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-3(Markanda River-Ambala)

Depth : 13.5m

Date Of Testing : 28.09.12

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	14.5	4.50	45	27	50%
2	10	12.0	2.00	20		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

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-3(Markanda River-Ambala)

Depth : 15.0m

Date Of Testing : 28.09.12

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	13.0	3.00	30	25	50%
2	10	12.5	2.50	25		
3	10	12.0	2.00	20		

Remarks:

Lab Manager

Checked By:

3710

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	:	28.09.12	
Type of Sample	: UDS	Tested by	:	D.Mohanty	
Location	: BH-3(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	13.5	3.50	35	25	50%
2	10	13.0	3.00	30		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

3711

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

Type of Sample : UDS

Location : BH-3(Markanda River-Ambala)

Depth : 19.5m

Date Of Testing : 28.09.12

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	13.8	3.80	38	26	50%
2	10	12.5	2.50	25		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

3712

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	:	28.09.12
Type of Sample	:	UDS	Tested by	:	D.Mohanty
Location	:	BH-3(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	13.5	3.50	35	25	50%
2	10	12.5	2.50	25		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

3713

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	:	28.09.12
Type of Sample	:	SPT	Tested by	:	D.Mohanty
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	24.0m	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:

Lab Manager

Checked By:

3714

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	:	28.09.12
Type of Sample	:	SPT	Tested by	:	D.Mohanty
Location	:	BH-3(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	13.3	3.30	33	26	50%
2	10	12.5	2.50	25		
3	10	12.0	2.00	20		

Remarks:

Lab Manager

Checked By:

3715

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	:	28.09.12
Type of Sample	:	SPT	Tested by	:	D.Mohanty
Location	:	BH-3(Markanda 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	12.0	2.00	20	14	50%
2	10	11.5	1.50	15		
3	10	10.7	0.70	7		

Remarks:

Lab Manager

Checked By:

3716

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

Type of Sample : SPT

Location : BH-3(Markanda River-Ambala)

Depth : 33.0m

Date Of Testing : 28.09.12

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	11.5	1.50	15	13	50%
2	10	11.5	1.50	15		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

3717

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-3(Markanda River-Ambala)

Depth : 34.5m

Date Of Testing : 28.09.12

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	12.2	2.20	22	14	50%
2	10	11.0	1.00	10		
3	10	11.0	1.00	10		

Remarks:

Lab Manager

Checked By:

3718

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	:	28.09.12
Type of Sample	:	SPT	Tested by	:	D.Mohanty
Location	:	BH-3(Markanda 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	26	50%
2	10	12.5	2.50	25		
3	10	12.3	2.30	23		

Remarks:

Lab Manager

Checked By:

3719

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-3(Markanda River-Ambala)

Depth : 39.0m

Date Of Testing : 28.09.12

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

Remarks:

Lab Manager

Checked By:

2720 - 3720

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	:	28.09.12	
Type of Sample	: SPT	Tested by	:	D.Mohanty	
Location	: BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das	
Depth	: 43.5m	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	14.0	4.00	40	25	50%
2	10	12.0	2.00	20		
3	10	11.5	1.50	15		

Remarks:

Lab Manager

Checked By:

3721

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	:	28.09.12
Location	:	BH-3(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	136.37	
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	2.38	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

Checked By

3722

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	3.0m	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	37.24	
3	Weight of bottle with soil and water W3 in gm	137.11	
4	Weight of bottle full of water W4 in gm	133.55	
5	Weight of dry soil (W2-W1)in gm	5.72	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.16	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3723

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	4.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.58	
3	Weight of bottle with soil and water W3 in gm	136.94	
4	Weight of bottle full of water W4 in gm	133.79	
5	Weight of dry soil (W2-W1)in gm	5.06	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.91	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3724

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	6.0m	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	37.13	
3	Weight of bottle with soil and water W3 in gm	137.46	
4	Weight of bottle full of water W4 in gm	133.97	
5	Weight of dry soil (W2-W1)in gm	5.61	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.13	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

Checked By

3725

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	:	28.09.12
Location	:	BH-3(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

3726

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	9.0m	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	37.50	
3	Weight of bottle with soil and water W3 in gm	136.82	
4	Weight of bottle full of water W4 in gm	133.08	
5	Weight of dry soil (W2-W1)in gm	5.98	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.24	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3727

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	:	28.09.12
Location	:	BH-3(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	134.16	
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)	2.66	

Lab Manager

Checked By

3728

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	13.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	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

3723

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	:	28.09.12
Location	:	BH-3(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	138.21	
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	2.03	
7	Specific Gravity G = (5) / (6)	2.68	

Lab Manager

Checked By

3730

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	16.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	35.28	
3	Weight of bottle with soil and water W3 in gm	137.06	
4	Weight of bottle full of water W4 in gm	134.71	
5	Weight of dry soil (W2-W1)in gm	3.76	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.41	
7	Specific Gravity G = (5) / (6)	2.67	

Lab Manager

Checked By

3731

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	19.5m	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	37.49	
3	Weight of bottle with soil and water W3 in gm	137.96	
4	Weight of bottle full of water W4 in gm	134.23	
5	Weight of dry soil (W2-W1)in gm	5.97	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.24	
7	Specific Gravity G = (5) / (6)	2.66	

Lab Manager

Checked By

3732

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	:	28.09.12
Location	:	BH-3(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	136.88	
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	1.77	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

3733

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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	:	28.09.12
Location	:	BH-3(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

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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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	27.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.67	
3	Weight of bottle with soil and water W3 in gm	137.55	
4	Weight of bottle full of water W4 in gm	133.71	
5	Weight of dry soil (W2-W1)in gm	6.15	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.31	
7	Specific Gravity G = (5) / (6)	2.66	

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	30.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.34	
3	Weight of bottle with soil and water W3 in gm	137.76	
4	Weight of bottle full of water W4 in gm	134.76	
5	Weight of dry soil (W2-W1)in gm	4.82	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.82	
7	Specific Gravity G = (5) / (6)	2.65	

Lab Manager

Checked By

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date Of Testing	:	28.09.12
Location	:	BH-3(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	136.71	
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	2.05	
7	Specific Gravity G = (5) / (6)	2.65	

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	34.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	36.22	
3	Weight of bottle with soil and water W3 in gm	135.94	
4	Weight of bottle full of water W4 in gm	133.01	
5	Weight of dry soil (W2-W1)in gm	4.70	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	1.77	
7	Specific Gravity G = (5) / (6)	2.66	

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	36.0m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	37.85	
3	Weight of bottle with soil and water W3 in gm	138.35	
4	Weight of bottle full of water W4 in gm	134.39	
5	Weight of dry soil (W2-W1)in gm	6.33	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.37	
7	Specific Gravity G = (5) / (6)	2.67	

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	:	28.09.12
Location	:	BH-3(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	137.48	
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	2.24	
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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	43.5m	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	37.13	
3	Weight of bottle with soil and water W3 in gm	137.59	
4	Weight of bottle full of water W4 in gm	134.08	
5	Weight of dry soil (W2-W1)in gm	5.61	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.10	
7	Specific Gravity G = (5) / (6)	2.67	

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	:	28.09.12
Location	:	BH-3(Markanda River-Ambala)	Sampled by	:	T.K.Das
Depth	:	46.5m	Tested by	:	D.Mohanty

