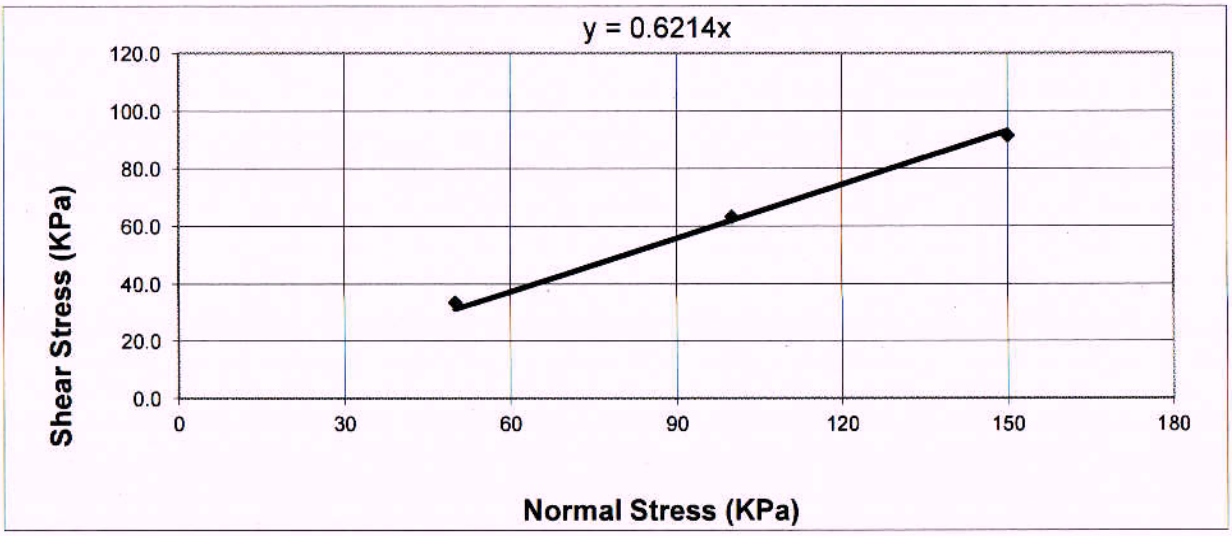
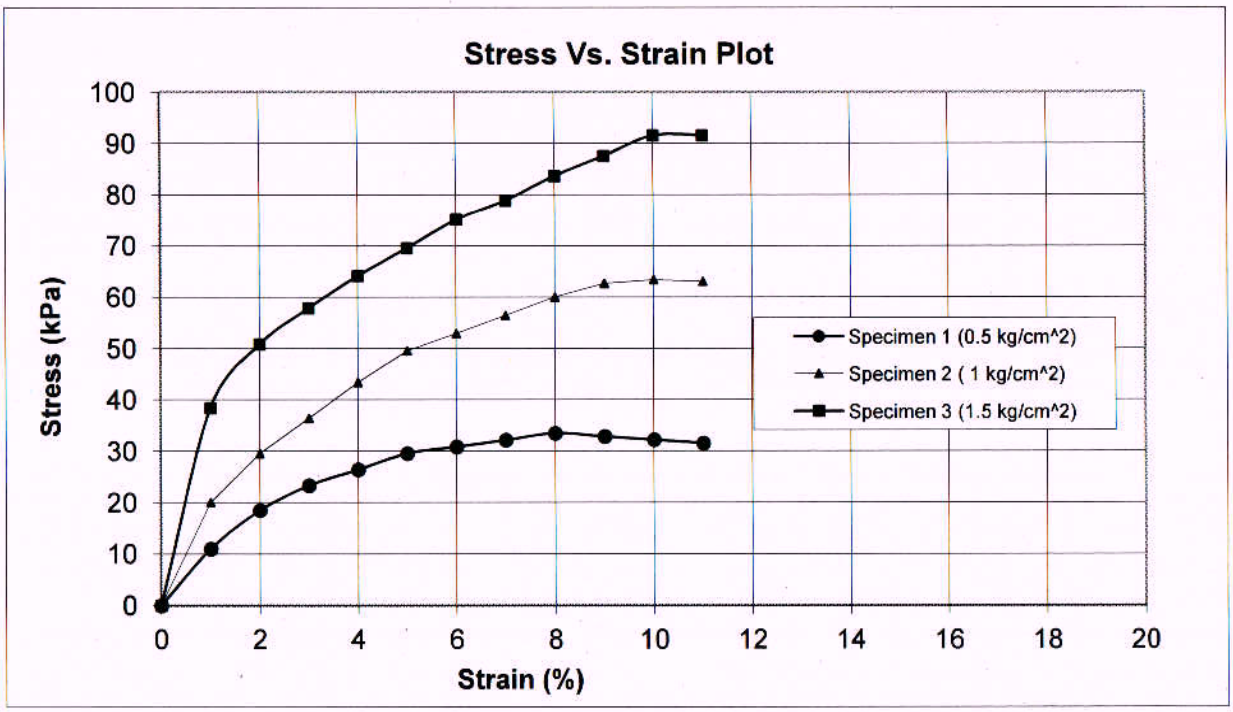
XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.68	c =	0.0 kPa
Brownish Silty SAND (SM)		ϕ =	31.8 °

BH No: 1	Chainage 27820	Sample No.: SPT-8	Depth (m): 12.00
Site Ref: Meerut			Job No : 1342
			Test Report No: XPL/2015-16/02

Tested by:	Checked by:	Authorised Signatory:
Rajan Singh		
Date: 30/5/015	Date: 18/8/15	Date: 18/8/15

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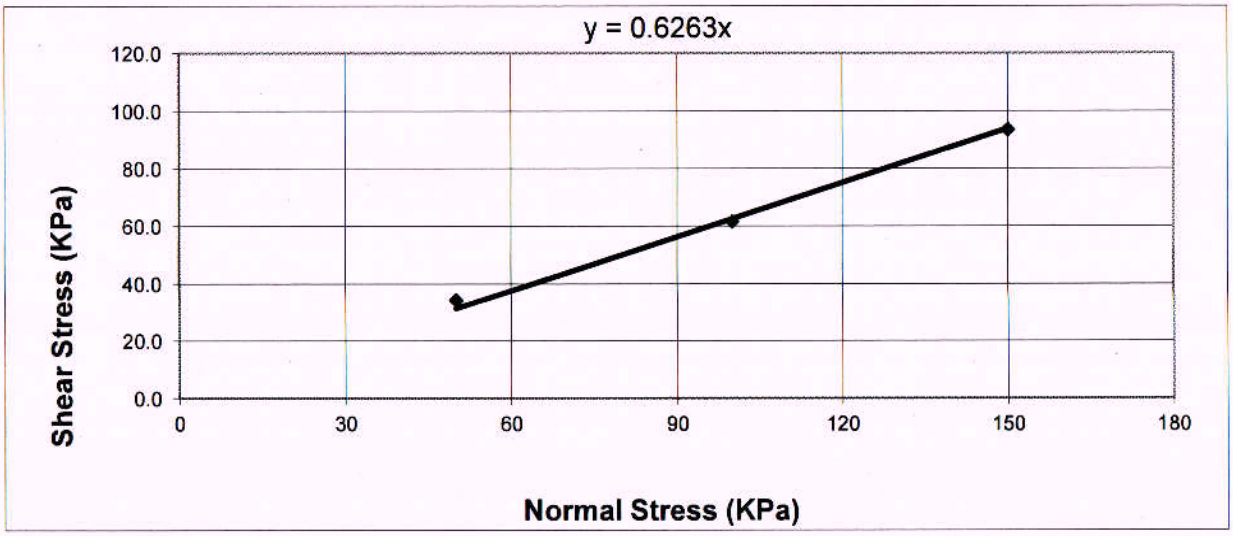
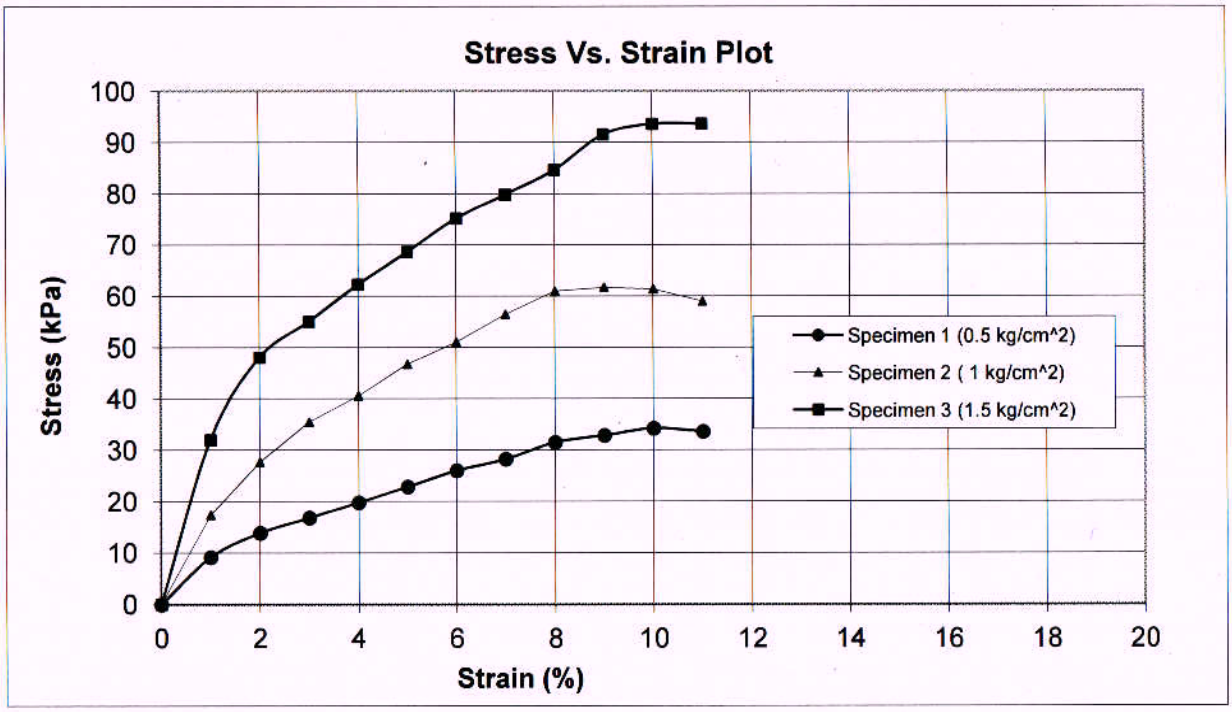
XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO.T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.76	c =	0.0 kPa
Brownish Sandy SILT(ML)		ϕ =	32.0 °

BH No: 1	Chainage 28660	Sample No.: SPT-2	Depth (m): 3.00
Site Ref: Meerut			Job No : 1342
			Test Report No: XPL/2015-16/02

Tested by: Rajan Singh — **Date:** 30/5/2015

Checked by: — **Date:** 18/8/15

Authorised Signatory: — **Date:** 18/8/15

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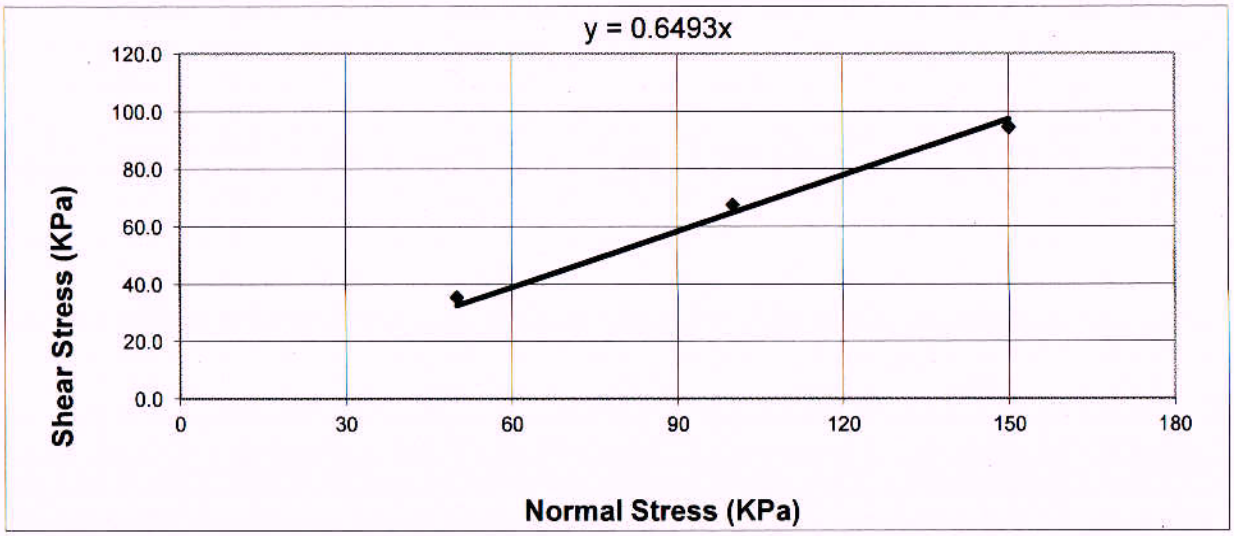
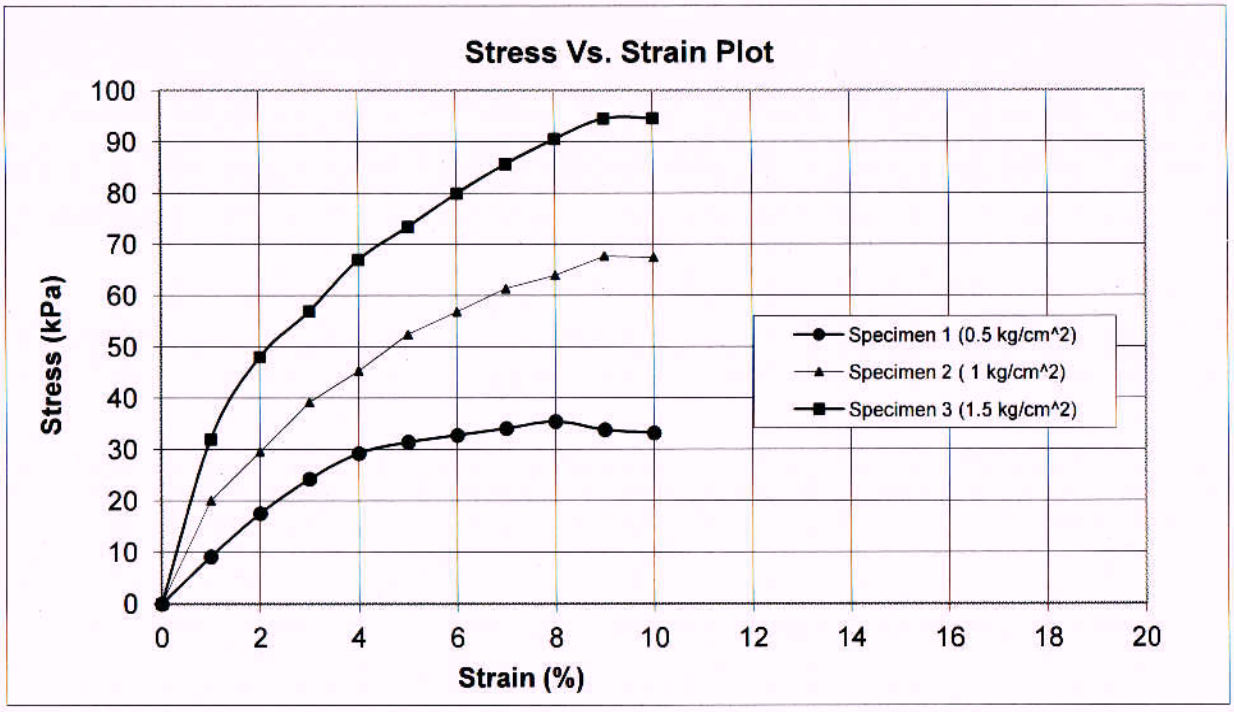
XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.72	c =	0.0 kPa
Poorly Graded SAND (SP-SM)		ϕ =	33.0 °

BH No: 1	Chainage 28660	Sample No.: SPT-7	Depth (m): 10.50
Site Ref:	**Meerut**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: Rajan Singh
Date: 30/5/2015

Checked by:
18/8/15
Date:

Authorised Signatory:
Date: 18/8/15

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XPLORER CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

UNCONFINED COMPRESSIVE STRENGTH TEST

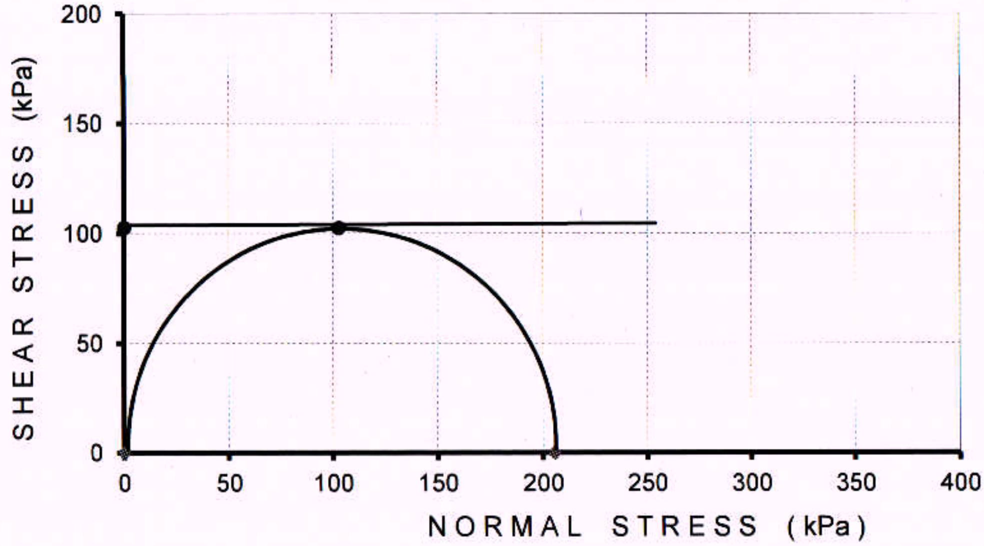
IS: 2720 , PART-10

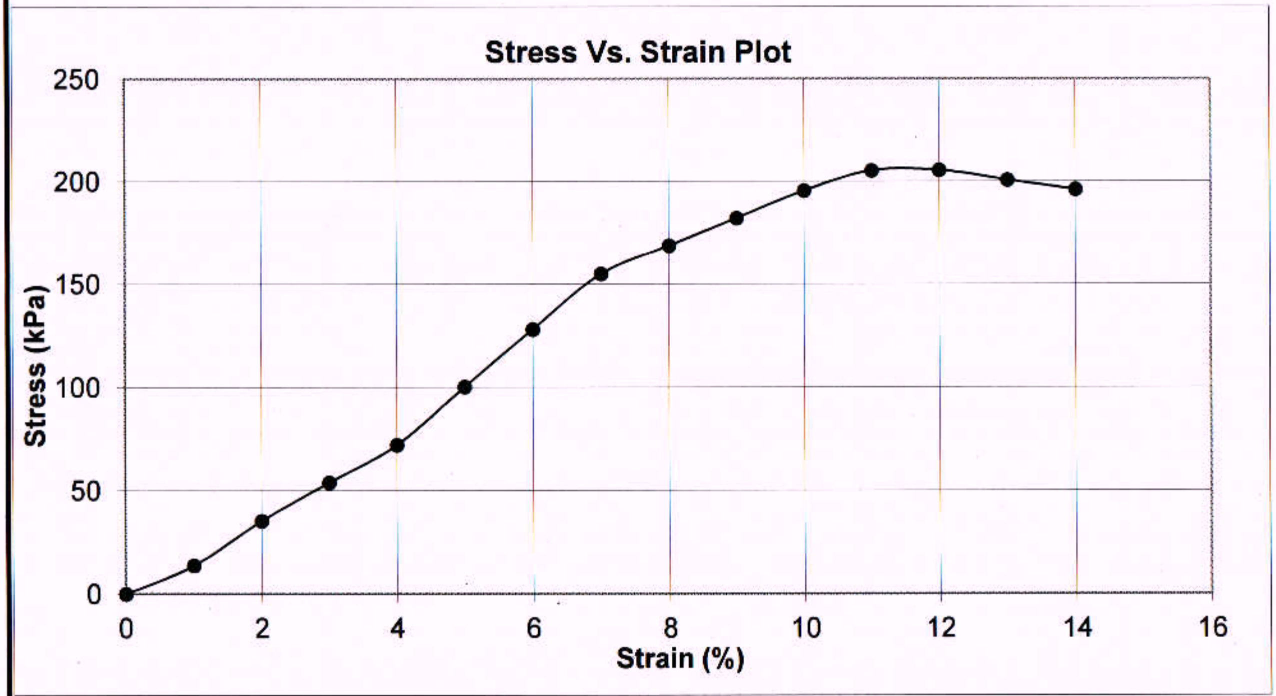
Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.96	1.67	17.60

c value kPa	ϕ Value Degree
103	0.0

Type of Sample : Undisturbed

Type of Soil : Silty CLAY(CL)





Borehole No: BH-1	Sample No: UDS-2	Depth (m) : 5.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 20/5/15	Checked : 18/8/15 Date:	Authorised Signatory: Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

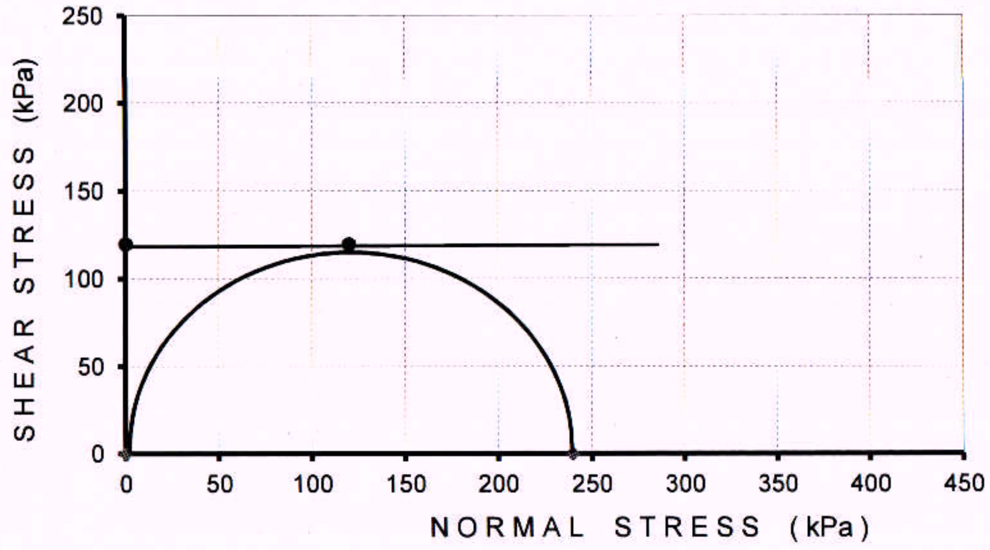
UNCONFINED COMPRESSIVE STRENGTH TEST

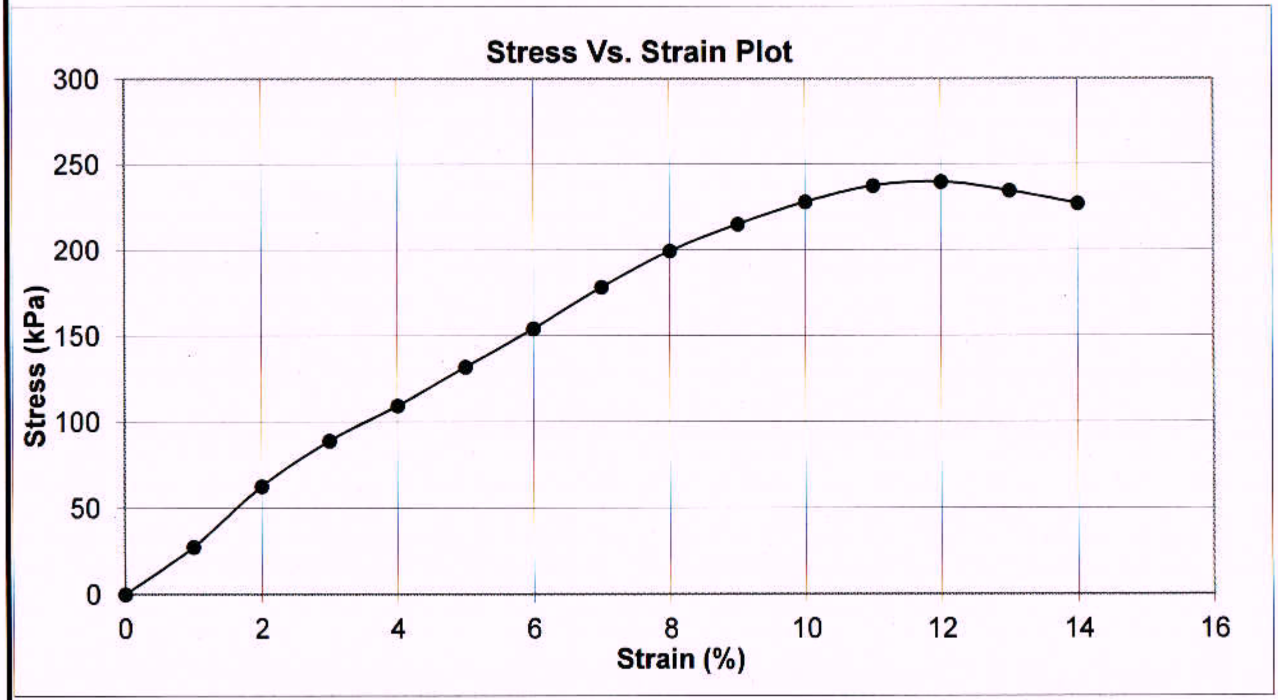
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.01	1.65	22.00

c value kPa	ϕ Value Degree
120	0.0

Type of Sample : Undisturbed
Type of Soil : Silty CLAY(CL)





Borehole No: BH-1	Sample No: UDS-3	Depth (m) : 11.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Bhagwan Date : 20/5/15	Checked : 18/8/15 Date:	Authorised Signatory: Date: 18/8/15

