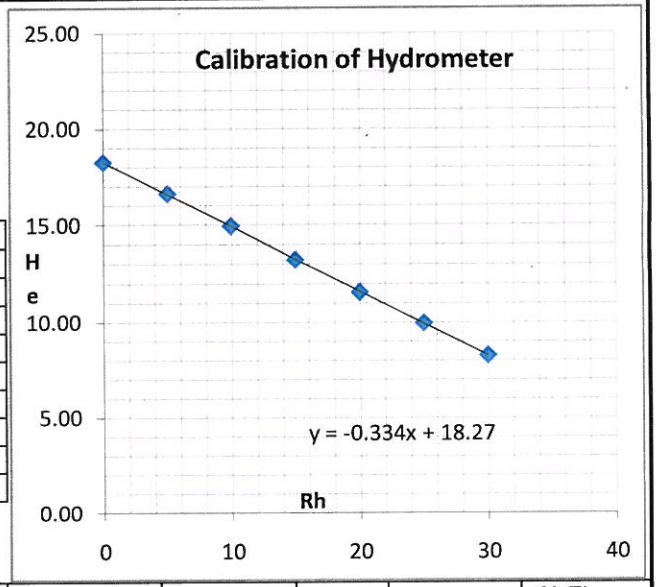
Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.11
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.4
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.6
(V)	Specific gravity of soil grains, Gs		2.69
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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

CALIBRATION OF HYDROMETER

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.91	29	-2.0	8.28	30.41	0.525	0.000008341	0.012168186	0.00639267	27.91	3.212	89.65	88.85
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012168186	0.00455752	27.50	3.212	88.33	87.54
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012168186	0.00325447	27.00	3.212	86.72	85.95
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012168186	0.00232353	26.50	3.212	85.12	84.36
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012168186	0.00165859	26.00	3.212	83.51	82.77
	15	27.50	29	-2.0	9.09	28.00	0.100	0.000008341	0.012168186	0.00122255	25.50	3.212	81.91	81.18
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012168186	0.00088022	24.50	3.212	78.69	77.99
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012168186	0.00063335	23.50	3.212	75.48	74.81
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012168186	0.00045166	23.00	3.212	73.88	73.22
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012168186	0.00032205	22.50	3.212	72.27	71.63
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007984	0.011905018	0.00022464	22.00	3.212	70.66	70.04
	1440	23.83	32	-2.0	10.31	24.33	0.011	0.000007984	0.011905018	0.000130049	21.83	3.212	70.12	69.50

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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-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 19.5m

Date of Testing : 28.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.38
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.7
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

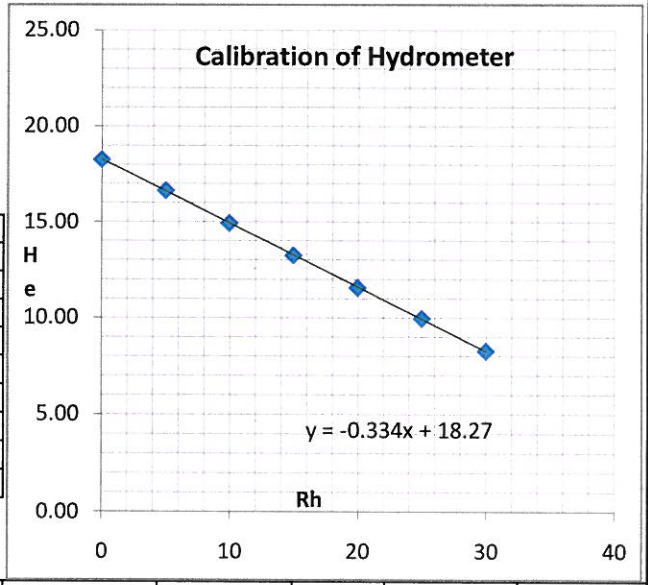
CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.63	29	-2.0	8.37	30.13	0.528	0.000008341	0.012204347	0.00644777	27.63	3.210	88.70	88.15
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.210	88.29	87.74
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.210	86.68	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.210	85.08	84.55
	8	28.00	29	-2.0	8.92	28.50	0.136	0.000008341	0.012204347	0.00166352	26.00	3.210	83.47	82.95
	15	27.50	29	-2.0	9.09	28.00	0.100	0.000008341	0.012204347	0.00122618	25.50	3.210	81.86	81.36
	30	26.50	29	-2.0	9.42	27.00	0.072	0.000008341	0.012204347	0.00088284	24.50	3.210	78.65	78.17
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.210	75.44	74.98
	120	24.50	29	-2.0	10.09	25.00	0.037	0.000008341	0.012204347	0.00045680	22.50	3.210	72.23	71.79
	240	24.00	29	-2.0	10.25	24.50	0.027	0.000008341	0.012204347	0.00032567	22.00	3.210	70.63	70.19
	480	23.50	32	-2.0	10.42	24.00	0.019	0.000007984	0.011940397	0.00022713	21.50	3.210	69.02	68.60
	1440	23.05	32	-2.0	10.57	23.55	0.011	0.000007984	0.011940397	0.000132083	21.05	3.210	67.57	67.15