Sl. No.	Observations	1	Remarks
1	Weight of density bottle W1 in gm	31.52	
2	Weight of bottle with dry soil in W2 gm	38.01	
3	Weight of bottle with soil and water W3 in gm	137.91	
4	Weight of bottle full of water W4 in gm	133.88	
5	Weight of dry soil (W2-W1)in gm	6.49	
6	Weight of equal volume of water(W2 - W1) - (W3 - W4) in gm	2.46	
7	Specific Gravity G = (5) / (6)	2.64	

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	:	28.09.12
Location	:	BH-3(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	138.79	
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	2.53	
7	Specific Gravity G = (5) / (6)	2.64	

Lab Manager

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3743

ARKI TECHNO CONSULTANTS (I) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

DETERMINATION OF BULK DENSITY & MOISTURE CONTENT OF SOIL SAMPLE

Client : DFCC

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

Location : BH-3(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-3(Markanda River-Ambala)	1.5	SPT	28.09.12	62.34	3.8	7	79.39	206.83	192.17	129.83	14.66	11.29	1.82	1.64
2		3.0	SPT	28.09.12	61.82	3.8	7	79.39	207.10	191.86	130.04	15.24	11.72	1.83	1.64
3		4.5	SPT	28.09.12	60.71	3.8	7	79.39	207.58	193.18	132.47	14.40	10.87	1.85	1.67
4		6.0	SPT	28.09.12	63.49	3.8	7	79.39	211.16	195.23	131.74	15.93	12.09	1.86	1.66
5		7.5	UDS	28.09.12	60.77	3.8	7	79.39	211.61	186.73	125.96	24.88	19.75	1.90	1.59
6		9.0	SPT	28.09.12	64.84	3.8	7	79.39	216.47	191.01	126.17	25.46	20.18	1.91	1.59
7		10.5	UDS	28.09.12	65.31	3.8	7	79.39	218.53	192.46	127.15	26.08	20.51	1.93	1.60
8		13.5	UDS	28.09.12	60.5	3.8	7	79.39	215.31	190.17	129.67	25.14	19.39	1.95	1.63
9		15.0	SPT	28.09.12	61.31	3.8	7	79.39	215.33	187.92	126.61	27.41	21.65	1.94	1.59
10		16.5	UDS	28.09.12	62.29	3.8	7	79.39	217.10	191.01	128.72	26.09	20.27	1.95	1.62
11		19.5	UDS	28.09.12	63.12	3.8	7	79.39	219.52	193.54	130.42	25.98	19.92	1.97	1.64
12		22.5	UDS	28.09.12	62.74	3.8	7	79.39	220.73	193.81	131.07	26.92	20.54	1.99	1.65
13		24.0	SPT	28.09.12	62.80	3.8	7	79.39	221.58	193.86	131.06	27.72	21.15	2.00	1.65
14		27.0	SPT	28.09.12	62.86	3.8	7	79.39	227.19	200.15	137.29	27.05	19.70	2.07	1.73
15		30.0	SPT	28.09.12	62.91	3.8	7	79.39	225.66	200.06	137.15	25.60	18.66	2.05	1.73
16		33.0	SPT	28.09.12	61.48	3.8	7	79.39	226.61	200.76	139.28	25.85	18.56	2.08	1.75
17		34.5	SPT	28.09.12	63.79	3.8	7	79.39	229.72	203.18	139.39	26.54	19.04	2.09	1.76
18		36.0	SPT	28.09.12	60.84	3.8	7	79.39	231.53	202.75	141.91	28.78	20.28	2.15	1.79
19		39.0	SPT	28.09.12	62.37	3.8	7	79.39	233.85	205.47	143.10	28.38	19.83	2.16	1.80
20		43.5	SPT	28.09.12	61.44	3.8	7	79.39	234.51	203.98	142.54	30.53	21.42	2.18	1.80
21		46.5	SPT	28.09.12	64.57	3.8	7	79.39	236.85	219.48	154.91	17.37	11.21	2.17	1.95
22		50.0	SPT	28.09.12	60.19	3.8	7	79.39	234.85	217.07	156.88	17.77	11.33	2.20	1.98

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	:	08.10.12
Location	:	BH-4(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) :- 64.67

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	30.61	30.61	30.61	69.39
0.425	23.78	23.78	54.39	45.61
0.075	10.28	10.28	64.67	35.33
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 64.67 **Silt and clay %** 35.33

Remarks :-

3745

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	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	3.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 69.29

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	33.26	33.26	33.26	66.74
0.425	27.38	27.38	60.64	39.36
0.075	8.65	8.65	69.29	30.71
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 69.29 **Silt and clay %** 30.71

Remarks :-

3746

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	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	4.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 71.14

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	31.86	31.86	31.86	68.14
0.425	28.77	28.77	60.63	39.37
0.075	10.51	10.51	71.14	28.86
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 71.14 **Silt and clay %** 28.86

Remarks :-

3747

Lab Manager Checked By

Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	6.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 68.48

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	31.42	31.42	31.42	68.58
0.425	28.76	28.76	60.18	39.82
0.075	8.30	8.30	68.48	31.52
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 68.48 **Silt and clay %** 31.52

Remarks :-

3748

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	08.10.12
Location	:	BH-4(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) :- 1.18

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.57	0.57	0.57	99.43
0.425	0.50	0.50	1.07	98.93
0.075	0.12	0.12	1.19	98.81
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.19 **Silt and clay %** 98.81

Remarks :-

Lab Manager Checked By

Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	08.10.12
Location	:	BH-4(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) :- 1.78

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	0.82	0.82	0.82	99.18
0.425	0.67	0.67	1.49	98.51
0.075	0.29	0.29	1.78	98.22
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.78 **Silt and clay %** 98.22

Remarks :-

3750

Lab Manager

Checked By

Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	12.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.83

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	0.87	0.87	0.87	99.13
0.425	0.69	0.69	1.56	98.44
0.075	0.27	0.27	1.83	98.17
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.83 **Silt and clay %** 98.17

Remarks :-

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ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	08.10.12
Location	:	BH-4(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) :- 2.06

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	0.99	0.99	0.99	99.01
0.425	0.87	0.87	1.86	98.14
0.075	0.21	0.21	2.07	97.93
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 2.07 **Silt and clay %** 97.93

Remarks :-

3752

Lab Manager

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	16.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.33

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	0.00	0.00	0.00	100.00
2.00	0.69	0.69	0.69	99.31
0.425	0.46	0.46	1.15	98.85
0.075	0.19	0.19	1.34	98.66
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.34 **Silt and clay %** 98.66

Remarks :-

3753

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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	:	08.10.12
Location	:	BH-4(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) :- 6.37

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	3.21	3.21	3.21	96.79
0.425	2.34	2.34	5.55	94.45
0.075	0.82	0.82	6.37	93.63
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 6.37 **Silt and clay %** 93.63

Remarks :-

3754

Lab Manager

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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	08.10.12
Location	:	BH-4(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) :- 1.62

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	0.72	0.72	0.72	99.28
0.425	0.64	0.64	1.36	98.64
0.075	0.27	0.27	1.63	98.37
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.63 **Silt and clay %** 98.37

Remarks :-

3755

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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	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	22.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 30.73

