Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

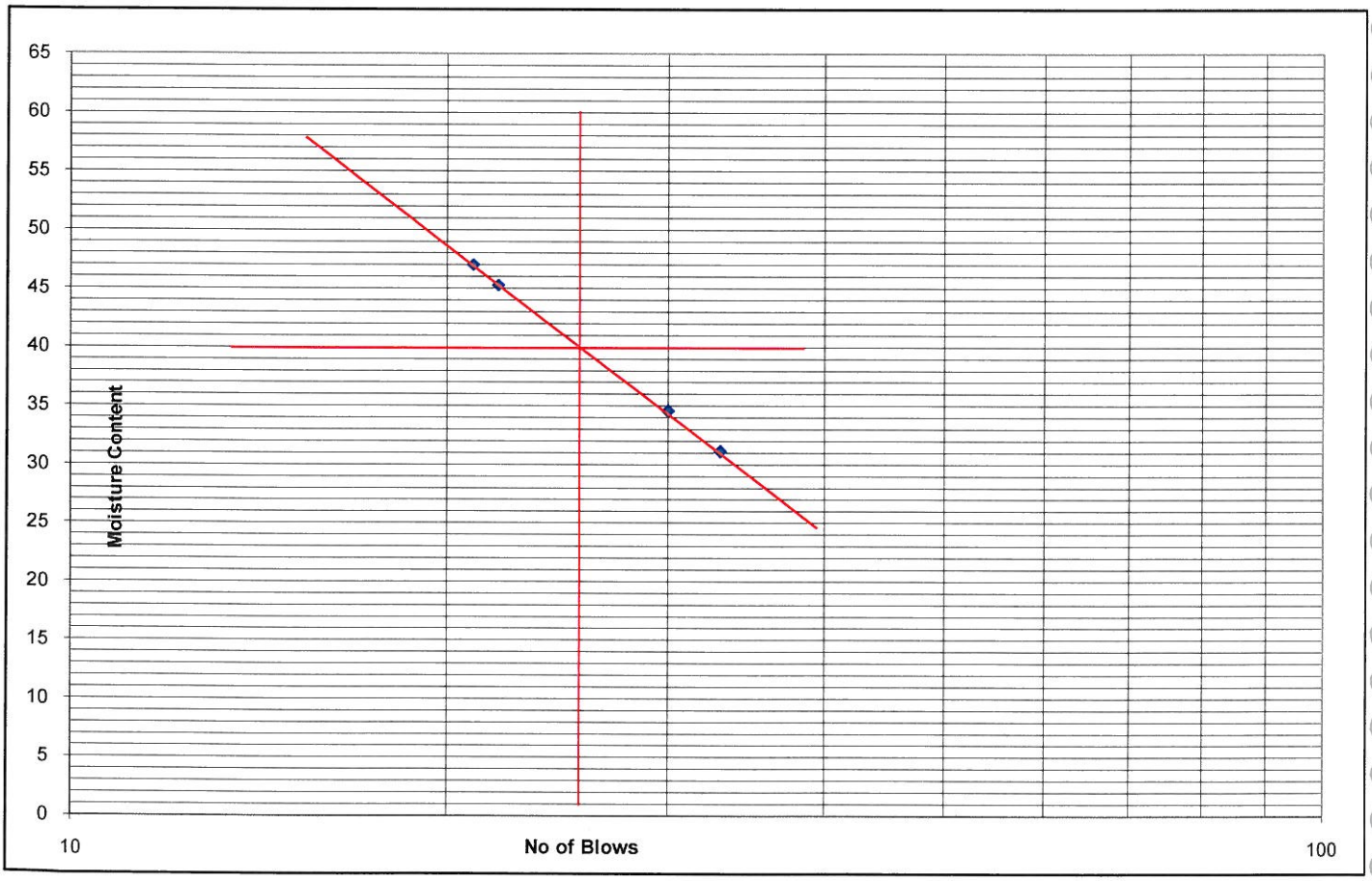
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	37.5m	Tested by	:	D.Mohanty

Number of Blows	33	30	22	21	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)	90.83	108.89	110.92	110.05	99.42	99.14
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.77	89.49	86.08	87.46	89.01	88.86
Wt. Of water (gm) (W2-W1)-(W3-W1)	13.05	19.40	24.84	22.59	10.41	10.28
Wt. of oven dry soil (gm) (W3-W1)	41.94	56.13	54.88	48.04	54.15	58.10
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**31.12**	**34.57**	**45.26**	**47.02**	**19.23**	**17.70**

Result Summary

Liquid Limit (WL)	40	%
Plastic Limit (Wp)	18	%
Plasticity Index (Ip)	22	%



4783

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

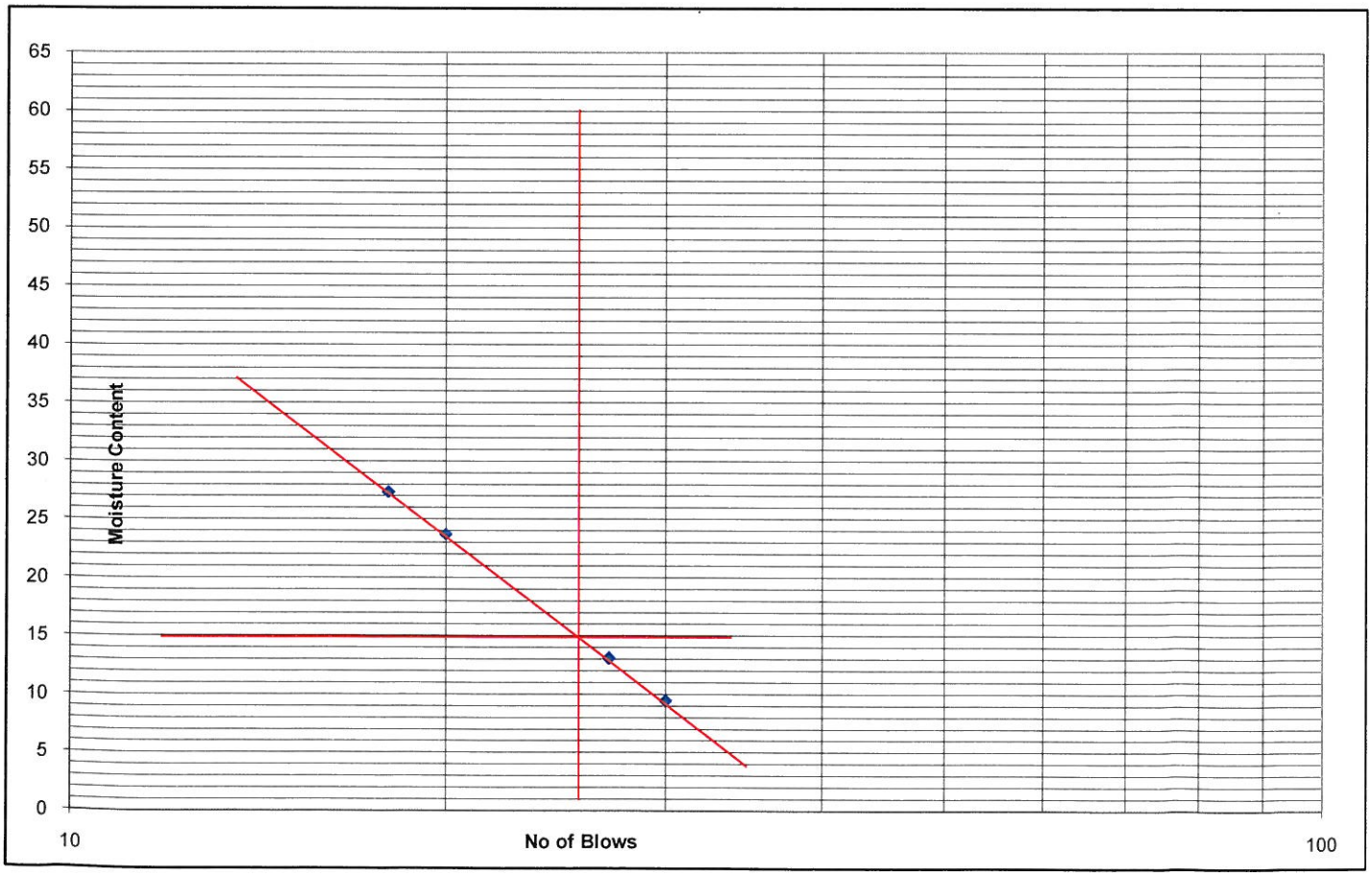
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	39.0m	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)	81.60	97.45	98.90	102.80		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.64	89.93	86.17	87.50		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.95	7.52	12.72	15.30		
Wt. of oven dry soil (gm) (W3-W1)	41.84	57.42	53.70	55.94		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**9.45**	**13.10**	**23.69**	**27.35**		

Result Summary

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



4790

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

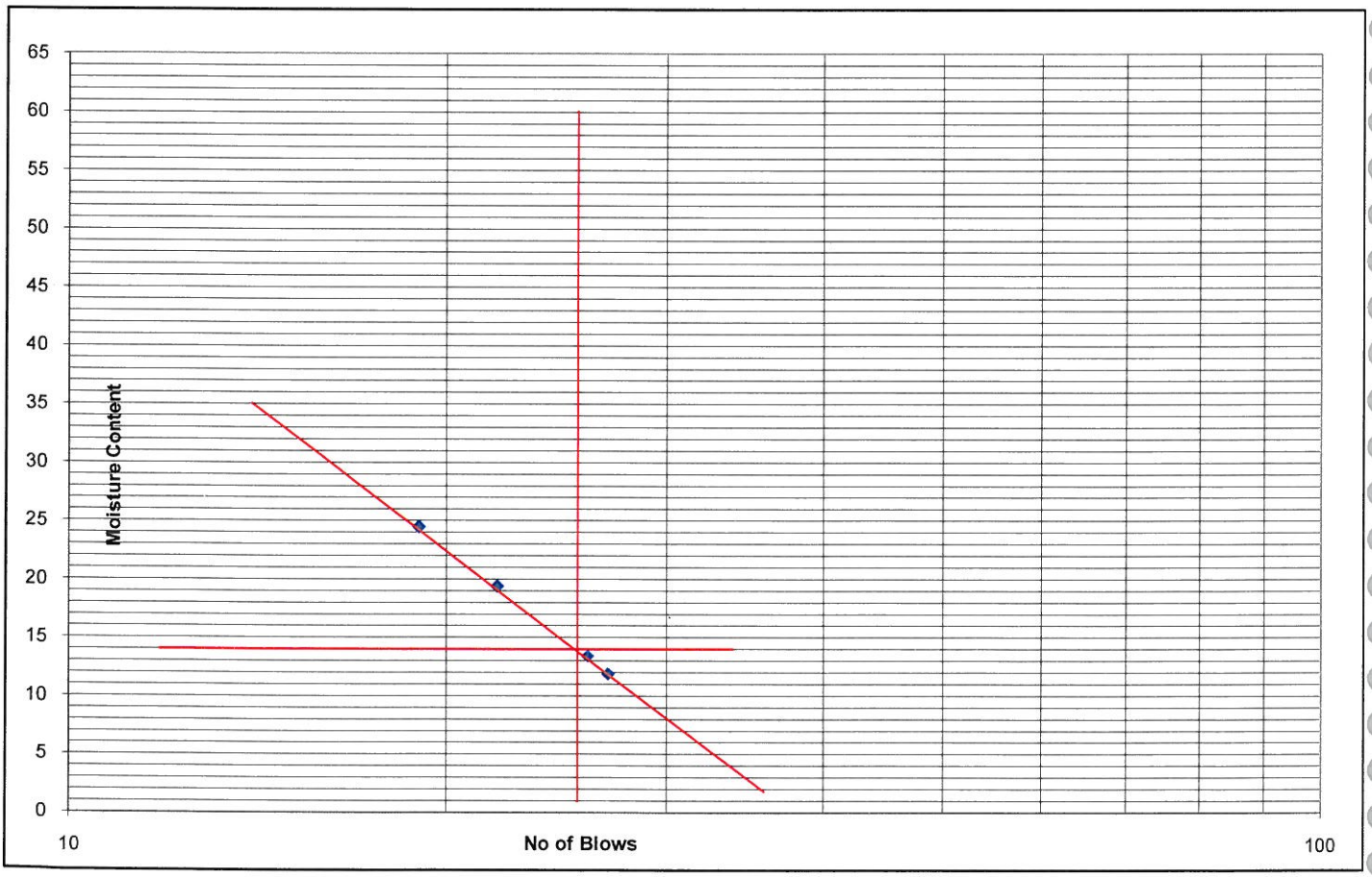
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	40.5m	Tested by	:	D.Mohanty

Number of Blows	27	26	22	19	Plastic Limit	
Container No.	A9	A10	A11	A12	NP	
Container Weight (gm) (W1)	32.84	33.18	31.85	34.26		
Container + Wt. of wet soil (gm) (W2)	83.17	97.68	96.72	100.60		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.82	90.04	86.40	87.56		
Wt. Of water (gm) (W2-W1)-(W3-W1)	5.36	7.64	10.31	13.04		
Wt. of oven dry soil (gm) (W3-W1)	44.98	56.86	53.22	53.30		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**11.91**	**13.44**	**19.38**	**24.47**		