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XPLORER

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

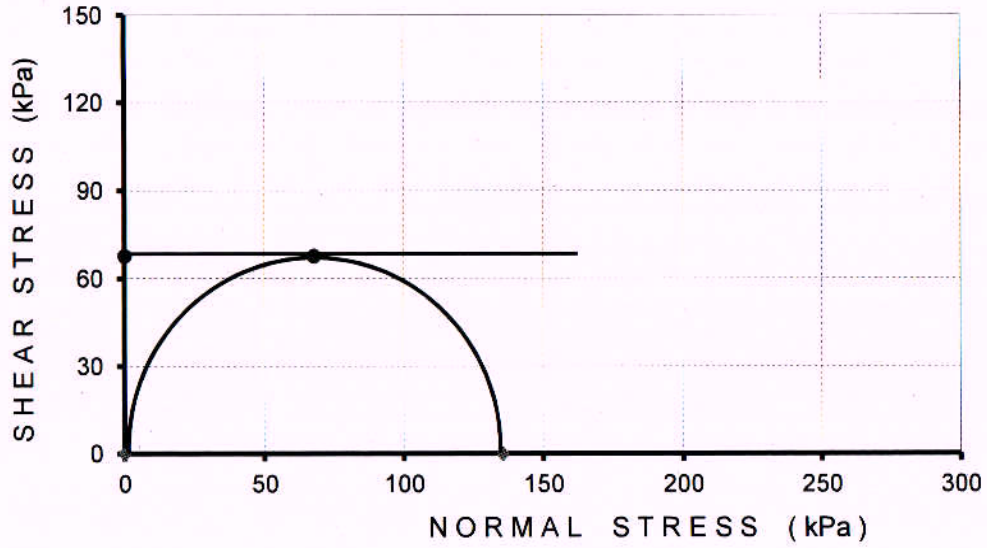
UNCONFINED COMPRESSIVE STRENGTH TEST

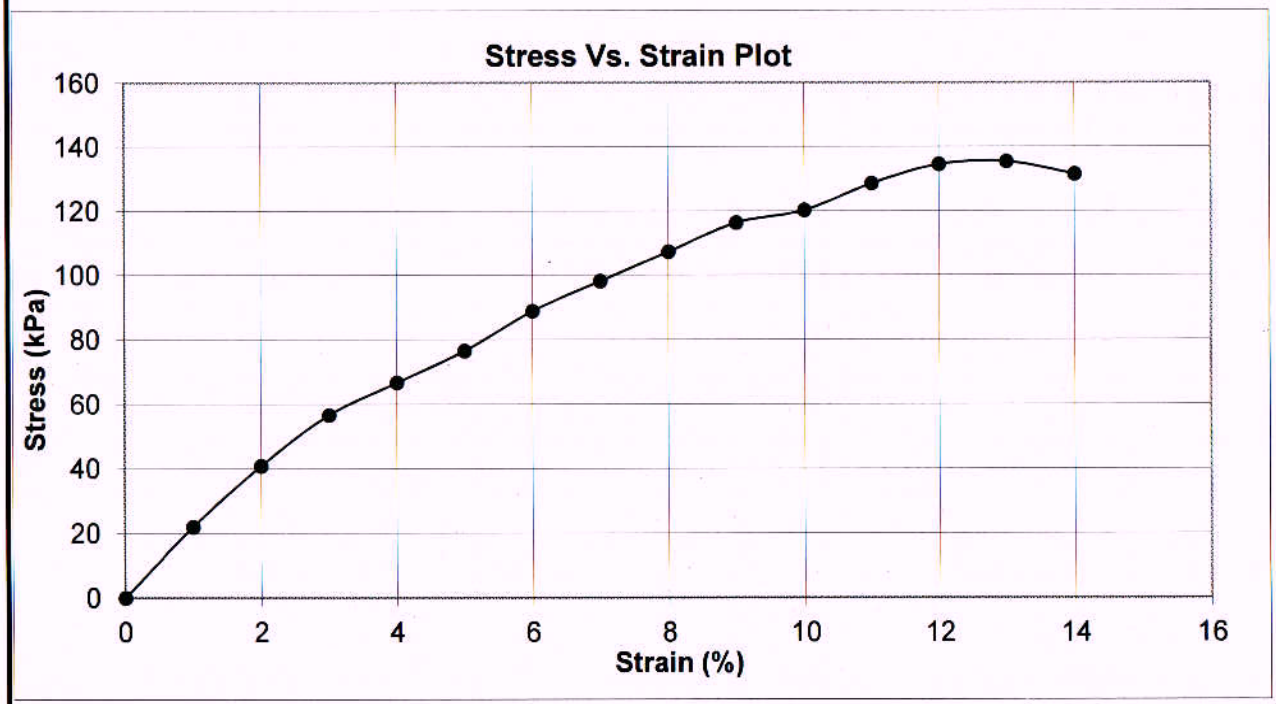
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.96	1.63	20.60

c value kPa	ϕ Value Degree
68	0.0

Type of Sample : Undisturbed
Type of Soil : Silty CLAY(CL)





Borehole No: BH-2	Sample No: UDS-2	Depth (m) : 5.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Bhopey Date : 20/5/15	Checked : RM Date: 18/8/15	Authorised Signatory: Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

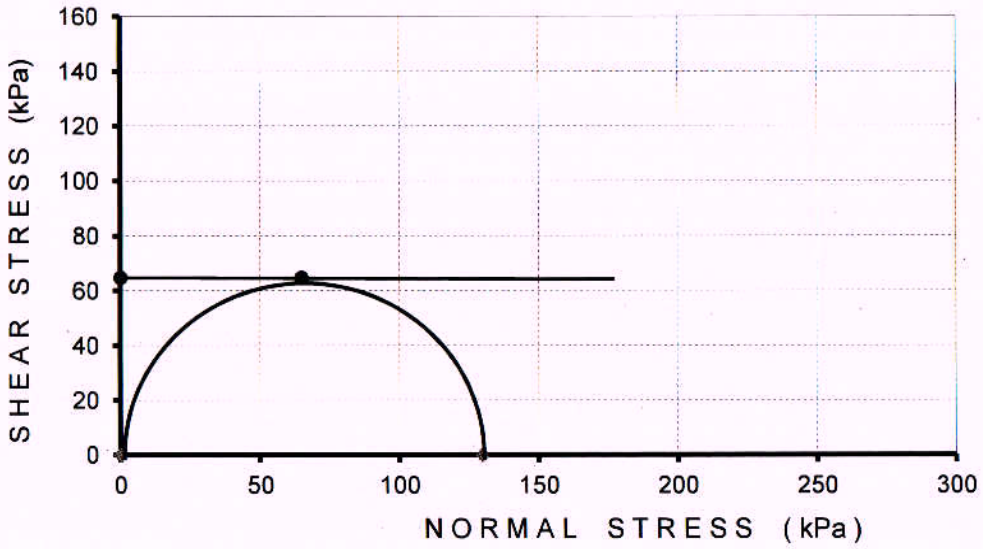
UNCONFINED COMPRESSIVE STRENGTH TEST

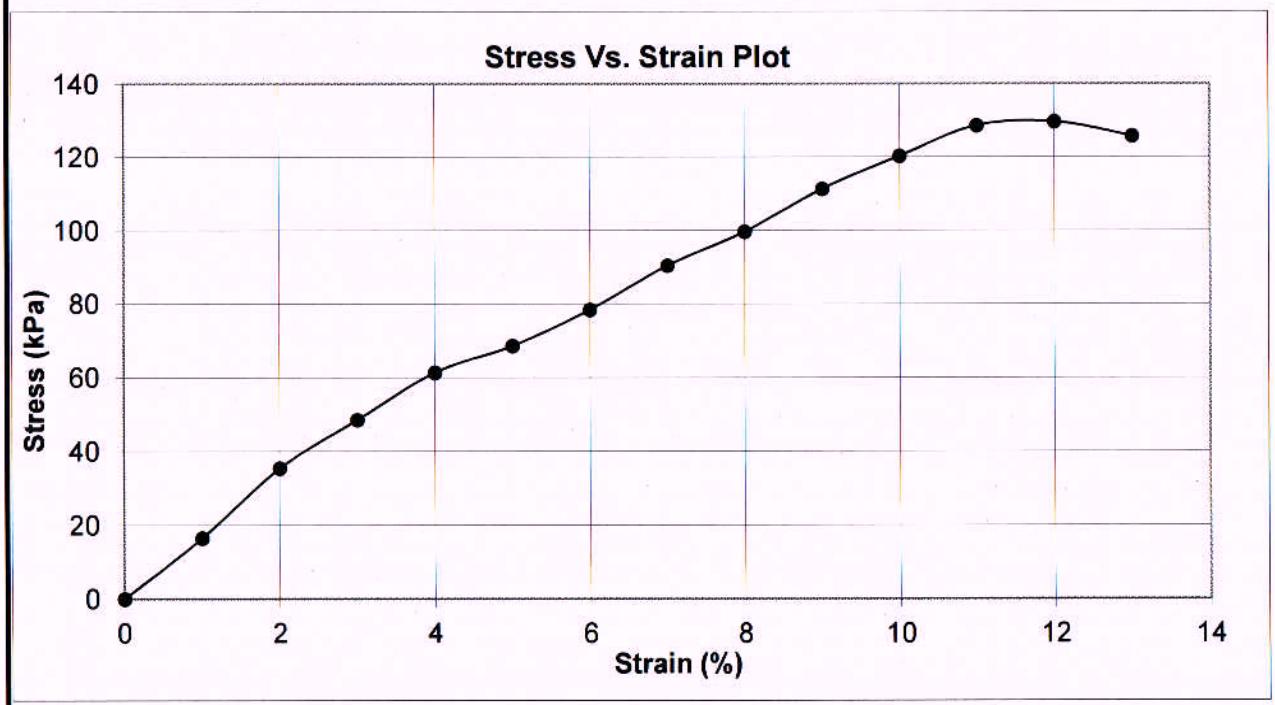
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.89	1.64	15.00

c value kPa	ϕ Value Degree
65	0.0

Type of Sample : Undisturbed
Type of Soil : Silty Clay (CL)





Borehole No: BH-1	Sample No: UDS-1	Depth (m) : 2.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Bhupesh Date : 20/5/15	Checked : RM Date: 18/8/15	Authorised Signatory: Date: 18/8/15

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XPLORER

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

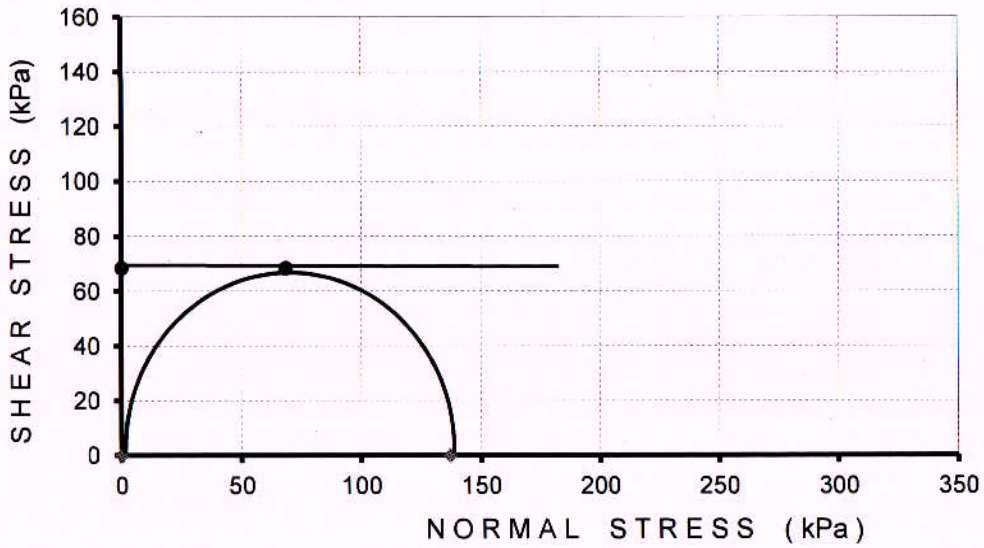
UNCONFINED COMPRESSIVE STRENGTH TEST

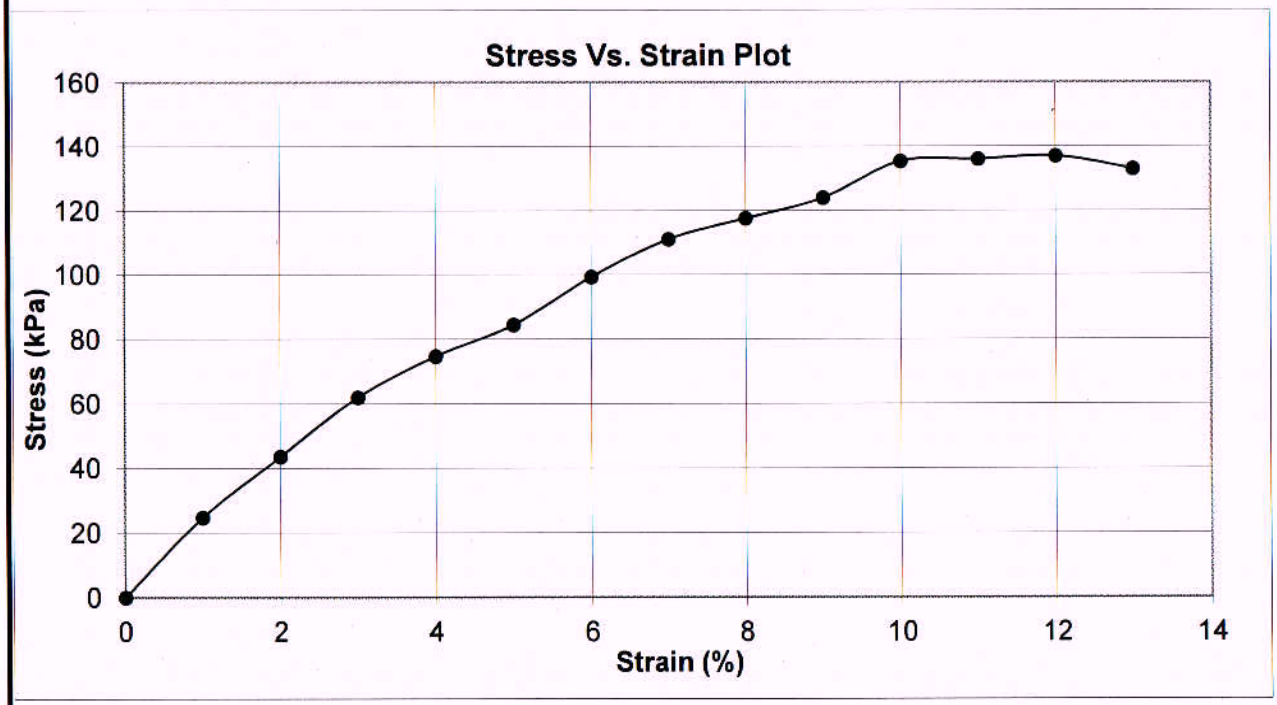
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.96	1.69	15.80

c value kPa	ϕ Value Degree
68	0.0

Type of Sample : Undisturbed
Type of Soil : Silty Clay (CL)





Borehole No: BH-1	Sample No: UDS-2	Depth (m) : 5.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Bhupey Date : 20/5/15	Checked : RKM Date: 18/8/15	Authorised Signatory: Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1078

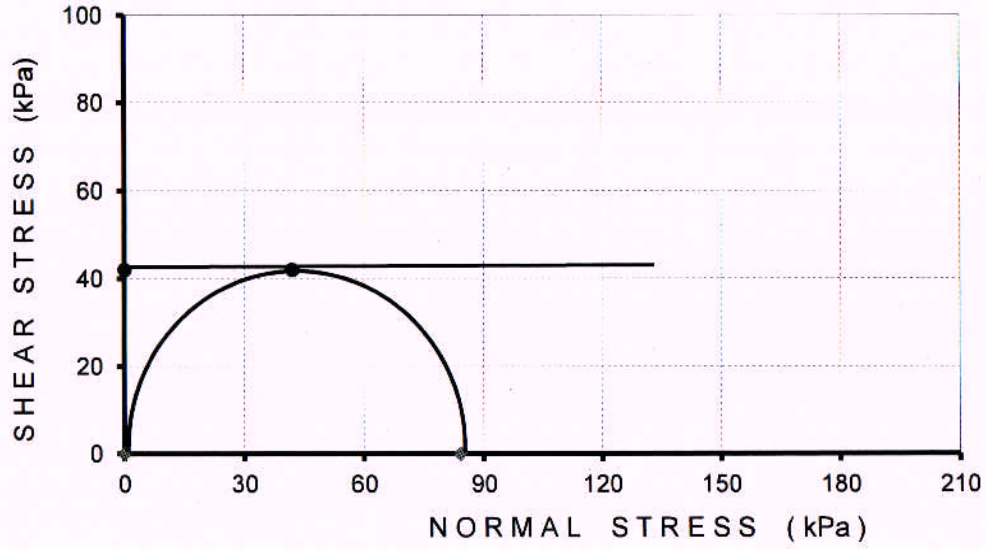
UNCONFINED COMPRESSIVE STRENGTH TEST

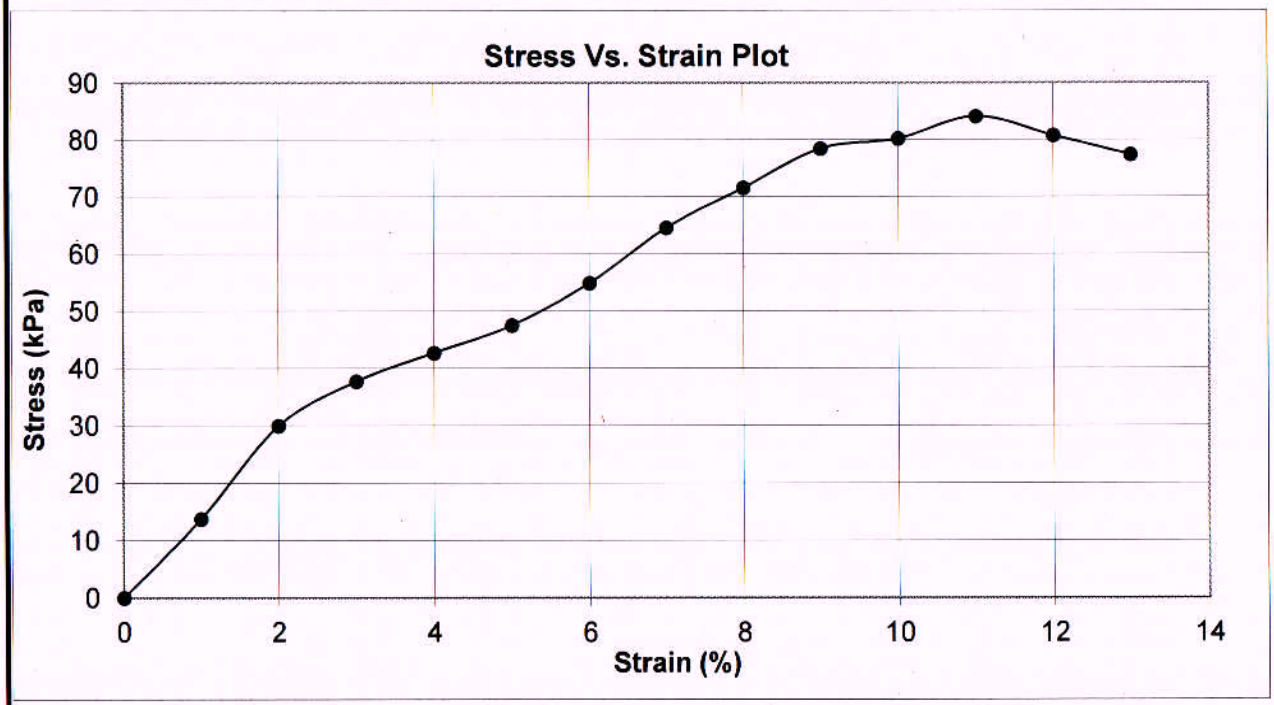
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.93	1.68	14.90

c value kPa	ϕ Value Degree
42	0.0

Type of Sample : Undisturbed
Type of Soil : Silty Clay (CL)





Borehole No: BH-1	Sample No: UDS-1	Depth (m) : 2.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Bhagey Date : 20/5/15	Checked : RA Date: 18/8/15	Authorised Signatory: Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

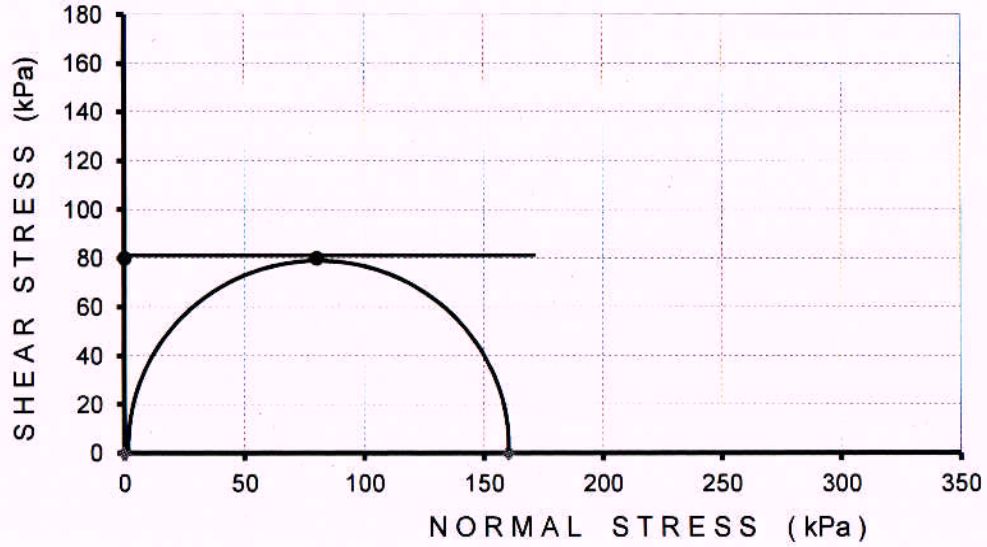
UNCONFINED COMPRESSIVE STRENGTH TEST

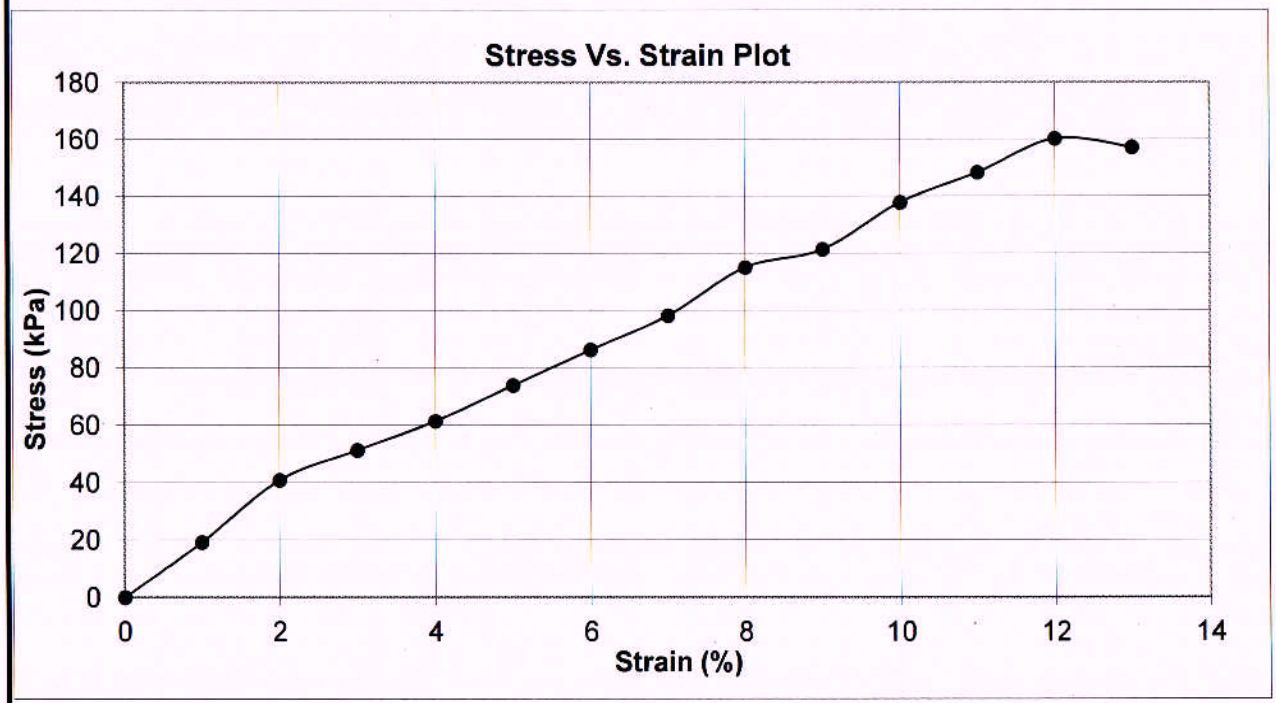
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.00	1.70	17.50

c value kPa	ϕ Value Degree
80	0.0

Type of Sample : Undisturbed
Type of Soil : Sandy SILT (ML)





Borehole No: BH-1	Sample No: UDS-2	Depth (m) : 5.5
XPLORER	Site Ref: Meerut	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Bhojraj Date : 20/5/15	Checked : RM 18/8/15 Date:	Authorised Signatory: Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

ONE DIMENSIONAL TEST RESULTS
I.S. : 2720 : PART XV

Moisture Content Determination

Mass of ring + wet soil (g) =	198.08	Diameter of ring =	60 mm
Mass of ring + dry soil (g) =	181.20	Height of ring =	20 mm
Mass of ring (g) =	81.05	Specific Gravity =	2.69
Mass of dry soil (g) =	100.15	Height of solid, H_s=	13.17 mm
Mass of water (g) =	16.88	Initial void ratio, e_0=	0.5188844
Water content =	16.9 %	Degree of saturation=	87.378213 %

Load, P kPa	Dial Reading	Change in Height (mm)	Specimen Height (mm)	Ht. of Void (mm)	Void Ratio e	t_{90} min	c_v m^2/yr	m_v m^2/MN	k (cm/sec)
0	1500	0	20	6.832	0.51888439				
25	1438	0.124	19.876	6.708	0.50946731	16.00	2.751	0.25	2.16E-05
50	1380	0.116	19.76	6.592	0.50065778	20.25	2.149	0.23	1.58E-05
100	1275	0.21	19.550	6.382	0.485	64	0.665	0.21	4.43E-06
200	1100	0.35	19.2	6.032	0.45812902	25.00	1.643	0.18	9.12E-06
100	1115	-0.03	19.23	6.062	0.46040734				
50	1135	-0.04	19.270	6.102	0.46344511				
100	1157	-0.044	19.314	6.146	0.46678666				
200	1085	0.144	19.17	6.002	0.456				
400	850	0.470	18.7	5.532	0.420	100	0.390	0.12	1.45E-06
800	550	0.600	18.1	4.932	0.375	400	0.091	0.08	2.17E-07
400	585	-0.070	18.17	5.002	0.380				
200	615	-0.060	18.23	5.062	0.384				
100	645	-0.060	18.29	5.122	0.389				

Borehole No: BH-1 Sample No: UDS-1 Depth : 2.50

CH. (Km.):- **28660** Job No : 1342

Test Report No:XPL/2015-16/02

Tested by	Checked by	Authorised Signatory
Date : 30/5/15	Date : 18/8/15	Date : 18/8/15

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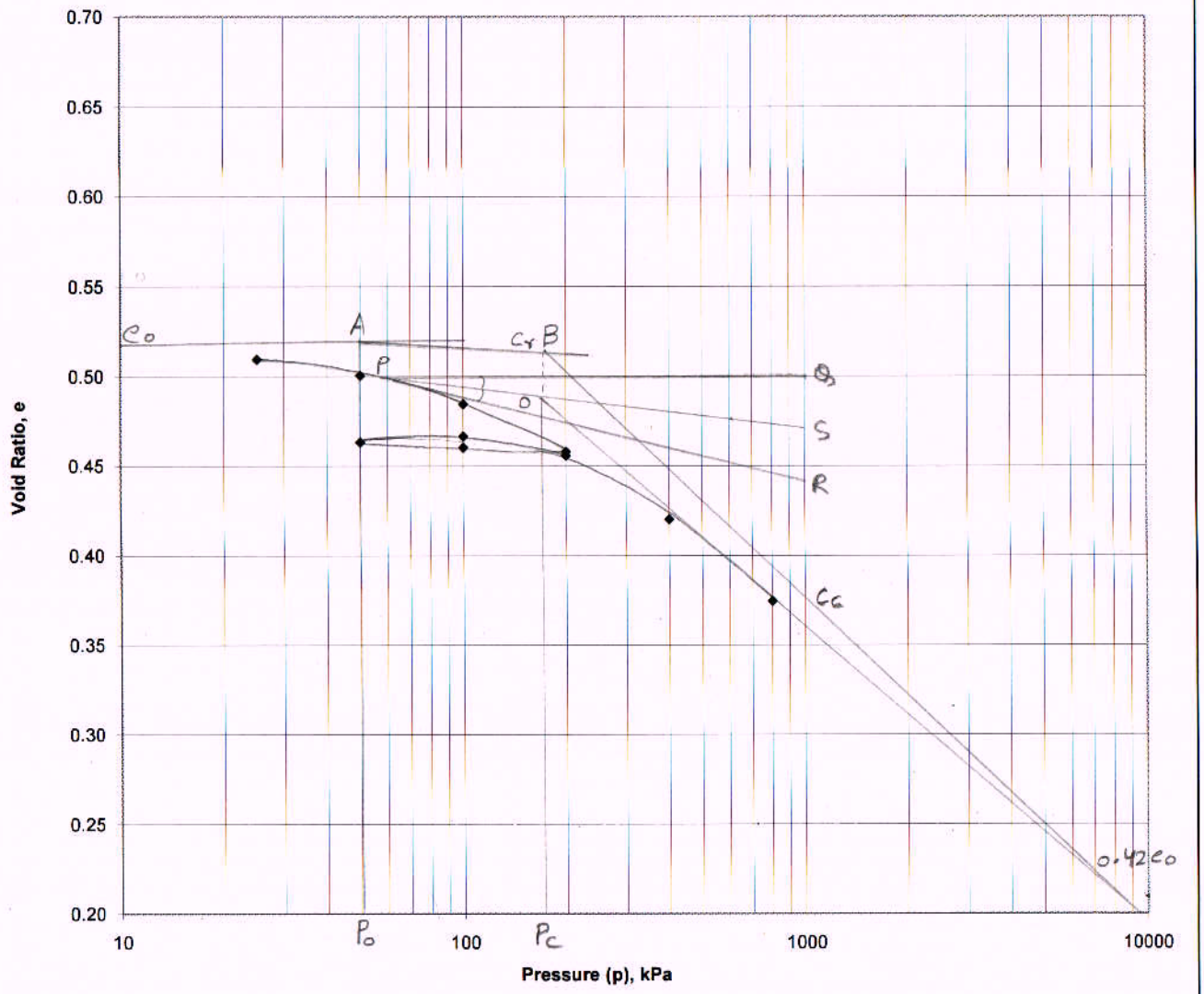
XPLORER