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	0.00	0.00	0.00	100.00
2.00	15.84	15.84	15.84	84.16
0.425	11.25	11.25	27.09	72.91
0.075	3.64	3.64	30.73	69.27
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 30.73 **Silt and clay %** 69.27

Remarks :-

3756

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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	:	08.10.12
Location	:	BH-4(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) :- 4.77

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	0.74	0.74	0.74	99.26
2.00	1.91	1.91	2.65	97.35
0.425	1.47	1.47	4.12	95.88
0.075	0.65	0.65	4.77	95.23
Total	100.00			

Gravel Content (%)= **0.74**

Sand Content (%) = 4.03 **Silt and clay %** 95.23

Remarks :-

3757

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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	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	28.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 2.18

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	1.07	1.07	1.07	98.93
0.425	0.78	0.78	1.85	98.15
0.075	0.33	0.33	2.18	97.82
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 2.18 **Silt and clay %** 97.82

Remarks :-

3753

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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	:	08.10.12
Location	:	BH-4(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) :- 0.58

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.29	0.29	0.29	99.71
0.425	0.21	0.21	0.50	99.50
0.075	0.09	0.09	0.59	99.41
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 0.59 **Silt and clay %** 99.41

Remarks :-

3759

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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	:	08.10.12
Location	:	BH-4(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) :- 1.88

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	0.95	0.95	0.95	99.05
0.425	0.66	0.66	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 :-

3760

Lab Manager Checked By

Arki Techno Consultants (India) Pvt. Ltd

ARKITECHNO CONSULTANTS (INDIA) PVT. LTD.

N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	UDS	Date of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	34.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 1.87

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.92	0.92	0.92	99.08
0.425	0.72	0.72	1.64	98.36
0.075	0.23	0.23	1.87	98.13
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.87 **Silt and clay %** 98.13

Remarks :-

3761

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	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	37.5m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 0.95

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	0.53	0.53	0.53	99.47
0.425	0.32	0.32	0.85	99.15
0.075	0.11	0.11	0.96	99.04
Total	100.00			

Gravel Content (%)= **0.00**

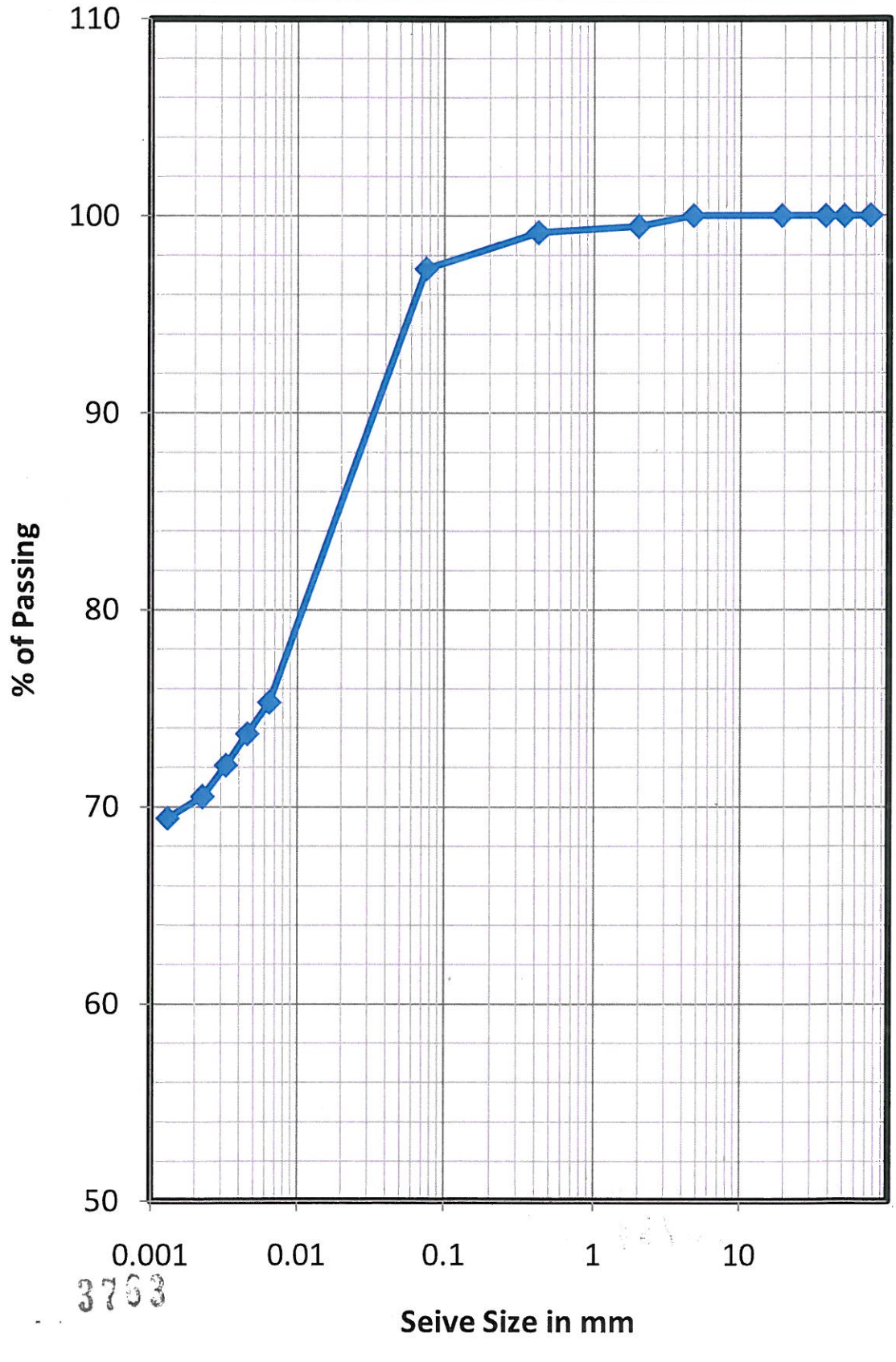
Sand Content (%) = 0.96 **Silt and clay %** 99.04

Remarks :-

3762

Lab Manager Checked By

Grain Size Distribution Curve
BH-4,D-37.5m



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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	:	08.10.12
Location	:	BH-4(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) :- 1.97

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	0.88	0.88	0.88	99.12
0.425	0.79	0.79	1.67	98.33
0.075	0.30	0.30	1.97	98.03
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.97 **Silt and clay %** 98.03