Result Summary

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



4791

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

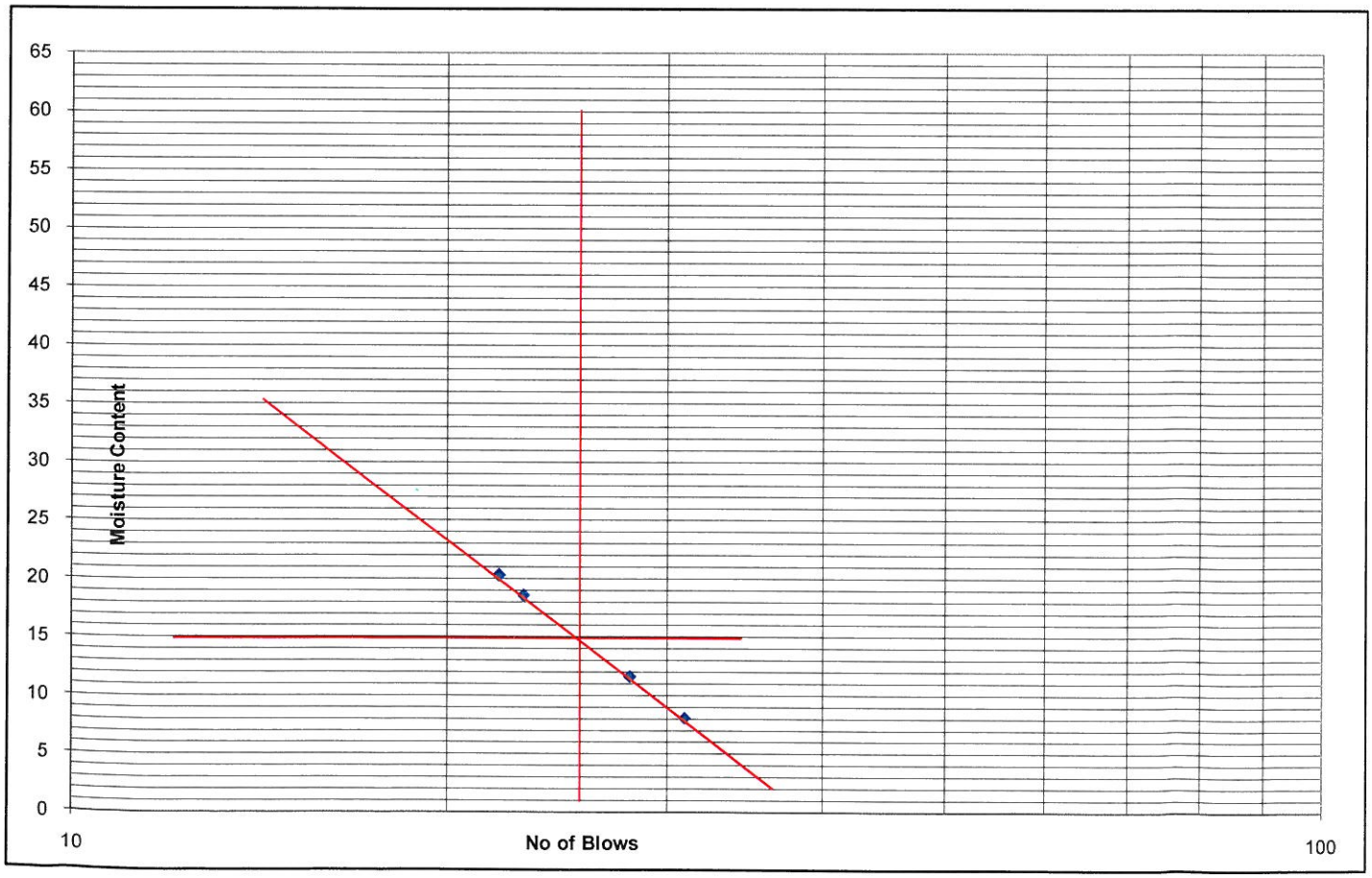
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	43.5m	Tested by	:	D.Mohanty

Number of Blows	31	28	23	22	Plastic Limit	
Container No.	A3	A4	A21	A22	NP	
Container Weight (gm) (W1)	36.7	32.65	35.44	34.61		
Container + Wt. of wet soil (gm) (W2)	81.37	96.44	96.29	98.26		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.02	89.78	86.34	87.53		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.35	6.66	9.95	10.73		
Wt. of oven dry soil (gm) (W3-W1)	41.32	57.13	53.69	52.92		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.10**	**11.65**	**18.53**	**20.28**		

Result Summary

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



4792

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

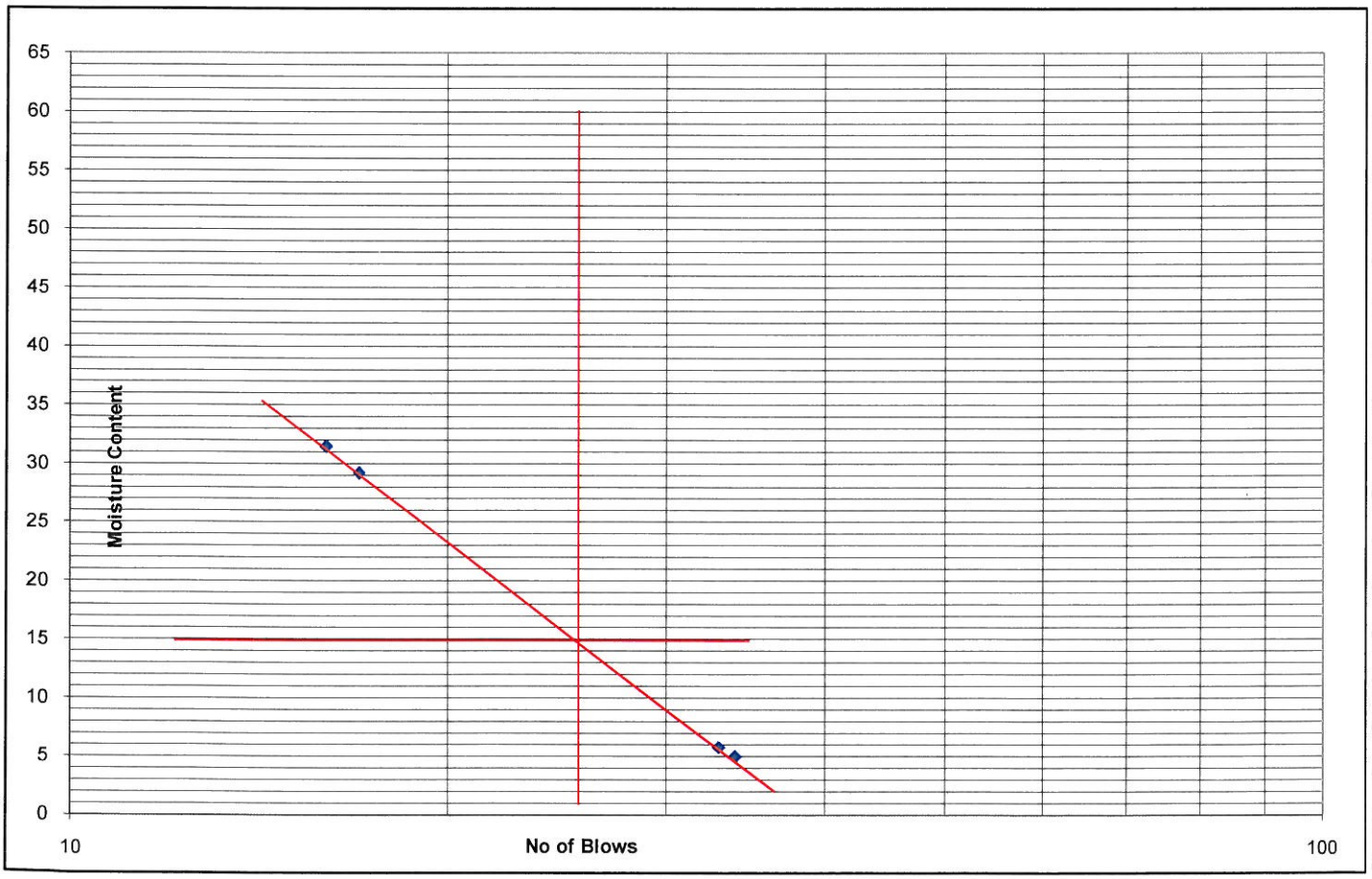
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	45.0m	Tested by	:	D.Mohanty

Number of Blows	34	33	17	16	Plastic Limit	
Container No.	A7	A8	A19	A20	NP	
Container Weight (gm) (W1)	36.24	35.69	30.48	36.37		
Container + Wt. of wet soil (gm) (W2)	78.90	93.37	100.89	102.97		
Wt of Container + Wt. of oven dry soil (gm) (W3)	76.86	90.19	86.17	87.04		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.04	3.18	14.72	15.93		
Wt. of oven dry soil (gm) (W3-W1)	40.62	54.50	50.48	50.67		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**5.02**	**5.83**	**29.16**	**31.43**		

Result Summary

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



4793

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

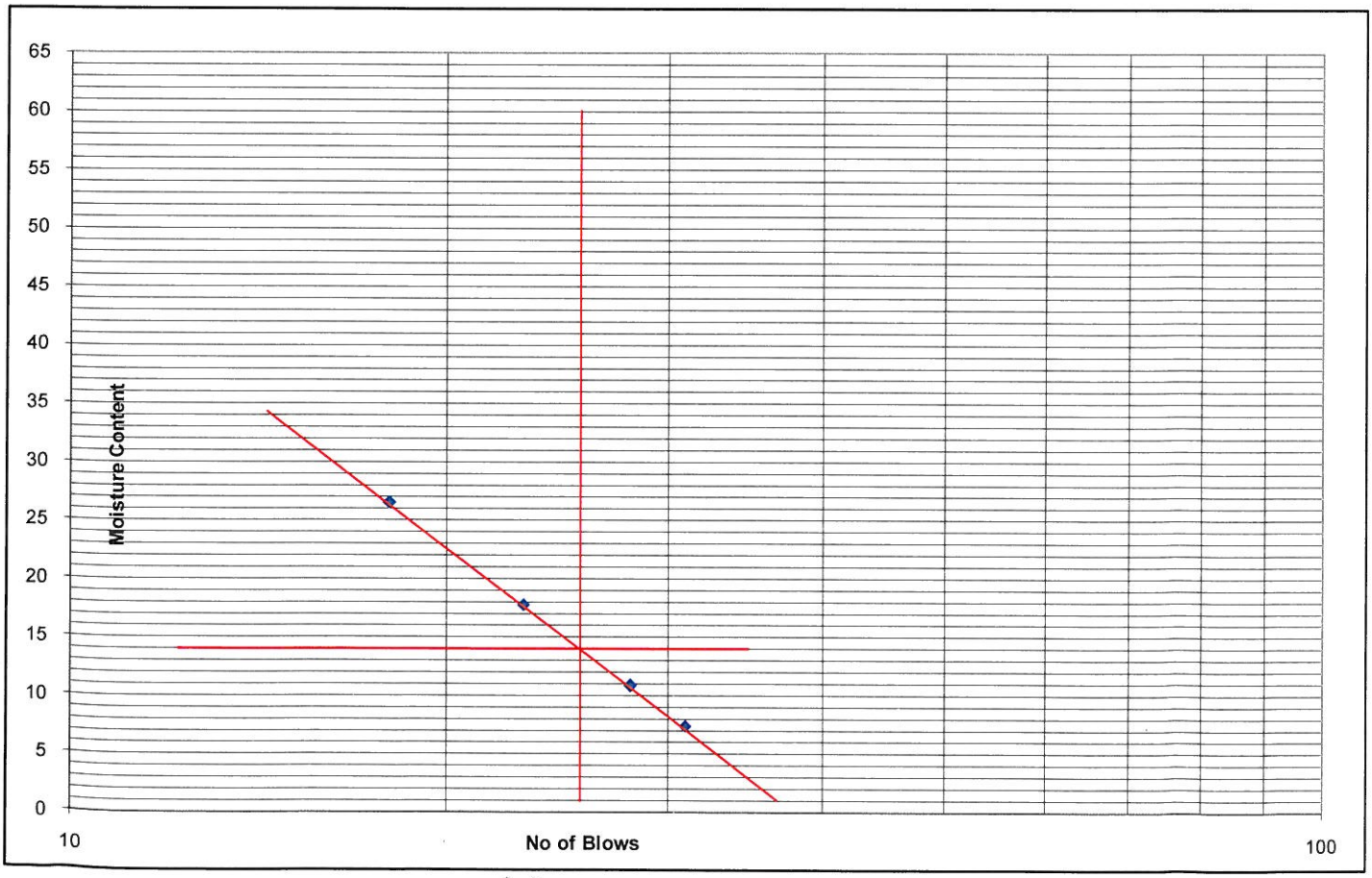
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	48.0m	Tested by	:	D.Mohanty

Number of Blows	31	28	23	18	Plastic Limit	
Container No.	A1	A2	A5	A6	NP	
Container Weight (gm) (W1)	30.58	33.64	34.87	31.29		
Container + Wt. of wet soil (gm) (W2)	81.66	96.16	95.41	102.42		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.13	90.02	86.09	87.50		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.52	6.14	9.32	14.92		
Wt. of oven dry soil (gm) (W3-W1)	47.55	56.38	52.45	56.21		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.41**	**10.89**	**17.78**	**26.55**		

Result Summary

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



4791

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

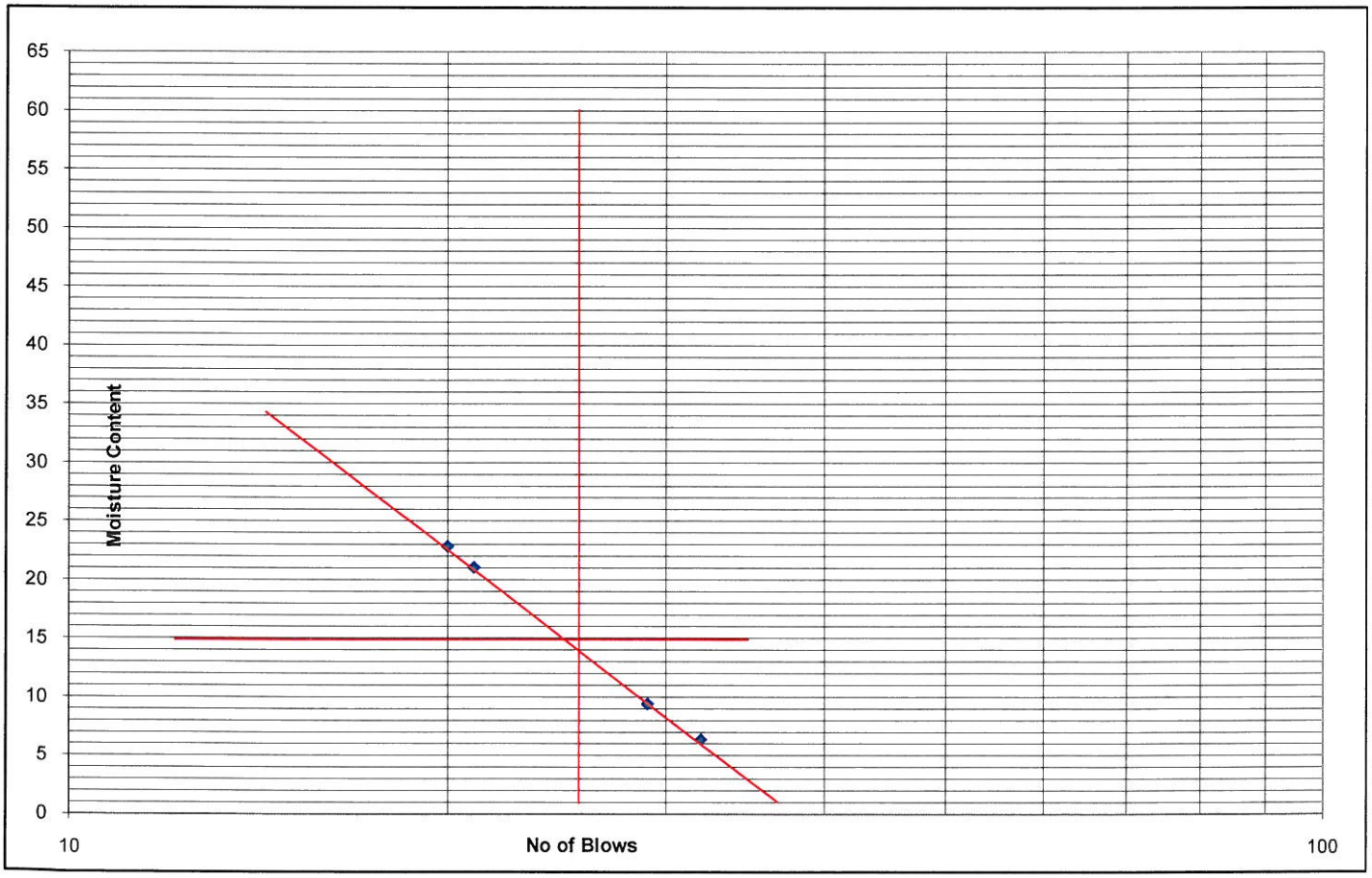
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	26.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	50.0m	Tested by	:	D.Mohanty