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-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 21.0m

Date of Testing : 28.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.47
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.7
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

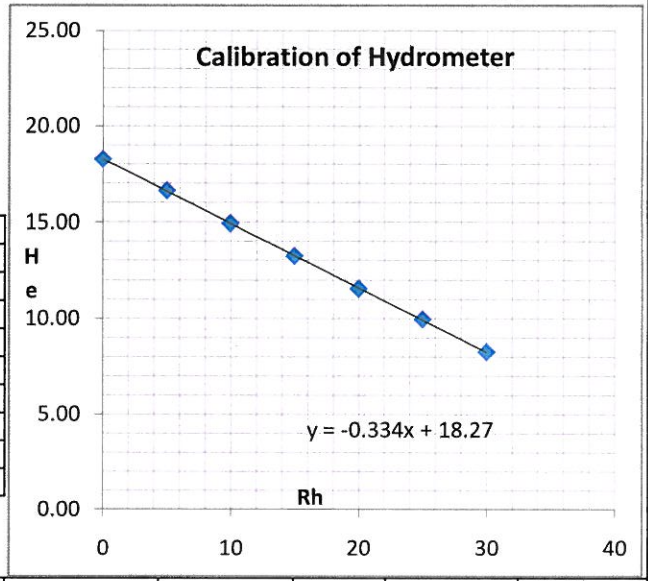
CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.73	29	-2.0	8.34	30.23	0.527	0.000008341	0.012204347	0.00643490	27.73	3.207	88.94	88.47
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.207	86.60	86.14
	2	28.50	29	-2.0	8.75	29.00	0.270	0.000008341	0.012204347	0.00329574	26.50	3.207	85.00	84.55
	4	28.00	29	-2.0	8.92	28.50	0.193	0.000008341	0.012204347	0.00235257	26.00	3.207	83.39	82.95
	8	27.50	29	-2.0	9.09	28.00	0.138	0.000008341	0.012204347	0.00167902	25.50	3.207	81.79	81.36
	15	26.50	29	-2.0	9.42	27.00	0.102	0.000008341	0.012204347	0.00124852	24.50	3.207	78.58	78.17
	30	26.00	29	-2.0	9.59	26.50	0.073	0.000008341	0.012204347	0.00089063	24.00	3.207	76.98	76.57
	60	25.50	29	-2.0	9.75	26.00	0.052	0.000008341	0.012204347	0.00063523	23.50	3.207	75.38	74.98
	120	25.00	29	-2.0	9.92	25.50	0.037	0.000008341	0.012204347	0.00045301	23.00	3.207	73.77	73.38
	240	24.50	29	-2.0	10.09	25.00	0.026	0.000008341	0.012204347	0.00032301	22.50	3.207	72.17	71.79
	480	24.00	32	-2.0	10.25	24.50	0.019	0.000007984	0.011940397	0.00022530	22.00	3.207	70.56	70.19
	1440	23.60	32	-2.0	10.39	24.10	0.011	0.000007984	0.011940397	0.000130934	21.60	3.207	69.27	68.90