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

e-logp Plot



Compression Index, C_c= 0.174

Pre-consolidation Pressure, p_c= 180 kPa

Re-compression Index , Cr = 0.018

Borehole No: BH-1	Sample No: UDS-1	Depth :	2.5
CH. (Km.):- **28660**		Job No :	1342
		Test Report No:XPL/2015-16/02	

Tested by	Checked by	Authorised Signatory
Bhojrey		
Date : 30/5/15	Date : 18/8/15	Date : 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

ONE DIMENSIONAL TEST RESULTS
I.S. : 2720 : PART XV

Moisture Content Determination

Mass of ring + wet soil (g) =	209.78	Diameter of ring =	60 mm
Mass of ring + dry soil (g) =	189.81	Height of ring =	20 mm
Mass of ring (g) =	104.62	Specific Gravity =	2.64
Mass of dry soil (g) =	85.19	Height of solid, H_s=	11.41 mm
Mass of water (g) =	19.97	Initial void ratio, e_o=	0.752422
Water content =	23.4 %	Degree of saturation=	82.249237 %

Load, P kPa	Dial Reading	Change in Height (mm)	Specimen Height (mm)	Ht. of Void (mm)	Void Ratio e	t_{90} min	c_v m^2/yr	m_v m^2/MN	k (cm/sec)
0	1500	0	20	8.587	0.75242202				
25	1465	0.07	19.93	8.517	0.74628854	81.00	0.546	0.14	2.43E-06
50	1399	0.132	19.798	8.385	0.73472256	36	1.213	0.26	1.02E-05
100	1272	0.254	19.544	8.131	0.712	289	0.147	0.25	1.19E-06
200	1074	0.396	19.148	7.735	0.67776884	144.00	0.284	0.20	1.78E-06
100	1077	-0.006	19.154	7.741	0.67829457				
50	1081	-0.008	19.162	7.749	0.67899554				
100	1125	-0.088	19.250	7.837	0.6867062				
200	1025	0.200	19.05	7.637	0.669				
400	676	0.698	18.352	6.939	0.608	144	0.261	0.17	1.44E-06
800	292	0.768	17.584	6.171	0.541	441	0.078	0.10	2.38E-07
400	697	-0.810	18.394	6.981	0.612				
200	722	-0.050	18.444	7.031	0.616				
100	750	-0.056	18.5	7.087	0.621				

Borehole No: BH-1 Sample No: UDS-2 Depth : 5.50

CH. (Km.):- **27820** Job No : 1342

Test Report No:XPL/2015-16/02

Tested by	Checked by	Authorised Signatory
Bhojraj		
Date : 30/5/15	Date : 18/8/15	Date : 18/8/15

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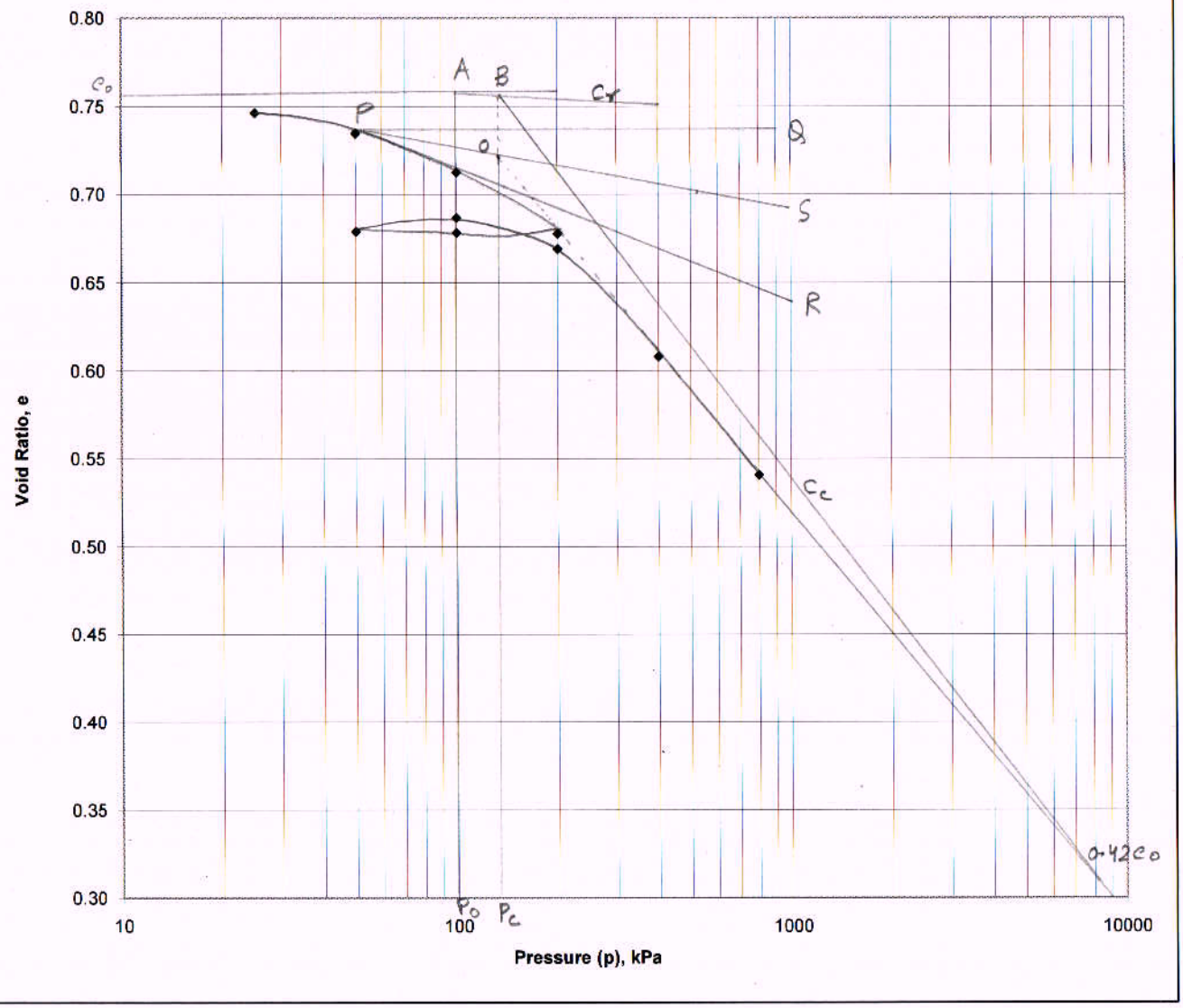
XPLORER

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

e-logp Plot



Compression Index, C_c= 0.238

Pre-consolidation Pressure, p_c= 140 kPa

Re-compression Index , Cr = 0.016

Borehole No: BH-1	Sample No: UDS-2	Depth :	5.5
CH. (Km.):- 27820		Job No :	1342
		Test Report No:XPL/2015-16/02	

Tested by	Checked by	Authorised Signatory
Date : 30/5/15	Date : 18/8/15	Date : 18/8/15

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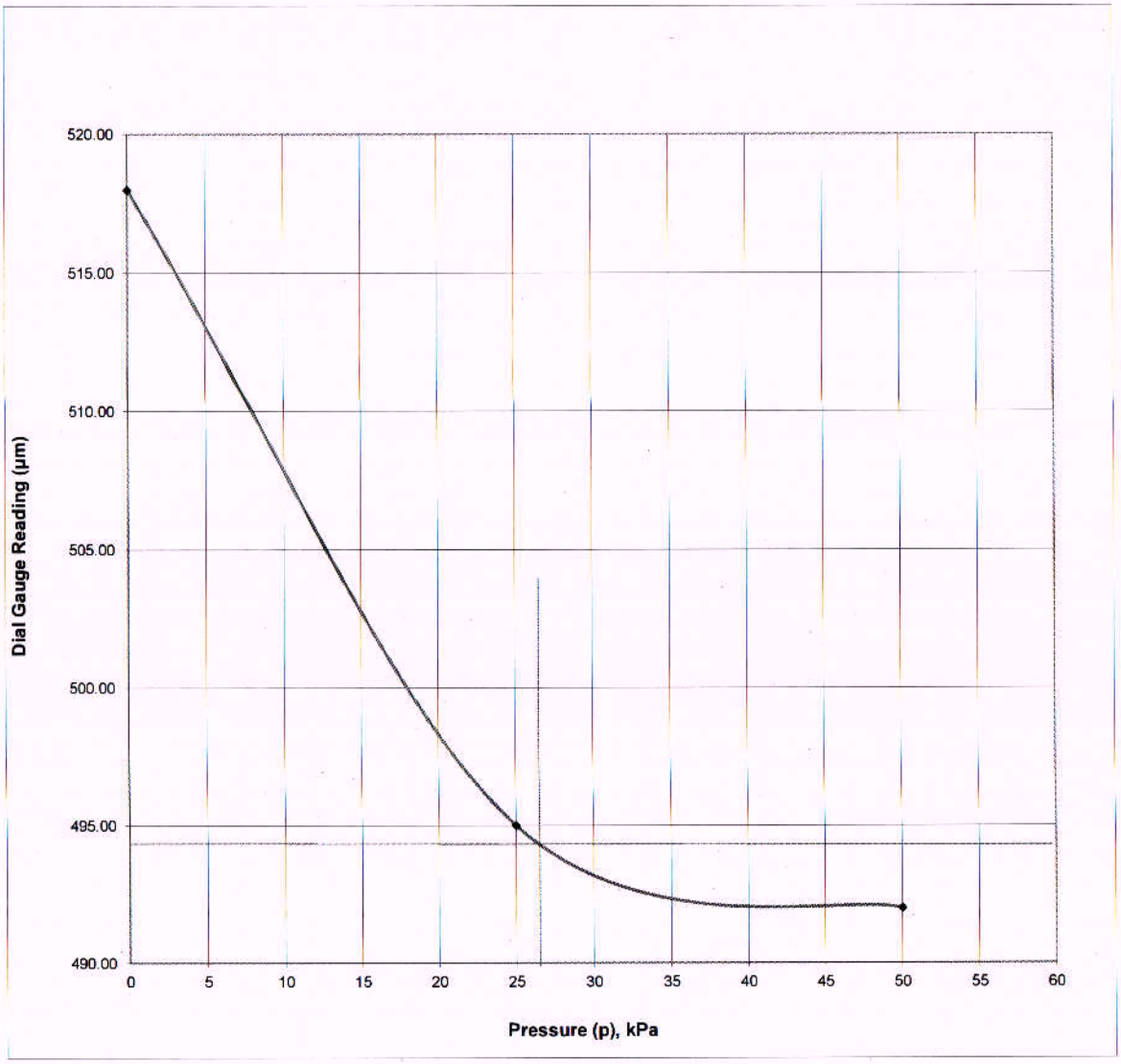
XPLORER
CONSULTANCY SERVICES (P) LTD

SWELLING PRESSURE

IS : 2720 (Part - 41) -1977

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678



Initial Reading before Swelling = 500 µm

Swelling Pressure = 26.8 kPa

Borehole No:	1 27820	Sample No:	UDS-2	Job No :	1342
Site Ref:	Meerut	Depth (m)	5.5	Lab ID :	
				Test Report No. :	XPL/2015-16/02

Tested By:	Checked by :	Authorised Signatory:
Date : 30/5/15	Date : 18/8/15	Date : 18/8/15

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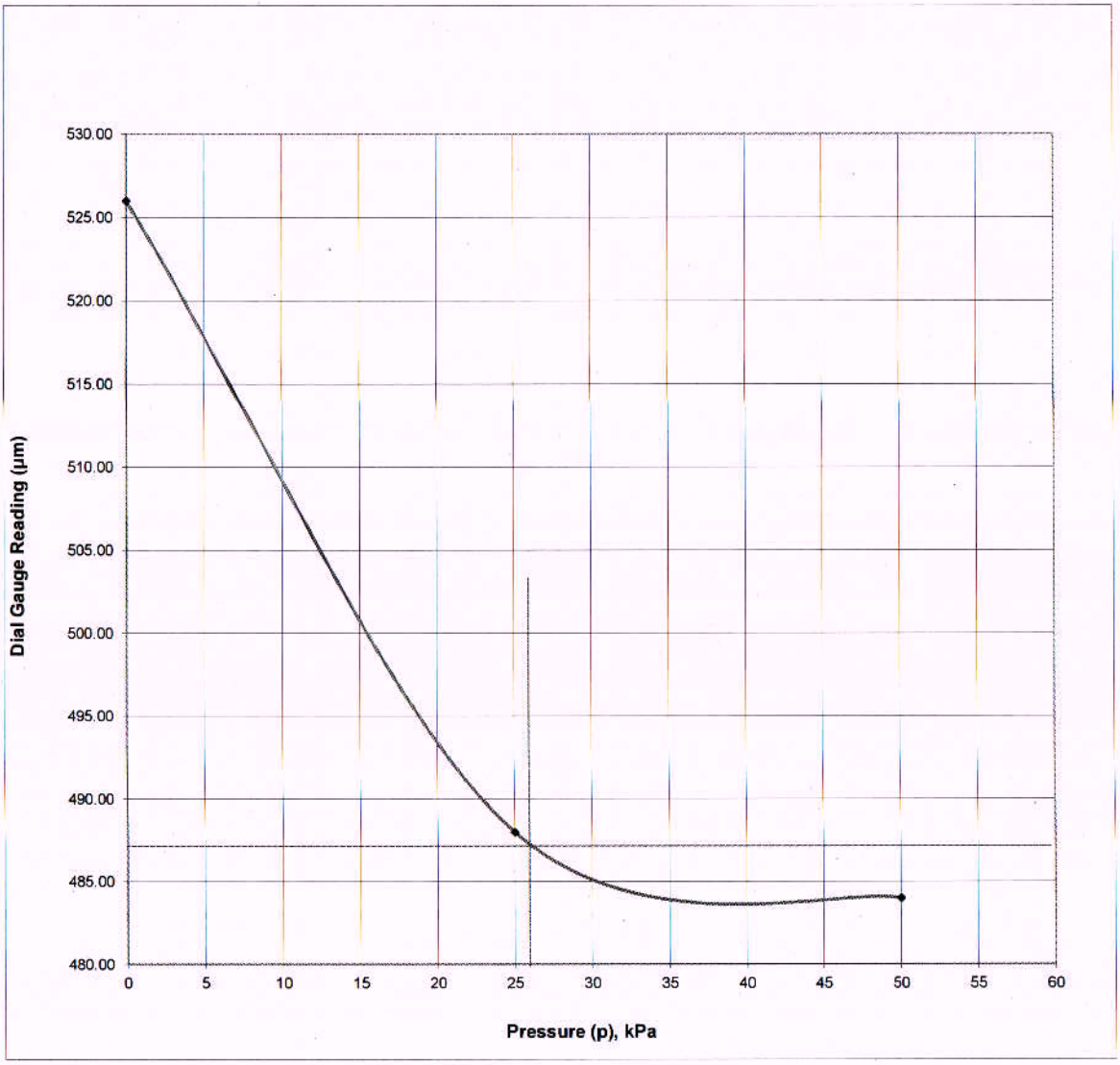
XPLORER
CONSULTANCY SERVICES (P) LTD

SWELLING PRESSURE

IS : 2720 (Part - 41) -1977

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678



Initial Reading before Swelling = 500 µm

Swelling Pressure = 26 kPa

Borehole No:	1 28660	Sample No:	UDS-1	Job No :	1342
Site Ref:	Meerut	Depth (m)	2.5	Lab ID :	
				Test Report No. :	XPL/2015-16/02

Tested By:	Checked by :	Authorised Signatory:
Bhupesh		
Date : 30/5/15	Date : 18/8/15	Date : 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

SHRINKAGE LIMIT
TEST METHOD IS: 2720 (1979)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

CLIENT / CONSULTANT: Sky Lark JOB No.: 1342

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut

SITE REF: Meerut Test Report No.XPL/2015-16/02

Pit No, Chainage.	24920/BH-1	25760/BH-1	26530/BH-1	27290/BH-1	
Sample No.	UDS-1	UDS-1	UDS-1	UDS-1	UDS-2
Depth (m)	2.50	2.50	2.50	2.50	5.50
Balance No.	XPL/EB-05	XPL/EB-05	XPL/EB-05	XPL/EB-05	XPL/EB-05
Soil type	Sandy SILT	Sandy SILT	Sandy SILT	Silty SAND	Silty CLAY
Soil:Undisturbed/Remoulded	Remoulded	Remoulded	Remoulded	Remoulded	Remoulded
Shrinkage limit Apparatus No :	15	14	13	7	8
Wt.of Shrinkage Dish (gm)	44.25	45.43	43.80	35.70	34.93
Wt.of Shrinkage Dish + wet soil pat (gm)	89.78	87.9	88.36	81.57	77.04
Wt.of Shrinkage Dish + dry soil pat (gm)	75.89	75.73	77.90	69.96	63.50
Wt.of water (gm)	13.89	12.17	10.46	11.61	13.54
Wt.of dry soil pat, Wo(gm)	31.64	30.30	34.10	34.26	28.57
Wt of Mercury (Hg)+ Shrinkage Dish	378.5	380.83	360.25	377.05	382.5
Volume of wet soil pat, V (ml)	24.58	24.66	23.27	25.10	25.56
Moisture Content (W%)	43.90	40.17	30.67	33.89	47.39
Wt. of Mercury displaced (Hg)	208.50	221.95	235.60	245.60	214.80
Volume of dry soil pat, Vo (ml)	15.33	16.32	17.32	18.06	15.79
Wt.of Shrinkage Dish+Oven dry specimen(gm)					
Wt.of oven dry specimen, Wos(gm)					
Volume of oven dry specimen, Vos(ml)					
Specific gravity of soil, G					
Remoulded Soil:Ws%	14.68	12.63	13.24	13.3	13.22
Undistirbed Soil:Ws%					

Tested by	Checked by	Authorised Signatory
Date: 20/5/015	Date: 18/8/15	Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

SHRINKAGE LIMIT
TEST METHOD IS: 2720 (1979)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

CLIENT / CONSULTANT: Sky Lark JOB No.: 1342

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut

SITE REF: Meerut Test Report No.XPL/2015-16/02

Pit No, Chainage.	27290/BH-1	27290/BH-2			
Sample No.	UDS-3	UDS-1	UDS-2	UDS-3	
Depth (m)	11.50	2.50	5.50	8.5	
Balance No.	XPL/EB-05	XPL/EB-05	XPL/EB-05	XPL/EB-05	
Soil type	Silty CLAY	Sandy SILT	Silty CLAY	Sandy SILT	
Soil:Undisturbed/Remoulded	Remoulded	Remoulded	Remoulded	Remoulded	
Shrinkage limit Apparatus No :	6	14	1	2	
Wt.of Shrinkage Dish (gm)	37.87	45.26	58.59	60.87	
Wt.of Shrinkage Dish + wet soil pat (gm)	81.06	85.6	103.29	104.95	
Wt.of Shrinkage Dish + dry soil pat (gm)	66.30	73.56	93.05	94.96	
Wt.of water (gm)	14.76	12.04	10.24	9.99	
Wt.of dry soil pat, Wo(gm)	28.43	28.30	34.46	34.09	
Wt of Mercury (Hg)+ Shrinkage Dish	378.5	380.83	360.25	377.05	
Volume of wet soil pat, V (ml)	25.05	24.67	22.18	23.25	
Moisture Content (W%)	51.92	42.54	29.71	29.30	
Wt. of Mercury displaced (Hg)	208.50	221.95	235.60	245.60	
Volume of dry soil pat, Vo (ml)	15.33	16.32	17.32	18.06	
Wt.of Shrinkage Dish+Oven dry specimen(gm)					
Wt.of oven dry specimen, Wos(gm)					
Volume of oven dry specimen, Vos(ml)					
Specific gravity of soil, G					
Remoulded Soil:Ws%	17.74	13.02	15.62	14.1	
Undistirbed Soil:Ws%					

Tested by	Checked by	Authorised Signatory
Date: 20/5/015	Date: 18/8/15	Date: 18/8/15

B-83

XPLORER
CONSULTANCY SERVICES (P) LTD

SHRINKAGE LIMIT
TEST METHOD IS: 2720 (1979)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

CLIENT / CONSULTANT: Sky Lark JOB No.: 1342

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut

SITE REF: Meerut Test Report No.XPL/2015-16/02

Pit No, Chainage.	27820/BH-1		28660/BH-1		
Sample No.	UDS-1	UDS-2	UDS-1	UDS-2	
Depth (m)	2.50	5.50	2.50	5.50	
Balance No.	XPL/EB-05	XPL/EB-05	XPL/EB-05	XPL/EB-05	
Soil type	Silty CLAY	Silty CLAY	Silty CLAY	Sandy SILT	
Soil:Undisturbed/Remoulded	Remoulded	Remoulded	Remoulded	Remoulded	
Shrinkage limit Apparatus No :	12	10	3	4	
Wt.of Shrinkage Dish (gm)	37.56	30.91	60.43	57.82	
Wt.of Shrinkage Dish + wet soil pat (gm)	80.76	75.54	103.04	101.38	
Wt.of Shrinkage Dish + dry soil pat (gm)	66.80	60.88	93.85	91.99	
Wt.of water (gm)	13.96	14.66	9.19	9.39	
Wt.of dry soil pat, Wo(gm)	29.24	29.97	33.42	34.17	
Wt of Mercury (Hg)+ Shrinkage Dish	378.5	380.83	360.25	377.05	
Volume of wet soil pat, V (ml)	25.07	25.73	22.05	23.47	
Moisture Content (W%)	47.74	48.92	27.50	27.48	
Wt. of Mercury displaced (Hg)	208.50	221.95	235.60	245.60	
Volume of dry soil pat, Vo (ml)	15.33	16.32	17.32	18.06	
Wt.of Shrinkage Dish+Oven dry specimen(gm)					
Wt.of oven dry specimen, Wos(gm)					
Volume of oven dry specimen, Vos(ml)					
Specific gravity of soil, G					
Remoulded Soil:Ws%	14.44	17.52	13.37	11.6	
Undistirbed Soil:Ws%					

Tested by	Checked by	Authorised Signatory
Date: 20/5/015	Date: 18/8/15	Date: 18/8/15

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XPLORER

DETERMINATION OF TOTAL SOLUBLE SULPHATE OF SOIL
IS 2720: (PART-27) -1977

CLIENT / CONSULTANT: Sky Lark

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut — **JOB No:** 1342

SITE REF: — **Test Report No:** XPL/2015-16/02

Location :

S. No.	Description of Data	Borehole No. : 24920/BH-1 Sample No : UDS-2 Depth (m): 5.5	Borehole No. : 25760/BH-1 Sample No : UDS-2 Depth (m): 5.5
1	Mass of soil sample taken (gm)	100	100
2	Volume of Distilled water added (ml)	200	200
3	Volume of soil water Extract taken ml	100	100
4	Weight of Empty crucible gm (W_1)	NA	NA
5	Weight of crucible + Barium Sulphate gm (W_2)	No ppt	No ppt
6	Sulphate (as SO_3) gm/l	NIL	NIL

S. No.	Description of Data	Borehole No. : 26530/BH-1 Sample No : UDS-1 Depth (m): 5.5	Borehole No. : 27290/BH-1 Sample No : UDS-2 Depth (m): 0.00-1.25
1	Mass of soil sample taken (gm)	100	100
2	Volume of Distilled water added (ml)	200	200
3	Volume of soil water Extract taken ml	100	100
4	Weight of Empty crucible gm (W_1)	NA	NA
5	Weight of crucible + Barium Sulphate gm (W_2)	No ppt	No ppt
6	Sulphate (as SO3) gm/l	NIL	NIL

Tested By :	Checked By:	Authorised Signatory :
Date: 27/5/015	Date: 18/8/15	Date: 18/8/15

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XPLORER

DETERMINATION OF TOTAL SOLUBLE SULPHATE OF SOIL
IS 2720: (PART-27) -1977

CLIENT / CONSULTANT: Sky Lark	
PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut	**JOB No:** 1342
SITE REF:	**Test Report No:** XPL/2015-16/02
Location :	

S. No.	Description of Data	Borehole No. : 27290/BH-1 Sample No : UDS-3 Depth (m): 11.5	Borehole No. : 27290/BH-2 Sample No : UDS-2 Depth (m): 5.5
1	Mass of soil sample taken (gm)	100	100
2	Volume of Distilled water added (ml)	200	200
3	Volume of soil water Extract taken ml	100	100
4	Weight of Empty crucible gm (W_1)	NA	29.2735
5	Weight of crucible + Barium Sulphate gm (W_2)	No ppt	29.2805
6	Sulphate (as SO_3) gm/l	NIL	0.0240

S. No.	Description of Data	Borehole No. : 27290/BH-2 Sample No : UDS-3 Depth (m): 8.5	Borehole No. : 27820/BH-1 Sample No : UDS-2 Depth (m): 5.5
1	Mass of soil sample taken (gm)	100	100
2	Volume of Distilled water added (ml)	200	200
3	Volume of soil water Extract taken ml	100	100
4	Weight of Empty crucible gm (W_1)	NA	NA
5	Weight of crucible + Barium Sulphate gm (W_2)	No ppt	No ppt
6	Sulphate (as SO3) gm/l	NIL	NIL

Tested By :	Checked By:	Authorised Signatory
Date: 27/5/015	Date: 18/8/15	Date: 18/8/15

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XPLORER

DETERMINATION OF TOTAL SOLUBLE SULPHATE OF SOIL
IS 2720: (PART-27) -1977

CLIENT / CONSULTANT: Sky Lark

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut — **JOB No:** 1342

SITE REF: — **Test Report No:** XPL/2015-16/02

Location :

S. No.	Description of Data	Borehole No. : 28660/BH-1	Borehole No. :
		Sample No : UDS-2	Sample No :
		Depth (m): 5.5	Depth (m):
1	Mass of soil sample taken (gm)	100	
2	Volume of Distilled water added (ml)	200	
3	Volume of soil water Extract taken ml	100	
4	Weight of Empty crucible gm (W_1)	NA	
5	Weight of crucible + Barium Sulphate gm (W_2)	No ppt	
6	Sulphate (as SO_3) gm/l	NIL	

S. No.	Description of Data	Borehole No. :	Borehole No. :
		Sample No :	Sample No :
		Depth (m):	Depth (m):
1	Mass of soil sample taken (gm)		
2	Volume of Distilled water added (ml)		
3	Volume of soil water Extract taken ml		
4	Weight of Empty crucible gm (W_1)		
5	Weight of crucible + Barium Sulphate gm (W_2)		
6	Sulphate (as SO3) gm/l		

Tested By :	Checked By:	Authorised Signatory
Date: 28/5/015	Date: 18/8/15	Date: 18/8/15

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XPLORER
CONSULTANCY SERVICES (P) LTD

DETERMINATION OF TOTAL SOLUBLE CHLORIDE OF SOIL

Vogel"s Text Book of Quantitative Chemical Analysis

CLIENT / CONSULTANT: Sky Lark	**JOB No.: 1342**
PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut	**Test Report No.XPL/2015-16/02**
SITE REF:	

S. No.	Description of Data	Borehole No. : 24920/BH-1	Borehole No. : 25760/ BH-1	Borehole No. : 26530/BH-1
		Sample No : UDS-2	Sample No : UDS-2	Sample No : UDS-2
		Depth (m): 5.5	Depth (m): 5.5	Depth (m): 5.5
1	Mass of soil sample taken (gm)	40	40	40
2	Volume of Distilled water added (ml)	200	200	200
3	Normality of $AgNO_3$	0.014N	0.014N	0.014N
4	Volume of soil water extract taken for titration (ml)	25	25	25
5	Initial burette reading V_1	0	1.4	2.7
6	Final burette reading V_2	1.4	2.7	3.9
7	Chloride (mg/l or ppm), Y	27.80	25.81	23.83
8	Total Chlorides in soil sample (mg/l or ppm)	139.00	129.07	119.15

S. No.	Description of Data	Borehole No. : 27290/BH-1	Borehole No. : 27290/BH-1	Borehole No. : 27290/BH-2
		Sample No : UDS-2	Sample No : UDS-3	Sample No : UDS-2
		Depth (m): 5.5	Depth (m): 11.5	Depth (m): 5.5
1	Mass of soil sample taken (gm)	40	40	40
2	Volume of Distilled water added (ml)	200	200	200
3	Normality of $AgNO_3$	0.014N	0.014N	0.014N
4	Volume of soil water extract taken for titration (ml)	25	25	25
5	Initial burette reading V_1	3.9	5.6	7.0
6	Final burette reading V_2	5.4	7.0	8.2
7	Chloride (mg/l or ppm), Y	29.79	27.80	23.83
8	Total Chlorides in soil sample (mg/l or ppm)	148.93	139.00	119.15

Tested By :	Checked By:	Authorised Signatory
Date: 28/5/015	Date: 18/8/15	Date: 18/8/15

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XPLORER

CONSULTANCY SERVICES (P) LTD.