Number of Blows	32	29	21	20	Plastic Limit	
Container No.	A13	A14	A15	A16	NP	
Container Weight (gm) (W1)	30.74	36.34	35.26	32.28		
Container + Wt. of wet soil (gm) (W2)	81.07	94.91	96.91	100.21		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.04	89.87	86.38	87.58		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.03	5.05	10.53	12.64		
Wt. of oven dry soil (gm) (W3-W1)	47.30	53.53	50.04	55.30		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**6.41**	**9.43**	**21.05**	**22.85**		

Result Summary

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



4795

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	:	24.10.12
Type of Sample	:	SPT	Tested by	:	K.C.Sahoo
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	30.0m	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	13.0	3.00	30	22	50%
2	10	12.0	2.00	20		
3	10	11.5	1.50	15		

Remarks:

4796

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	:	24.10.12
Type of Sample	:	SPT	Tested by	:	K.C.Sahoo
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	36.0m	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	13.0	3.00	30	23	50%
2	10	12.5	2.50	25		
3	10	11.5	1.50	15		

Remarks:

4787

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(Yamuna River-Ambala)

Depth : 37.5m

Date Of Testing : 24.10.12

Tested by : K.C.Sahoo

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	13.5	3.50	35	27	50%
2	10	12.5	2.50	25		
3	10	12.0	2.00	20		

Remarks:

4798

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	1.5m	Tested by	:	K.C.Sahoo

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	35.27	
3	Weight of bottle with soil and water W3 in gm	135.70	
4	Weight of bottle full of water W4 in gm	133.36	
5	Weight of dry soil (W2-W1)in gm	3.75	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.42	
7	Specific Gravity G = (5) / (6)	2.65	

4799

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	3.0m	Tested by	:	K.C.Sahoo

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	136.78	
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	1.59	
7	Specific Gravity G = (5) / (6)	2.64	

4800

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	K.C.Sahoo

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	36.45	
3	Weight of bottle with soil and water W3 in gm	137.41	
4	Weight of bottle full of water W4 in gm	134.35	
5	Weight of dry soil (W2-W1)in gm	4.93	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.87	
7	Specific Gravity G = (5) / (6)	2.64	

4891

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	K.C.Sahoo

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	35.28	
3	Weight of bottle with soil and water W3 in gm	137.38	
4	Weight of bottle full of water W4 in gm	135.04	
5	Weight of dry soil (W2-W1)in gm	3.76	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.42	
7	Specific Gravity G = (5) / (6)	2.65	

4802

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	10.5m	Tested by	:	K.C.Sahoo

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	35.64	
3	Weight of bottle with soil and water W3 in gm	137.40	
4	Weight of bottle full of water W4 in gm	134.84	
5	Weight of dry soil (W2-W1)in gm	4.12	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.56	
7	Specific Gravity G = (5) / (6)	2.64	

4803

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	K.C.Sahoo

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	36.78	
3	Weight of bottle with soil and water W3 in gm	135.76	
4	Weight of bottle full of water W4 in gm	132.49	
5	Weight of dry soil (W2-W1)in gm	5.26	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.99	
7	Specific Gravity G = (5) / (6)	2.64	

4801

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	16.5m	Tested by	:	K.C.Sahoo

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	37.83	
3	Weight of bottle with soil and water W3 in gm	136.44	
4	Weight of bottle full of water W4 in gm	132.52	
5	Weight of dry soil (W2-W1)in gm	6.32	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.39	
7	Specific Gravity G = (5) / (6)	2.64	

4805

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	18.0m	Tested by	:	K.C.Sahoo

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	35.48	
3	Weight of bottle with soil and water W3 in gm	137.56	
4	Weight of bottle full of water W4 in gm	135.10	
5	Weight of dry soil (W2-W1)in gm	3.96	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.50	
7	Specific Gravity G = (5) / (6)	2.64	

4806

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	21.0m	Tested by	:	K.C.Sahoo

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	138.80	
4	Weight of bottle full of water W4 in gm	135.24	
5	Weight of dry soil (W2-W1)in gm	5.71	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.16	
7	Specific Gravity G = (5) / (6)	2.65	

4807

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	22.5m	Tested by	:	K.C.Sahoo

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	37.56	
3	Weight of bottle with soil and water W3 in gm	138.43	
4	Weight of bottle full of water W4 in gm	134.68	
5	Weight of dry soil (W2-W1)in gm	6.04	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.29	
7	Specific Gravity G = (5) / (6)	2.64	

4808

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	27.0m	Tested by	:	K.C.Sahoo

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	36.25	
3	Weight of bottle with soil and water W3 in gm	134.55	
4	Weight of bottle full of water W4 in gm	131.61	
5	Weight of dry soil (W2-W1)in gm	4.73	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.79	
7	Specific Gravity G = (5) / (6)	2.64	

4809

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	30.0m	Tested by	:	K.C.Sahoo

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	37.56	
3	Weight of bottle with soil and water W3 in gm	137.54	
4	Weight of bottle full of water W4 in gm	133.74	
5	Weight of dry soil (W2-W1)in gm	6.04	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.24	
7	Specific Gravity G = (5) / (6)	2.70	

4810

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	36.0m	Tested by	:	K.C.Sahoo

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	35.65	
3	Weight of bottle with soil and water W3 in gm	136.49	
4	Weight of bottle full of water W4 in gm	133.89	
5	Weight of dry soil (W2-W1)in gm	4.13	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.52	
7	Specific Gravity G = (5) / (6)	2.71	

4811

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	37.5m	Tested by	:	K.C.Sahoo

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	36.58	
3	Weight of bottle with soil and water W3 in gm	135.48	
4	Weight of bottle full of water W4 in gm	132.31	
5	Weight of dry soil (W2-W1)in gm	5.06	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.90	
7	Specific Gravity G = (5) / (6)	2.67	

4812

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	39.0m	Tested by	:	K.C.Sahoo

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	35.28	
3	Weight of bottle with soil and water W3 in gm	134.56	
4	Weight of bottle full of water W4 in gm	132.22	
5	Weight of dry soil (W2-W1)in gm	3.76	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.42	
7	Specific Gravity G = (5) / (6)	2.64	

4813

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	40.5m	Tested by	:	K.C.Sahoo

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	36.25	
3	Weight of bottle with soil and water W3 in gm	134.56	
4	Weight of bottle full of water W4 in gm	131.61	
5	Weight of dry soil (W2-W1)in gm	4.73	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.78	
7	Specific Gravity G = (5) / (6)	2.65	

4811

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	43.5m	Tested by	:	K.C.Sahoo

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	37.58	
3	Weight of bottle with soil and water W3 in gm	136.20	
4	Weight of bottle full of water W4 in gm	132.43	
5	Weight of dry soil (W2-W1)in gm	6.06	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.30	
7	Specific Gravity G = (5) / (6)	2.64	

4815

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	45.0m	Tested by	:	K.C.Sahoo

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	36.45	
3	Weight of bottle with soil and water W3 in gm	135.97	
4	Weight of bottle full of water W4 in gm	132.90	
5	Weight of dry soil (W2-W1)in gm	4.93	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.86	
7	Specific Gravity G = (5) / (6)	2.65	

4816

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	48.0m	Tested by	:	K.C.Sahoo

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	38.68	
3	Weight of bottle with soil and water W3 in gm	136.45	
4	Weight of bottle full of water W4 in gm	131.99	
5	Weight of dry soil (W2-W1)in gm	7.16	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.70	
7	Specific Gravity G = (5) / (6)	2.65	

4817

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	:	24.10.12
Location	:	BH-1(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	50.0m	Tested by	:	K.C.Sahoo

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	36.79	
3	Weight of bottle with soil and water W3 in gm	137.89	
4	Weight of bottle full of water W4 in gm	134.62	
5	Weight of dry soil (W2-W1)in gm	5.27	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.00	
7	Specific Gravity G = (5) / (6)	2.64	

4818

ARKI TECHNO CONSULTANTS (I) PVT. LTD.

ARKITECHNO

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(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-1(Yamuna River-Ambala)	1.5	SPT	24.10.12	62.34	3.8	7	79.39	206.04	190.33	127.99	15.70	12.27	1.81	1.61
2		3.0	SPT	24.10.12	61.82	3.8	7	79.39	206.31	191.28	129.46	15.03	11.61	1.82	1.63
3		4.5	SPT	24.10.12	60.71	3.8	7	79.39	205.20	190.04	129.33	15.16	11.72	1.82	1.63
4		6.0	SPT	24.10.12	63.49	3.8	7	79.39	208.77	192.64	129.15	16.13	12.49	1.83	1.63
5		10.5	SPT	24.10.12	60.77	3.8	7	79.39	206.85	191.24	130.47	15.60	11.96	1.84	1.64
6		13.5	SPT	24.10.12	64.84	3.8	7	79.39	212.51	196.27	131.43	16.23	12.35	1.86	1.66
7		16.5	SPT	24.10.12	65.31	3.8	7	79.39	214.56	198.38	133.07	16.18	12.16	1.88	1.68
8		18.0	SPT	24.10.12	60.5	3.8	7	79.39	206.58	191.42	130.92	15.16	11.58	1.84	1.65
9		21.0	SPT	24.10.12	61.31	3.8	7	79.39	208.98	193.82	132.51	15.16	11.44	1.86	1.67
10		22.5	SPT	24.10.12	62.29	3.8	7	79.39	212.34	195.55	133.26	16.79	12.60	1.89	1.68
11		27.0	SPT	24.10.12	63.12	3.8	7	79.39	213.96	198.60	135.48	15.36	11.34	1.90	1.71
12		30.0	SPT	24.10.12	60.5	3.8	7	79.39	220.87	200.06	139.56	20.81	14.91	2.02	1.76
13		36.0	SPT	24.10.12	61.31	3.8	7	79.39	223.27	201.22	139.91	22.05	15.76	2.04	1.76
14		37.5	SPT	24.10.12	62.29	3.8	7	79.39	228.22	200.37	138.08	27.85	20.17	2.09	1.74
15		39.0	SPT	24.10.12	63.12	3.8	7	79.39	226.66	208.49	145.37	18.17	12.50	2.06	1.83
16		40.5	SPT	24.10.12	62.74	3.8	7	79.39	228.67	210.79	148.04	17.88	12.08	2.09	1.86
17		43.5	SPT	24.10.12	62.80	3.8	7	79.39	220.79	204.84	142.04	15.95	11.23	1.99	1.79
18		45.0	SPT	24.10.12	62.86	3.8	7	79.39	221.58	205.22	142.37	16.36	11.49	2.00	1.79
19		48.0	SPT	24.10.12	62.91	3.8	7	79.39	220.10	203.50	140.59	16.60	11.81	1.98	1.77
20		50.0	SPT	24.10.12	61.48	3.8	7	79.39	218.67	202.42	140.94	16.25	11.53	1.98	1.78

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	1.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 73.23

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	32.34	32.34	32.34	67.66
0.425	29.61	29.61	61.95	38.05
0.075	11.28	11.28	73.23	26.77
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 73.23 **Silt and clay %** 26.77

Remarks :-

4820

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	3.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 73.38

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	32.91	32.91	32.91	67.09
0.425	28.47	28.47	61.38	38.62
0.075	12.01	12.01	73.39	26.61
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 73.39 **Silt and clay %** 26.61

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	4.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 75.18

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	33.16	33.16	33.16	66.84
0.425	28.75	28.75	61.91	38.09
0.075	13.27	13.27	75.18	24.82
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 75.18 **Silt and clay %** 24.82

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	6.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 77.35

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	0.00	0.00	0.00	100.00
2.00	34.02	34.02	34.02	65.98
0.425	29.16	29.16	63.18	36.82
0.075	14.18	14.18	77.36	22.64
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 77.36 **Silt and clay %** 22.64

Remarks :-

4823

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	7.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 78.45

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	0.00	0.00	0.00	100.00
2.00	33.28	33.28	33.28	66.72
0.425	30.21	30.21	63.49	36.51
0.075	14.96	14.96	78.45	21.55
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 78.45 **Silt and clay %** 21.55

Remarks :-

4824

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	12.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 88.10

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	9.95	9.95	9.95	90.05
2.00	33.17	33.17	43.12	56.88
0.425	30.94	30.94	74.06	25.94
0.075	14.05	14.05	88.11	11.89
Total	100.00			

Gravel Content (%)= **9.95**

Sand Content (%) = 78.16 **Silt and clay %** 11.89

Remarks :-

4825

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	15.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 74.67

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	32.63	32.63	32.63	67.37
0.425	28.71	28.71	61.34	38.66
0.075	13.34	13.34	74.68	25.32
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 74.68 **Silt and clay %** 25.32

Remarks :-

4836

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	19.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 73.52

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	32.36	32.36	32.36	67.64
0.425	29.79	29.79	62.15	37.85
0.075	11.37	11.37	73.52	26.48
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 73.52 **Silt and clay %** 26.48

Remarks :-

4827

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	21.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 89.04

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	11.75	11.75	11.75	88.25
2.00	33.82	33.82	45.57	54.43
0.425	30.92	30.92	76.49	23.51
0.075	12.54	12.54	89.03	10.97
Total	100.00			

Gravel Content (%)= **11.75**

Sand Content (%) = 77.28 **Silt and clay %** 10.97

Remarks :-

4823

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	27.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 89.73

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	10.69	10.69	10.69	89.31
2.00	34.79	34.79	45.48	54.52
0.425	31.22	31.22	76.70	23.30
0.075	13.03	13.03	89.73	10.27
Total	100.00			

Gravel Content (%)= **10.69**

Sand Content (%) = 79.04 **Silt and clay %** 10.27

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	28.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 27.57

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	14.28	14.28	14.28	85.72
2.00	6.25	6.25	20.53	79.47
0.425	5.23	5.23	25.76	74.24
0.075	1.81	1.81	27.57	72.43
Total	100.00			