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : UDS

Location : BH-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 25.5m

Date of Testing : 28.09.12

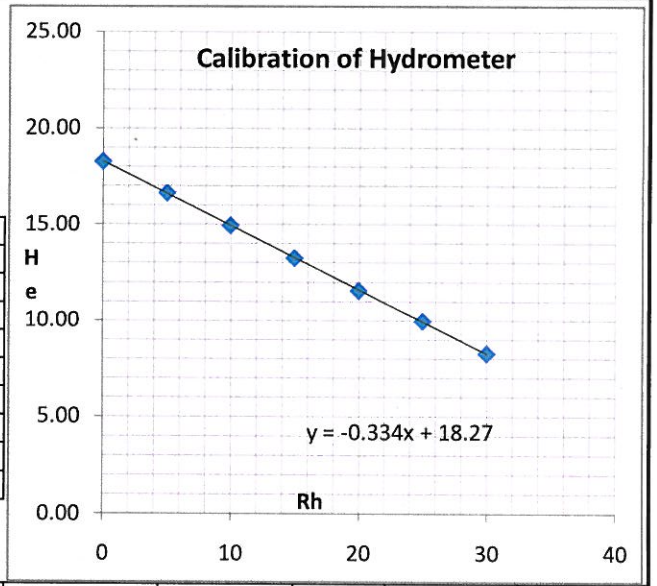
Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.83
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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

CALIBRATION OF HYDROMETER

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	28.84	29	-2.0	8.64	29.34	0.537	0.000008341	0.012204347	0.00654857	26.84	3.228	86.65	85.63
	1	28.50	29	-2.0	8.75	29.00	0.382	0.000008341	0.012204347	0.00466088	26.50	3.228	85.55	84.55
	2	28.00	29	-2.0	8.92	28.50	0.273	0.000008341	0.012204347	0.00332704	26.00	3.228	83.93	82.95
	4	27.50	29	-2.0	9.09	28.00	0.195	0.000008341	0.012204347	0.00237450	25.50	3.228	82.32	81.36
	8	27.00	29	-2.0	9.25	27.50	0.139	0.000008341	0.012204347	0.00169438	25.00	3.228	80.71	79.76
	15	26.00	29	-2.0	9.59	26.50	0.103	0.000008341	0.012204347	0.00125954	24.00	3.228	77.48	76.57
	30	25.00	29	-2.0	9.92	25.50	0.074	0.000008341	0.012204347	0.00090601	23.00	3.228	74.25	73.38
	60	24.50	29	-2.0	10.09	25.00	0.053	0.000008341	0.012204347	0.00064602	22.50	3.228	72.64	71.79
	120	24.00	29	-2.0	10.25	24.50	0.038	0.000008341	0.012204347	0.00046057	22.00	3.228	71.02	70.19
	240	23.50	29	-2.0	10.42	24.00	0.027	0.000008341	0.012204347	0.00032831	21.50	3.228	69.41	68.60
	480	23.00	32	-2.0	10.59	23.50	0.019	0.000007984	0.011940397	0.00022894	21.00	3.228	67.79	67.00
	1440	22.31	32	-2.0	10.82	22.81	0.011	0.000007984	0.011940397	0.000133611	20.31	3.228	65.57	64.80

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : SPT

Location : BH-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 30.0m

Date of Testing : 28.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.49
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.7
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