DETERMINATION OF TOTAL SOLUBLE CHLORIDE OF SOIL

Vogel"s Text Book of Quantitative Chemical Analysis

CLIENT / CONSULTANT: Sky Lark	JOB No.: 1342
PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut	Test Report No.XPL/2015-16/02
SITE REF:	

S. No.	Description of Data	Borehole No. : 27290/BH-2	Borehole No. :27820/ BH-1	Borehole No. : 28660/BH-1
		Sample No : UDS-3	Sample No : UDS-2	Sample No : UDS-2
		Depth (m): 8.5	Depth (m): 5.5	Depth (m): 5.5
1	Mass of soil sample taken (gm)	40	40	40
2	Volume of Distilled water added (ml)	200	200	200
3	Normality of $AgNO_3$	0.014N	0.014N	0.014N
4	Volume of soil water extract taken for titration (ml)	25	25	25
5	Initial burette reading V_1	8.5	9.8	11.1
6	Final burette reading V_2	9.8	11.1	12.3
7	Chloride (mg/l or ppm), Y	25.81	25.81	23.83
8	Total Chlorides in soil sample (mg/l or ppm)	129.07	129.07	119.15

S. No.	Description of Data	Borehole No. :	Borehole No. :	Borehole No. :
		Sample No :	Sample No :	Sample No :
		Depth (m):	Depth (m):	Depth (m):
1	Mass of soil sample taken (gm)			
2	Volume of Distilled water added (ml)			
3	Normality of $AgNO_3$			
4	Volume of soil water extract taken for titration (ml)			
5	Initial burette reading V_1			
6	Final burette reading V_2			
7	Chloride (mg/l or ppm), Y			
8	Total Chlorides in soil sample (mg/l or ppm)			

Tested By :	Checked By:	Authorised Signatory :
Date: 29/5/015	Date: 18/8/15	Date: 18/8/15

B-89

XPLORER
CONSULTANCY SERVICES (P) LTD

DETERMINATION OF pH VALUE OF SOIL

IS 2720: (PART-26) -1987

CLIENT / CONSULTANT: Sky Lark

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut | **JOB No:** 1342

SITE REF: Meerut | **Test Report No:** XPL/2015-16/02

S. No.	Description of Data	Borehole No: 24920/ BH-1	Borehole No: 25760/ BH-1
		Sample No : UDS-2	Sample No : UDS-2
		Depth (m): 5.50	Depth (m): 5.5
1	Soil Identification	Poorly Graded SAND	Poorly Graded SAND
2	Sample Passing Sieve Size (µ)	425	425
3	Wt. of Soil sample Taken (gm)	40	40
4	Volume of Distilled water added (ml)	100	100
5	Temperature (°C)	31.9	32.1
6	pH meter reading	7.69	7.94

S. No.	Description of Data	Borehole No: 26530/BH-1	Borehole No: 27290/BH-1
		Sample No : UDS-2	Sample No : UDS-2
		Depth (m): 5.5	Depth (m): 5.5
1	Soil Identification	Poorly Graded SAND	Silty CLAY
2	Sample Passing Sieve Size (µ)	425	425
3	Wt. of Soil sample Taken (gm)	40	40
4	Volume of Distilled water added (ml)	100	100
5	Temperature (°C)	32	32.2
6	pH meter reading	7.72	7.94

S. No.	Description of Data	Borehole No: 27290/BH-1	Borehole No: 27290/BH-2
		Sample No : UDS-3	Sample No : UDS-2
		Depth (m): 11.5	Depth (m): 5.5
1	Soil Identification	Silty CLAY	Silty CLAY
2	Sample Passing Sieve Size (µ)	425	425
3	Wt. of Soil sample Taken (gm)	40	40
4	Volume of Distilled water added (ml)	100	100
5	Temperature (°C)	32.8	32.8
6	pH meter reading	7.99	7.90

Tested By :	Checked By:	Authorised Signatory :
Date: 29/5/015	Date: 18/8/15	Date: 18/8/15

B-90

XPLORER

DETERMINATION OF pH VALUE OF SOIL

IS 2720: (PART-26) -1987

CLIENT / CONSULTANT: Sky Lark

PROJECT: Geotechnical Investigation Works For Skylark DFCCIL Meerut | **JOB No:** 1342

SITE REF: Meerut | **Test Report No:** XPL/2015-16/02

S. No.	Description of Data	Borehole No: 27920/ BH-2	Borehole No: 27820/ BH-1
		Sample No : UDS-3	Sample No : UDS-2
		Depth (m): 8.50	Depth (m): 5.5
1	Soil Identification	Sandy SILT	Silty CLAY
2	Sample Passing Sieve Size (μ)	425	425
3	Wt. of Soil sample Taken (gm)	40	40
4	Volume of Distilled water added (ml)	100	100
5	Temperature (°C)	32.7	33.2
6	pH meter reading	7.87	8.00

S. No.	Description of Data	Borehole No: 28660/BH-1	Borehole No:
		Sample No : UDS-2	Sample No :
		Depth (m): 5.5	Depth (m):
1	Soil Identification	Sandy SILT	
2	Sample Passing Sieve Size (μ)	425	
3	Wt. of Soil sample Taken (gm)	40	
4	Volume of Distilled water added (ml)	100	
5	Temperature (°C)	32	
6	pH meter reading	7.72	

S. No.	Description of Data	Borehole No:	Borehole No:
		Sample No :	Sample No :
		Depth (m):	Depth (m):
1	Soil Identification		
2	Sample Passing Sieve Size (μ)		
3	Wt. of Soil sample Taken (gm)		
4	Volume of Distilled water added (ml)		
5	Temperature (°C)		
6	pH meter reading		

Tested By :	Checked By:	Authorised Signatory :
Date: 29/9/015	Date: 18/8/15	Date 18/8/15

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XPLORER

SUMMARY OF LABORATORY TEST RESULTS

CLIENT: SKYLARK DESIGNER AND ENGINEERS (P) LTD — Job No. 1342

PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — Test Report No: XPL/2015-16/02

Sl. NO.	CHAINAGE/ BH NO	Type of Sample	Depth (m)	Moisture Content %	Bulk Density g/cc	Dry Density g/cc	Grain size Analysis (%)				Atterberg Limit (%)			IS Classification	Permeability (cm/sec)	Specific Gravity	U.S.I. %	Modified Proctor		Standard Proctor		CBR Test %	Direct Shear Test		Triaxial Test		Consolidation Test				Swelling Pressure kpa	Shrinkage Limit %	Chemical Analysis *		
							Gravel	Sand	Fines		LL	PL	PI					OMC%	MDD Mg/m³	OMC%	MDD Mg/m³		c kPa	Φ Degree	UU C kPa	UC C kPa	e_0	C_c	P_c	C_r			Sulphates mg/l	Chlorides mg/l	pH Value
									Silt	Clay																									
1	28+880 / BH-1	UDS-1	2.00	15.80	1.99	1.72	13	27	47	13	29	NP		ML		2.61									56.0								NIL	168.79	7.61
2		UDS-2	5.00	29.70	1.76	1.35	1	14	77	8				ML										30.6											
3		UDS-4	11.00	28.20	1.85	1.45	7	8	71	14	31	NP		ML		2.60									53.0										
4		SPT-11	16.50				0	98	2					SP																					
5		SPT-14	21.00				0	99	1					SP		2.68								33.3											
6		SPT-18	27.00				0	98	2					SP										34.0											
7	30+780 / BH-1	UDS-1	2.00	14.60	2.00	1.75	4	21	58	17	28	NP		ML											70.0								NIL	129.07	7.68
8		UDS-2	5.00	21.50	2.08	1.71	1	5	78	16	32	NP		MI		2.66									108.0										
9		SPT-6	9.00				0	32	66	2				ML										32.4											
10		SPT-8	12.00				0	60	40	0				SM										33.6											
11	33+050/ BH-1	UDS-1	2.00	16.80	1.94	1.66	2	16	70	12	29	NP		ML											87.0								NIL	148.93	7.31
12		SPT-4	6.00				0	96	4					SP		2.63								34.2											
13		SPT-8	12.00				1	97	2					SP																					
14		SPT-11	16.50				0	97	3					SP		2.73								34.0											
15		SPT-14	21.00				0	95	5					SW-SM																					
16		SPT-18	27.00				0	99	1					SP										35.0											
17	34+986 / BH-1	UDS-1	2.00	15.30	2.01	1.75	0	96	4					SP										27.6											
18		SPT-5	7.50				0	97	3					SP		2.60								30.7											
19		SPT-8	12.00				0	98	2					SP																					
20		SPT-12	18.00				1	95	4					SP		2.60								32.7											
21		SPT-16	24.00				2	96	2					SP																					
22		SPT-19	28.50				0	94	6					SW-SM										34.3											

Remark * Not in NABL Scope
* NP - Non Plastic

Checked by: — Date: 22/2/16

Authorised Signatory: — Date: 22/2/16

XPLORER

SUMMARY OF LABORATORY TEST RESULTS

CLIENT: SKYLARK DESIGNER AND ENGINEERS (P) LTD — Job No. 1342

PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — Test Report No: XPL/2015-16/02

SL.NO.	CHAINAGE/ BH NO	Type of Sample	Depth (m)	Moisture Content %	Bulk Density g/cc	Dry Density g/cc	Grain size Analysis (%)				Atterberg Limit (%)			IS Classification	Permeability (cm/sec)	Specific Gravity	F.S.I. %	Modified Proctor		Standard Proctor		CBR Test %	Direct Shear Test		Triaxial Test		Consolidation Test				Swelling Pressure kpa	Shrinkage Limit %	Chemical Analysis *		
							Gravel	Sand	Fines		LL	PL	PI					OMC%	MDD Mg/m³	OMC%	MDD Mg/m³		c kPa	Φ Degree	UU C kPa	CC kPa	e_0	C_c	P_c	C_r			Sulphates mg/l	Chlorides mg/l	pH Value
									Silt	Clay																									
23	34+986 / BH-2	UDS-1	2.00	25.20	2.04	1.63	16	42	31	11	26	NP		SM										31.8									NIL	119.15	7.33
24		SPT-5	7.50				0	99	1					SP		2.59																		
25		SPT-8	12.00				0	5	71	24	33	23	10	CL																					
26		SPT-11	16.50				0	98	2					SP		2.59								33.3											
27		SPT-14	21.00				0	98	2					SP																					
28		SPT-18	27.00				0	98	2					SP										35.0											
29	35+549/ BH-1	UDS-1	2.00	12.60	2.07	1.84	0	73	24	3				SM										30.0									NIL	129.07	7.25
30		SPT-5	7.50				0	96	4					SP		2.59								32.0											
31		SPT-8	12.00				0	98	2					SP																					
32		SPT-12	18.00				3	5	73	19	31	26	5	ML		2.61								32.6											
33		SPT-16	24.00				0	99	1					SP																					
34		SPT-19	28.50				0	98	2					SP										33.2											
35	35+549/ BH-2	SPT-1	1.50				0	46	50	4				ML										30.1									NIL	139.00	7.30
36		SPT-5	7.50				0	98	2					SP		2.65								33.1											
37		SPT-8	12.00				0	99	1					SP																					
38		SPT-12	18.00				1	97	2					SP		2.65								34.5											
39		SPT-16	24.00				1	96	3					SP																					
40		SPT-19	28.50				0	96	4					SP										34.7											

578

Remark * Not in NABL Scope
* NP - Non Plastic

Checked by: RAM — Date: 22/2/16

Authorised Signatory: — Date: 22/2/16

XPLORER

SUMMARY OF LABORATORY TEST RESULTS

CLIENT: SKYLARK DESIGNER AND ENGINEERS (P) LTD — Job No. 1342

PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — Test Report No XPL/2015-16/02

SL.NO.	CHAINAGE/ BH NO.	Type of Sample	Depth (m)	Moisture Content %	Bulk Density g/cc	Dry Density g/cc	Grain size Analysis (%)				Atterberg Limit (%)			IS Classification	Permeability (cm/sec)	Specific Gravity	F.S.I. %	Modified Proctor		Standard Proctor		CBR Test %	Direct Shear Test		Triaxial Test		Consolidation Test				Swelling Pressure kpa	Shrinkage Limit %	Chemical Analysis *		
							Gravel	Sand	Fines		LL	PL	PI					OMC%	MDD Mg/m³	OMC%	MDD Mg/m³		c kPa	Φ Degree	UU C kPa	UC C kPa	e_0	C_c	P_c	C_v			Sulphates mg/l	Chlorides mg/l	pH Value
									Silt	Clay																									
41	97+160/ BH-1	UDS-1	3.00	21.90	1.98	1.62	0	58	31	11				SM										31.3									NIL	139.00	7.20
42		SPT-4	6.00				1	87	12					SW-SM										33.7											
43		SPT-6	9.00				2	80	18					SM										33.3											
44		SPT-8	12.00				0	95	5					SW-SM										34.3											
45	385+580/ BH-1	UDS-1	3.00	22.30	1.95	1.59	0	68	29	3				SM										29.8											
46		SPT-5	7.50				0	98	2					SP		2.63								32.0									NIL	129.07	7.26
47		SPT-9	13.50				0	97	3					SP										34.0											
48		SPT-12	18.00				3	14	67	16	28	NP		ML		2.67																			
49		SPT-16	24.00				0	96	4					SP										33.3											
50		SPT-20	30.00				0	96	4					SP																					
51	393+420/ BH-1	SPT-1	1.50				0	96	4					SP										31.7											
52		SPT-4	6.00				3	6	79	12	29	NP		ML		2.59								33.5									NIL	129.07	7.43
53		SPT-8	12.00				0	97	3					SP										33.0											
54		SPT-12	18.00				0	7	72	21	33	20	13	CL		2.64																			
55		SPT-16	24.00				0	96	4					SP																					
56		SPT-19	28.50				0	100	0					SP										34.7											

Remark * Not in NABL Scope
* NP - Non Plastic

Checked by: Date: 22/2/16

Authorised Signatory: Date 22/2/16

XPLORER

MOISTURE CONTENT & DENSITY TEST OF SOIL

IS: 2720-1973(Part-II) (Reaffirmed 2007)

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — JOB NO: 1342

SITE REF: Hapur - Meerut Section — Test Report No: XPL/2015-16/02

MOISTURE CONTENT	**28+880**			**30+780**	
Borehole No./Pit no.	BH-1			BH-1	
Sample No.	UDS-1	UDS-2	UDS-4	UDS-1	UDS-2
Depth (m)	2.00	5.00	11.00	2.00	5.00
Oven No.	XPL/OV-2	XPL/OV-2	XPL/OV-2	XPL/OV-2	XPL/OV-1
Sample Extruder No.	XPL/SE-1	XPL/SE-1	XPL/SE-1	XPL/SE-1	XPL/SE-1
Balance No.	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06
Soil Type	Sandy SILT	Sandy SILT	Sandy SILT	Sandy SILT	Sandy SILT
Container No.	ST-2	ST-13	ST-76	ST-92	ST-2
Wt.Can. W1,g	23.44	23.83	19.93	23.70	23.45
Wt.Can.+ Wet Soil,(W2),g	69.2	87.14	79.23	62.91	74.36
Wt.Can.+ Dry Soil,(W3),g	62.94	72.65	66.20	57.92	65.36
Wt.Water (W2-W3),g	6.26	14.49	13.03	4.99	9.00
Wt.Dry Soil (W3-W1),g	39.50	48.82	46.27	34.22	41.91
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**15.8**	**29.7**	**28.2**	**14.6**	**21.5**
IN-SITU DENSITY					
Balance No.	XPL/EB-04	XPL/EB-04	XPL/EB-04	XPL/EB-04	XPL/EB-04
Vernier Calliper No.	XPL/VC-1	XPL/VC-1	XPL/VC-1	XPL/VC-1	XPL/VC-1
Steel Tape No.	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1
Container No.	B-350	B-321	B-277	B-83	B-46
Wt. Tube+Soil, g	8505	10356	9169	10594	11435
Wt.of Tube	4912	6629	5529	7404	6867
Dia of Tube, g(Average) cm	10	10	10	9	10
Length of sample, cm	23.0	27.0	25.0	25.0	28.0
Wt Soil (W)	3593	3727	3640	3190	4568
Vol. Soil (V), cm^3	1807	2121	1964	1591	2200
In-Situ Density, g_t =(W/V) g/cm^3	1.99	1.76	1.85	2.00	2.08
Dry Density, γd =[gt/(1+w)] g/cm^3	**1.72**	**1.35**	**1.45**	**1.75**	**1.71**

Tested by	Cheked By	Authorised Signatory
Date: 25/11/16	Date: 22/2/16	Date: 22/2/16

XPLORER

MOISTURE CONTENT & DENSITY TEST OF SOIL

IS: 2720-1973(Part-II) (Reaffirmed 2007)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO: T-1678

PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — JOB NO: 1342

SITE REF: Hapur - Meerut Section — Test Report No: XPL/2015-16/02

MOISTURE CONTENT	**33+050**	**34+986**		**35+549**	**37+360**
Borehole No./Pit no.	BH-1	BH-1	BH-2	BH-1	BH-1
Sample No.	UDS-1	UDS-1	UDS-1	UDS-1	UDS-1
Depth (m)	2.00	5.00	11.00	2.00	2.00
Oven No.	XPL/OV-2	XPL/OV-2	XPL/OV-2	XPL/OV-2	XPL/OV-1
Sample Extruder No.	XPL/SE-1	XPL/SE-1	XPL/SE-1	XPL/SE-1	XPL/SE-1
Balance No.	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06
Soil Type	Sandy SILT	Sandy SILT	Silty SAND	Silty SAND	Silty SAND
Container No.	ST-77	ST-223	ST-143	ST-77	ST-228
Wt.Can. W1,g	21.15	23.58	20.10	21.14	24.26
Wt.Can.+ Wet Soil,(W2),g	75.79	51.5	68.92	55.73	87.64
Wt.Can.+ Dry Soil,(W3),g	67.92	47.80	59.09	51.86	76.26
Wt.Water (W2-W3),g	7.87	3.70	9.83	3.87	11.38
Wt.Dry Soil (W3-W1),g	46.77	24.22	38.99	30.72	52.00
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**16.8**	**15.3**	**25.2**	**12.6**	**21.9**
IN-SITU DENSITY					
Balance No.	XPL/EB-04	XPL/EB-04	XPL/EB-04	XPL/EB-04	XPL/EB-04
Vernier Calliper No.	XPL/VC-1	XPL/VC-1	XPL/VC-1	XPL/VC-1	XPL/VC-1
Steel Tape No.	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1
Container No.	B-207	B-163	B-68	B-401	B-264
Wt. Tube+Soil, g	13360	10054	13690	9523	10432
Wt.of Tube	8790	6852	6959	5400	6232
Dia of Tube, g(Average) cm	10	9	10.5	10.5	10
Length of sample, cm	30.0	25.0	38.0	23.0	27.0
Wt Soil (W)	4570	3202	6731	4123	4200
Vol. Soil (V), cm^3	2357	1591	3292	1992	2121
In-Situ Density, g_t =(W/V) g/cm^3	1.94	2.01	2.04	2.07	1.98
Dry Density, γd =[gt/(1+w)] g/cm^3	**1.66**	**1.75**	**1.63**	**1.84**	**1.62**

Tested by	Cheked By	Authorised Signatory
Date: 25/11/16	Date: 22/2/16	Date: 22/2/16

XPLORER

MOISTURE CONTENT & DENSITY TEST OF SOIL

IS: 2720-1973(Part-II) (Reaffirmed 2007)

NABL ACCREDITATED LABORATORY

CERTIFICATE NO.T-1078

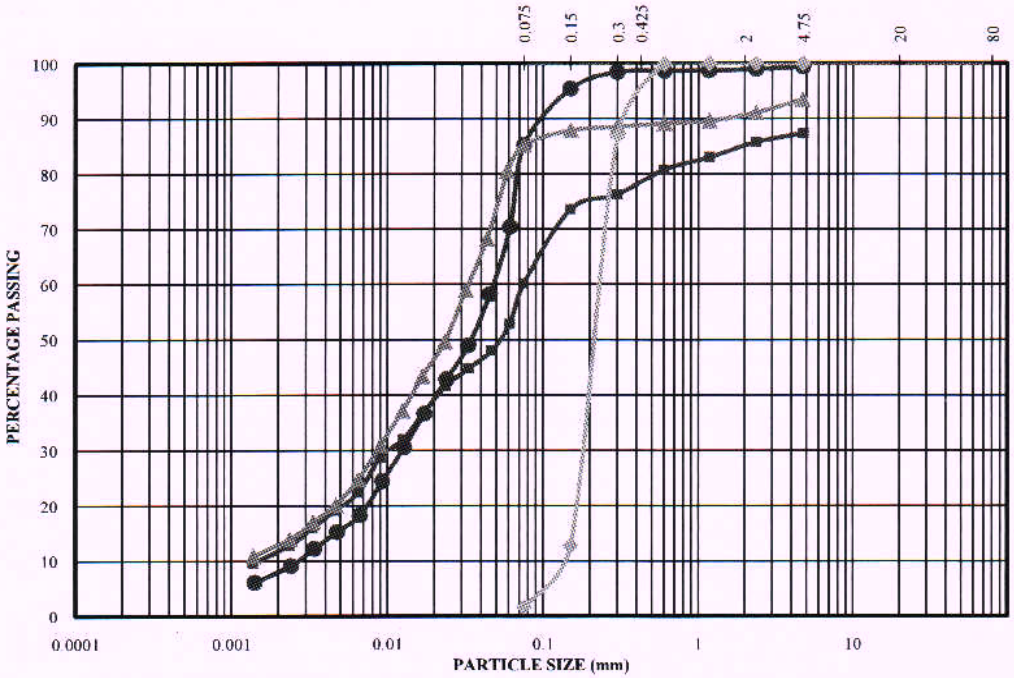
PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — JOB NO: 1342

SITE REF: Hapur - Meerut Section — Test Report No: XPL/2015-16/02

MOISTURE CONTENT	**38+580**				
Borehole No./Pit no.	BH-1				
Sample No.	UDS-1				
Depth (m)	2.00				
Oven No.	XPL/OV-2				
Sample Extruder No.	XPL/SE-1				
Balance No.	XPL/EB-06				
Soil Type	Silty SAND				
Container No.	ST-76				
Wt.Can. W1,g	19.92				
Wt.Can.+ Wet Soil,(W2),g	59.01				
Wt.Can.+ Dry Soil,(W3),g	51.88				
Wt.Water (W2-W3),g	7.13				
Wt.Dry Soil (W3-W1),g	31.96				
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**22.3**				
IN-SITU DENSITY					
Balance No.	XPL/EB-04				
Vernier Calliper No.	XPL/VC-1				
Steel Tape No.	XPL/ST-1				
Container No.	B-85				
Wt. Tube+Soil, g	9862				
Wt.of Tube	6820				
Dia of Tube, g(Average) cm	9.5				
Length of sample, cm	22.0				
Wt Soil (W)	3042				
Vol. Soil (V), cm^3	1560				
In-Situ Density, γ_t =(W/V) g/cm^3	1.95				
Dry Density, γd =[gt/(1+w)] g/cm^3	**1.59**				

Tested by	Cheked By	Authorised Signatory
Date: 26/11/16	Date: 22/2/16	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/28+880	UDS-1	2.00	Brownish Sandy SILT (ML)	13	27	47	13
2		BH-1/28+880	UDS-2	5.00	Brownish Sandy SILT (ML)	1	14	77	8
3		BH-1/28+880	UDS-4	11.00	Brownish Sandy SILT (ML)	7	8	71	14
4		BH-1/28+880	SPT-11	16.50	Poorly Graded SAND(SP)	0	98	2	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 26/1/16	Checked:	Date:	Authorised Signatory	Date: 22/2/16

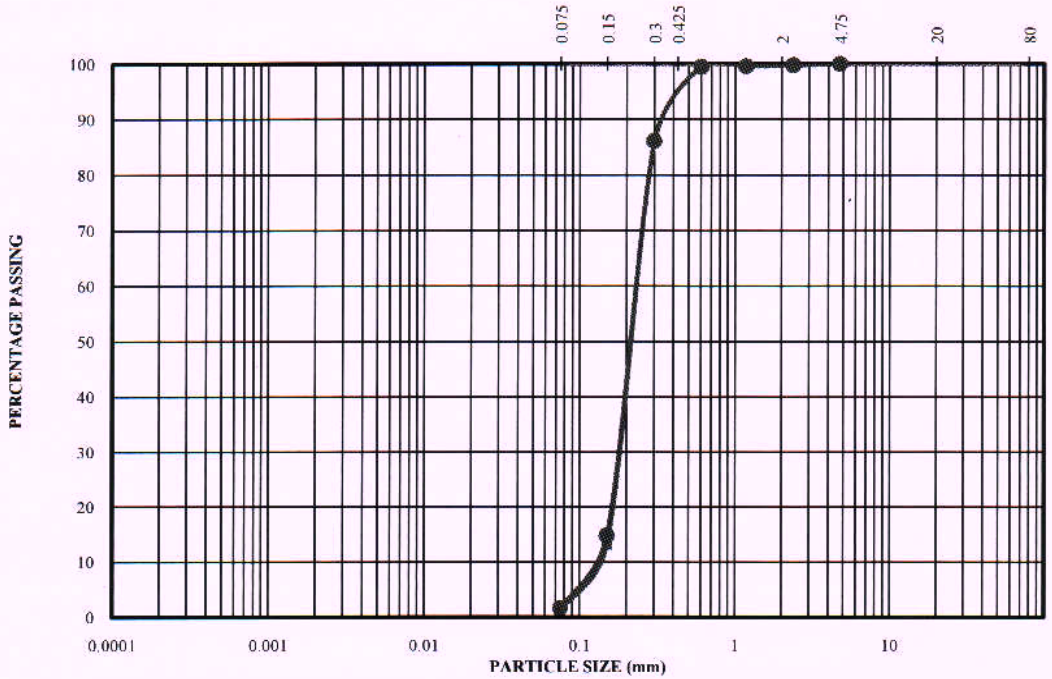
XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY