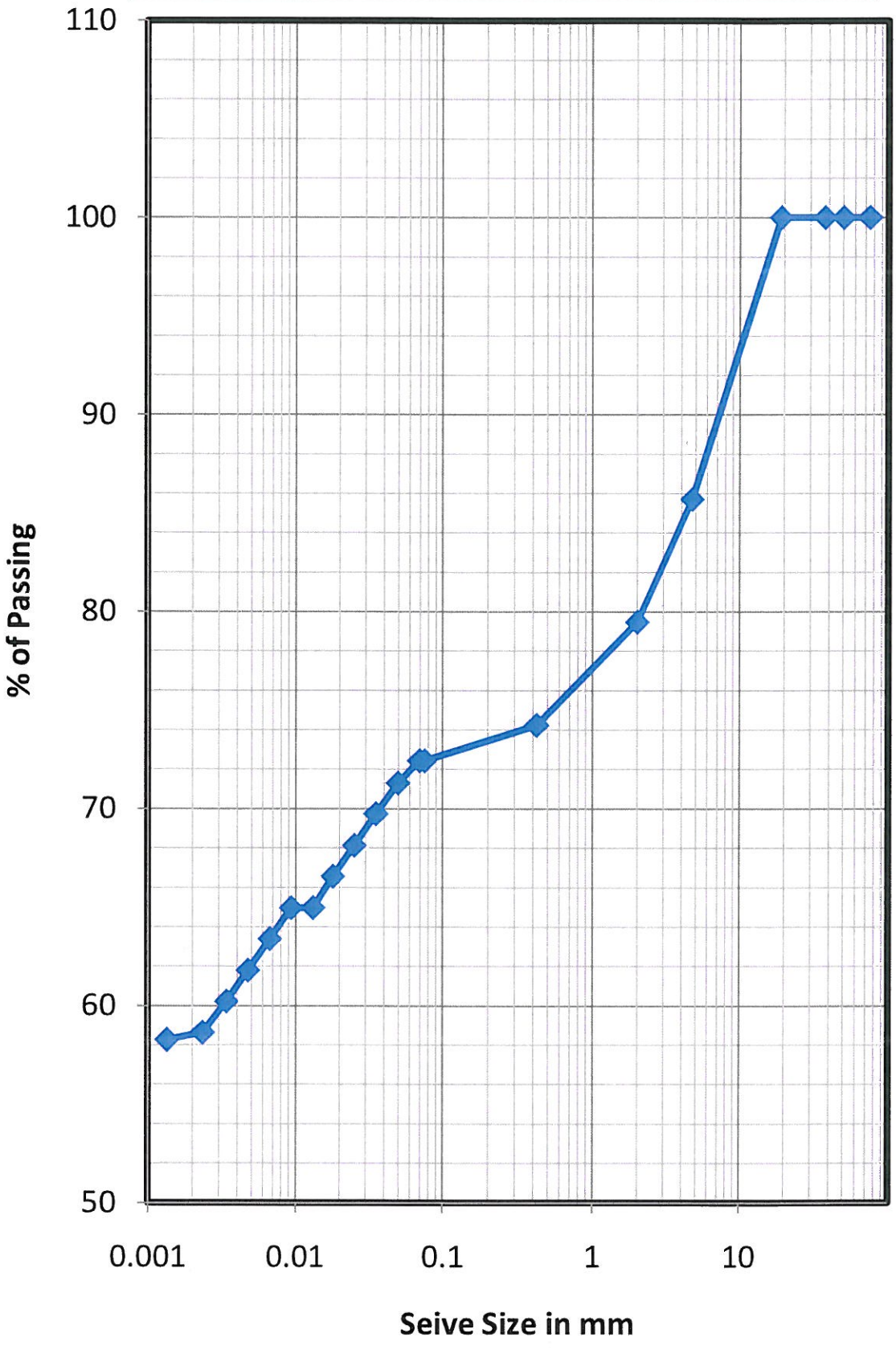
Gravel Content (%)= **14.28**

Sand Content (%) = 13.29 **Silt and clay %** 72.43

Remarks :-

4830

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



4831

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	31.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 22.32

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	12.74	12.74	12.74	87.26
2.00	4.77	4.77	17.51	82.49
0.425	3.38	3.38	20.89	79.11
0.075	1.43	1.43	22.32	77.68
Total	100.00			

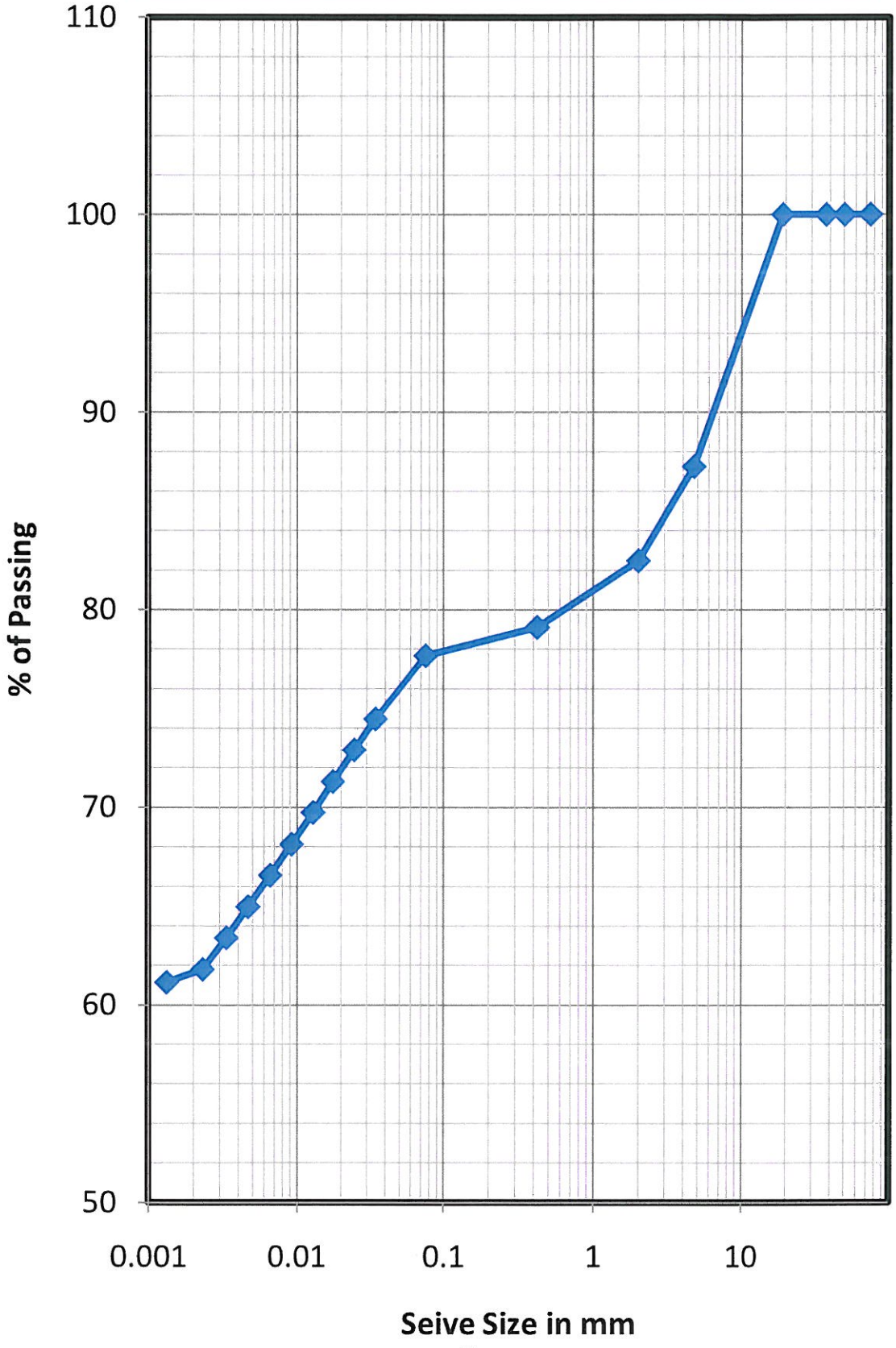
Gravel Content (%)= **12.74**

Sand Content (%) = 9.58 **Silt and clay %** 77.68

Remarks :-

4832

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



4833

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	33.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 26.49

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	15.07	15.07	15.07	84.93
2.00	5.37	5.37	20.44	79.56
0.425	4.89	4.89	25.33	74.67
0.075	1.16	1.16	26.49	73.51
Total	100.00			

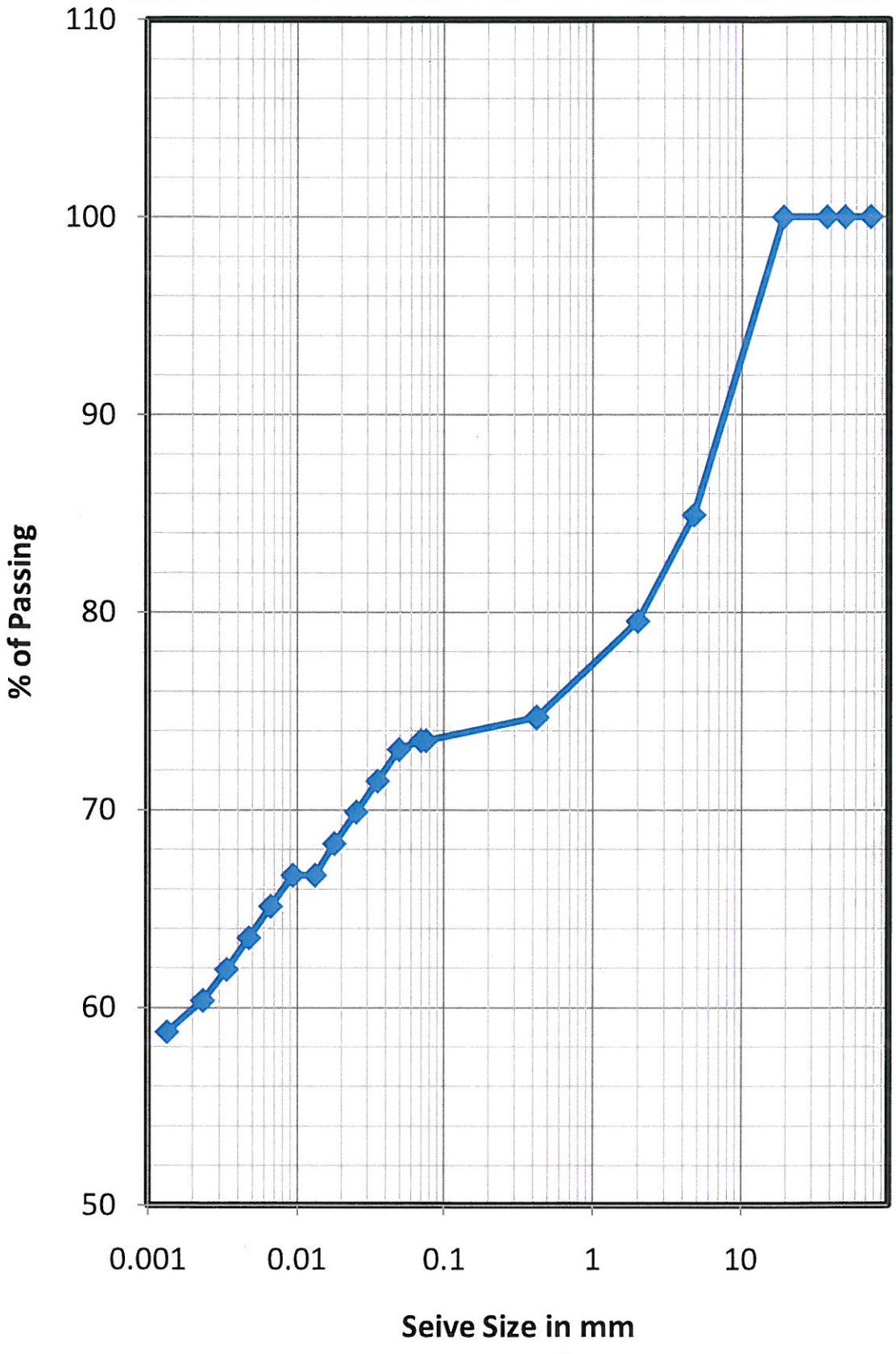
Gravel Content (%)= **15.07**

Sand Content (%) = 11.42 **Silt and clay %** 73.51

Remarks :-

4834

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



4835

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	34.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.65

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	0.78	0.78	0.78	99.22
0.425	0.64	0.64	1.42	98.58
0.075	0.23	0.23	1.65	98.35
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.65 **Silt and clay %** 98.35

Remarks :-

4836

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	36.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 1.89

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	0.84	0.84	0.84	99.16
0.425	0.77	0.77	1.61	98.39
0.075	0.28	0.28	1.89	98.11
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.89 **Silt and clay %** 98.11

Remarks :-

4837

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	37.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 82.14

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	0.00	0.00	0.00	100.00
2.00	37.64	37.64	37.64	62.36
0.425	32.97	32.97	70.61	29.39
0.075	11.53	11.53	82.14	17.86
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 82.14 **Silt and clay %** 17.86

Remarks :-

4838

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	39.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 83.52

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	38.80	38.80	38.80	61.20
0.425	31.74	31.74	70.54	29.46
0.075	12.98	12.98	83.52	16.48
Total	100.00			

Gravel Content (%)= **0.00**

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

Remarks :-

4839

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	42.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 84.29

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	9.78	9.78	9.78	90.22
2.00	34.22	34.22	44.00	56.00
0.425	29.61	29.61	73.61	26.39
0.075	10.68	10.68	84.29	15.71
Total	100.00			

Gravel Content (%)= **9.78**

Sand Content (%) = 74.51 **Silt and clay %** 15.71

Remarks :-

4815

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	46.5m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 87.29

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	11.47	11.47	11.47	88.53
2.00	34.68	34.68	46.15	53.85
0.425	29.79	29.79	75.94	24.06
0.075	11.35	11.35	87.29	12.71
Total	100.00			

Gravel Content (%)= **11.47**

Sand Content (%) = 75.82 **Silt and clay %** 12.71

Remarks :-

4821

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	:	25.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T. K. Das
Depth	:	50.0m	Tested by	:	K.C.Sahoo

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

Weight of oven dried sample after washing (gm) :- 88.33

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	10.59	10.59	10.59	89.41
2.00	34.57	34.57	45.16	54.84
0.425	30.19	30.19	75.35	24.65
0.075	12.99	12.99	88.34	11.66
Total	100.00			