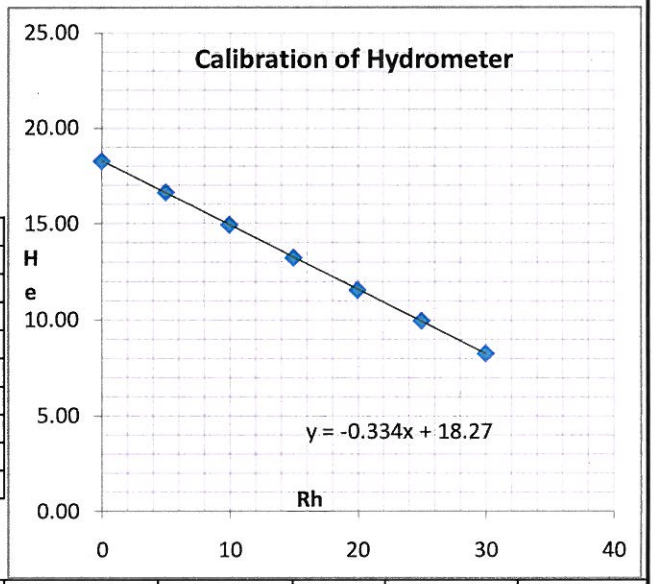
CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.37	29	-2.0	8.46	29.87	0.531	0.000008341	0.012204347	0.00648112	27.37	3.207	87.77	87.32
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.207	86.58	86.14
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.207	86.58	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.207	84.98	84.55
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012204347	0.00164787	26.50	3.207	84.98	84.55
	15	28.00	29	-2.0	8.92	28.50	0.100	0.000008341	0.012204347	0.00121486	26.00	3.207	83.38	82.95
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012204347	0.00085904	26.00	3.207	83.38	82.95
	60	27.50	29	-2.0	9.09	28.00	0.050	0.000008341	0.012204347	0.00061309	25.50	3.207	81.77	81.36
	120	27.50	29	-2.0	9.09	28.00	0.036	0.000008341	0.012204347	0.00043352	25.50	3.207	81.77	81.36
	240	27.00	29	-2.0	9.25	27.50	0.025	0.000008341	0.012204347	0.00030935	25.00	3.207	80.17	79.76
	480	27.00	32	-2.0	9.25	27.50	0.018	0.000007984	0.011940397	0.00021401	25.00	3.207	80.17	79.76
	1440	26.79	32	-2.0	9.32	27.29	0.010	0.000007984	0.011940397	0.000124036	24.79	3.207	79.49	79.08

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : SPT

Location : BH-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 42.0m

Date of Testing : 28.09.12

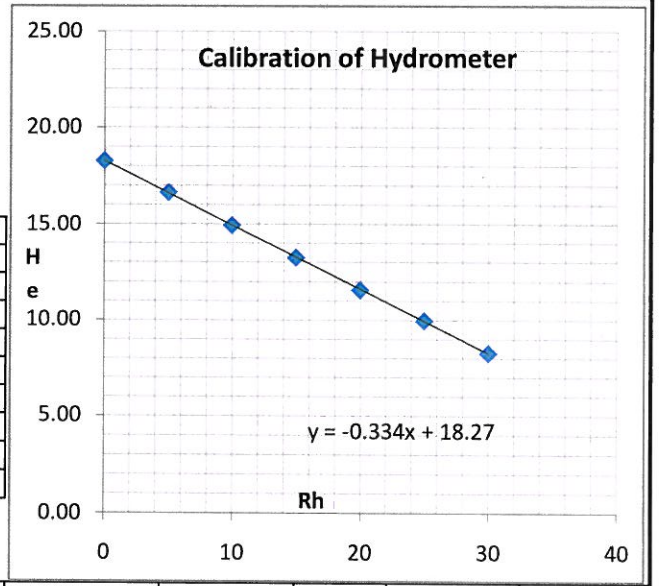
Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		98.09
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		1.0
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.0
(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	29.13	29	-2.0	8.54	29.63	0.534	0.000008341	0.012168186	0.00649245	27.13	3.245	88.05	86.37
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012168186	0.00460251	27.00	3.245	87.63	85.95
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012168186	0.00325447	27.00	3.245	87.63	85.95
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012168186	0.00232353	26.50	3.245	86.00	84.36
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012168186	0.00164299	26.50	3.245	86.00	84.36
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012168186	0.00119987	26.50	3.245	86.00	84.36
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012168186	0.00085649	26.00	3.245	84.38	82.77
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012168186	0.00060563	26.00	3.245	84.38	82.77
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012168186	0.00042825	26.00	3.245	84.38	82.77
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012168186	0.00030564	25.50	3.245	82.76	81.18
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007984	0.011905018	0.00021144	25.50	3.245	82.76	81.18
	1440	27.39	32	-2.0	9.12	27.89	0.010	0.000007984	0.011905018	0.000122315	25.39	3.245	82.41	80.84

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Type of Sample : SPT

Location : BH-2(Markanda River-Ambala)

Sampled by : T.K.Das

Depth : 50.0m

Date of Testing : 28.09.12

Tested by : D.Mohanty

(I)	Percentage of 75 micron passing (from sieve analysis)		99.44
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.3
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.7
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