583

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1	■—■	BH-1/28+880	SPT-14	21.00	Poorly Graded SAND(SP)	0	99	1	
2	●—●	BH-1/28+880	SPT-18	27.00	Poorly Graded SAND(SP)	0	98	2	

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

Site Ref: Hapur - Meerut Section

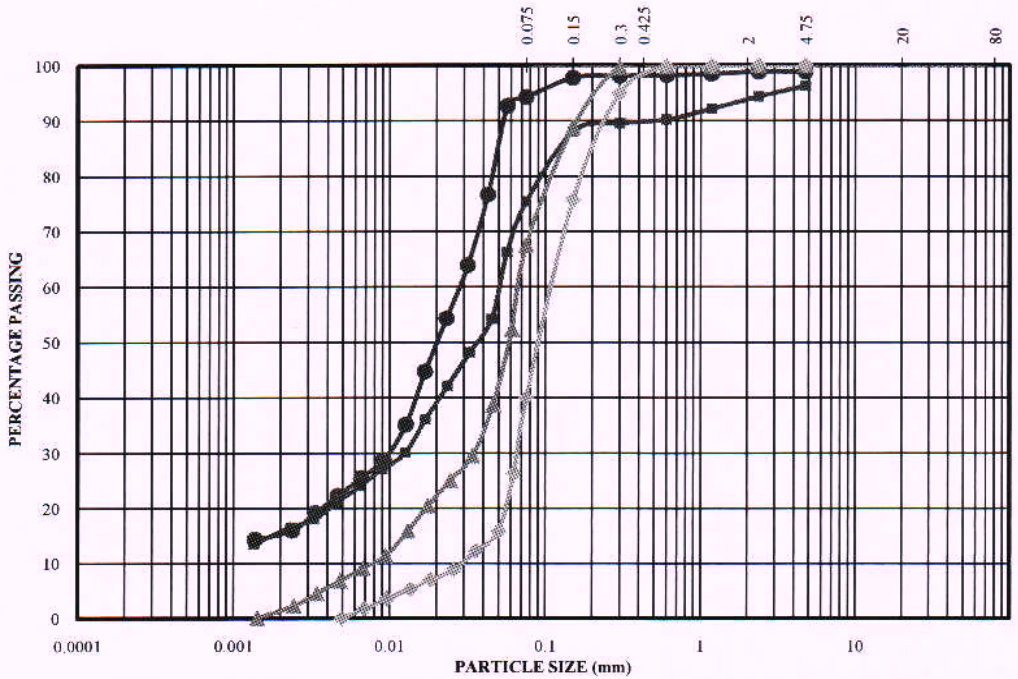
Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 26/11/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

NABL ACCREDITATED LABORATORY CERTIFICATE NO.-1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/30+780	UDS-1	2.00	Brownish Sandy SILT (ML)	4	21	58	17
2		BH-1/30+780	UDS-2	5.00	Brownish Sandy SILT (ML)	1	5	78	16
3		BH-1/30+780	SPT-6	9.00	Brownish Sandy SILT (ML)	0	32	66	2
4		BH-1/30+780	SPT-8	12.00	Brownish Silty SAND (SM)	0	60	40	0

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

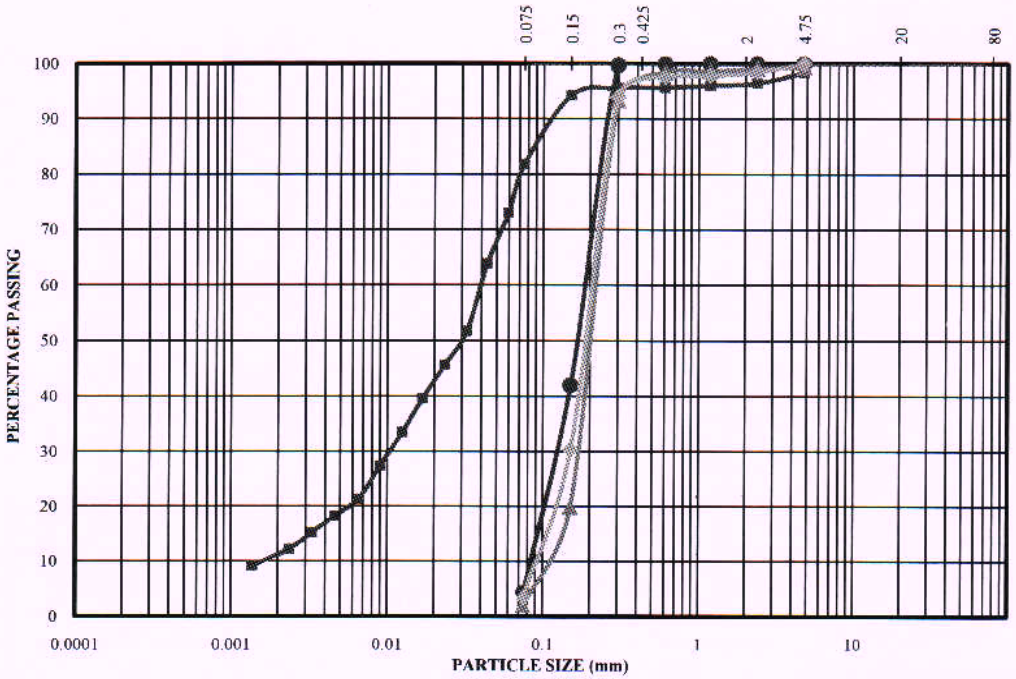
Operator:	Date: 26/11/16	Checked:	Date: 22/12/16	Authorised Signatory	Date: 22/12/16

XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO. 1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	FINE	MEDIUM	COARSE	FINE	COARSE	C
		SAND			GRAVEL		

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/33+050	UDS-1	2.00	Brownish Sandy SILT (ML)	2	16	70	12
2		BH-1/33+050	SPT-4	6.00	Poorly Graded SAND(SP)	0	96	4	
3		BH-1/33+050	SPT-8	12.00	Poorly Graded SAND(SP)	1	97	2	
4		BH-1/33+050	SPT-11	16.50	Poorly Graded SAND(SP)	0	97	3	

XPLORER CONSULTANTS (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

Site Ref: Hapur - Meerut Section

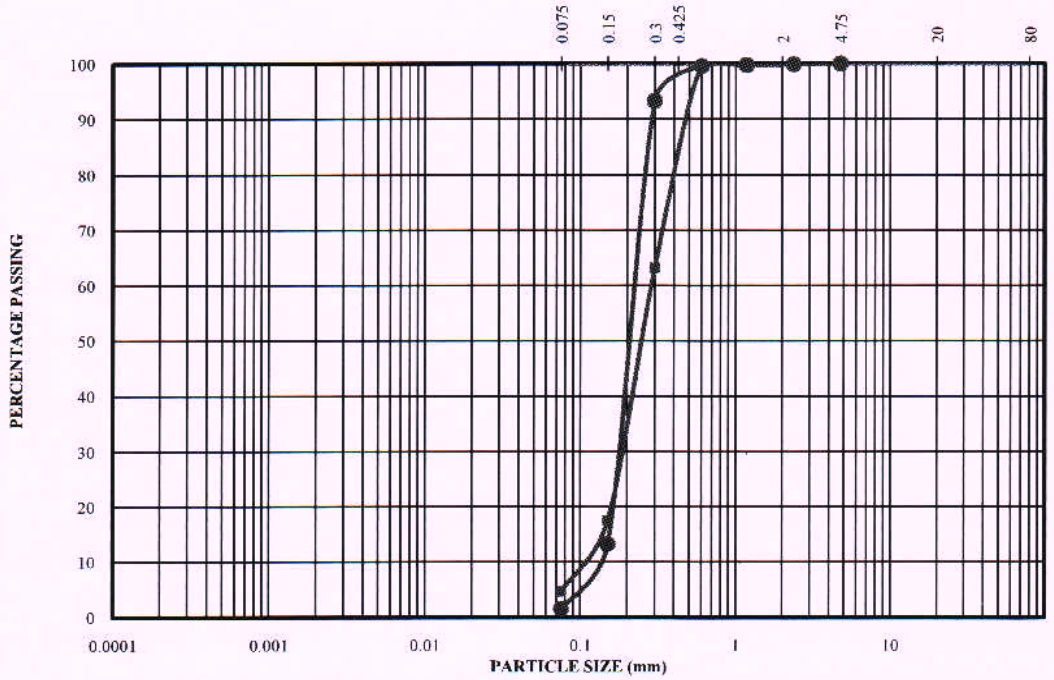
Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 26/11/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

NABL ACCREDITED LABORATORY

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	FINE	MEDIUM	COARSE	FINE	COARSE	C
		SAND			GRAVEL		

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1	■—■	BH-1/33+050	SPT-14	21.00	Brownish Silty SAND (SW-SM)	0	95	5	
2	●—●	BH-1/33+050	SPT-18	27.00	Poorly Graded SAND(SP)	0	99	1	

XPLORER
CONSULTANTS PRIVATE LIMITED

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

Site Ref: Hapur - Meerut Section

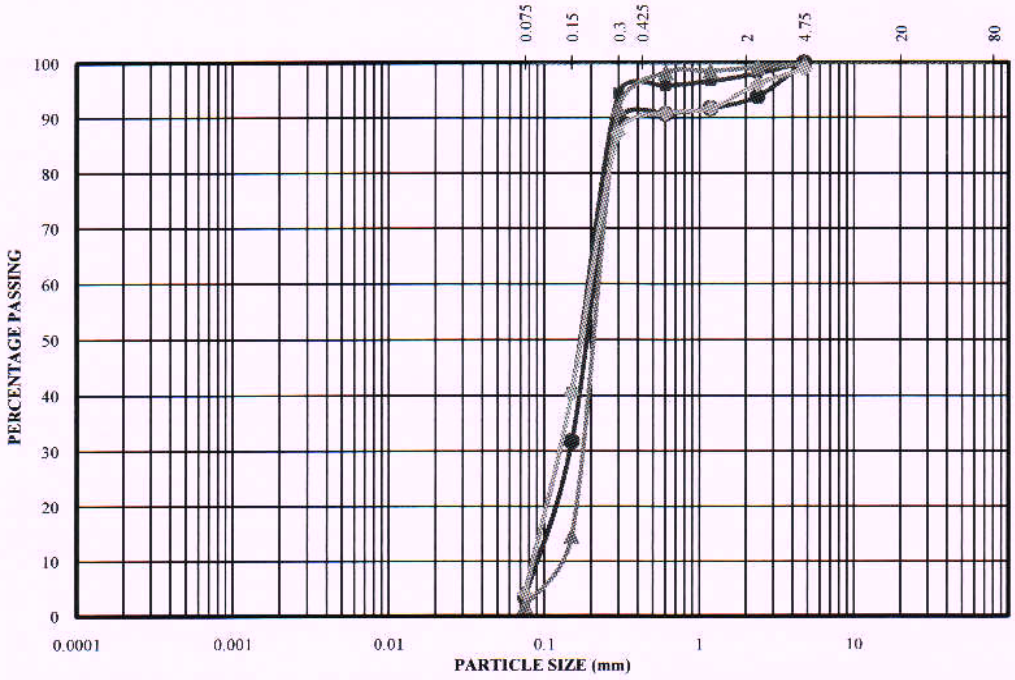
Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 26/11/16	Checked:	Date: 22/12/16	Authorised Signatory	Date: 22/12/16

NABL ACCREDITATED LABORATORY
CERTIFICATE NO.-1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/34+986	UDS-1	2.00	Brownish Sandy SILT (ML)	0	96	4	
2		BH-1/34+986	SPT-5	7.50	Poorly Graded SAND(SP)	0	97	3	
3		BH-1/34+986	SPT-8	12.00	Poorly Graded SAND(SP)	0	98	2	
4		BH-1/34+986	SPT-12	18.00	Poorly Graded SAND(SP)	1	95	4	

XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY
CERTIFICATE NO. T-1658

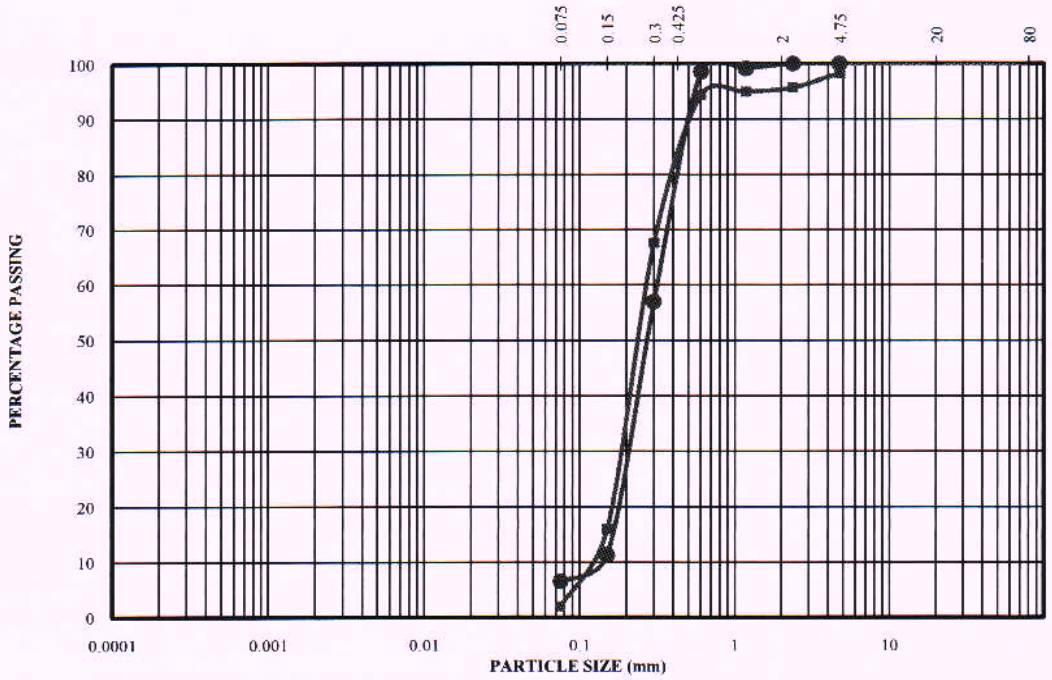
Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 26/1/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1	■—■	BH-1/34+986	SPT-16	24.00	Poorly Graded SAND(SP)	2	96	2	
2	●—●	BH-1/34+986	SPT-19	28.50	Brownish Silty SAND(SW-SM)	0	94	6	

XPLORER CONSULTANTS SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY (CERTIFICATE NO. T-1678)

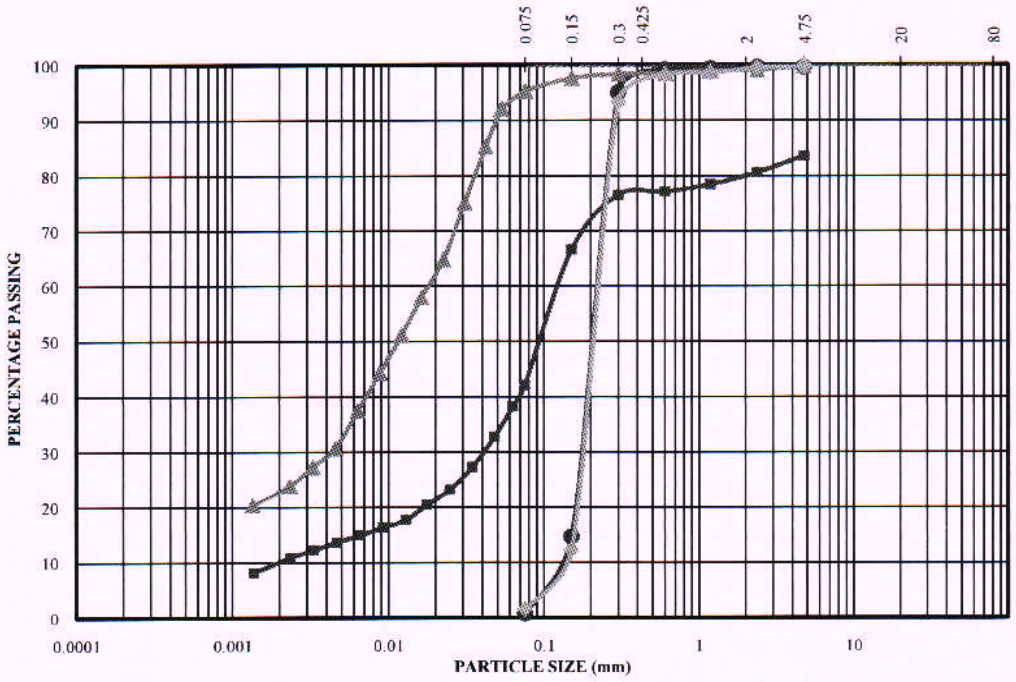
Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 27/10/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	FINE	MEDIUM	COARSE	FINE	COARSE	C
		SAND			GRAVEL		

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-2/34+986	UDS-1	2.00	Brownish Silty SAND(SM)	16	42	31	11
2		BH-2/34+986	SPT-5	7.50	Poorly Graded SAND(SP)	0	99	1	
3		BH-2/34+986	SPT-8	12.00	Brownish Silty CLAY (CL)	0	5	71	24
4		BH-2/34+986	SPT-11	16.50	Poorly Graded SAND(SP)	0	98	2	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

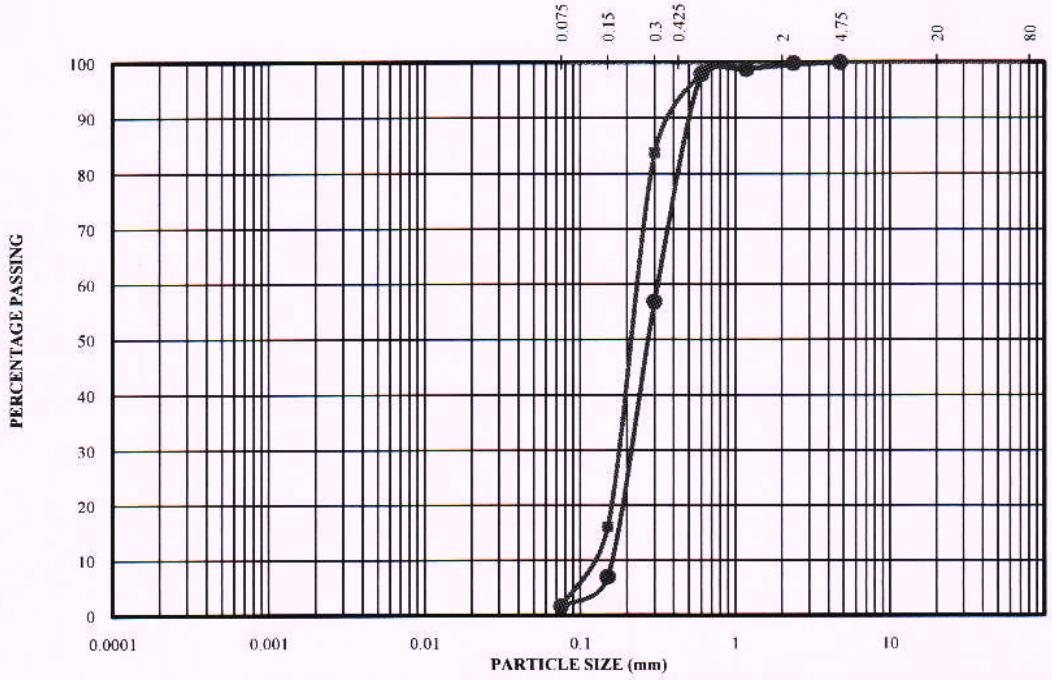
Operator:	Date: 27/11/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO.-1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1	■—■	BH-2/34+986	SPT-14	21.00	Poorly Graded SAND(SP)	0	98	2	
2	●—●	BH-2/34+986	SPT-18	27.00	Poorly Graded SAND(SP)	0	98	2	

XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO. T-1678

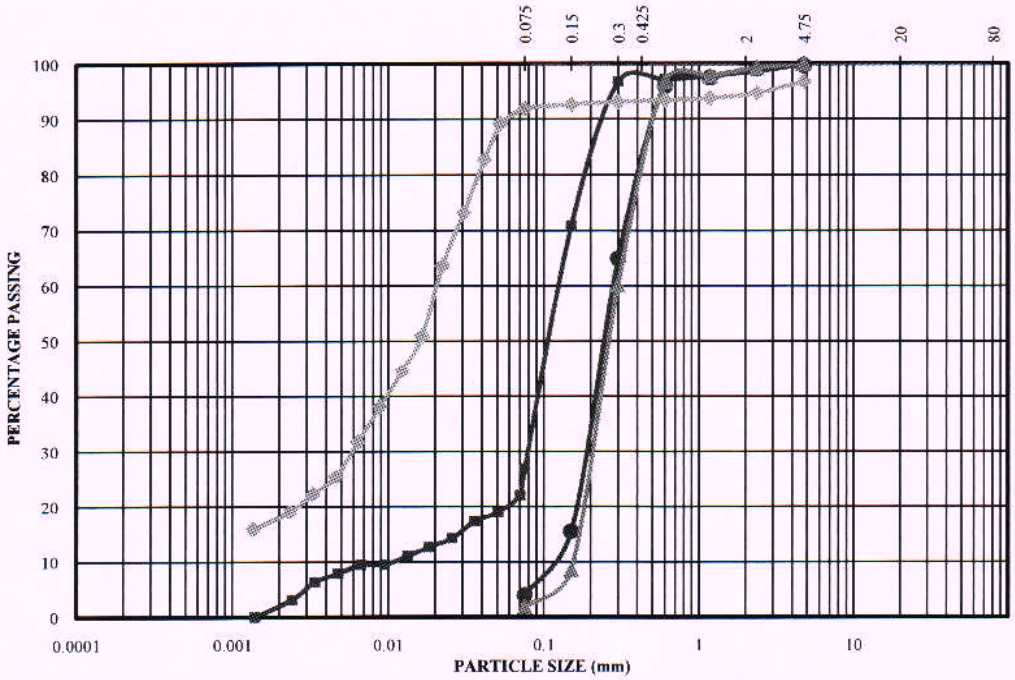
Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 27/1/016	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/35+549	UDS-1	2.00	Brownish Silty SAND(SM)	0	73	24	3
2		BH-1/35+549	SPT-5	7.50	Poorly Graded SAND(SP)	0	96	4	
3		BH-1/35+549	SPT-8	12.00	Poorly Graded SAND(SP)	0	98	2	
4		BH-1/35+549	SPT-12	18.00	Brownish Sandy SILT (ML)	3	5	73	19

XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

Site Ref: Hapur - Meerut Section

Job No: 1342

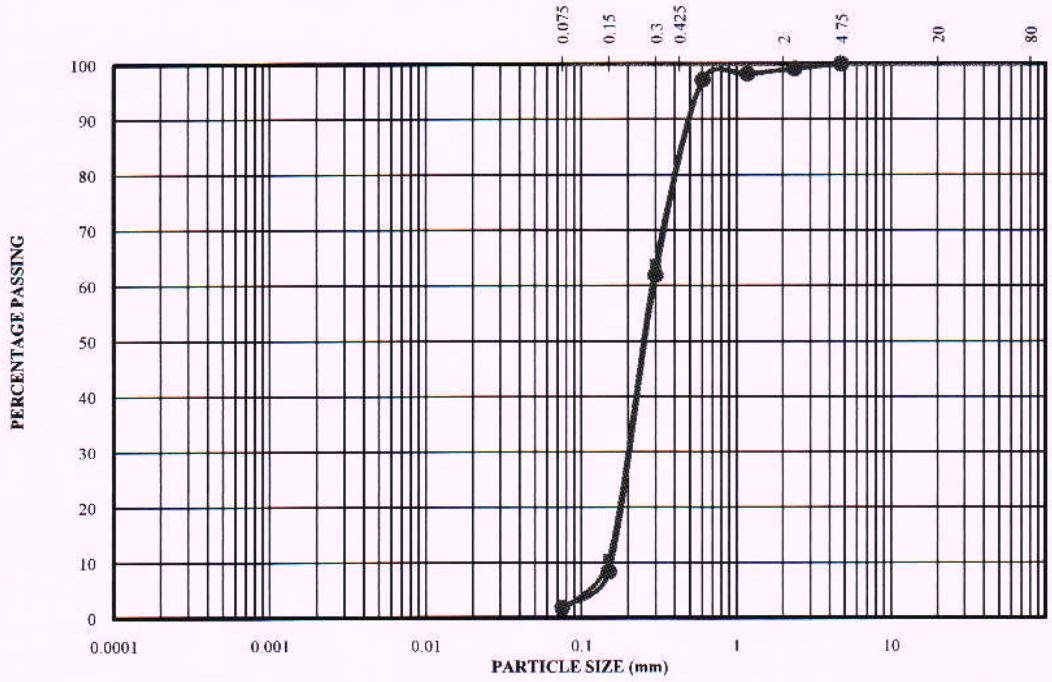
Test Report No: XPL/2015-16/02

Operator:	Date: 27/10/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

NABL ACCREDITED LABORATORY

592

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/35+549	SPT-16	24.00	Poorly Graded SAND(SP)	0	99	1	
2		BH-1/35+549	SPT-19	28.50	Poorly Graded SAND(SP)	0	98	2	

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

XPLORER

Site Ref: Hapur - Meerut Section

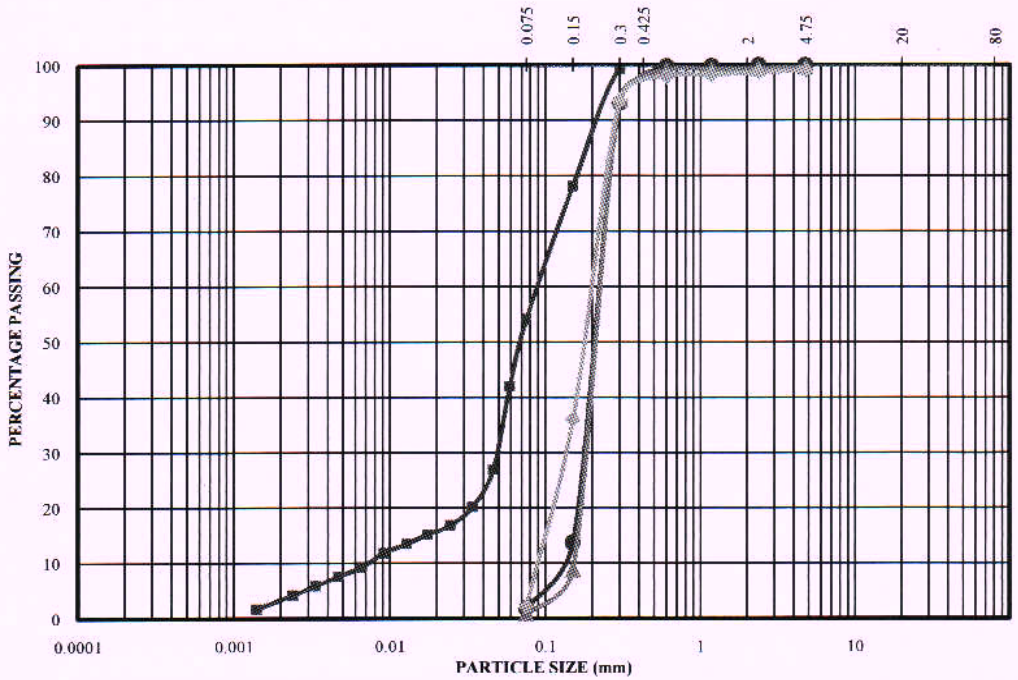
Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 27/1/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