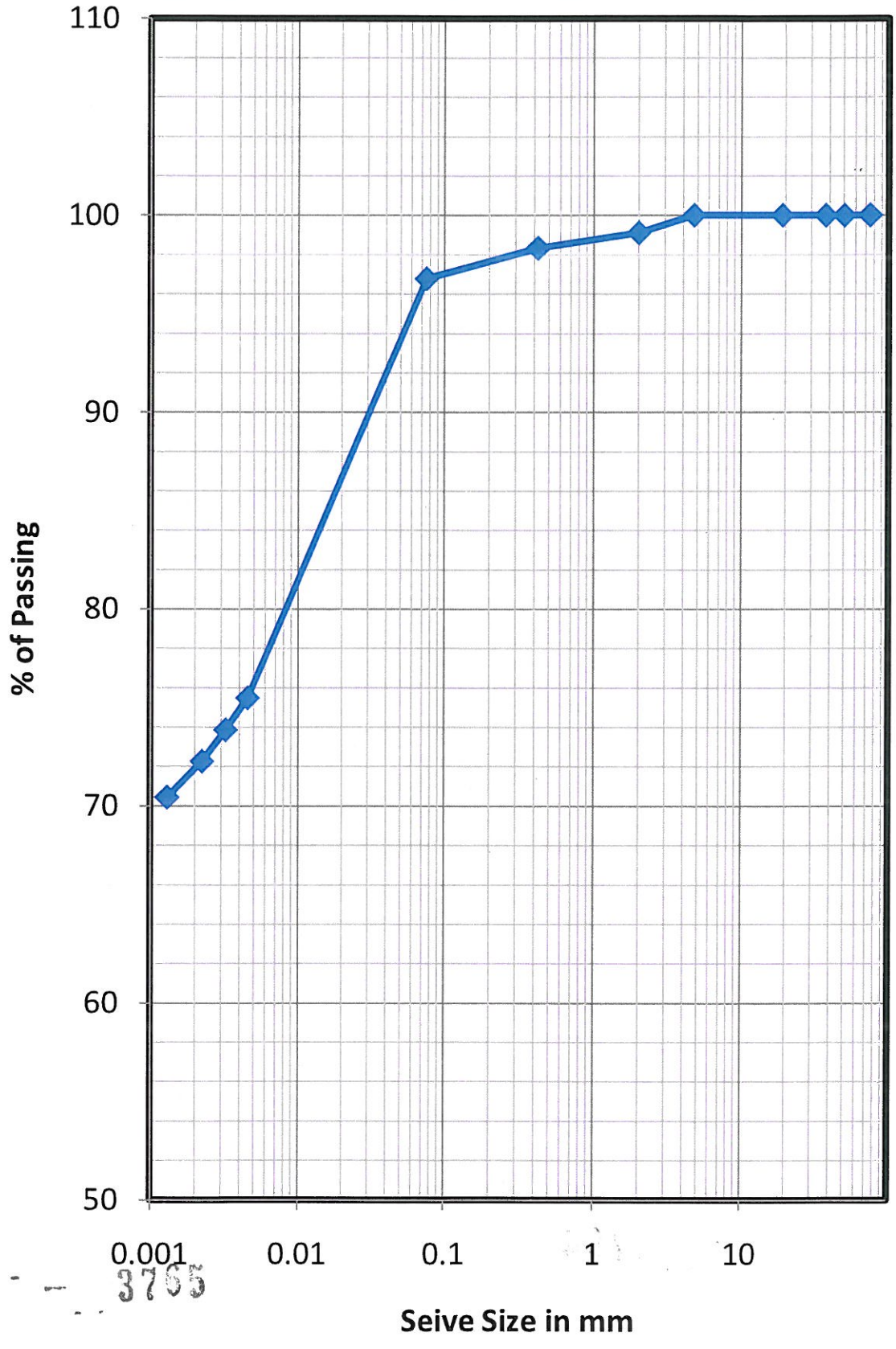
Remarks :-

3764

Lab Manager

Checked By

Grain Size Distribution Curve
BH-4,D-40.5m



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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	:	08.10.12
Location	:	BH-4(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) :- 1.72

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	0.82	0.82	0.82	99.18
0.425	0.64	0.64	1.46	98.54
0.075	0.27	0.27	1.73	98.27
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 1.73 **Silt and clay %** 98.27

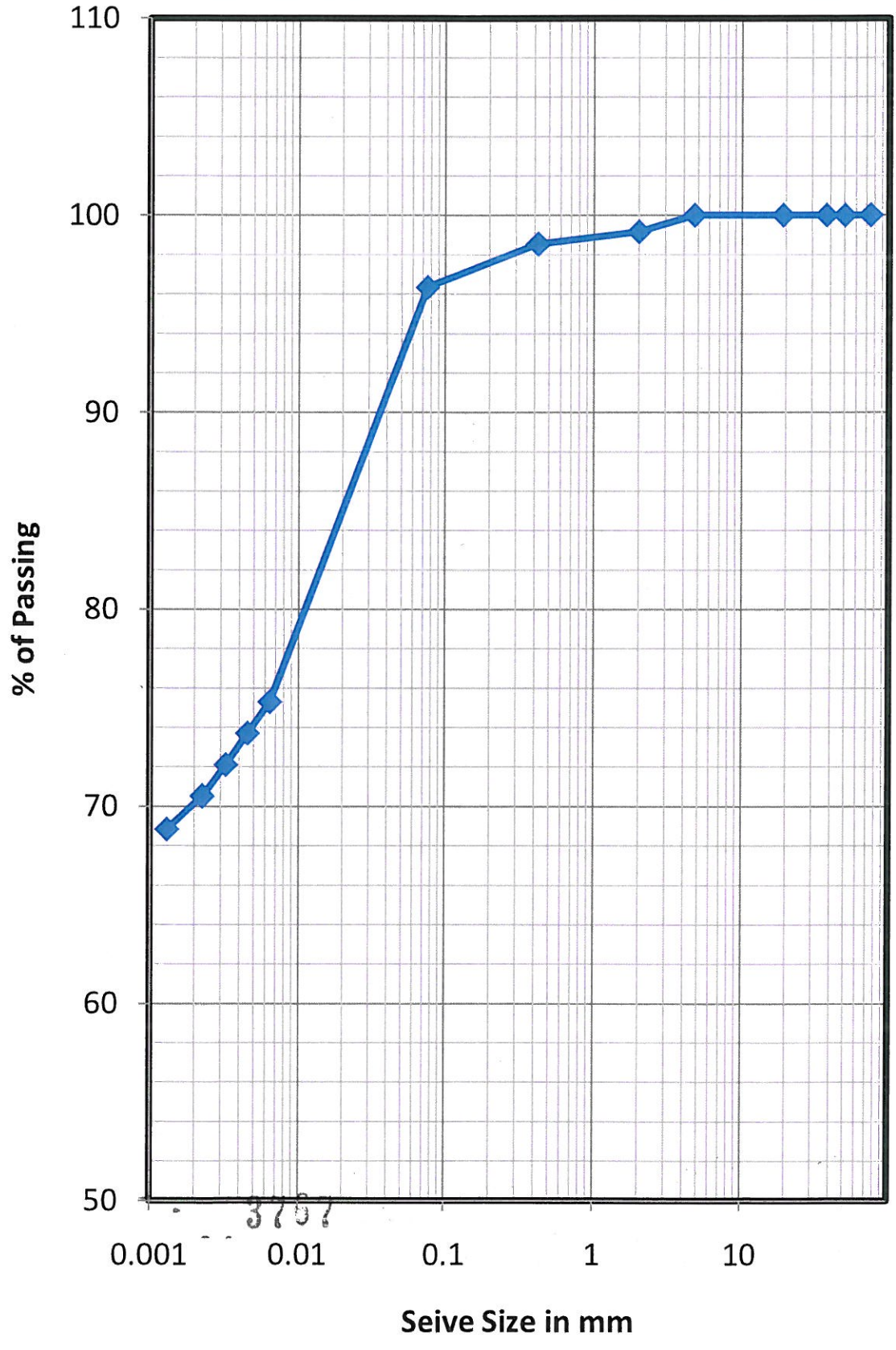
Remarks :-

3766

Lab Manager

Checked By

Grain Size Distribution Curve
BH-4,D-42.0m



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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	08.10.12
Location	:	BH-4(Markanda River-Ambala)	Sampled by	:	T. K. Das
Depth	:	45.0m	Tested by	:	D.Mohanty