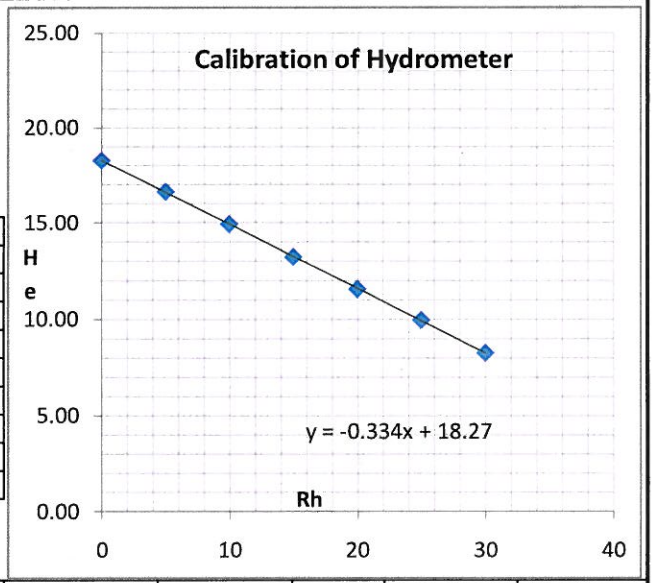
Rh = hydrometer Reading

H = height corresponding to Rh

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

CALIBRATION OF HYDROMETER

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.13	29	-2.0	8.54	29.63	0.534	0.000008341	0.012204347	0.00651175	27.13	3.208	87.05	86.56
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012204347	0.00461619	27.00	3.208	86.63	86.14
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012204347	0.00326414	27.00	3.208	86.63	86.14
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012204347	0.00233044	26.50	3.208	85.02	84.55
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012204347	0.00164787	26.50	3.208	85.02	84.55
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012204347	0.00120343	26.50	3.208	85.02	84.55
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012204347	0.00085904	26.00	3.208	83.42	82.95
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012204347	0.00060743	26.00	3.208	83.42	82.95
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012204347	0.00042952	26.00	3.208	83.42	82.95
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012204347	0.00030655	25.50	3.208	81.82	81.36
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007984	0.011940397	0.00021207	25.50	3.208	81.82	81.36
	1440	27.49	32	-2.0	9.09	27.99	0.010	0.000007984	0.011940397	0.000122474	25.49	3.208	81.77	81.31