Gravel Content (%)= **10.59**

Sand Content (%) = 77.75 **Silt and clay %** 11.66

Remarks :-

4842

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

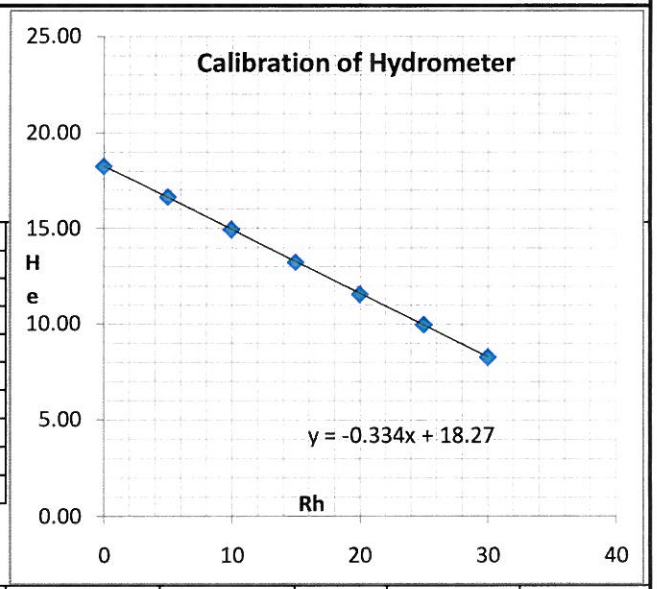
Location : BH-2(Yamuna River- Ambala)

Sampled by : T.K.Das

Depth : 28.5m

Date of Testing : 25.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		72.43
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		13.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		36.2
(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	24.85	29	-2.0	9.97	25.35	0.576	0.000008341	0.012096818	0.00697347	22.85	4.376	100.00	72.43
	1	24.50	29	-2.0	10.09	25.00	0.410	0.000008341	0.012096818	0.00495994	22.50	4.376	98.46	71.32
	2	24.00	29	-2.0	10.25	24.50	0.292	0.000008341	0.012096818	0.00353612	22.00	4.376	96.27	69.73
	4	23.50	29	-2.0	10.42	24.00	0.208	0.000008341	0.012096818	0.00252069	21.50	4.376	94.09	68.15
	8	23.00	29	-2.0	10.59	23.50	0.149	0.000008341	0.012096818	0.00179663	21.00	4.376	91.90	66.56
	15	22.50	29	-2.0	10.76	23.00	0.109	0.000008341	0.012096818	0.00132238	20.50	4.376	89.71	64.98
	30	22.50	29	-2.0	10.76	23.00	0.077	0.000008341	0.012096818	0.00093506	20.50	4.376	89.71	64.98
	60	22.00	29	-2.0	10.92	22.50	0.055	0.000008341	0.012096818	0.00066630	20.00	4.376	87.52	63.39
	120	21.50	29	-2.0	11.09	22.00	0.039	0.000008341	0.012096818	0.00047473	19.50	4.376	85.33	61.81
	240	21.00	29	-2.0	11.26	21.50	0.028	0.000008341	0.012096818	0.00033821	19.00	4.376	83.15	60.22
	480	20.50	32	-2.0	11.42	21.00	0.020	0.000007821	0.011713648	0.00023328	18.50	4.376	80.96	58.64
	1440	20.38	32	-2.0	11.46	20.88	0.012	0.000007821	0.011713648	0.000134927	18.38	4.376	80.42	58.25

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(Yamuna River- Ambala)

Sampled by : T.K.Das

Depth : 31.5m

Date of Testing : 25.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		77.68
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		11.2
(IV)	Mass of dry soil passing 75 micron Wh (gm)		38.8
(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	

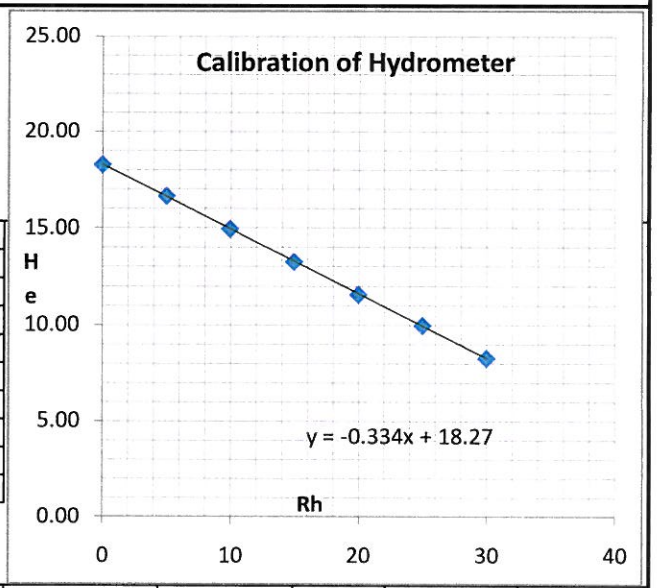
Rh = hydrometer Reading

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	26.51	29	-2.0	9.42	27.01	0.560	0.000008341	0.012096818	0.00677723	24.51	4.080	100.00	77.68
	1	26.00	29	-2.0	9.59	26.50	0.400	0.000008341	0.012096818	0.00483520	24.00	4.080	97.93	76.07
	2	25.50	29	-2.0	9.75	26.00	0.285	0.000008341	0.012096818	0.00344865	23.50	4.080	95.89	74.49
	4	25.00	29	-2.0	9.92	25.50	0.203	0.000008341	0.012096818	0.00245936	23.00	4.080	93.85	72.90
	8	24.50	29	-2.0	10.09	25.00	0.145	0.000008341	0.012096818	0.00175360	22.50	4.080	91.81	71.32
	15	24.00	29	-2.0	10.25	24.50	0.107	0.000008341	0.012096818	0.00129121	22.00	4.080	89.77	69.73
	30	23.50	29	-2.0	10.42	24.00	0.076	0.000008341	0.012096818	0.00092043	21.50	4.080	87.73	68.15
	60	23.00	29	-2.0	10.59	23.50	0.054	0.000008341	0.012096818	0.00065603	21.00	4.080	85.69	66.56
	120	22.50	29	-2.0	10.76	23.00	0.039	0.000008341	0.012096818	0.00046753	20.50	4.080	83.65	64.98
	240	22.00	29	-2.0	10.92	22.50	0.028	0.000008341	0.012096818	0.00033315	20.00	4.080	81.61	63.39
	480	21.50	32	-2.0	11.09	22.00	0.020	0.000007821	0.011713648	0.00022985	19.50	4.080	79.57	61.81
	1440	21.29	32	-2.0	11.16	21.79	0.011	0.000007821	0.011713648	0.000133117	19.29	4.080	78.72	61.15

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(Yamuna River- Ambala)

Sampled by : T.K.Das

Depth : 33.0m

Date of Testing : 25.10.12

Tested by : K.C.Sahoo

(I)	Percentage of 75 micron passing (from sieve analysis)		73.51
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		13.2
(IV)	Mass of dry soil passing 75 micron Wh (gm)		36.8
(V)	Specific gravity of soil grains, Gs		2.7
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

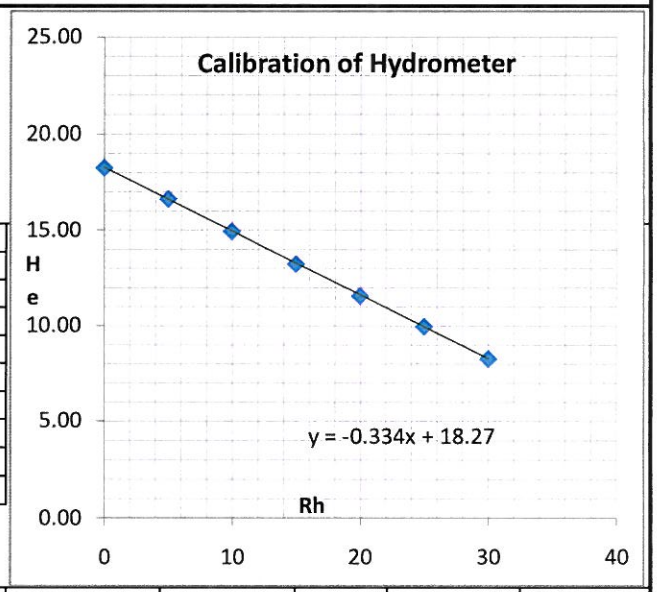
CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	25.14	29	-2.0	9.87	25.64	0.574	0.000008341	0.012132344	0.00695984	23.14	4.321	100.00	73.51
	1	25.00	29	-2.0	9.92	25.50	0.407	0.000008341	0.012132344	0.00493316	23.00	4.321	99.39	73.06
	2	24.50	29	-2.0	10.09	25.00	0.290	0.000008341	0.012132344	0.00351751	22.50	4.321	97.23	71.47
	4	24.00	29	-2.0	10.25	24.50	0.207	0.000008341	0.012132344	0.00250776	22.00	4.321	95.07	69.88
	8	23.50	29	-2.0	10.42	24.00	0.147	0.000008341	0.012132344	0.00178763	21.50	4.321	92.90	68.29
	15	23.00	29	-2.0	10.59	23.50	0.108	0.000008341	0.012132344	0.00131592	21.00	4.321	90.74	66.71
	30	23.00	29	-2.0	10.59	23.50	0.077	0.000008341	0.012132344	0.00093050	21.00	4.321	90.74	66.71
	60	22.50	29	-2.0	10.76	23.00	0.055	0.000008341	0.012132344	0.00066313	20.50	4.321	88.58	65.12
	120	22.00	29	-2.0	10.92	22.50	0.039	0.000008341	0.012132344	0.00047253	20.00	4.321	86.42	63.53
	240	21.50	29	-2.0	11.09	22.00	0.028	0.000008341	0.012132344	0.00033667	19.50	4.321	84.26	61.94
	480	21.00	32	-2.0	11.26	21.50	0.020	0.000007821	0.011748049	0.00023225	19.00	4.321	82.10	60.35
	1440	20.50	32	-2.0	11.42	21.00	0.011	0.000007821	0.011748049	0.000135079	18.50	4.321	79.95	58.77

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

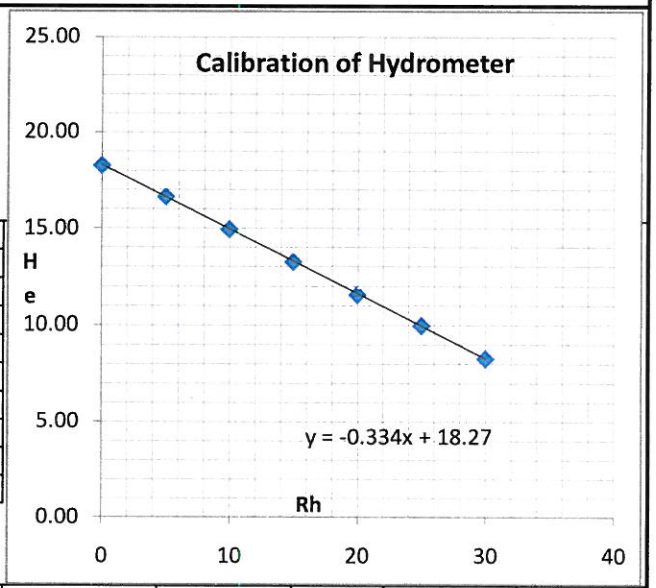
Location : BH-2(Yamuna River- Ambala)

Sampled by : T.K.Das

Depth : 34.5m

Date of Testing : 25.10.12

Tested by : K.C.Sahoo



(I)	Percentage of 75 micron passing (from sieve analysis)		98.35
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.8
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.2
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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	29.82	29	-2.0	8.31	30.32	0.526	0.000008341	0.012240833	0.00644249	27.82	3.251	90.45	88.96
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.251	89.41	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.251	89.41	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.251	87.78	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.251	87.78	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.251	86.16	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.251	86.16	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.251	84.53	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.251	84.53	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.251	82.91	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.251	82.91	81.54
	1440	27.36	32	-2.0	9.13	27.86	0.010	0.000007821	0.011853101	0.000121865	25.36	3.251	82.44	81.08

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 : 36.0m

Type of Sample : SPT

Date of Testing : 25.10.12

Location : BH-2(Yamuna River- Ambala)

Tested by : K.C.Sahoo

Sampled by : T.K.Das

(I)	Percentage of 75 micron passing (from sieve analysis)		98.11
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.68
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

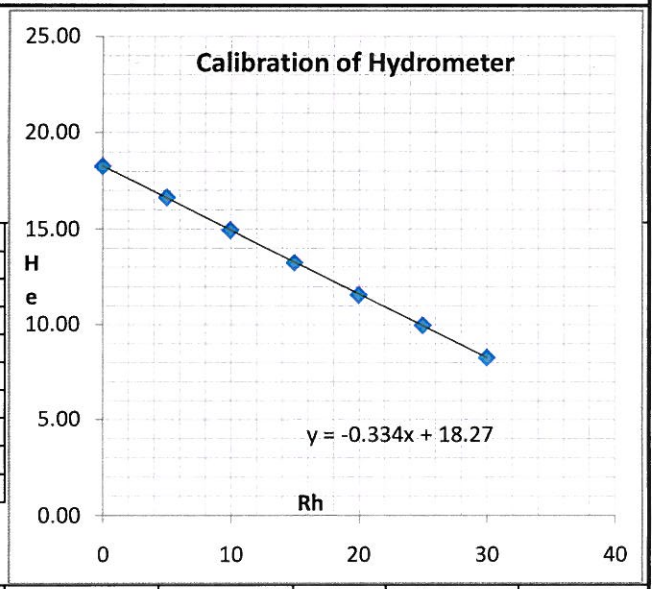
CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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



Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.75	29	-2.0	8.33	30.25	0.527	0.000008341	0.012204347	0.00643232	27.75	3.252	90.24	88.54
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.252	89.43	87.74
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012204347	0.00323223	27.50	3.252	89.43	87.74
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012204347	0.00230810	27.00	3.252	87.80	86.14
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012204347	0.00163207	27.00	3.252	87.80	86.14
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012204347	0.00120343	26.50	3.252	86.18	84.55
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012204347	0.00085096	26.50	3.252	86.18	84.55
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012204347	0.00060743	26.00	3.252	84.55	82.95
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012204347	0.00042952	26.00	3.252	84.55	82.95
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012204347	0.00030655	25.50	3.252	82.92	81.36
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011817771	0.00020989	25.50	3.252	82.92	81.36
	1440	26.98	32	-2.0	9.26	27.48	0.010	0.000007821	0.011817771	0.000122327	24.98	3.252	81.25	79.71