NABL ACCREDITED LABORATORY CERTIFICATE NO. 1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	FINE	MEDIUM	COARSE	FINE	COARSE	C
		SAND			GRAVEL		

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-2/35+549	SPT-1	1.50	Brownish Sandy SILT (ML)	0	46	50	4
2		BH-2/35+549	SPT-5	7.50	Poorly Graded SAND(SP)	0	98	2	
3		BH-2/35+549	SPT-8	12.00	Poorly Graded SAND(SP)	0	99	1	
4		BH-2/35+549	SPT-12	18.00	Poorly Graded SAND(SP)	1	97	2	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 28/1/016	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

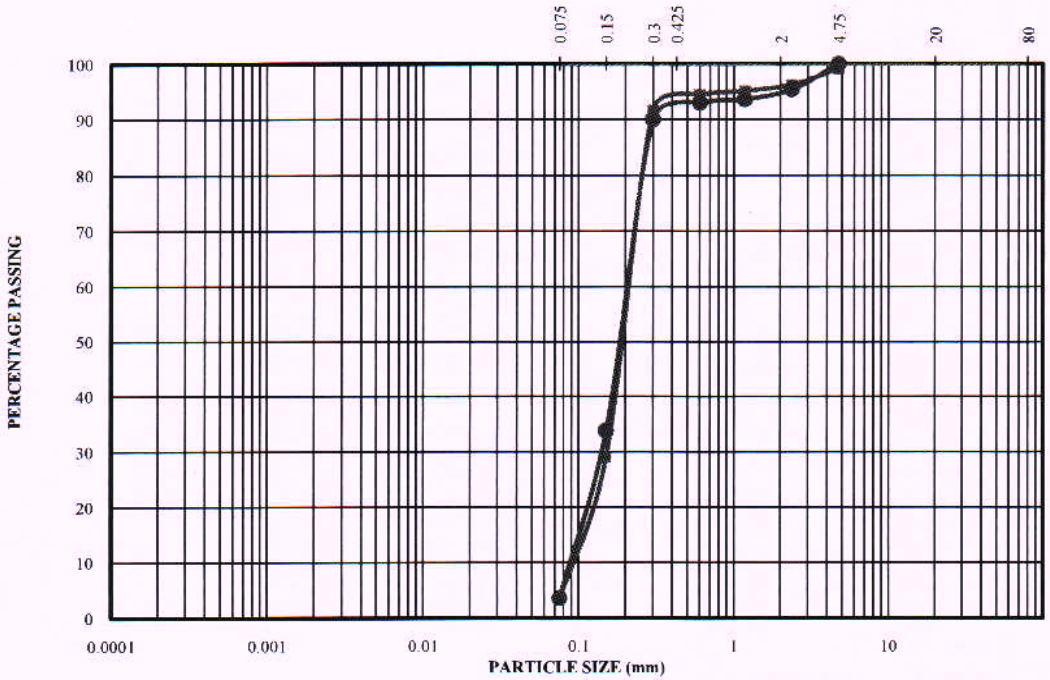
XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY

CERTIFICATE NO.T-1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-2/35+549	SPT-16	24.00	Poorly Graded SAND(SP)	1	96	3	
2		BH-2/35+549	SPT-19	28.50	Poorly Graded SAND(SP)	0	96	4	

XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO.T-1678

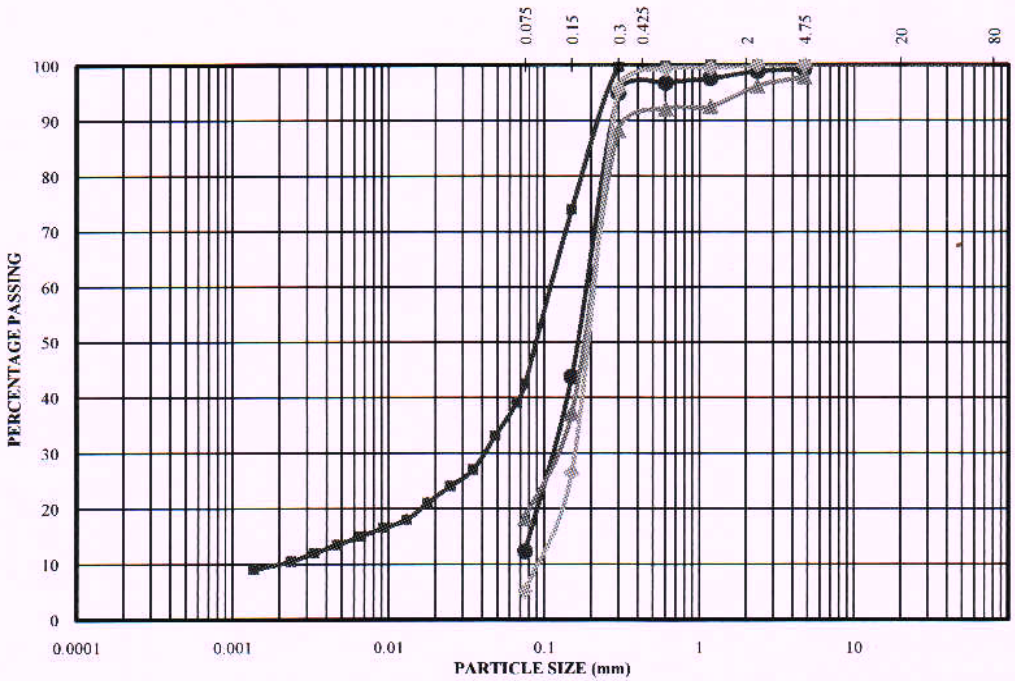
Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 28/10/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/37+360	UDS-1	2.00	Brownish Silty SAND(SM)	0	58	31	11
2		BH-1/37+360	SPT-4	6.00	Brownish Silty SAND(SW-SM)	1	87	12	
3		BH-1/37+360	SPT-6	9.00	Brownish Silty SAND(SM)	2	80	18	
4		BH-1/37+360	SPT-8	12.00	Brownish Silty SAND(SW-SM)	0	95	5	

XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY CERTIFICATE NO. T-3656

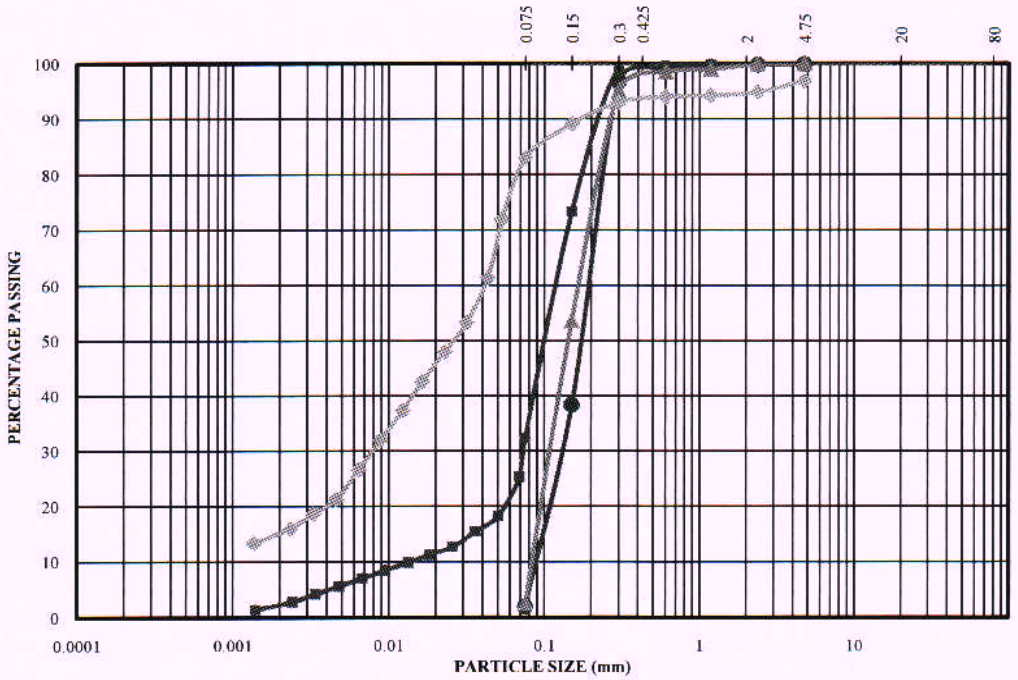
Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 28/10/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/38+580	UDS-1	2.00	Brownish Silty SAND (SM)	0	68	29	3
2		BH-1/38+580	SPT-5	7.50	Poorly Graded SAND(SP)	0	98	2	
3		BH-1/38+580	SPT-9	13.50	Poorly Graded SAND(SP)	0	97	3	
4		BH-1/38+580	SPT-12	18.00	Brownish Sandy SILT (ML)	3	14	67	16

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

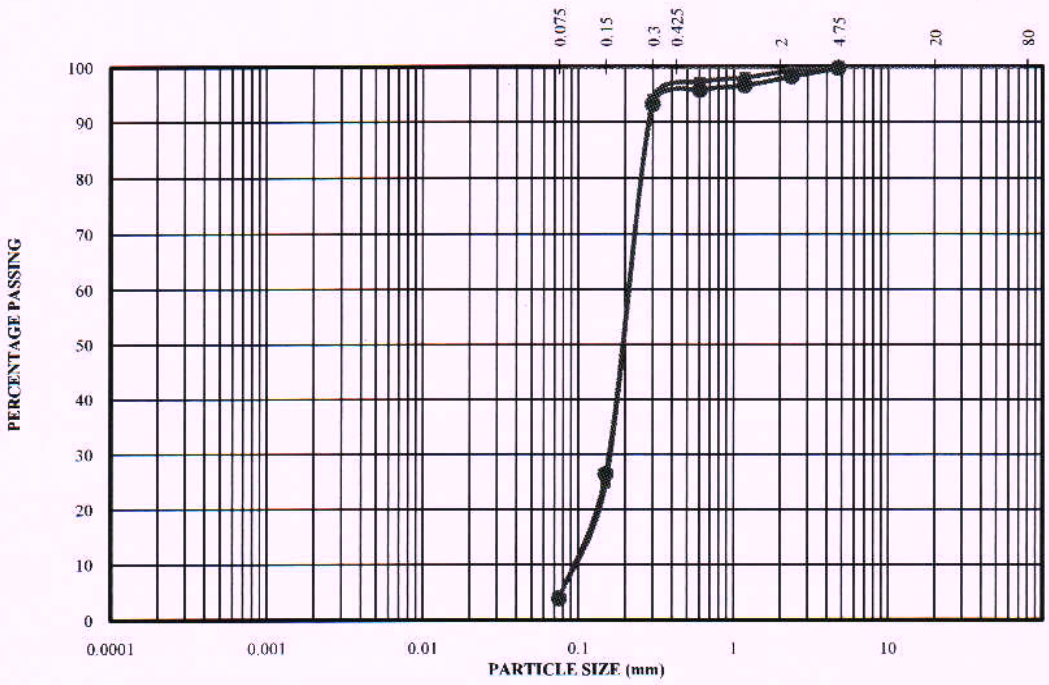
Operator:	Date: 28/10/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

XPLORER CONSULTANCY SERVICES PVT. LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO.T-1678

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1	■—■	BH-1/38+580	SPT-16	24.00	Poorly Graded SAND(SP)	0	96	4	
2	●—●	BH-1/38+580	SPT-20	30.00	Poorly Graded SAND(SP)	0	96	4	

XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY
CERTIFICATE NO. 1167

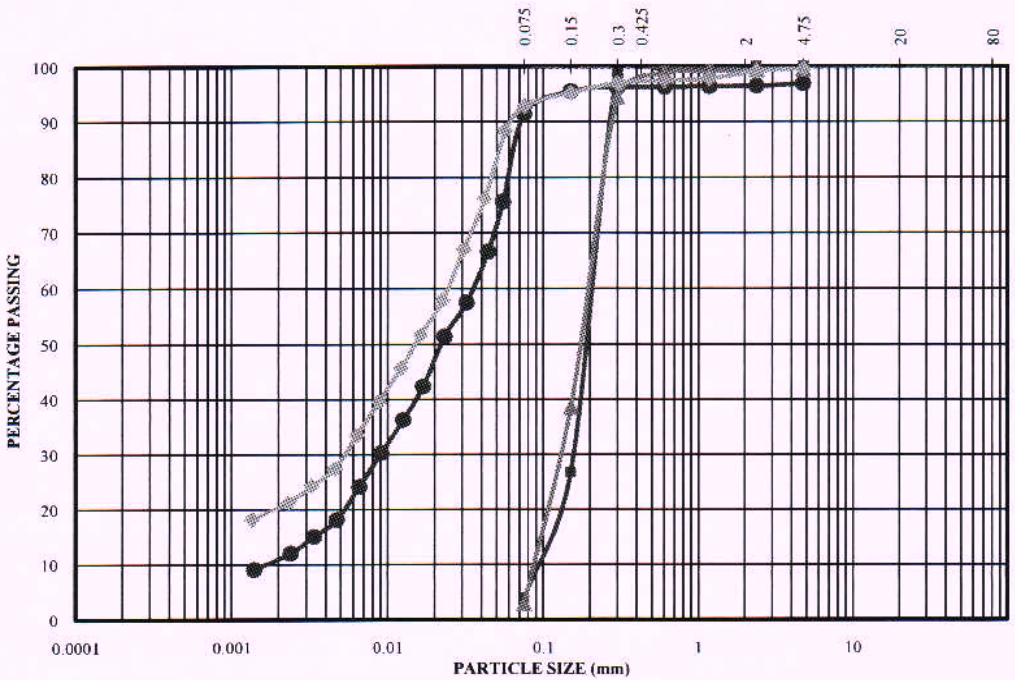
Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 28/10/16	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1		BH-1/39+120	SPT-1	1.50	Poorly Graded SAND(SP)	0	96	4	
2		BH-1/39+120	SPT-4	6.00	Brownish Sandy SILT (ML)	3	6	79	12
3		BH-1/39+120	SPT-8	12.00	Poorly Graded SAND(SP)	0	97	3	
4		BH-1/39+120	SPT-12	18.00	Brownish Silty CLAY (CL)	0	7	72	21

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 29/1/2016	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

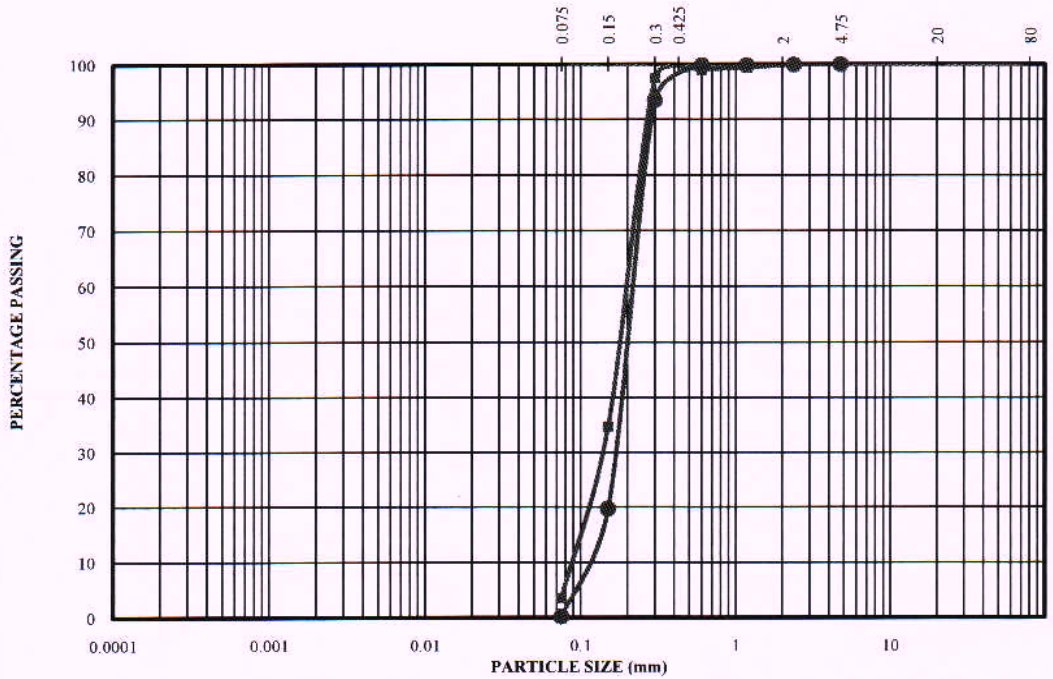
XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY

599

GRADING CURVE BASED ON IS : 2720 : PART IV



CLAY	SILT	SAND			GRAVEL		C
		FINE	MEDIUM	COARSE	FINE	COARSE	

S.NO.	SYMBOL	BH NO./CHAINAGE	SAMPLE NO	DEPTH (M)	DESCRIPTION	GRAVEL %	SAND %	SILT %	CLAY %
1	■—■	BH-1/39+120	SPT-16	24.00	Poorly Graded SAND(SP)	0	96	4	
2	●—●	BH-1/39+120	SPT-19	28.50	Poorly Graded SAND(SP)	0	100	0	

XPLORER

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPI /2015-16/02

Operator:	Date: 29/1/2016	Checked:	Date: 22/2/16	Authorised Signatory	Date: 22/2/16

NABL ACCREDITATED LABORATORY

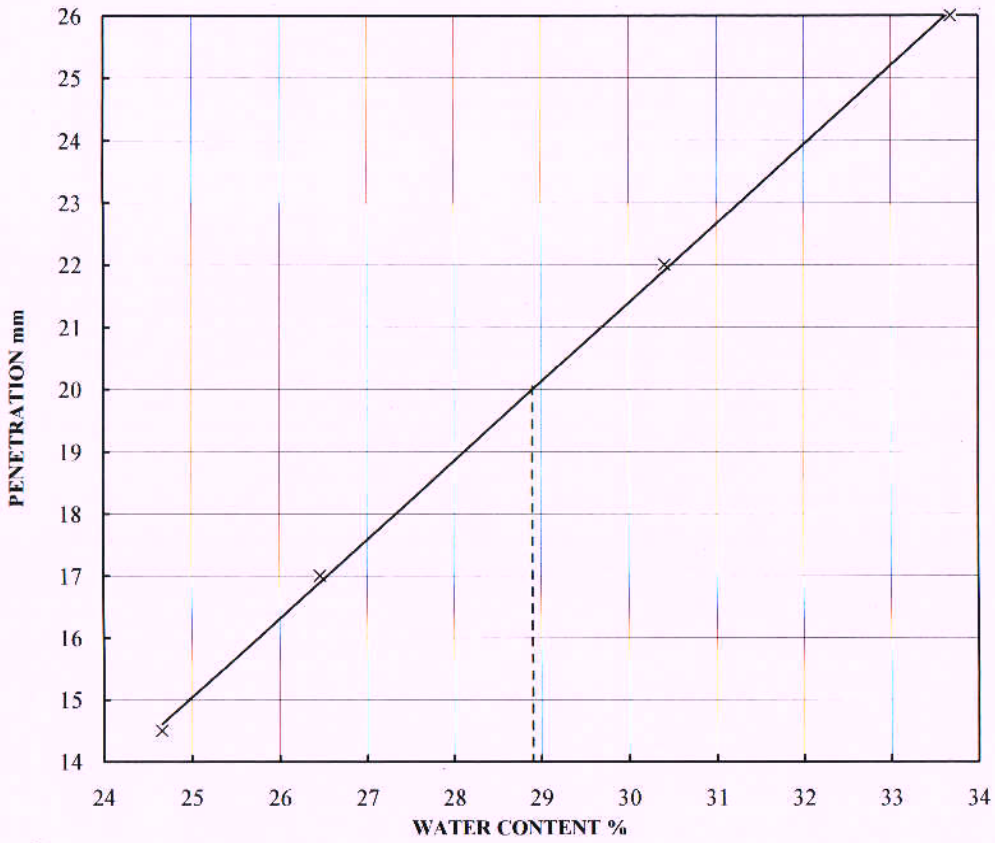
009

XPLORER
CONSULTANCY SERVICES (P) LTD.

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO.T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		25.55	24.30	25.05	23.29	
Dry Weight + Tare (g)		22.48	20.95	21.55	19.46	NP
Tare Weight	(g)	10.03	8.29	10.04	8.09	
Water Content	(%)	24.66	26.46	30.41	33.69	
Penetration	(mm)	14.50	17.00	22.00	26.00	

LIQUID LIMIT	(%)	29
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : UDS

Borehole No. 1/28+880 Sample No: UDS-1 Depth (m): 2.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

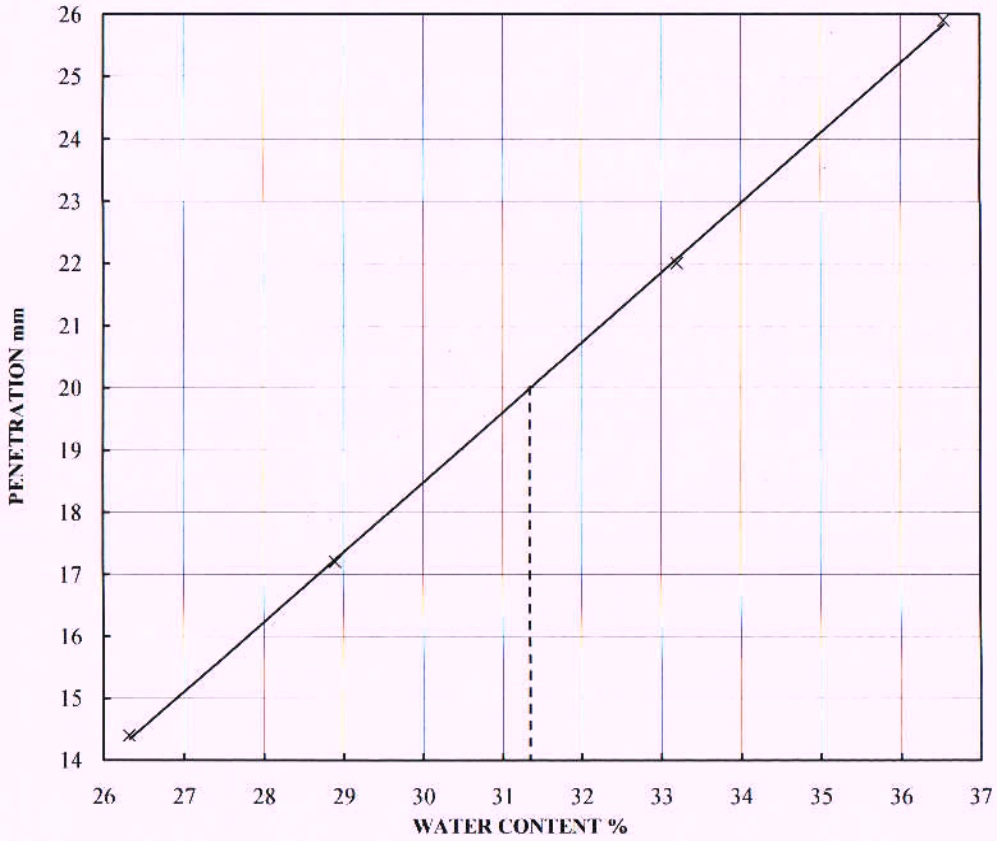
Operator : Bhim Singh	Checked :	Authorised Signaroty
Date : 25/1/16	Date: 22/2/16	Date: 22/2/16

XPLORER

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		23.45	32.45	24.85	27.53	
Dry Weight + Tare (g)		20.28	27.30	20.94	22.37	NP
Tare Weight	(g)	8.24	9.48	9.17	8.25	
Water Content	(%)	26.32	28.90	33.20	36.54	
Penetration	(mm)	14.40	17.20	22.00	25.90	

LIQUID LIMIT	(%)	31
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : UDS

Borehole No. 1/28+880 Sample No: UDS-4 Depth (m): 11.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

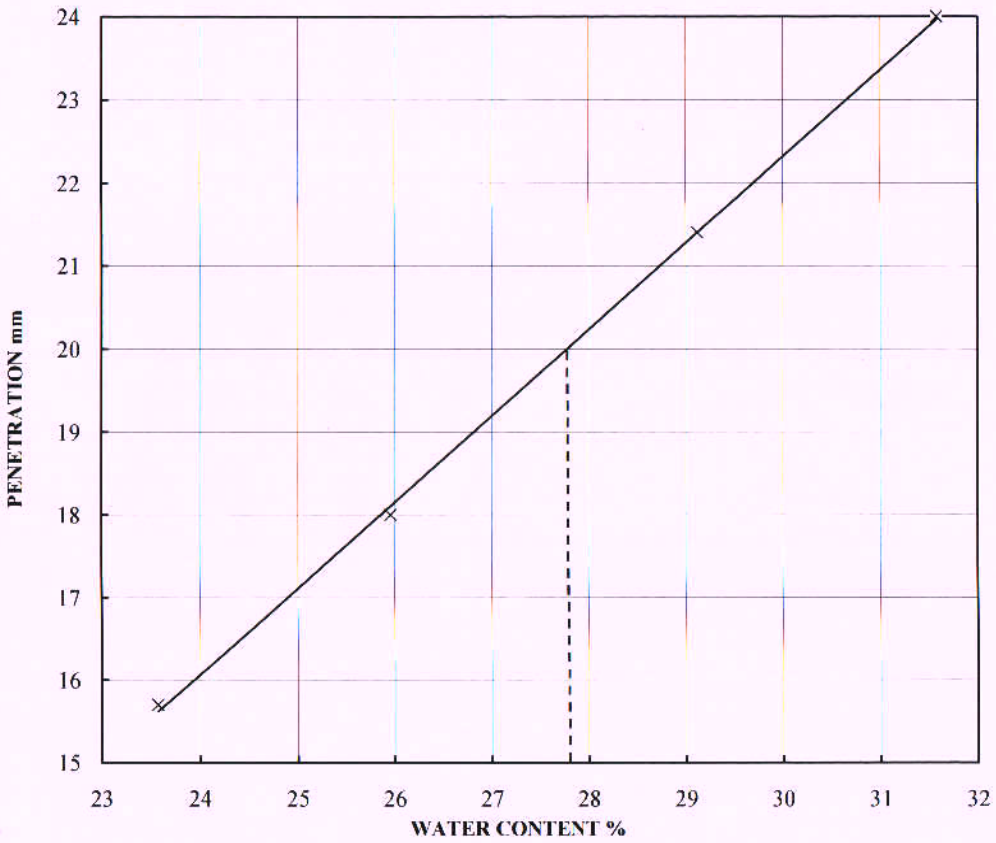
Operator : Balwan singh	Checked :	Authorised Signaroty
Date : 25/1/016	Date: 22/2/16	Date: 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		24.99	23.50	22.72	27.84	
Dry Weight + Tare (g)		22.14	20.73	19.45	23.46	NP
Tare Weight	(g)	10.05	10.06	8.22	9.59	
Water Content	(%)	23.57	25.96	29.12	31.58	
Penetration	(mm)	15.70	18.00	21.40	24.00	

LIQUID LIMIT	(%)	28
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : UDS

Borehole No. 1/30+780 Sample No: UDS-1 Depth (m): 2.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