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

Weight of oven dried sample after washing (gm) :- 16.33

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	0.00	0.00	0.00	100.00
2.00	7.95	7.95	7.95	92.05
0.425	6.04	6.04	13.99	86.01
0.075	2.35	2.35	16.34	83.66
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 16.34 **Silt and clay %** 83.66

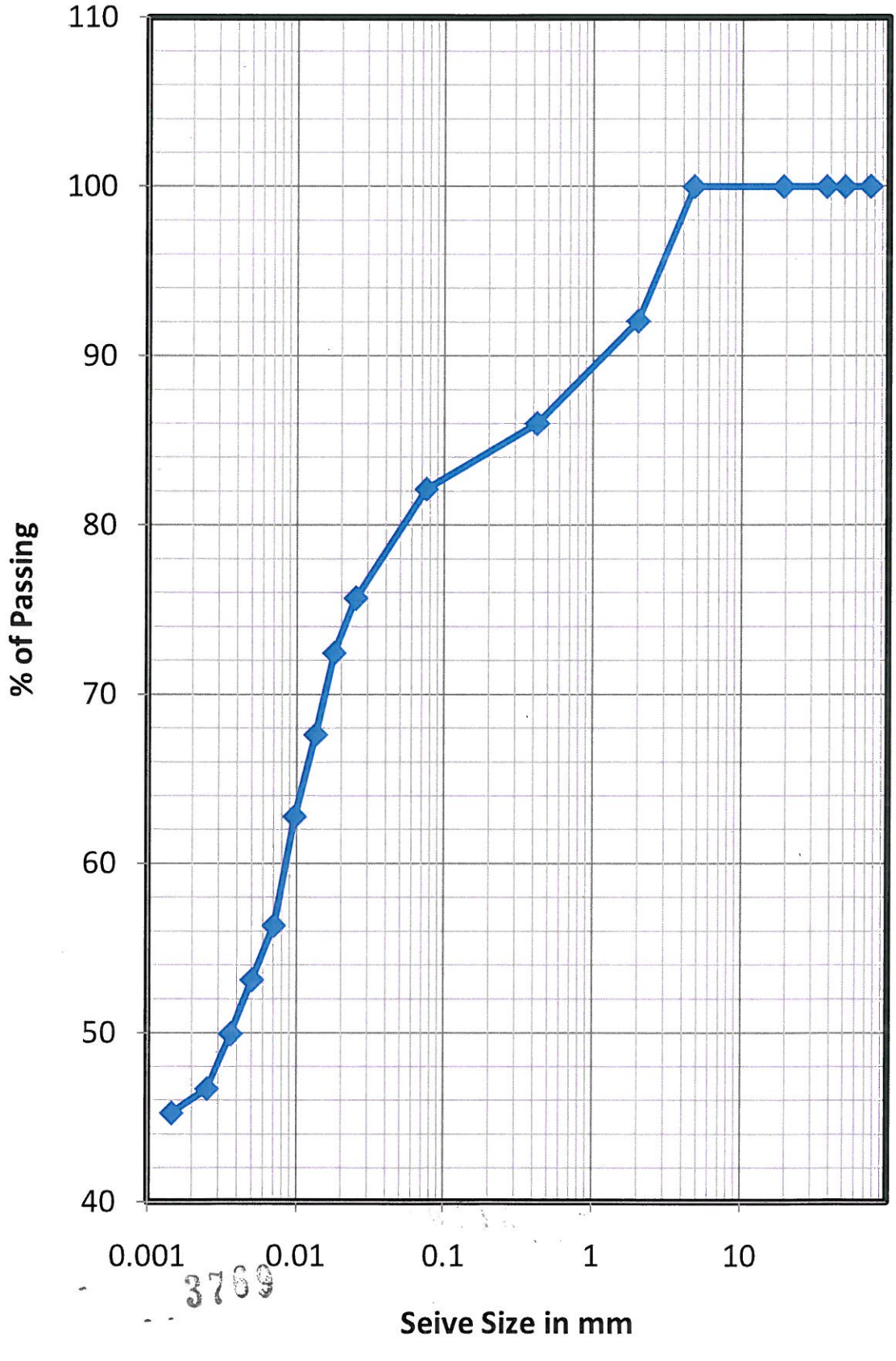
Remarks :-

3763

Lab Manager

Checked By

Grain Size Distribution Curve
BH-4,D-45.0m



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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	08.10.12
Location	:	BH-4(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) :- 15.93

Sieve Size mm	Individual Weight Retained in gm.	Individual Wt. Retained In %	Cummulative Wt Retained In %	Cummulative Wt Passing In %
75	0	0.00	0.00	100.00
50	0	0.00	0.00	100.00
37.5	0	0.00	0.00	100.00
19	0	0.00	0.00	100.00
4.75	0.00	0.00	0.00	100.00
2.00	7.34	7.34	7.34	92.66
0.425	5.98	5.98	13.32	86.68
0.075	2.62	2.62	15.94	84.06
Total	100.00			