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

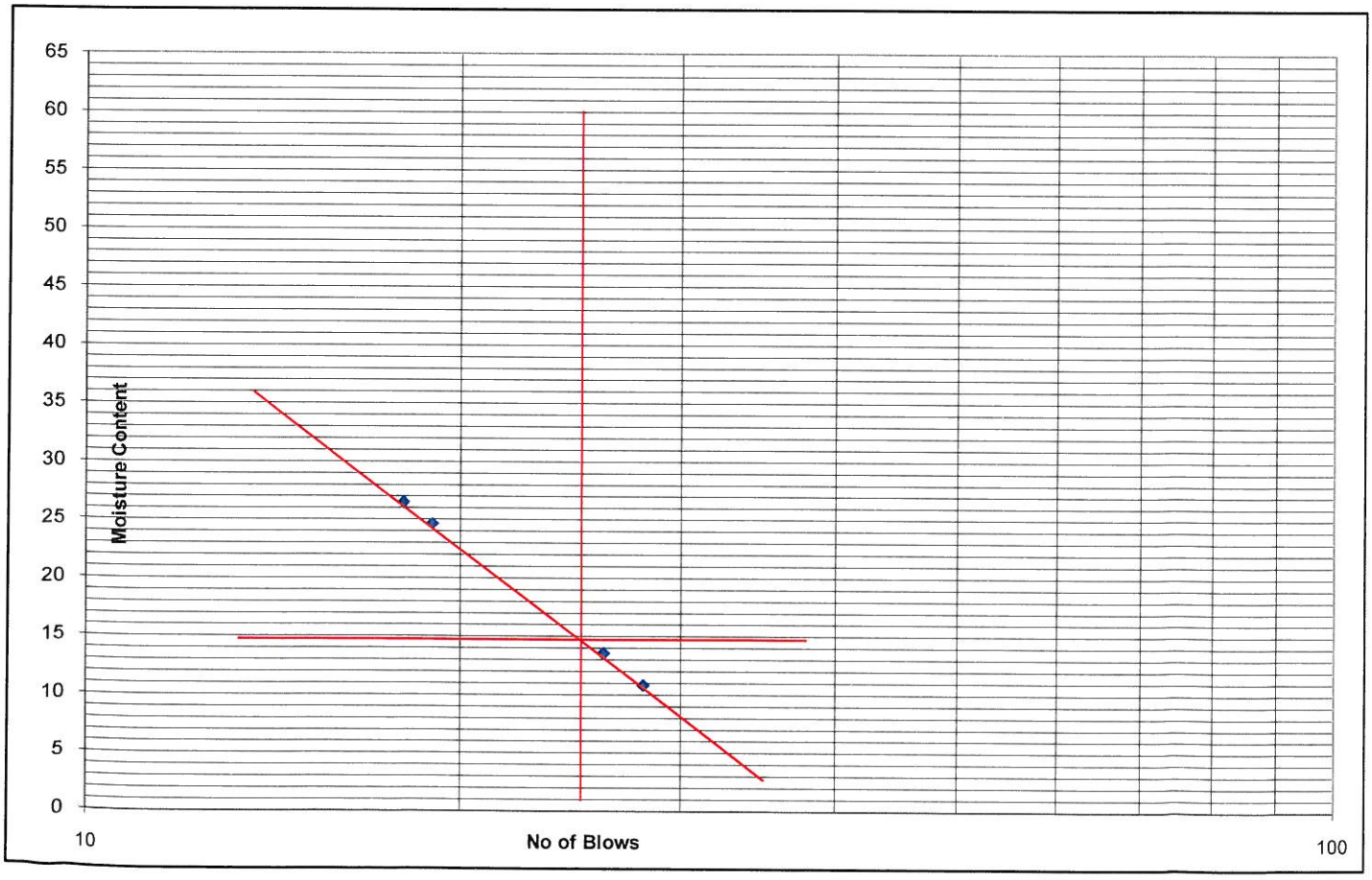
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	1.5m	Tested by	:	D.Mohanty

Number of Blows	28	26	19	18	Plastic Limit	
Container No.	D13	D14	D15	D16	NP	
Container Weight (gm) (W1)	34.4	33.46	32.41	35.31		
Container + Wt. of wet soil (gm) (W2)	82.50	95.56	98.77	101.34		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.80	88.14	85.65	87.51		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.70	7.42	13.12	13.82		
Wt. of oven dry soil (gm) (W3-W1)	43.40	54.68	53.24	52.20		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**10.84**	**13.57**	**24.65**	**26.48**		

Result Summary

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



4848

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

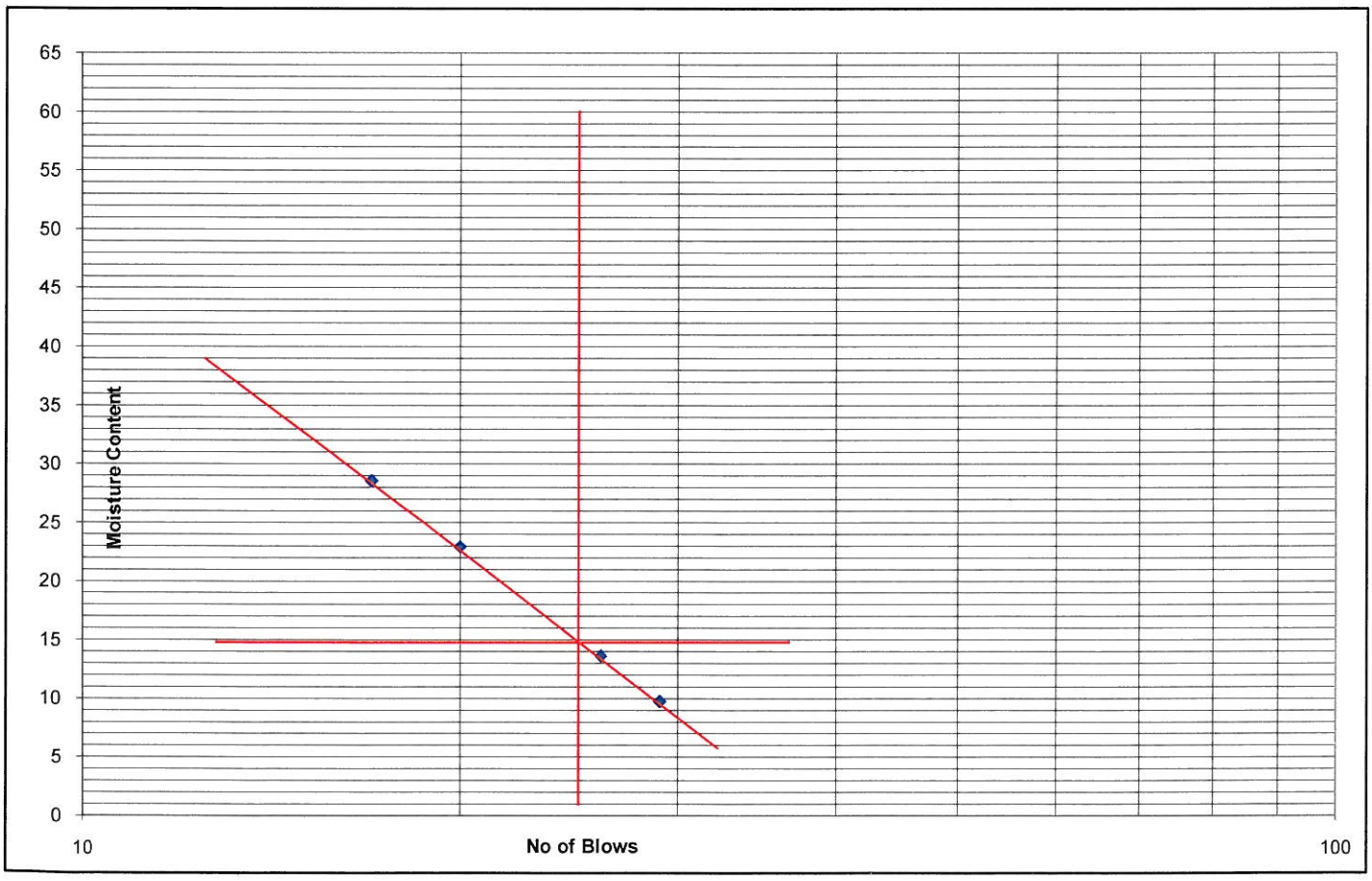
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	3.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	20	17	Plastic Limit	
Container No.	D17	D18	D41	D42	NP	
Container Weight (gm) (W1)	30.56	31.49	34.97	35.55		
Container + Wt. of wet soil (gm) (W2)	82.49	96.61	97.57	101.89		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.89	88.81	85.89	87.16		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.60	7.80	11.68	14.73		
Wt. of oven dry soil (gm) (W3-W1)	47.33	57.32	50.92	51.61		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**9.73**	**13.61**	**22.94**	**28.55**		

Result Summary

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



4849

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

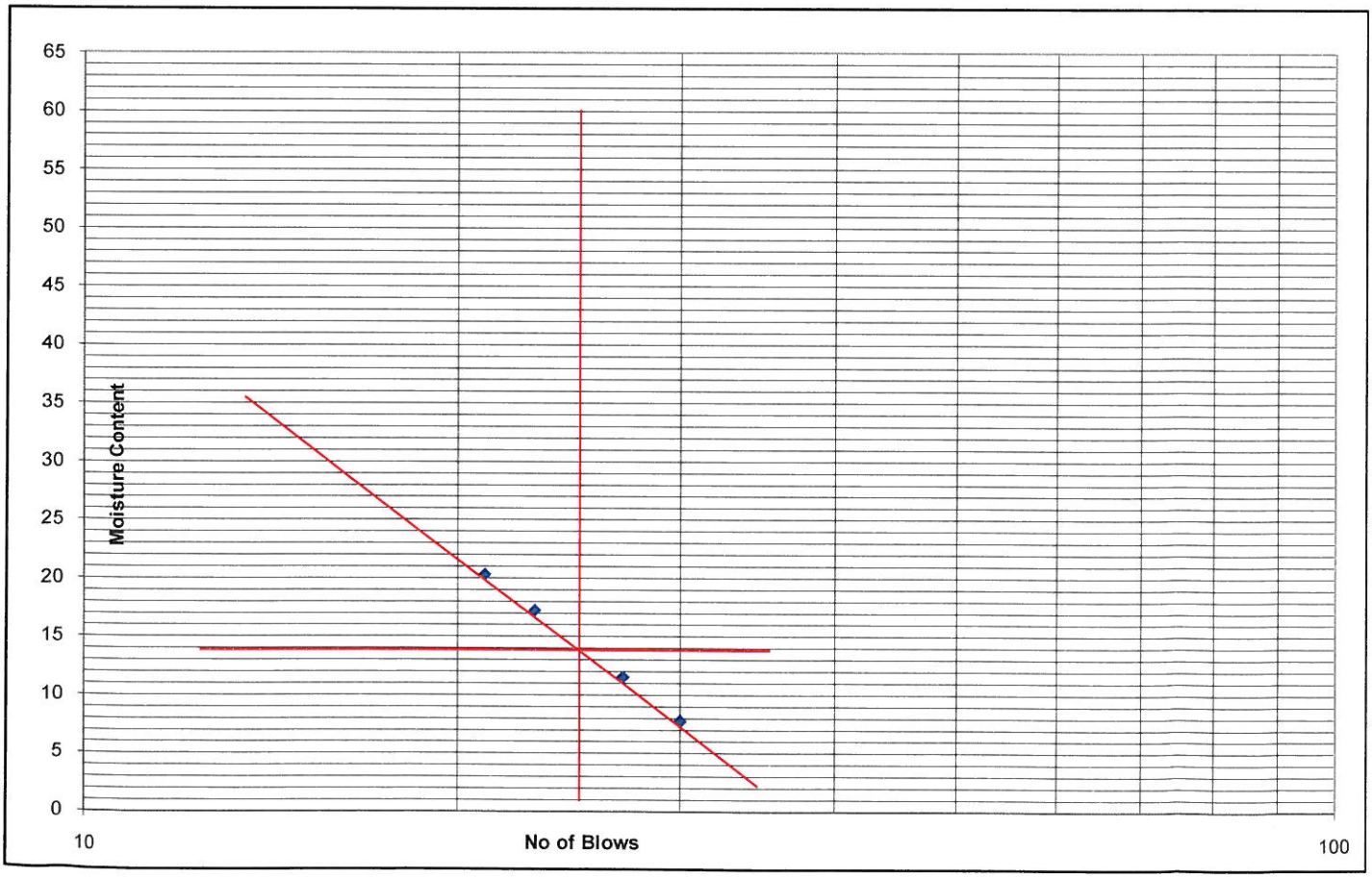
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	D.Mohanty

Number of Blows	30	27	23	21	Plastic Limit	
Container No.	D25	D26	D27	D28	NP	
Container Weight (gm) (W1)	33.58	34.18	32.29	34.64		
Container + Wt. of wet soil (gm) (W2)	81.42	95.31	95.94	98.24		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.97	88.99	86.57	87.50		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.45	6.32	9.36	10.74		
Wt. of oven dry soil (gm) (W3-W1)	44.39	54.81	54.28	52.86		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.77**	**11.53**	**17.25**	**20.32**		

Result Summary

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



Arki Techno Consultants (India) Pvt.Ltd

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

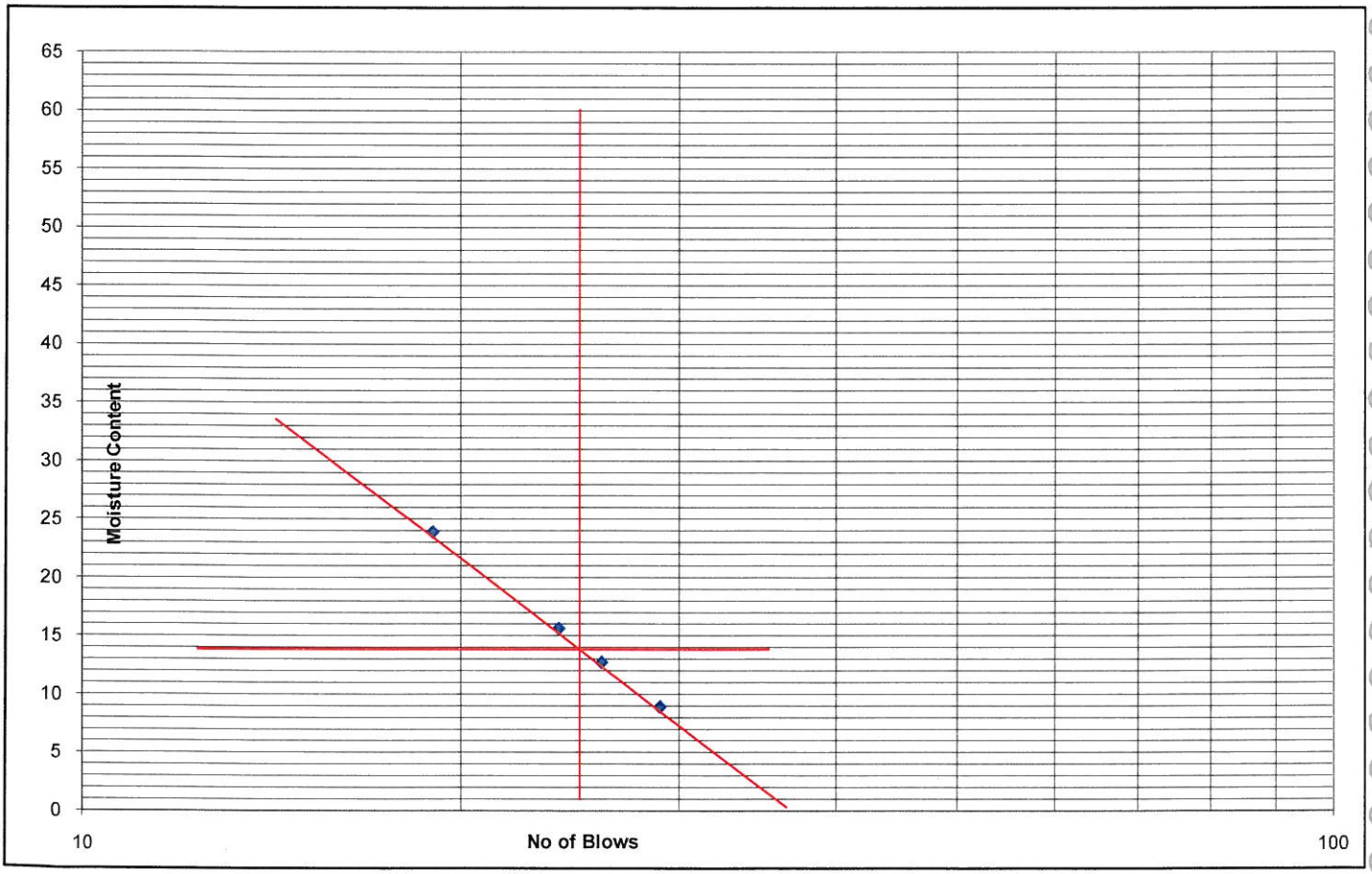
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	6.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	24	19	Plastic Limit	
Container No.	B29	B30	B27	B28		
Container Weight (gm) (W1)	34.86	30.76	31.2	39.42		
Container + Wt. of wet soil (gm) (W2)	81.55	96.49	94.53	99.47		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.73	89.06	85.97	87.89		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.82	7.43	8.56	11.58		
Wt. of oven dry soil (gm) (W3-W1)	42.87	58.30	54.77	48.47		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.91**	**12.74**	**15.63**	**23.89**		