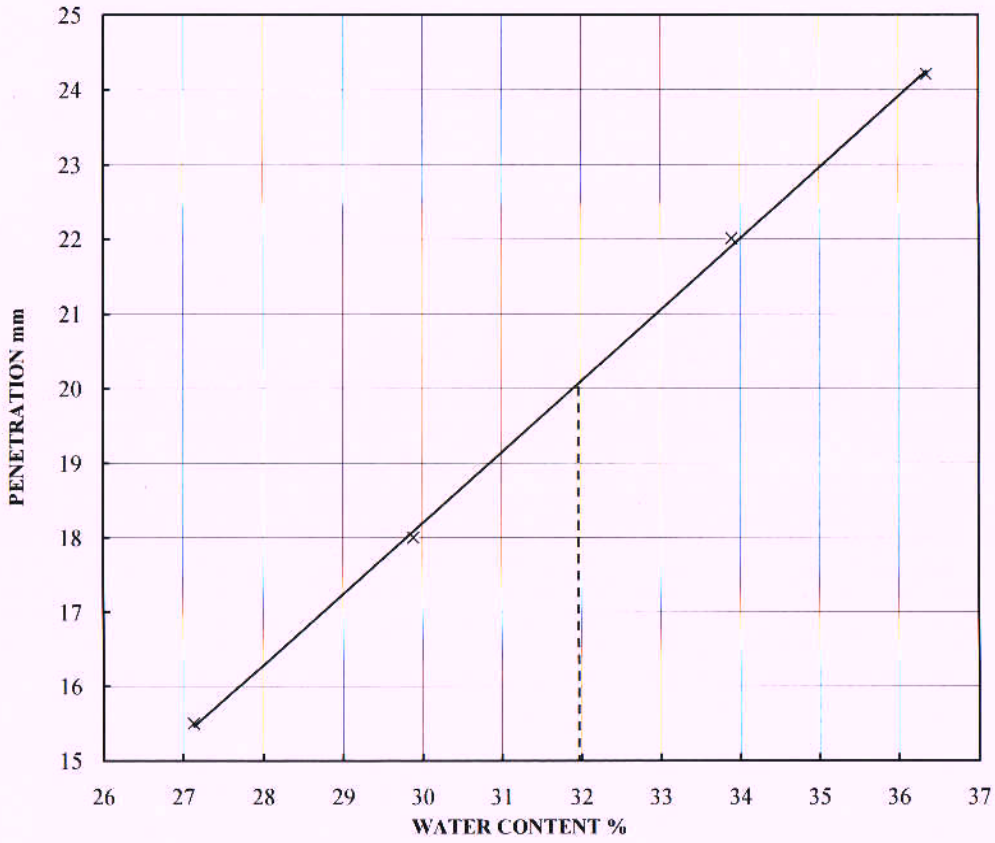
Operator : Briensingh	Checked :	Authorised Signaroty
Date : 25/1/2016	Date: 22/2/16	Date: 22/2/16

XPLORER

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		25.17	28.25	30.24	30.03	
Dry Weight + Tare (g)		21.54	23.94	25.00	24.57	NP
Tare Weight	(g)	8.16	9.52	9.54	9.55	
Water Content	(%)	27.13	29.89	33.89	36.35	
Penetration	(mm)	15.50	18.00	22.00	24.20	

LIQUID LIMIT	(%)	32
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : UDS

Borehole No. 1/30+780 Sample No: UDS-2 Depth (m): 5.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

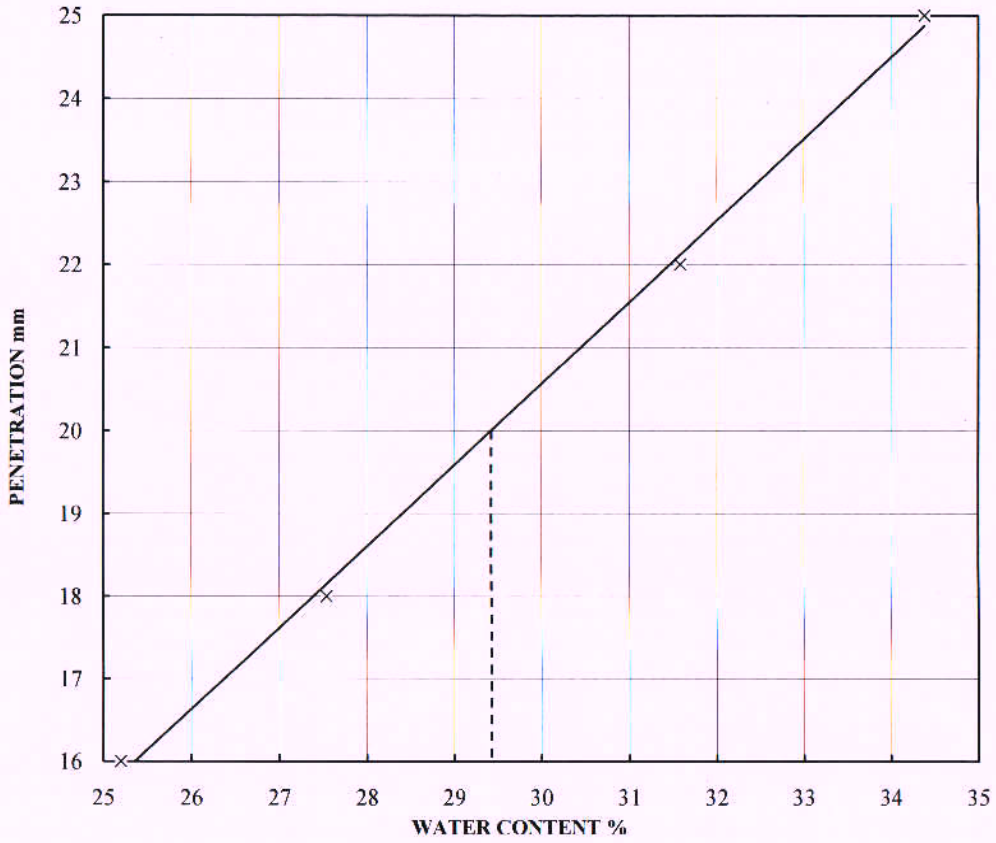
Operator :	Checked :	Authorised Signaroty
Date : 29/11/016	Date: 22/2/16	Date: 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO T 1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		23.59	27.93	30.16	28.08	
Dry Weight + Tare (g)		20.53	24.03	25.31	23.29	NP
Tare Weight	(g)	8.37	9.89	9.94	9.36	
Water Content	(%)	25.20	27.54	31.58	34.39	
Penetration	(mm)	16.00	18.00	22.00	25.00	

LIQUID LIMIT	(%)	29
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : UDS

Borehole No. 1/33+050 Sample No: UDS-1 Depth (m): 2.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

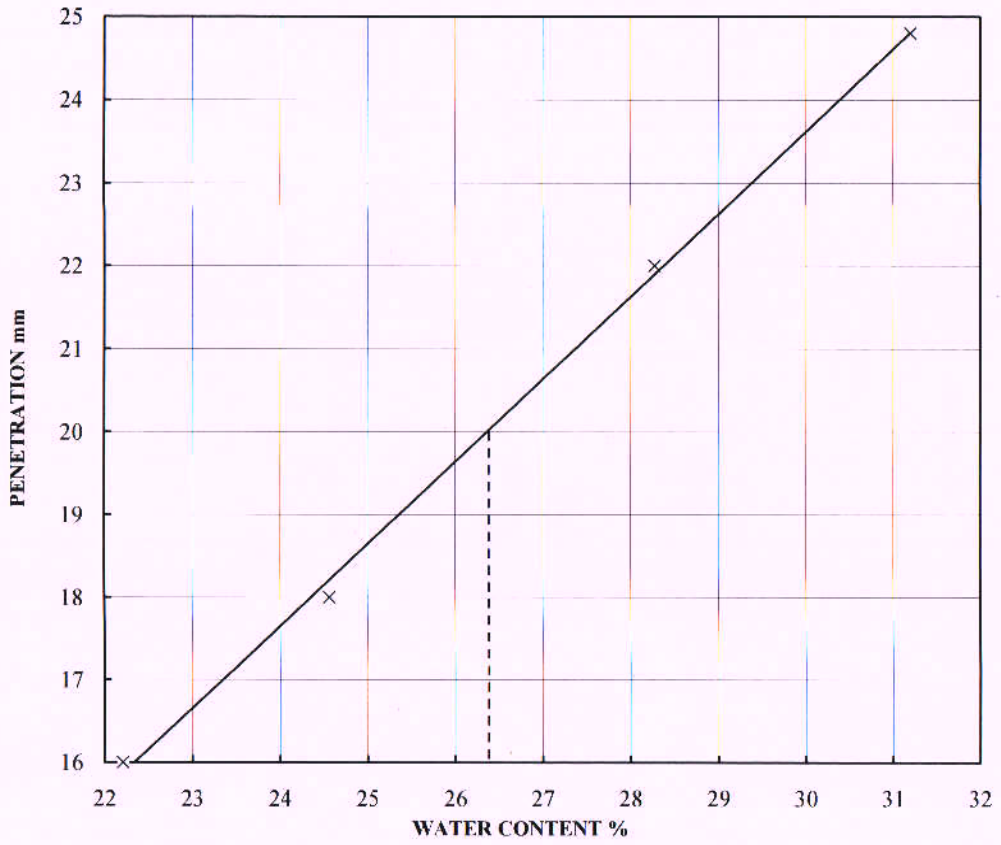
Operator : Bhimsingh	Checked :	Authorised Signaroty
Date : 27/1/16	Date: 22/2/16	Date: 22/2/16

XPLORER

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		29.26	27.87	30.22	29.49	
Dry Weight + Tare (g)		25.70	23.95	25.77	24.82	NP
Tare Weight	(g)	9.67	7.99	10.03	9.87	
Water Content	(%)	22.21	24.56	28.27	31.20	
Penetration	(mm)	16.00	18.00	22.00	24.80	

LIQUID LIMIT	(%)	26
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : UDS

Borehole No. 2/34+986 Sample No: UDS-1 Depth (m): 2.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

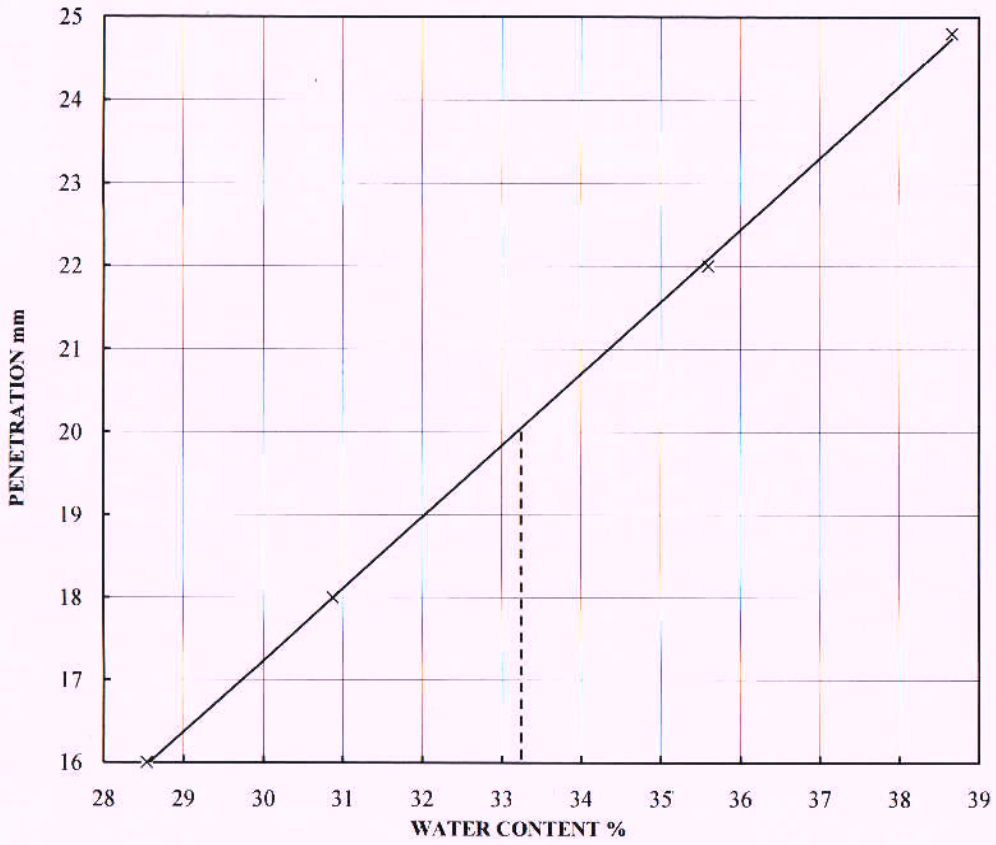
Operator : Brijesh Singh	Checked :	Authorised Signaroty
Date : 22/2/16	Date: 22/2/16	Date: 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1078

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = 76%

		LIQUID LIMIT %				PLASTIC LIMIT %	
Wet Weight + Tare (g)		29.26	27.87	30.22	29.49	17.99	18.38
Dry Weight + Tare (g)		24.91	23.18	24.92	24.02	16.33	16.40
Tare Weight	(g)	9.67	7.99	10.03	9.87	9.12	7.98
Water Content	(%)	28.54	30.88	35.59	38.66	23.02	23.52
Penetration	(mm)	16.00	18.00	22.00	24.80		

LIQUID LIMIT	(%)	33
PLASTIC LIMIT	(%)	23
PLASTICITY INDEX	(%)	10

Sample Type : SPT			
Borehole No. 2/34+986	Sample No: SPT-8	Depth (m): 12.00	
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342	
		Test Report No: XPL/2015-16/02	
Operator :	Checked :	Authorised Signaroty	
Date : 25/1/2016	Date: 22/2/16	Date: 22/2/16	

XPLORER

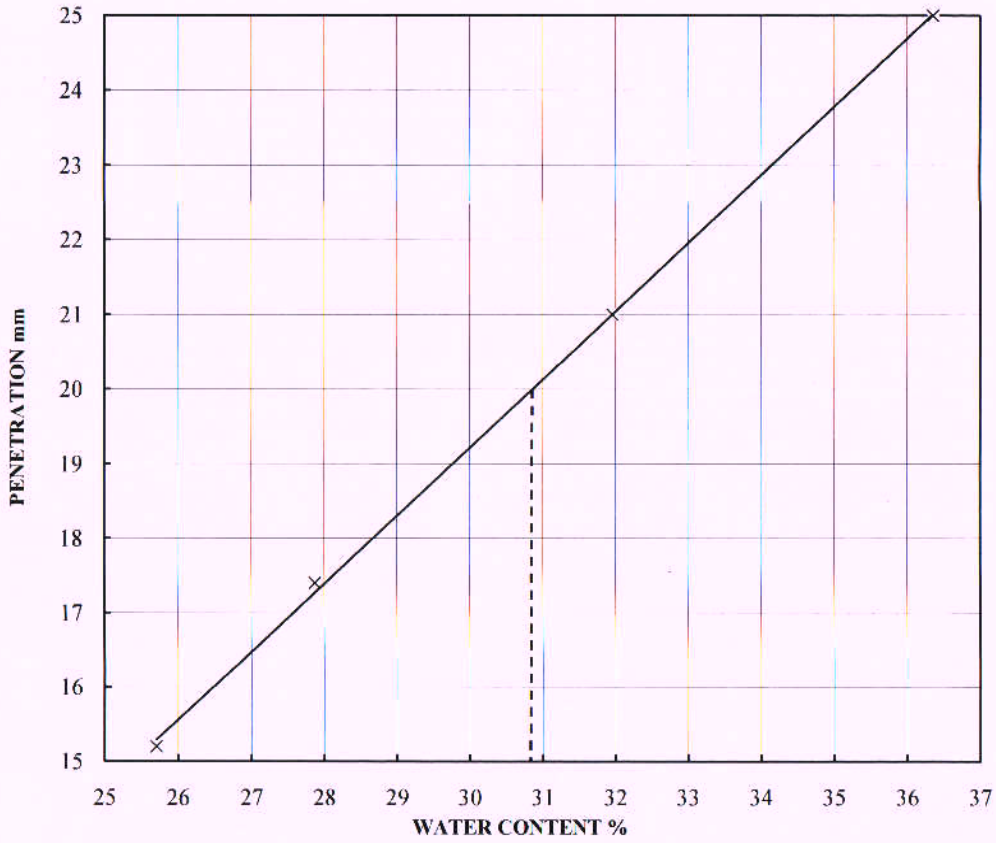
CONSULTANCY SERVICES (P) LTD.

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = 77%

	LIQUID LIMIT %				PLASTIC LIMIT %	
Wet Weight + Tare (g)	22.03	24.53	24.06	26.75	19.77	18.29
Dry Weight + Tare (g)	19.58	21.33	20.25	22.14	17.74	16.49
Tare Weight (g)	10.05	9.85	8.33	9.46	9.92	9.66
Water Content (%)	25.71	27.87	31.96	36.36	25.96	26.35
Penetration (mm)	15.20	17.40	21.00	25.00		

LIQUID LIMIT	(%)	31
PLASTIC LIMIT	(%)	26
PLASTICITY INDEX	(%)	5

Sample Type : SPT

Borehole No. 1/35+549 Sample No: SPT-12 Depth (m): 18.00

XPLORER	Site Ref:	Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02

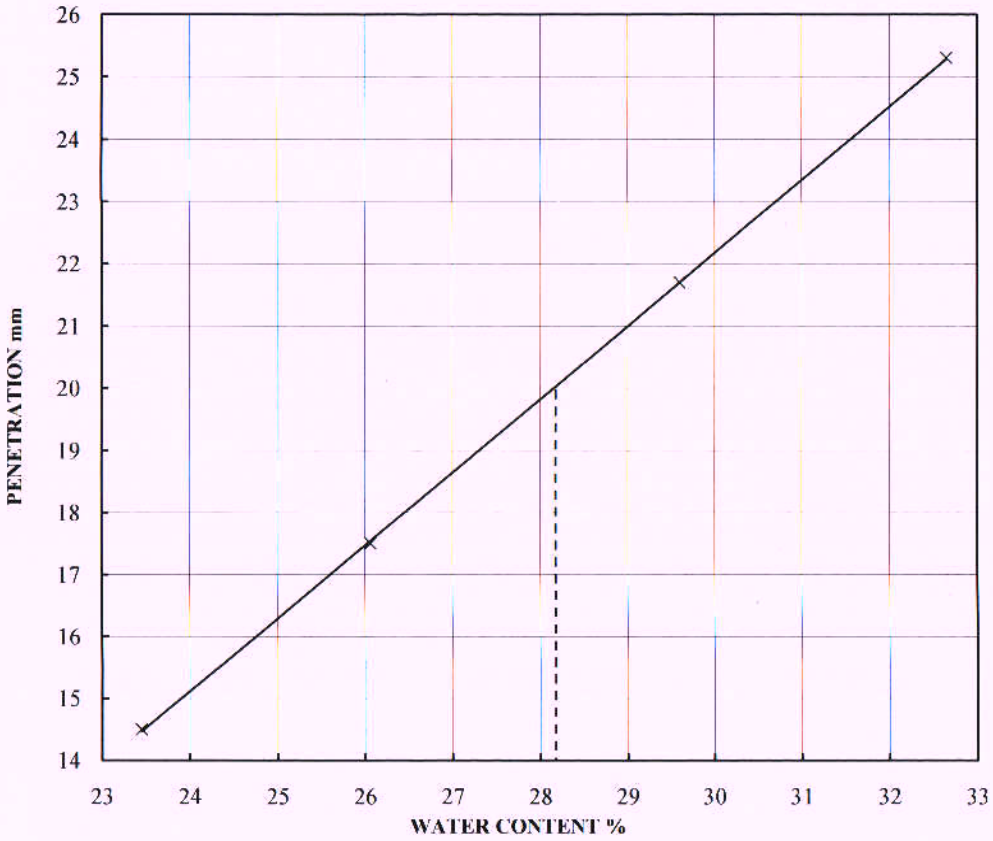
Operator : Brijm Singh	Checked :	Authorised Signaroty
Date : 22/1/16	Date: 22/2/16	Date: 22/2/16

XPLORER

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = 76%

	LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)	26.94	21.98	23.36	30.01	
Dry Weight + Tare (g)	23.59	19.10	20.18	24.96	NP
Tare Weight (g)	9.30	8.05	9.45	9.48	
Water Content (%)	23.45	26.06	29.60	32.65	
Penetration (mm)	14.50	17.50	21.70	25.30	

LIQUID LIMIT	(%)	28
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : SPT

Borehole No. 1/38+580 Sample No: SPT-12 Depth (m): 18.00

XPLORER	Site Ref: Hapur - Meerut Section	Job No :	1342
		Test Report No:	XPL/2015-16/02

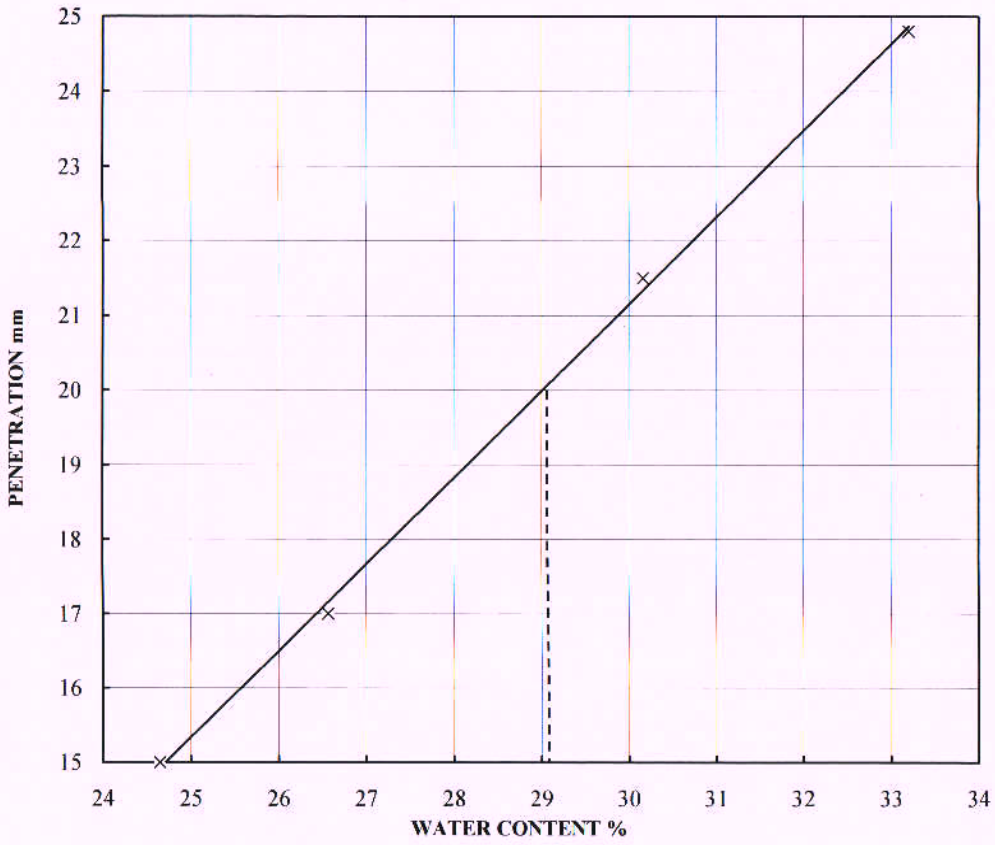
Operator :	Checked :	Authorised Signaroty
Date : 26/1/016	Date: 22/2/16	Date: 22/2/16

XPLORER

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = Natural

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		25.40	25.50	28.10	27.70	
Dry Weight + Tare (g)		22.02	22.15	23.75	23.17	NP
Tare Weight	(g)	8.33	9.54	9.33	9.52	
Water Content	(%)	24.65	26.57	30.17	33.20	
Penetration	(mm)	15.00	17.00	21.50	24.80	

LIQUID LIMIT	(%)	29
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	NP

Sample Type : SPT

Borehole No. 1/39+120 Sample No: SPT-4 Depth (m): 6.00

XPLORER	Site Ref:	Hapur - Meerut Section	Job No : 1342
			Test Report No: XPL/2015-16/02

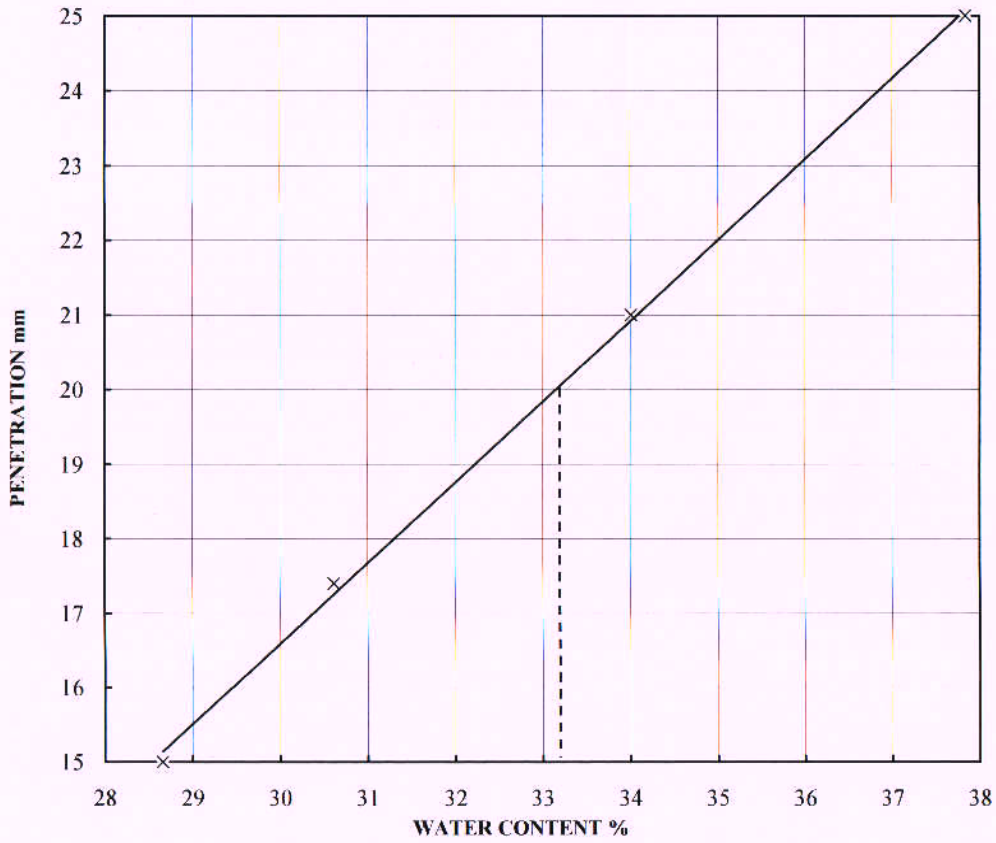
Operator : Bhim Singh	Checked :	Authorised Signaroty
Date : 26/10/16	Date: 22/2/16	Date: 22/2/16

XPLORER

LIQUID AND PLASTIC LIMIT TEST RESULTS

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

I.S. : 2720 : PART 5



HISTORY OF SAMPLE :

Percentage of passing 0.425mm B.S.Sieve = 76%

		LIQUID LIMIT %				PLASTIC LIMIT %	
Wet Weight + Tare (g)		25.19	28.55	30.71	28.10	18.00	18.35
Dry Weight + Tare (g)		21.78	24.05	25.00	22.95	16.54	16.65
Tare Weight	(g)	9.88	9.35	8.21	9.34	9.32	8.19
Water Content	(%)	28.66	30.61	34.01	37.84	20.22	20.09
Penetration	(mm)	15.00	17.40	21.00	25.00		

LIQUID LIMIT	(%)	33
PLASTIC LIMIT	(%)	20
PLASTICITY INDEX	(%)	13

Sample Type : SPT

Borehole No. 1/39+120 Sample No: SPT-12 Depth (m): 18.00

XPLORER Site Ref: Hapur - Meerut Section Job No : 1342

Test Report No: XPL/2015-16/02

Operator : Bringingh	Checked :	Authorised Signaroty
Date : 26/10/16	Date: 22/2/16	Date: 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-UDS-1 Depth(m) 2.00