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

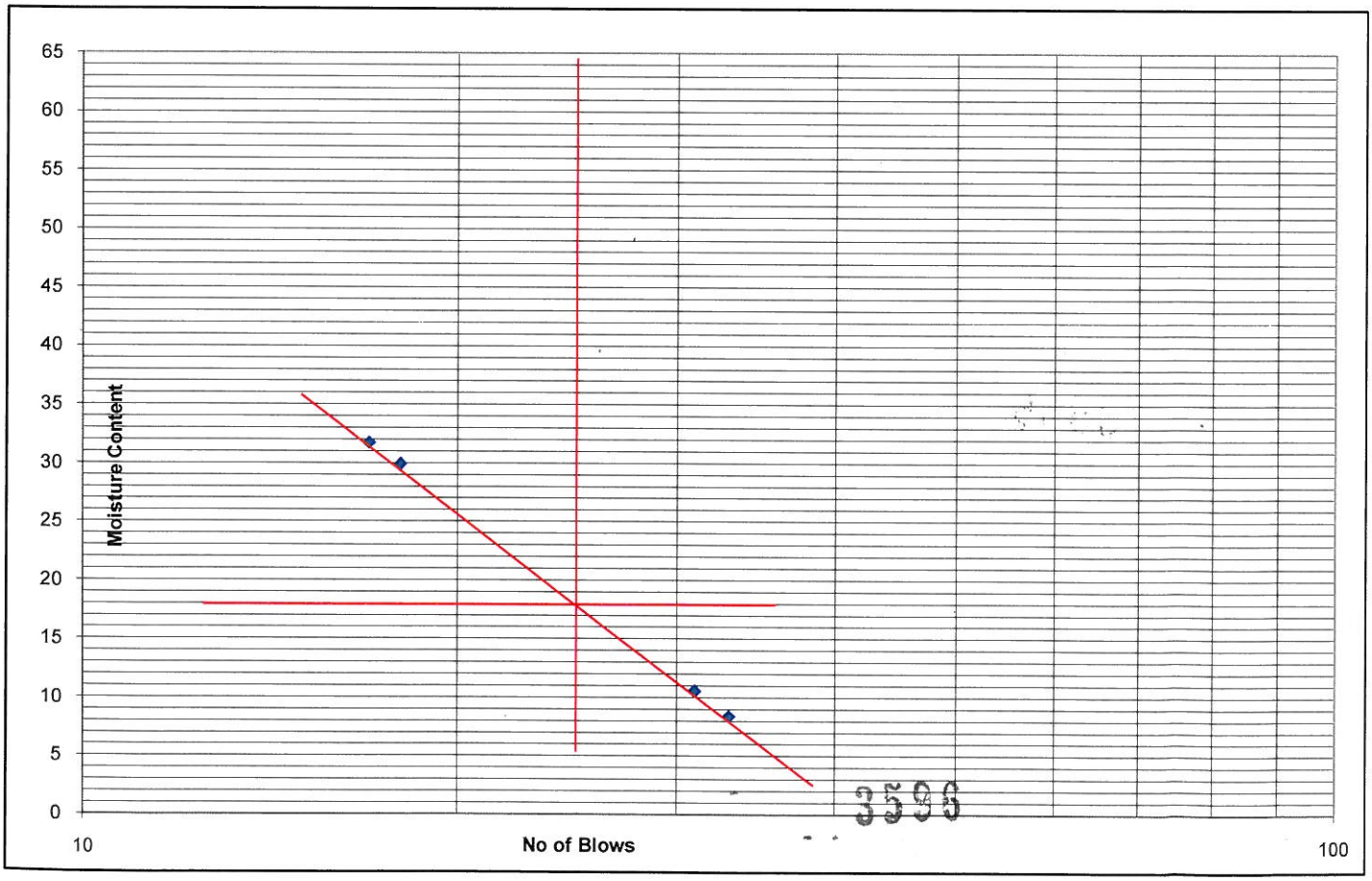
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	25.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	1.5m	Tested by	:	D.Mohanty

Number of Blows	33	31	18	17	Plastic Limit	
Container No.	D19	D20	D21	D22	NP	
Container Weight (gm) (W1)	35.26	31.48	30.11	32.39		
Container + Wt. of wet soil (gm) (W2)	81.18	94.50	102.73	104.68		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.61	88.48	86.01	87.27		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.57	6.02	16.72	17.41		
Wt. of oven dry soil (gm) (W3-W1)	42.35	57.00	55.90	54.88		
Moisture Content (%)= (W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.42**	**10.56**	**29.91**	**31.73**		