Result Summary

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



4851

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

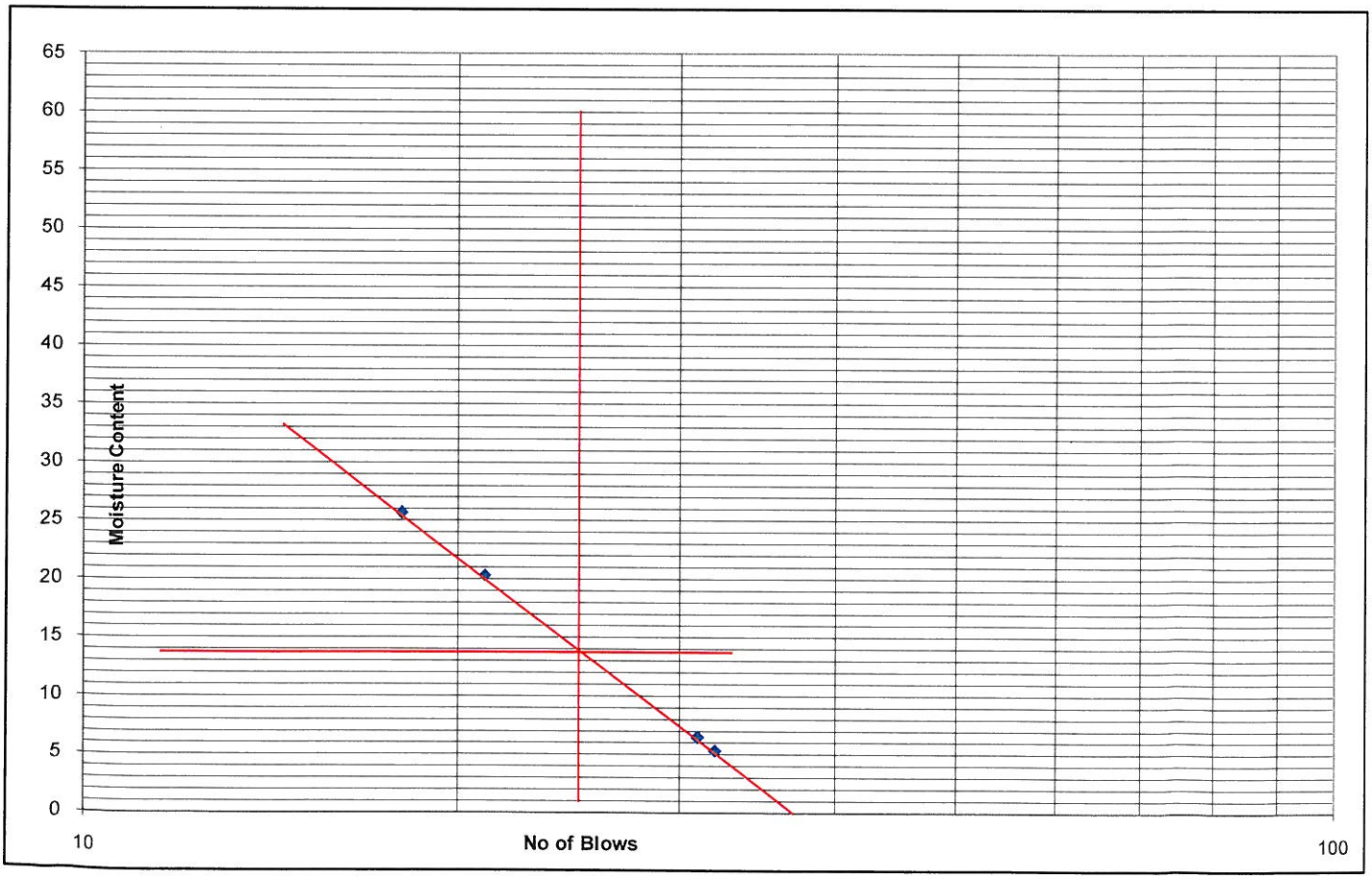
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	7.5m	Tested by	:	D.Mohanty

Number of Blows	32	31	21	18	Plastic Limit	
Container No.	B11	B12	B25	B26	NP	
Container Weight (gm) (W1)	35.81	33.24	35.22	33.36		
Container + Wt. of wet soil (gm) (W2)	79.88	93.59	96.49	101.67		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.64	89.92	86.15	87.72		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.24	3.67	10.34	13.95		
Wt. of oven dry soil (gm) (W3-W1)	41.83	56.68	50.93	54.36		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**5.36**	**6.48**	**20.31**	**25.67**		

Result Summary

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



4852

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

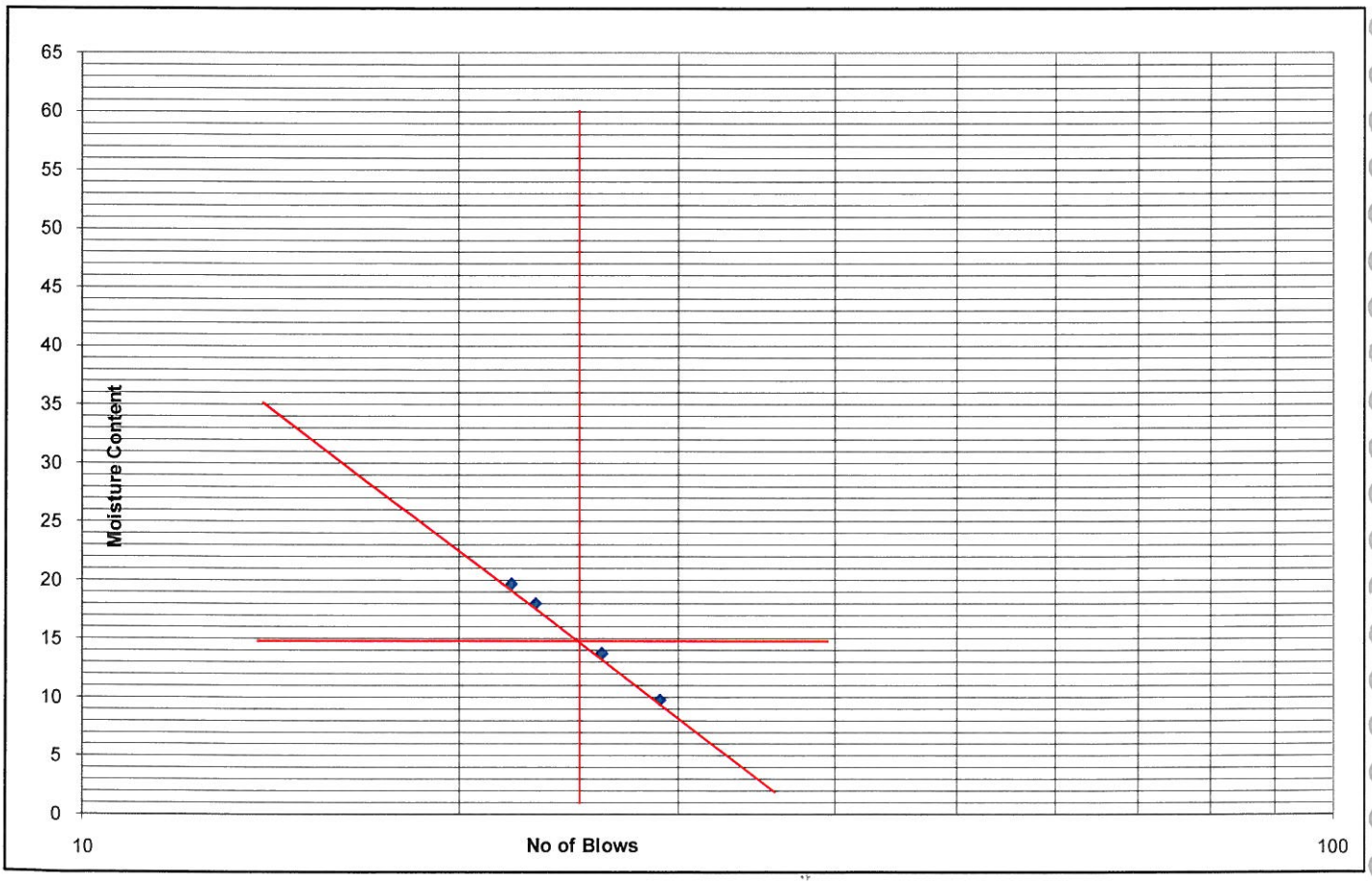
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	12.0m	Tested by	:	D.Mohanty

Number of Blows	29	26	23	22	Plastic Limit	
Container No.	B37	B38	B39	B40	NP	
Container Weight (gm) (W1)	33.26	32.74	31.98	30.5		
Container + Wt. of wet soil (gm) (W2)	82.15	97.29	96.04	98.88		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.79	89.49	86.25	87.65		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.36	7.80	9.79	11.23		
Wt. of oven dry soil (gm) (W3-W1)	44.53	56.75	54.27	57.15		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**9.79**	**13.74**	**18.04**	**19.65**		

Result Summary

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



4853

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

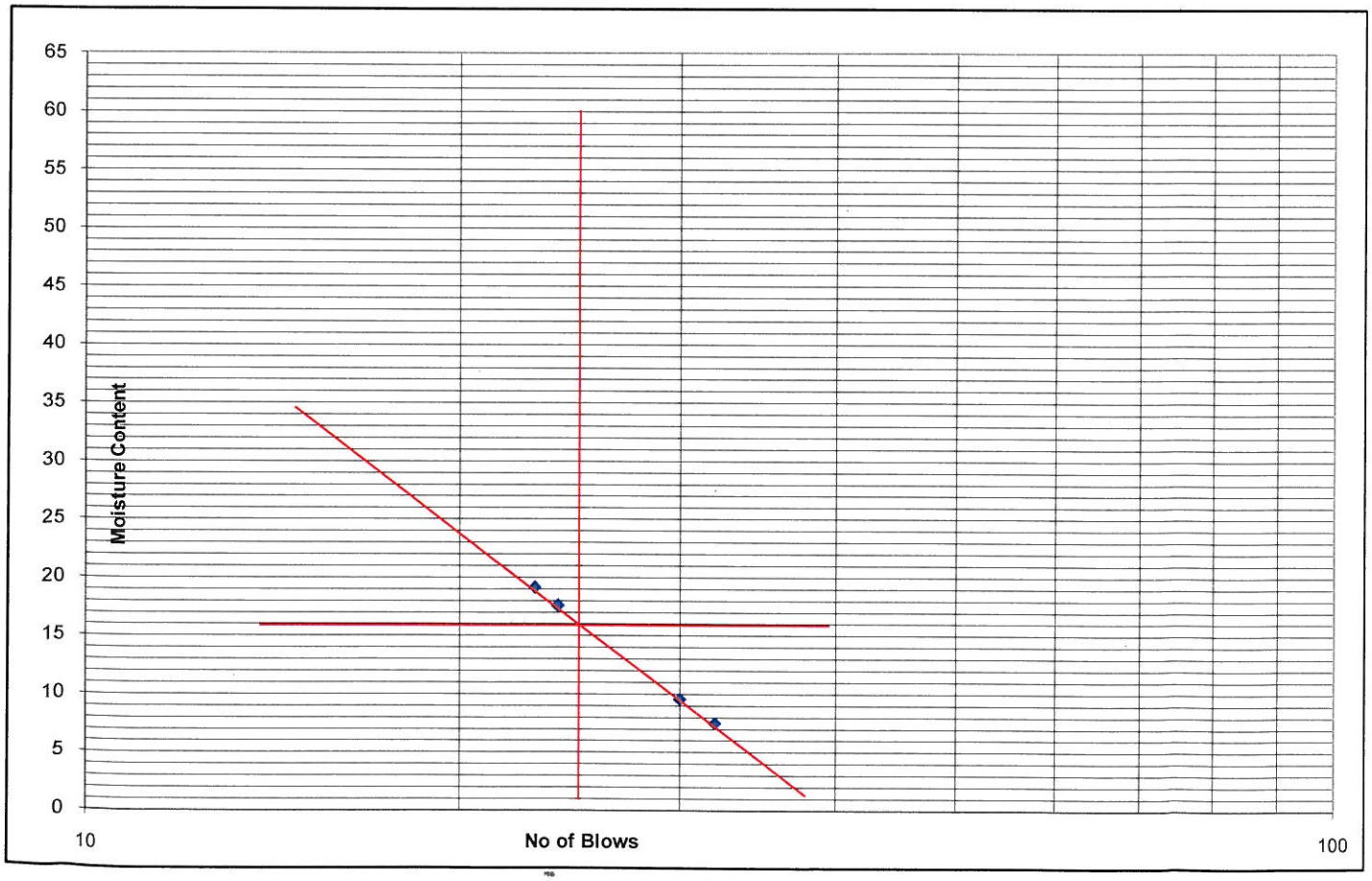
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	15.0m	Tested by	:	D.Mohanty