Gravel Content (%)= **0.00**

Sand Content (%) = 15.94 **Silt and clay %** 84.06

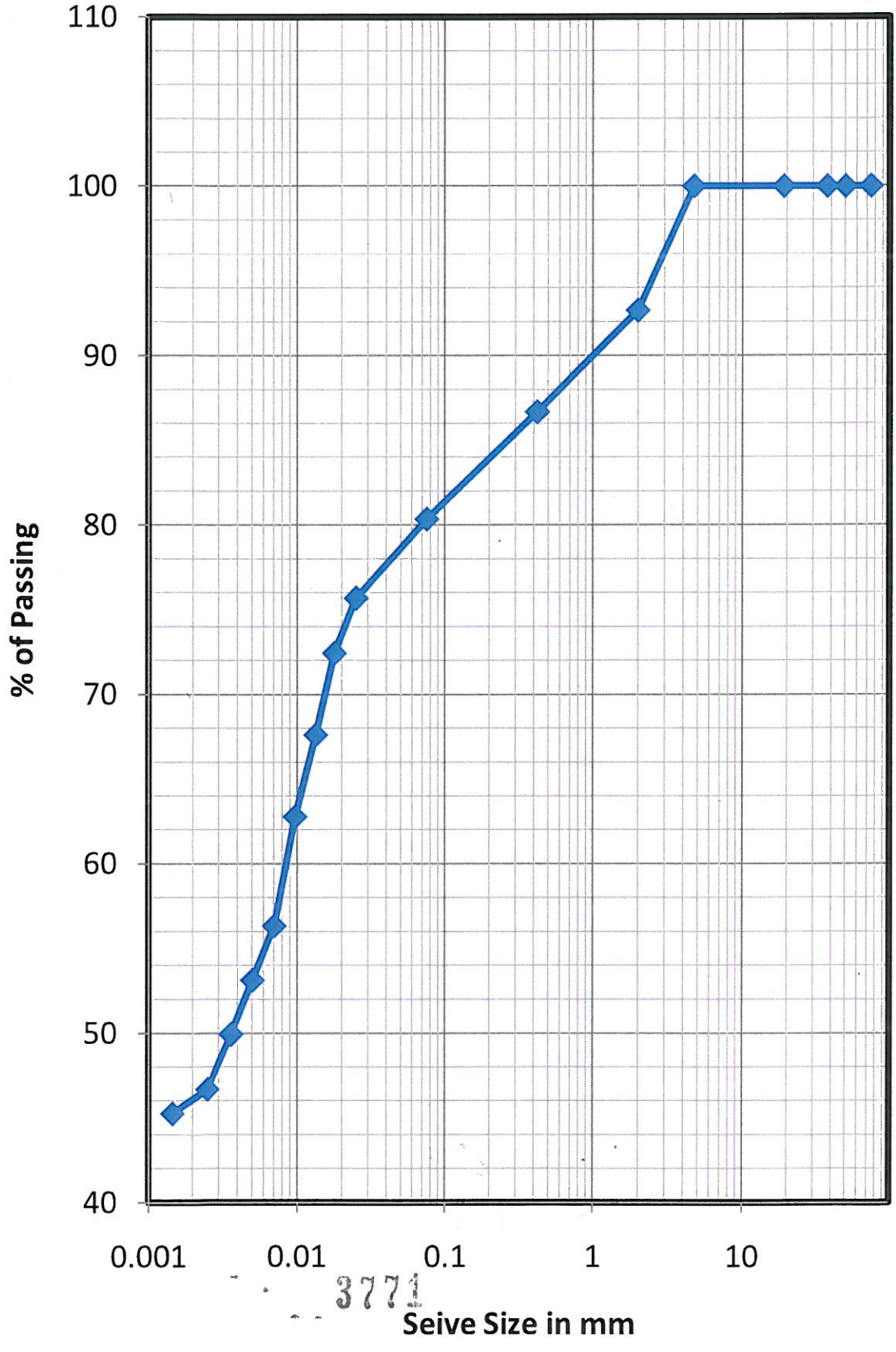
Remarks :-

3770

Lab Manager

Checked By

Grain Size Distribution Curve
BH-4,D-48.0m



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N 3/91, IRC Village, Bhubaneswar

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

Client	:	DFCC			
Project Name	:	G.I For 3 Nos. Important Bridges			
Type of Sample	:	SPT	Date of Testing	:	08.10.12
Location	:	BH-4(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) :- 17.13

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	8.24	8.24	8.24	91.76
0.425	6.67	6.67	14.91	85.09
0.075	2.22	2.22	17.13	82.87
Total	100.00			

Gravel Content (%)= **0.00**

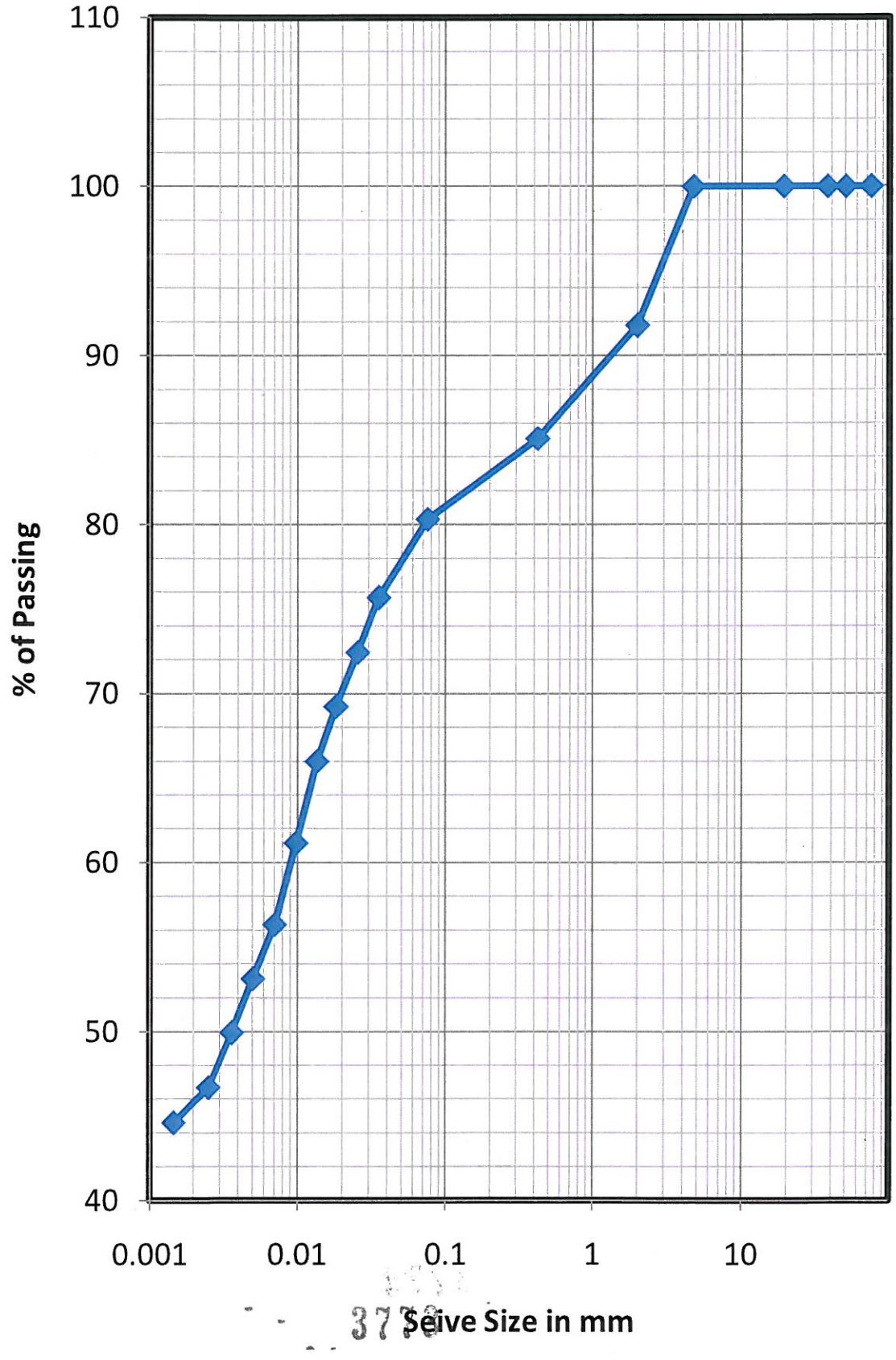
Sand Content (%) = 17.13 **Silt and clay %** 82.87

Remarks :-

3772

Lab Manager Checked By

Grain Size Distribution Curve
BH-4,D-50.0m



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-4(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 7.5m