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

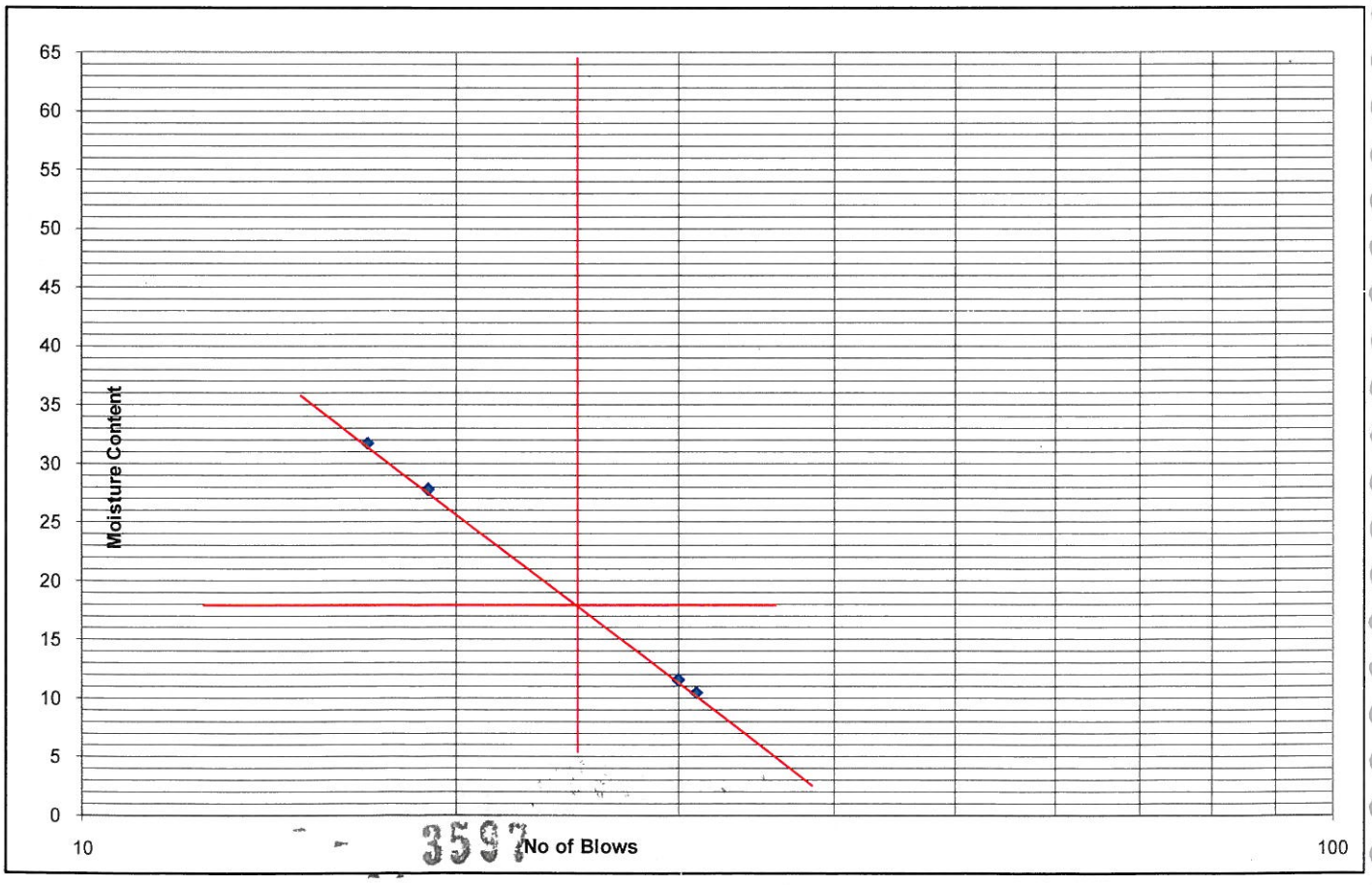
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	25.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	7.5m	Tested by	:	D.Mohanty

Number of Blows	31	30	19	17	Plastic Limit	
Container No.	D1	D2	D3	D4	NP	
Container Weight (gm) (W1)	32.58	33.69	31.24	30.58		
Container + Wt. of wet soil (gm) (W2)	82.40	94.70	101.04	105.25		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.68	88.38	85.86	87.26		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.73	6.32	15.18	17.99		
Wt. of oven dry soil (gm) (W3-W1)	45.10	54.69	54.62	56.68		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.48**	**11.56**	**27.79**	**31.74**		

Result Summary

Liquid Limit (WL)	18	%
Plastic Limit (Wp)	_	%
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	:	UDS	Date Of Testing	:	25.09.12
Location	:	BH-2(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	10.5m	Tested by	:	D.Mohanty

Number of Blows	30	28	20	19	Plastic Limit	
Container No.	D13	D14	D15	D16	D17	D18
Container Weight (gm) (W1)	34.4	33.46	32.41	35.31	30.56	31.49
Container + Wt. of wet soil (gm) (W2)	91.80	107.80	111.17	112.89	99.36	98.95
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.68	88.56	86.03	87.51	87.58	87.56
Wt. Of water (gm) (W2-W1)-(W3-W1)	14.13	19.24	25.14	25.38	11.78	11.39
Wt. of oven dry soil (gm) (W3-W1)	43.28	55.10	53.62	52.20	57.02	56.07
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**32.64**	**34.92**	**46.89**	**48.61**	**20.66**	**20.31**

Result Summary

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