Number of Blows	32	30	24	23	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)	80.86	94.48	95.76	98.64		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.49	89.16	86.11	87.71		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.37	5.32	9.65	10.93		
Wt. of oven dry soil (gm) (W3-W1)	44.91	55.47	54.87	57.13		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**7.51**	**9.59**	**17.58**	**19.13**		

Result Summary

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



4854

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

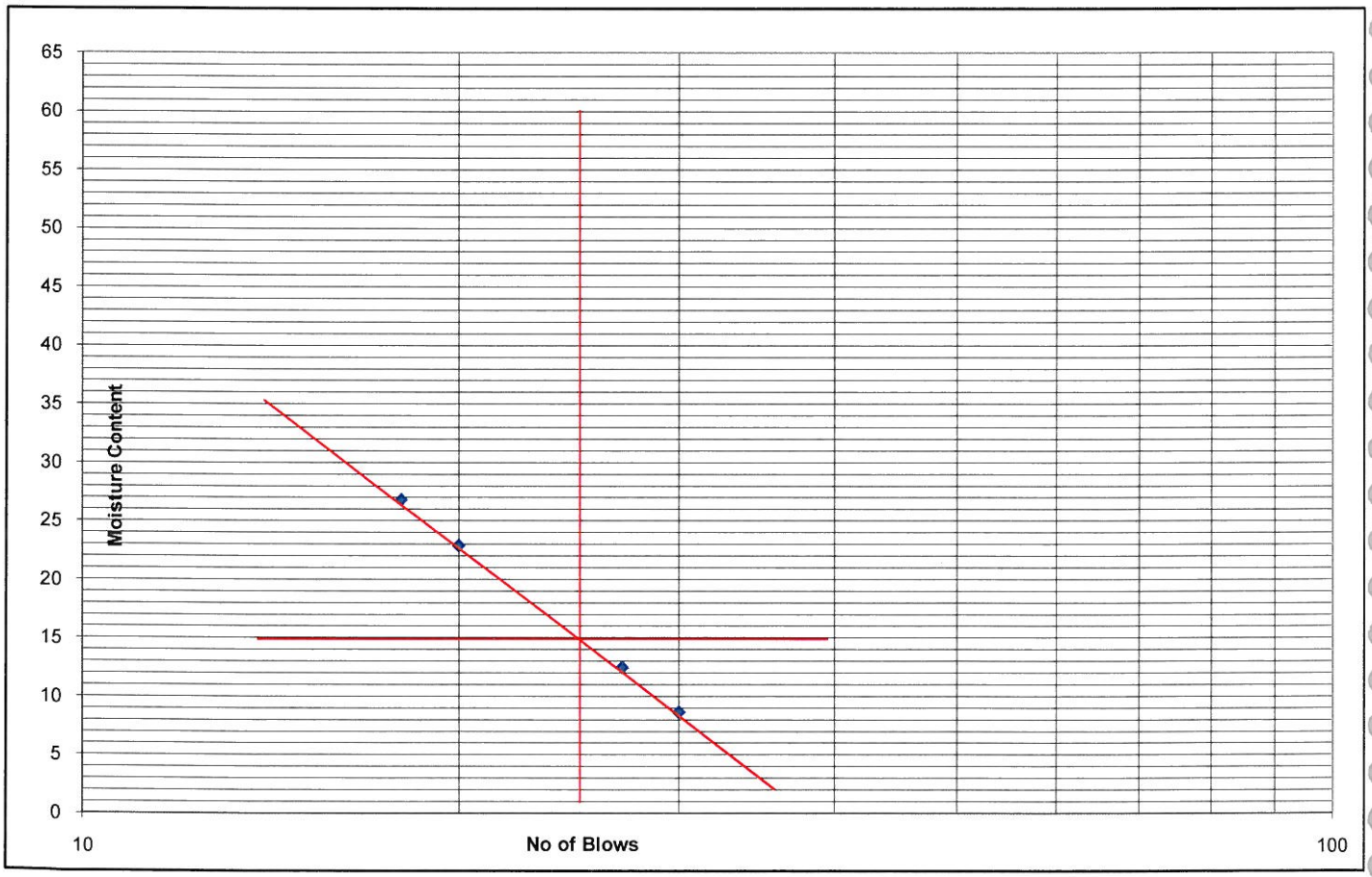
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	19.5m	Tested by	:	D.Mohanty

Number of Blows	30	27	20	18	Plastic Limit	
Container No.	D37	D38	D39	D40	NP	
Container Weight (gm) (W1)	36.57	32.26	31.04	30.5		
Container + Wt. of wet soil (gm) (W2)	80.62	96.32	98.63	102.90		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.11	89.22	86.04	87.60		
Wt. Of water (gm) (W2-W1)-(W3-W1)	3.51	7.10	12.59	15.30		
Wt. of oven dry soil (gm) (W3-W1)	40.54	56.96	55.00	57.10		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**8.67**	**12.46**	**22.89**	**26.79**		

Result Summary

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



4855

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

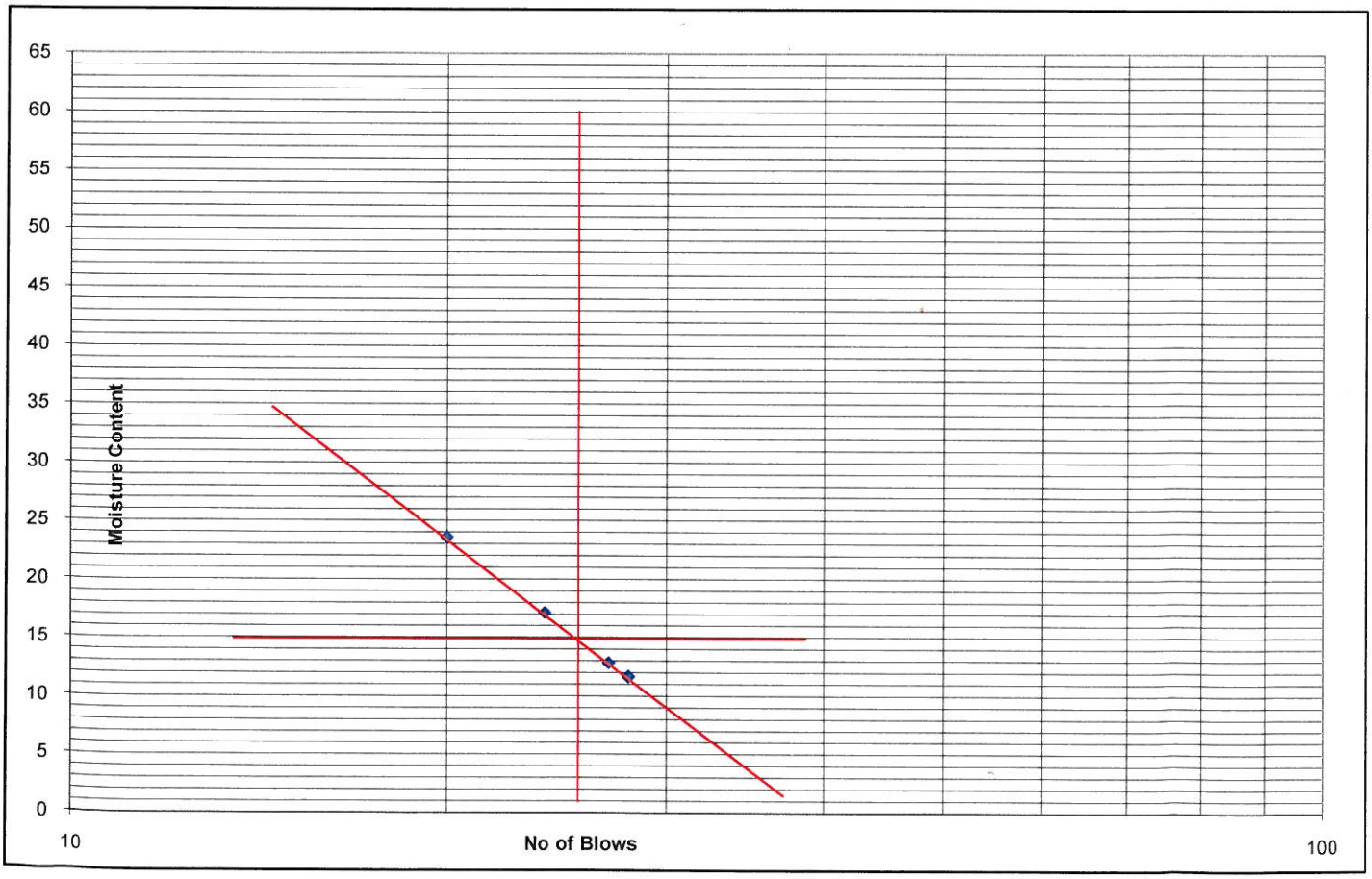
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	21.0m	Tested by	:	D.Mohanty

Number of Blows	28	27	24	20	Plastic Limit	
Container No.	D11	D12	D9	D10	NP	
Container Weight (gm) (W1)	36.48	37.96	34.13	32.45		
Container + Wt. of wet soil (gm) (W2)	81.93	95.25	94.80	100.44		
Wt of Container + Wt. of oven dry soil (gm) (W3)	77.18	88.72	85.93	87.47		
Wt. Of water (gm) (W2-W1)-(W3-W1)	4.75	6.53	8.87	12.97		
Wt. of oven dry soil (gm) (W3-W1)	40.70	50.76	51.80	55.02		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**11.67**	**12.86**	**17.13**	**23.57**		

Result Summary

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



4856

Arki Techno Consultants (India) Pvt.Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF LIQUID LIMIT AND PLASTIC LIMIT

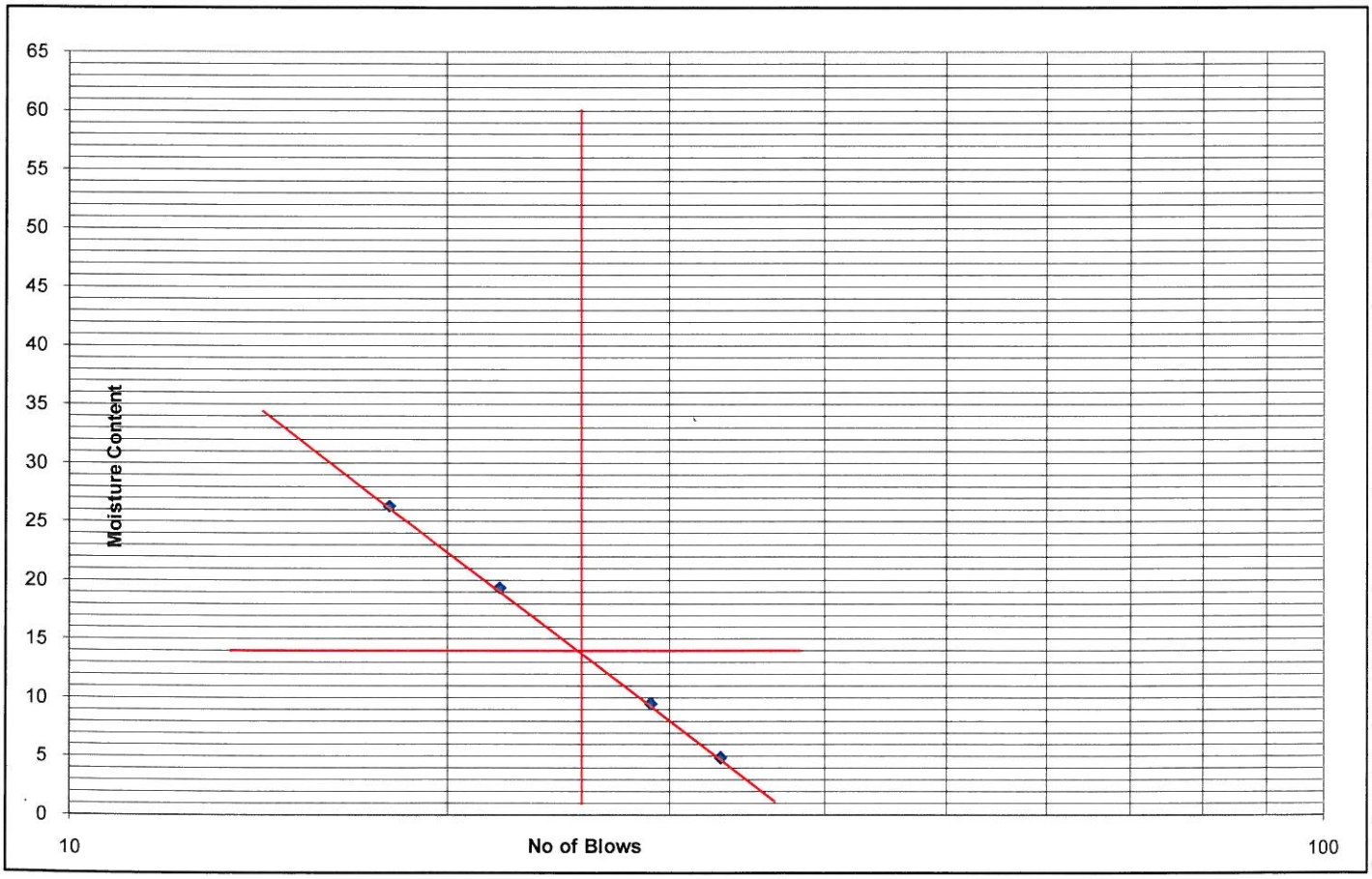
IS : 2720 (Part -5)

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	27.10.12
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	27.0m	Tested by	:	D.Mohanty

Number of Blows	33	29	22	18	Plastic Limit	
Container No.	D7	D8	D29	D30	NP	
Container Weight (gm) (W1)	35.82	31.27	36.84	30.87		
Container + Wt. of wet soil (gm) (W2)	80.26	94.98	95.98	102.85		
Wt of Container + Wt. of oven dry soil (gm) (W3)	78.19	89.45	86.38	87.84		
Wt. Of water (gm) (W2-W1)-(W3-W1)	2.07	5.53	9.60	15.01		
Wt. of oven dry soil (gm) (W3-W1)	42.37	58.18	49.54	56.97		
Moisture Content (%)= [(W2-W1)-(W3-W1)]/(W3-W1) X 100	**4.89**	**9.51**	**19.37**	**26.35**		

Result Summary

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



4857

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	:	24.10.12
Type of Sample	:	SPT	Tested by	:	K.C.Sahoo
Location	:	BH-2(Yamuna River-Ambala)	Sampled by	:	T.K.Das
Depth	:	28.5m	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	13.0	3.00	30	22	50%
2	10	12.0	2.00	20		
3	10	11.5	1.50	15		

Remarks:

4853