Date of Testing : 09.10.12

Tested by : D.Mohanty

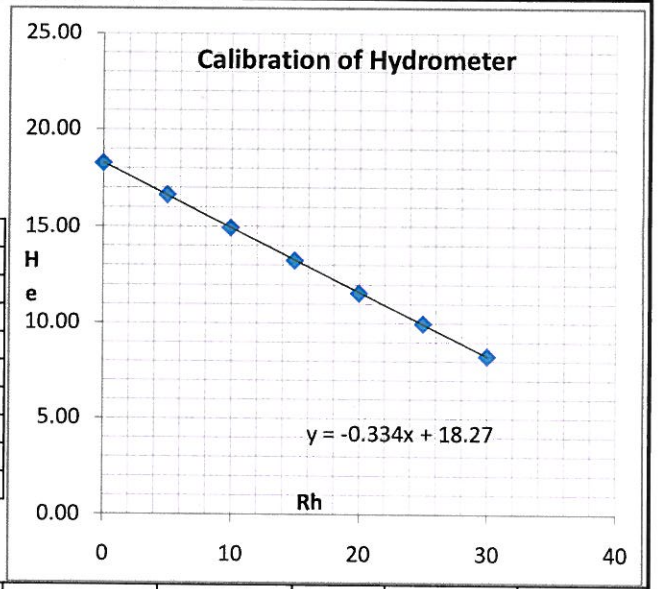
(I)	Percentage of 75 micron passing (from sieve analysis)		98.81
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.6
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.4
(V)	Specific gravity of soil grains, Gs		2.66
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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	29.10	29	-2.0	8.55	29.60	0.534	0.000008341	0.012277647	0.00655470	27.10	3.243	87.90	86.85
	1	29.00	29	-2.0	8.58	29.50	0.378	0.000008341	0.012277647	0.00464392	27.00	3.243	87.57	86.53
	2	29.00	29	-2.0	8.58	29.50	0.267	0.000008341	0.012277647	0.00328374	27.00	3.243	87.57	86.53
	4	28.50	29	-2.0	8.75	29.00	0.191	0.000008341	0.012277647	0.00234444	26.50	3.243	85.95	84.93
	8	28.50	29	-2.0	8.75	29.00	0.135	0.000008341	0.012277647	0.00165777	26.50	3.243	85.95	84.93
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012277647	0.00121066	26.50	3.243	85.95	84.93
	30	28.00	29	-2.0	8.92	28.50	0.070	0.000008341	0.012277647	0.00086420	26.00	3.243	84.33	83.33
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012277647	0.00061108	26.00	3.243	84.33	83.33
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012277647	0.00043210	26.00	3.243	84.33	83.33
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012277647	0.00030839	25.50	3.243	82.71	81.72
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011888750	0.00021116	25.50	3.243	82.71	81.72
	1440	27.47	32	-2.0	9.09	27.97	0.010	0.000007821	0.011888750	0.000121976	25.47	3.243	82.61	81.63

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Depth : 10.5m

Type of Sample : UDS

Date of Testing : 06.10.12

Location : BH-4(Markanda River- Ambala)

Tested by : D.Mohanty

Sampled by : T.K.Das

(I)	Percentage of 75 micron passing (from sieve analysis)		98.22
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

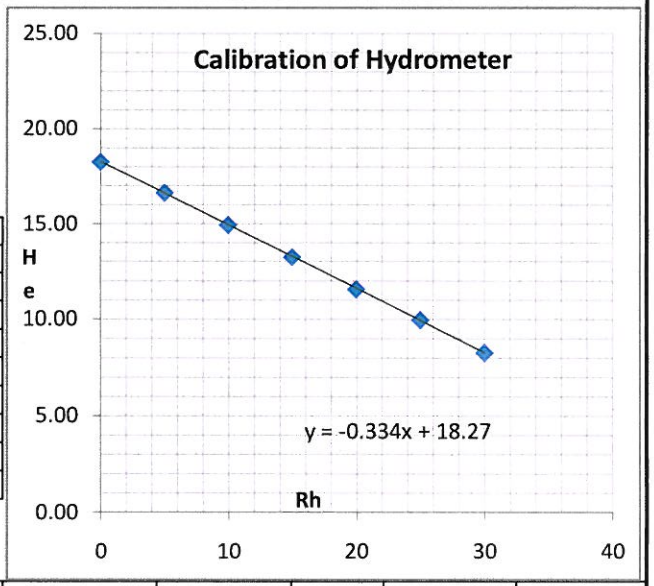
CALIBRATION OF HYDROMETER

(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	29.52	29	-2.0	8.41	30.02	0.529	0.000008341	0.012240833	0.00648122	27.52	3.256	89.59	88.00
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.256	89.53	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.256	89.53	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.256	87.90	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.256	87.90	86.34
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012240833	0.00119546	27.00	3.256	87.90	86.34
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.256	86.27	84.74
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012240833	0.00060352	26.50	3.256	86.27	84.74
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012240833	0.00042675	26.50	3.256	86.27	84.74
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012240833	0.00030462	26.00	3.256	84.64	83.14
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011853101	0.00020858	26.00	3.256	84.64	83.14
	1440	27.54	32	-2.0	9.07	28.04	0.010	0.000007821	0.011853101	0.000121461	25.54	3.256	83.14	81.66

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-4(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 12.0m

Date of Testing : 06.10.12

Tested by : D.Mohanty

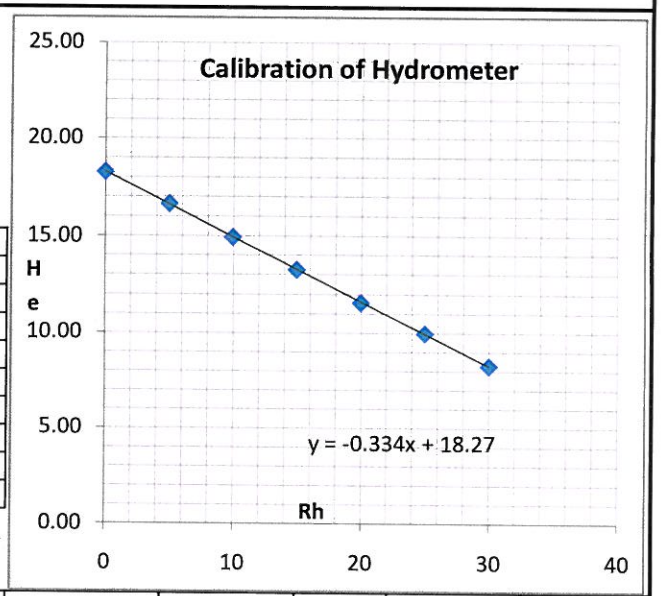
(I)	Percentage of 75 micron passing (from sieve analysis)		98.17
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.9
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.1
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

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	29.67	29	-2.0	8.36	30.17	0.528	0.000008341	0.012240833	0.00646188	27.67	3.257	90.13	88.48
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.257	89.57	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.257	89.57	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.257	87.94	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.257	87.94	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.257	86.32	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.257	86.32	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.257	84.69	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.257	84.69	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.257	83.06	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.257	83.06	81.54
	1440	27.19	32	-2.0	9.19	27.69	0.010	0.000007821	0.011853101	0.000122234	25.19	3.257	82.05	80.55

Lab Manager

Checked By

ARKI TECHNO CONSULTANTS (INDIA) PVT LTD

N 3/91, IRC Village, Bhubaneswar

GRAIN SIZE ANALYSIS OF SOIL - HYDROMETER METHOD

Client : DFCC

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

Depth : 13.5m

Type of Sample : UDS

Date of Testing : 06.10.12

Location : BH-4(Markanda River- Ambala)

Tested by : D.Mohanty

Sampled by : T.K.Das

(I)	Percentage of 75 micron passing (from sieve analysis)		97.93
(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		2.68
(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	

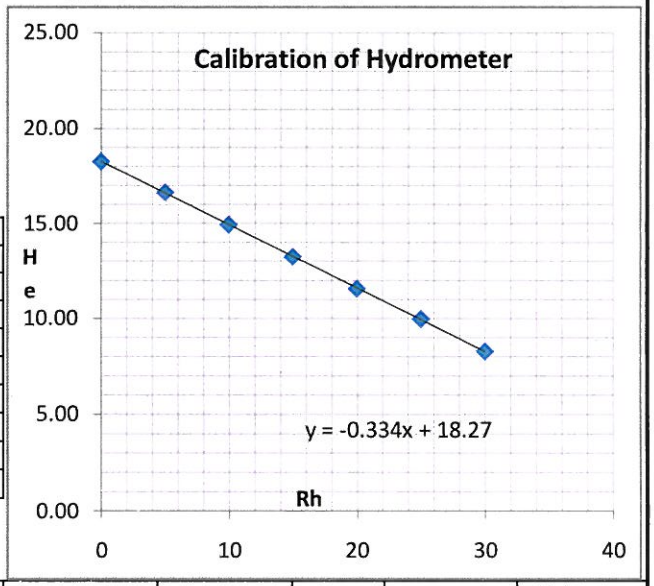
CALIBRATION OF HYDROMETER

(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	29.54	29	-2.0	8.40	30.04	0.529	0.000008341	0.012204347	0.00645933	27.54	3.258	89.72	87.87
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012204347	0.00457107	27.50	3.258	89.59	87.74
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012204347	0.00323223	27.50	3.258	89.59	87.74
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012204347	0.00230810	27.00	3.258	87.96	86.14
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012204347	0.00163207	27.00	3.258	87.96	86.14
	15	29.00	29	-2.0	8.58	29.50	0.098	0.000008341	0.012204347	0.00119190	27.00	3.258	87.96	86.14
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012204347	0.00085096	26.50	3.258	86.33	84.55
	60	28.50	29	-2.0	8.75	29.00	0.049	0.000008341	0.012204347	0.00060172	26.50	3.258	86.33	84.55
	120	28.50	29	-2.0	8.75	29.00	0.035	0.000008341	0.012204347	0.00042548	26.50	3.258	86.33	84.55
	240	28.00	29	-2.0	8.92	28.50	0.025	0.000008341	0.012204347	0.00030372	26.00	3.258	84.71	82.95
	480	28.00	32	-2.0	8.92	28.50	0.018	0.000007821	0.011817771	0.00020796	26.00	3.258	84.71	82.95
	1440	27.86	32	-2.0	8.96	28.36	0.010	0.000007821	0.011817771	0.000120368	25.86	3.258	84.26	82.52

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

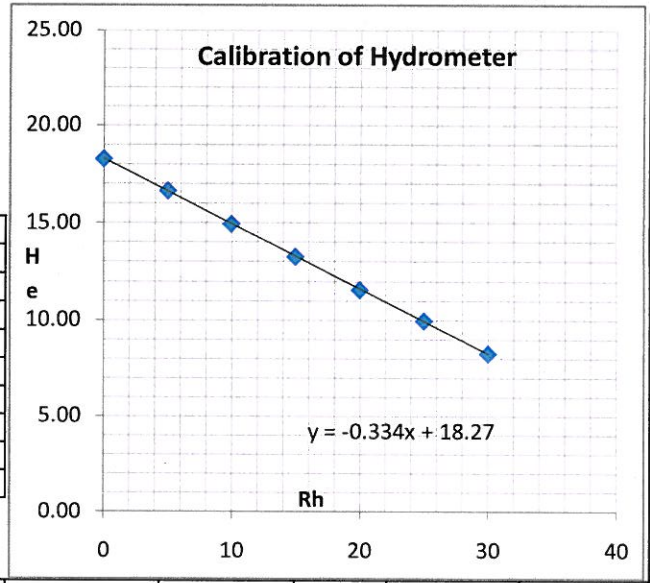
Location : BH-4(Markanda River- Ambala)

Sampled by : T.K.Das

Depth : 16.5m

Date of Testing : 06.10.12

Tested by : D.Mohanty



(I)	Percentage of 75 micron passing (from sieve analysis)		98.66
(II)	Mass of dry soil passing 2mm sieve taken (gm)		50
(III)	Mass of dry soil retained on 75micron sieve (gm)		0.7
(IV)	Mass of dry soil passing 75 micron Wh (gm)		49.3
(V)	Specific gravity of soil grains, Gs		2.67
(VI)	Top Meniscus reading on hydrometer stem		2.0
(VII)	Bottom meniscus reading on hydrometer stem		2.5
(VIII)	Meniscuss correction, Cm = + [(VII) - (VI)]		0.5
a	Hydrometer No	1	
	Volume of Hydrometer V (cm3)	50	
	Height of bulb (h) in cm	16.5	
b	Sedimentation Jar No	1	
	Cross sectional area of jar (A) in cm2	35.714	

CALIBRATION OF HYDROMETER

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

Rh = hydrometer Reading

H = height corresponding to Rh

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

Time	Elapsed Time (min)	Hydrometer Reading (Rh)	Temperature (o C)	Composite Correction +/- C	Effective depth h (cm)	Rc1 = Rh + Cm	Sqrt (h/t)	Viscosity (gm/cm2)	Factor M	Particle 'C' (cm) (8) x (10)	Rc2 = Rh + C (3) + (5)	Factor N	% Finner w.r.t Wd F (12) x (13)	% Finner w.r.t total mass (14) x (I)/100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.30	0.5	29.89	29	-2.0	8.29	30.39	0.526	0.000008341	0.012240833	0.00643342	27.89	3.241	90.39	89.18
	1	29.50	29	-2.0	8.42	30.00	0.375	0.000008341	0.012240833	0.00458473	27.50	3.241	89.13	87.93
	2	29.50	29	-2.0	8.42	30.00	0.265	0.000008341	0.012240833	0.00324190	27.50	3.241	89.13	87.93
	4	29.00	29	-2.0	8.58	29.50	0.189	0.000008341	0.012240833	0.00231500	27.00	3.241	87.51	86.34
	8	29.00	29	-2.0	8.58	29.50	0.134	0.000008341	0.012240833	0.00163695	27.00	3.241	87.51	86.34
	15	28.50	29	-2.0	8.75	29.00	0.099	0.000008341	0.012240833	0.00120703	26.50	3.241	85.89	84.74
	30	28.50	29	-2.0	8.75	29.00	0.070	0.000008341	0.012240833	0.00085350	26.50	3.241	85.89	84.74
	60	28.00	29	-2.0	8.92	28.50	0.050	0.000008341	0.012240833	0.00060925	26.00	3.241	84.27	83.14
	120	28.00	29	-2.0	8.92	28.50	0.035	0.000008341	0.012240833	0.00043080	26.00	3.241	84.27	83.14
	240	27.50	29	-2.0	9.09	28.00	0.025	0.000008341	0.012240833	0.00030746	25.50	3.241	82.65	81.54
	480	27.50	32	-2.0	9.09	28.00	0.018	0.000007821	0.011853101	0.00021052	25.50	3.241	82.65	81.54
	1440	27.22	32	-2.0	9.18	27.72	0.010	0.000007821	0.011853101	0.000122179	25.22	3.241	81.73	80.63

Lab Manager

Checked By