Chainage 28+880

Test No :	1	2
ρ_s Bottle No :	SG-10	SG-11
Mass of ρ_s bottle with stopper, M1	26.18	32.74
Mass of ρ_s bottle with Stopper & Soil, M2	36.18	42.74
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	77.02	86.78
Mass of ρ_s bottle with Stopper & Distilled Water, M4	70.87	80.60
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.60	2.62

Average Specific Gravity : 2.61

BH No :- 1 Sample No :-UDS-4 Depth(m) 11.00

Chainage 28+880

Test No :	1	2
ρ_s Bottle No :	SG-12	SG-15
Mass of ρ_s bottle with stopper, M1	39.05	34.94
Mass of ρ_s bottle with Stopper & Soil, M2	49.05	44.94
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	85.90	91.69
Mass of ρ_s bottle with Stopper & Distilled Water, M4	79.76	85.52
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.59	2.61

Average Specific Gravity : 2.60

Operator	Checked :	Authorised signatory
Date : 22/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-SPT-14 Depth(m) 21.00

Chainage 28+880

Test No :	1	2
ρ_s Bottle No :	SG-23	SG-25
Mass of ρ_s bottle with stopper, M1	33.43	23.02
Mass of ρ_s bottle with Stopper & Soil, M2	43.43	33.02
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	87.61	72.53
Mass of ρ_s bottle with Stopper & Distilled Water, M4	81.33	66.28
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.69	2.67

Average Specific Gravity : 2.68

BH No :- 1 Sample No :-UDS-2 Depth(m) 2.00

Chainage 30+780

Test No :	1	2
ρ_s Bottle No :	SG-16	SG-17
Mass of ρ_s bottle with stopper, M1	31.63	32.01
Mass of ρ_s bottle with Stopper & Soil, M2	41.63	42.01
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	88.45	88.53
Mass of ρ_s bottle with Stopper & Distilled Water, M4	82.20	82.31
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.67	2.65

Average Specific Gravity : 2.66

Operator :	Checked :	Authorised signatory
Date : 11/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-SPT-4 Depth(m) 6.00

Chainage 33+050

Test No :	1	2
ρ_s Bottle No :	SG-12	SG-15
Mass of ρ_s bottle with stopper, M1	39.05	34.94
Mass of ρ_s bottle with Stopper & Soil, M2	49.05	44.94
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	85.97	91.70
Mass of ρ_s bottle with Stopper & Distilled Water, M4	79.76	85.52
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.64	2.62

Average Specific Gravity : 2.63

BH No :- 1 Sample No :-SPT-11 Depth(m) 16.50

Chainage 33+050

Test No :	1	2
ρ_s Bottle No :	SG-10	SG-11
Mass of ρ_s bottle with stopper, M1	26.18	32.74
Mass of ρ_s bottle with Stopper & Soil, M2	36.18	42.74
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	77.19	86.96
Mass of ρ_s bottle with Stopper & Distilled Water, M4	70.87	80.60
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.72	2.75

Average Specific Gravity : 2.73

Operator :	Checked :	Authorised signatory
Date : 11/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-SPT-5 Depth(m) 7.50

Chainage 34+986

Test No :	1	2
ρ_s Bottle No :	SG-18	SG-21
Mass of ρ_s bottle with stopper, M1	38.8	36.13
Mass of ρ_s bottle with Stopper & Soil, M2	48.8	46.13
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	91.60	89.15
Mass of ρ_s bottle with Stopper & Distilled Water, M4	85.43	83.02
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.61	2.58

Average Specific Gravity : 2.60

BH No :- 1 Sample No :-SPT-12 Depth(m) 18.00

Chainage 34+986

Test No :	1	2
ρ_s Bottle No :	SG-23	SG-25
Mass of ρ_s bottle with stopper, M1	33.43	23.02
Mass of ρ_s bottle with Stopper & Soil, M2	43.43	33.02
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	87.49	72.42
Mass of ρ_s bottle with Stopper & Distilled Water, M4	81.33	66.28
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.60	2.59

Average Specific Gravity : 2.60

Operator :	Checked :	Authorised signatory
Date : 1/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 2 Sample No :-SPT-5 Depth(m) 7.50

Chainage 34+986

Test No :	1	2
ρ_s Bottle No :	SG-16	SG-17
Mass of ρ_s bottle with stopper, M1	31.63	32.01
Mass of ρ_s bottle with Stopper & Soil, M2	41.63	42.01
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	88.35	88.44
Mass of ρ_s bottle with Stopper & Distilled Water, M4	82.20	82.31
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.60	2.58

Average Specific Gravity : 2.59

BH No :- 2 Sample No :-SPT-11 Depth(m) 16.50

Chainage 34+986

Test No :	1	2
ρ_s Bottle No :	SG-18	SG-21
Mass of ρ_s bottle with stopper, M1	38.8	36.13
Mass of ρ_s bottle with Stopper & Soil, M2	48.8	46.13
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	91.58	89.16
Mass of ρ_s bottle with Stopper & Distilled Water, M4	85.43	83.02
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.60	2.59

Average Specific Gravity : 2.59

Operator :	Checked :	Authorised signatory
Date : 1/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1078

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-SPT-5 Depth(m) 7.50

Chainage 35+549

Test No :	1	2
ρ_s Bottle No :	SG-12	SG-15
Mass of ρ_s bottle with stopper, M1	39.05	34.94
Mass of ρ_s bottle with Stopper & Soil, M2	49.05	44.94
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	85.91	91.64
Mass of ρ_s bottle with Stopper & Distilled Water, M4	79.76	85.52
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.60	2.58

Average Specific Gravity : 2.59

BH No :- 1 Sample No :-SPT-12 Depth(m) 18.00

Chainage 35+549

Test No :	1	2
ρ_s Bottle No :	SG-16	SG-17
Mass of ρ_s bottle with stopper, M1	31.63	32.01
Mass of ρ_s bottle with Stopper & Soil, M2	41.63	42.01
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	88.40	88.46
Mass of ρ_s bottle with Stopper & Distilled Water, M4	82.20	82.31
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.63	2.60

Average Specific Gravity : 2.61

Operator :	Checked :	Authorised signatory
Date : 21/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 2 Sample No :-SPT-5 Depth(m) 7.50

Chainage 35+549

Test No :	1	2
ρ_s Bottle No :	SG-10	SG-11
Mass of ρ_s bottle with stopper, M1	26.18	32.74
Mass of ρ_s bottle with Stopper & Soil, M2	36.18	42.74
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	77.11	86.82
Mass of ρ_s bottle with Stopper & Distilled Water, M4	70.87	80.60
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.66	2.65

Average Specific Gravity : 2.65

BH No :- 2 Sample No :-SPT-12 Depth(m) 18.00

Chainage 35+549

Test No :	1	2
ρ_s Bottle No :	SG-23	SG-25
Mass of ρ_s bottle with stopper, M1	33.43	23.02
Mass of ρ_s bottle with Stopper & Soil, M2	43.43	33.02
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	87.57	72.49
Mass of ρ_s bottle with Stopper & Distilled Water, M4	81.33	66.28
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.66	2.64

Average Specific Gravity : 2.65

Operator :	Checked :	Authorised signatory
Date : 2/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-SPT-5 Depth(m) 7.50

Chainage 38+580

Test No :	1	2
ρ_s Bottle No :	SG-18	SG-21
Mass of ρ_s bottle with stopper, M1	38.8	36.13
Mass of ρ_s bottle with Stopper & Soil, M2	48.8	46.13
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	91.63	89.22
Mass of ρ_s bottle with Stopper & Distilled Water, M4	85.43	83.02
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.63	2.63

Average Specific Gravity : 2.63

BH No :- 1 Sample No :-SPT-12 Depth(m) 18.00

Chainage 38+580

Test No :	1	2
ρ_s Bottle No :	SG-16	SG-17
Mass of ρ_s bottle with stopper, M1	31.63	32.01
Mass of ρ_s bottle with Stopper & Soil, M2	41.63	42.01
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	88.44	88.59
Mass of ρ_s bottle with Stopper & Distilled Water, M4	82.20	82.31
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.66	2.69

Average Specific Gravity : 2.67

Operator :	Checked :	Authorised signatory
Date : 21/2/16	Date : 22/2/16	Date : 22/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

SPECIFIC GRAVITY
(IS 2720 : PART 3/ SEC 1 : 1980)

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

PROJECT : Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut

SITE REF: Hapur - Meerut Section Job No. 1342

Test Report No: XPL/2015-16/02

BH No :- 1 Sample No :-SPT-4 Depth(m) 6.00

Chainage 39+120

Test No :	1	2
ρ_s Bottle No :	SG-10	SG-11
Mass of ρ_s bottle with stopper, M1	26.18	32.74
Mass of ρ_s bottle with Stopper & Soil, M2	36.18	42.74
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	77.00	86.75
Mass of ρ_s bottle with Stopper & Distilled Water, M4	70.87	80.60
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.58	2.60

Average Specific Gravity : 2.59

BH No :- 1 Sample No :-SPT-12 Depth(m) 18.00

Chainage 39+120

Test No :	1	2
ρ_s Bottle No :	SG-12	SG-15
Mass of ρ_s bottle with stopper, M1	39.05	34.94
Mass of ρ_s bottle with Stopper & Soil, M2	49.05	44.94
Mass of ρ_s bottle with Stopper, Soil & Distilled Water, M3	85.99	91.72
Mass of ρ_s bottle with Stopper & Distilled Water, M4	79.76	85.52
$\rho_s = \frac{(M2 - M1)}{(M4 - M1) - (M3 - M2)}$	2.65	2.63

Average Specific Gravity : 2.64

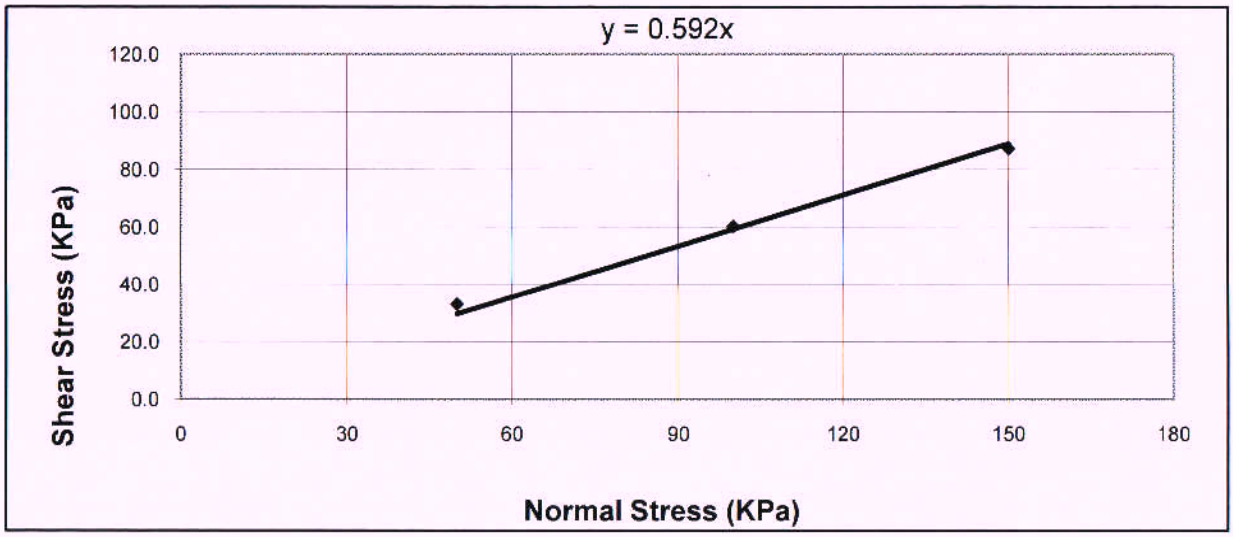
Operator :	Checked :	Authorised signatory
Date : 2/2/16	Date : 22/2/16	Date : 22/2/16

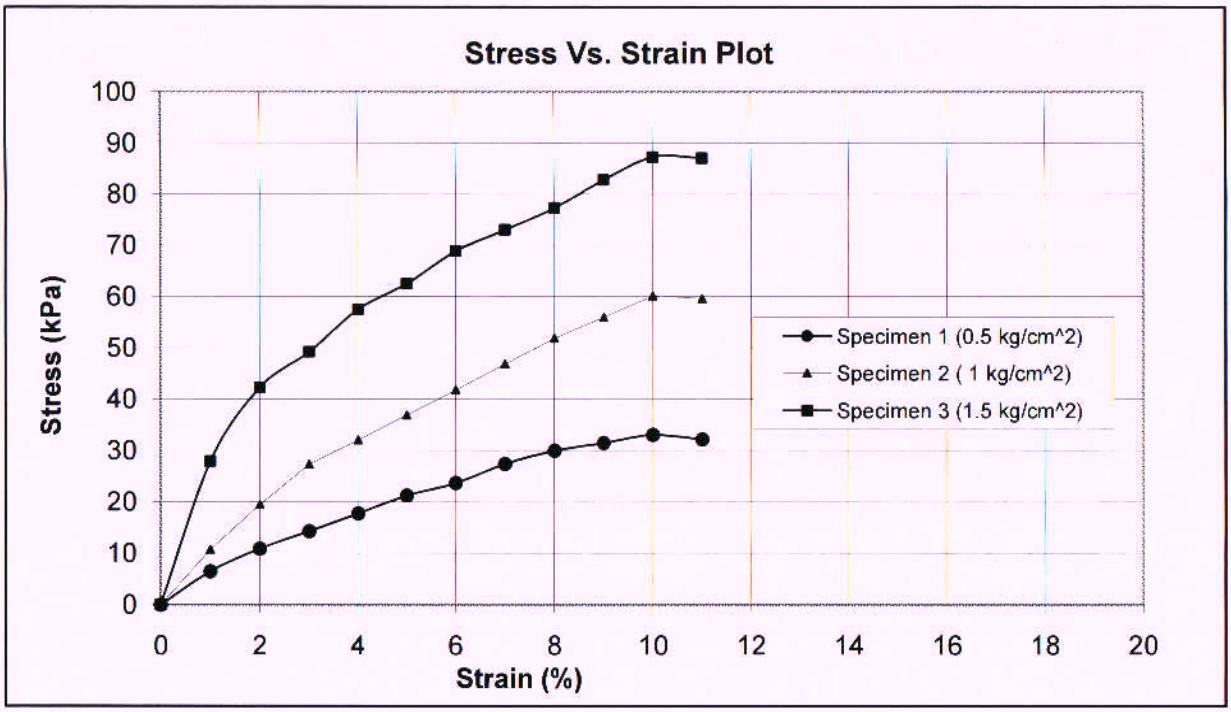
XPLORER

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.62	c =	0.0 kPa
Brownish Silty SAND(SM)		ϕ =	30.6 °

BH No: 1	Chainage 28+880	Sample No.: UDS-2	Depth (m): 5.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: **Checked by:** **Authorised Signatory:**

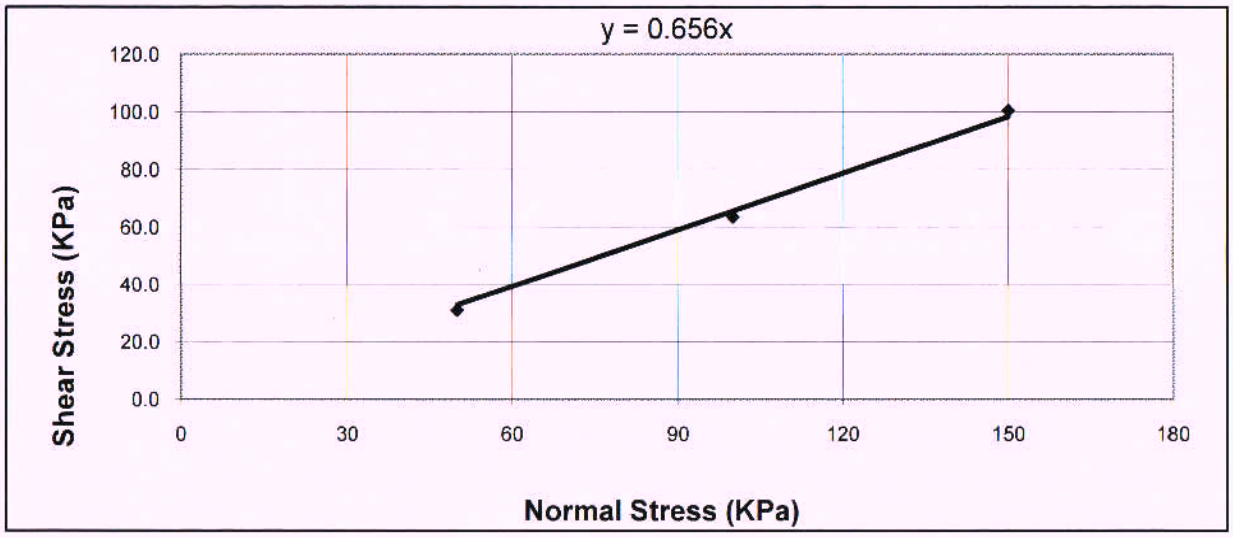
Date: 28/1/16 **Date:** 22/2/16 **Date:** 22/2/16

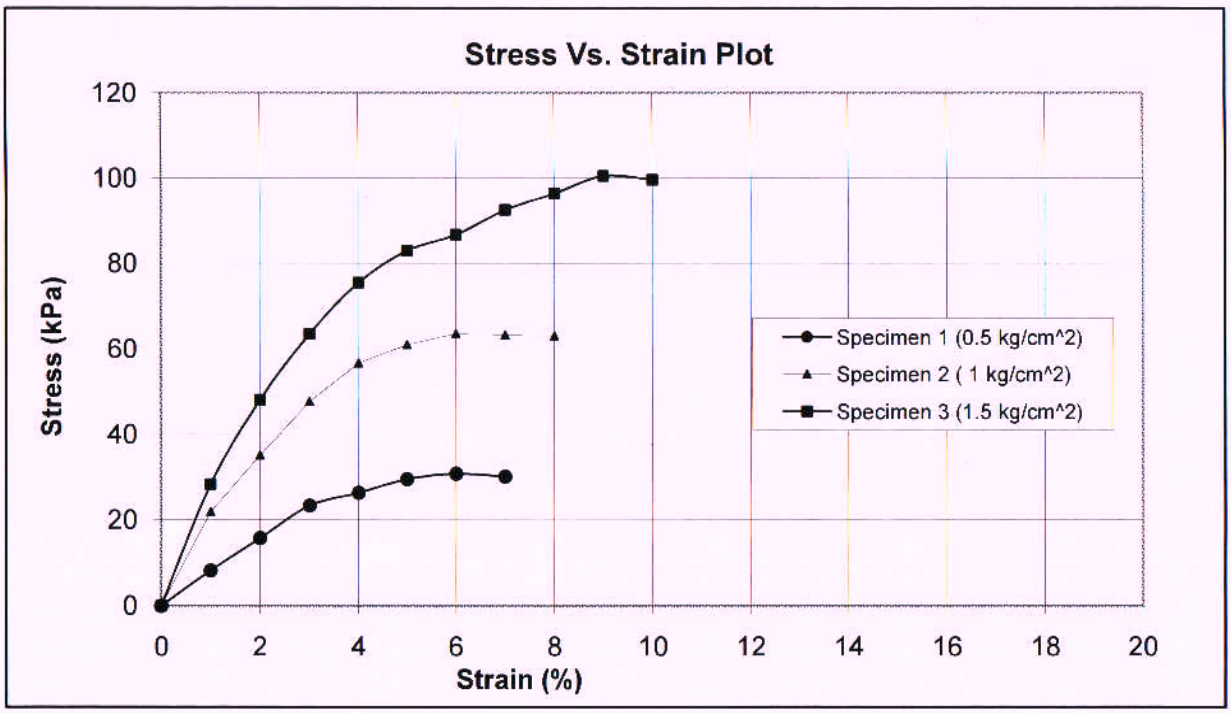
XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.67	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	33.3 °

BH No: 1	Chainage 28+880	Sample No.: SPT-14	Depth (m): 21.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: Bir Singh **Date:** 28/1/016

Checked by: **Date:** 22/2/16

Authorised Signatory: **Date:** 22/2/16

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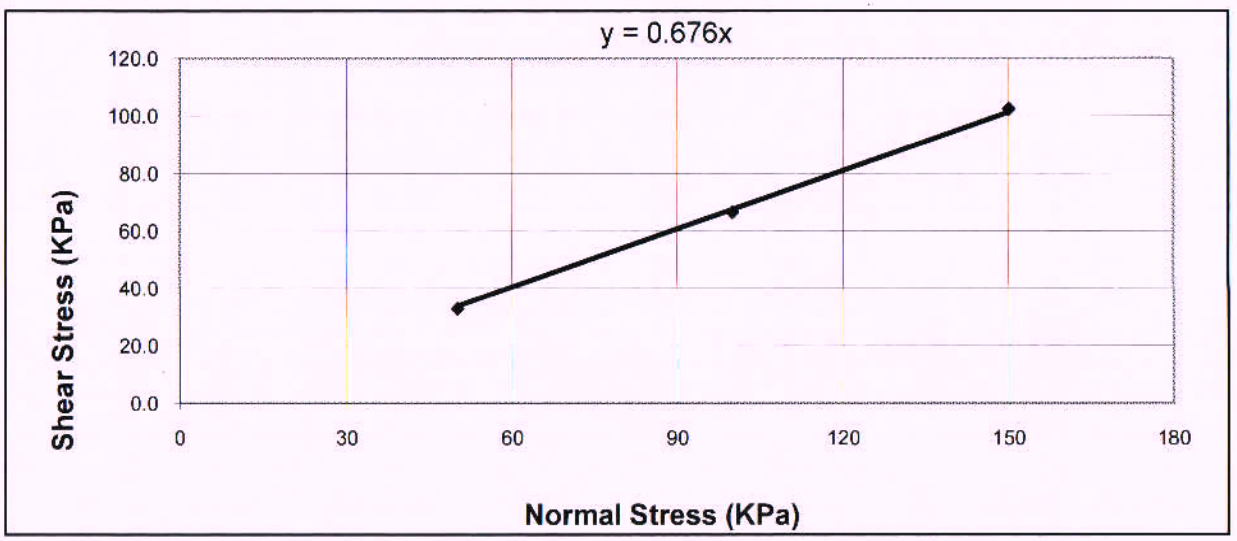
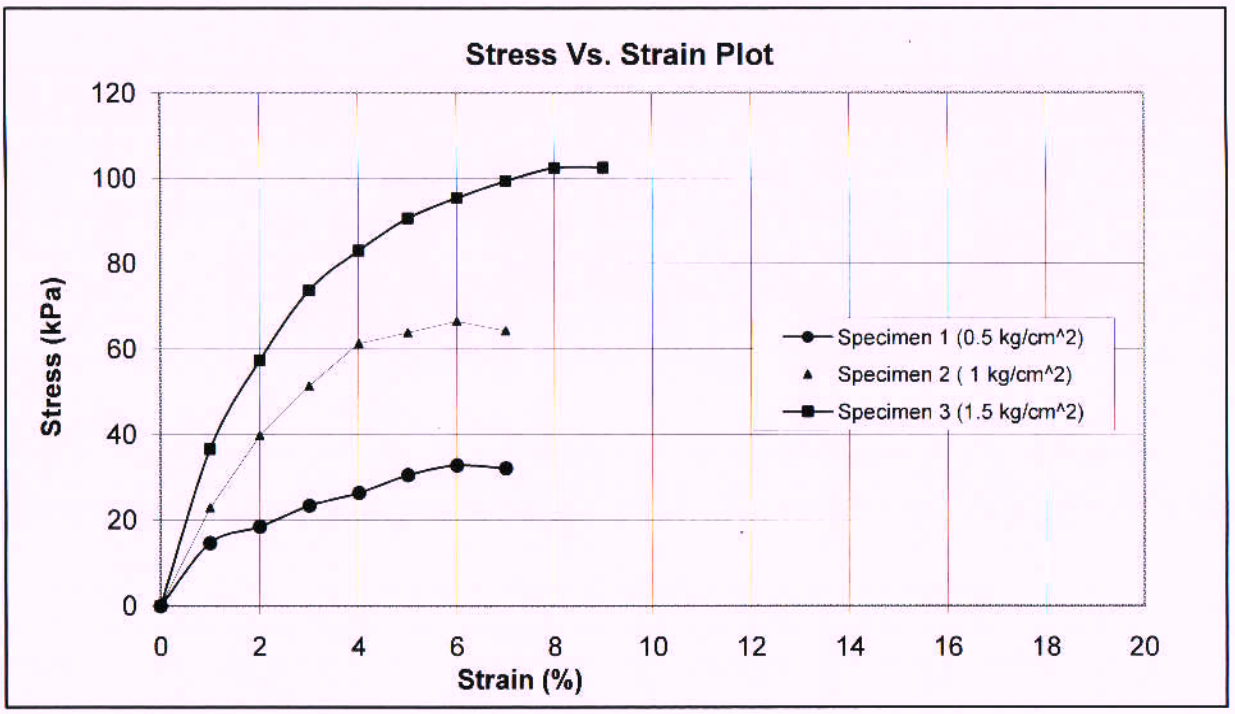
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.67	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	34.0 °

BH No: 1	Chainage 28+880	Sample No.: SPT-18	Depth (m): 27.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: Bhimsingh **Date:** 28/1/2016

Checked by: **Date:** 22/2/16

Authorised Signatory: **Date:** 22/2/16

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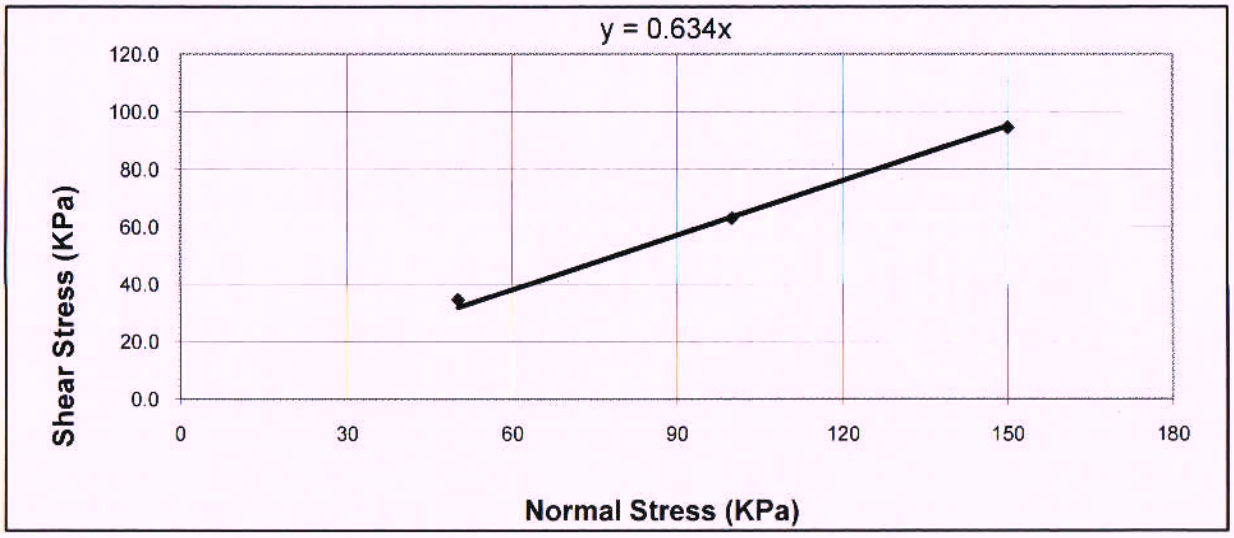
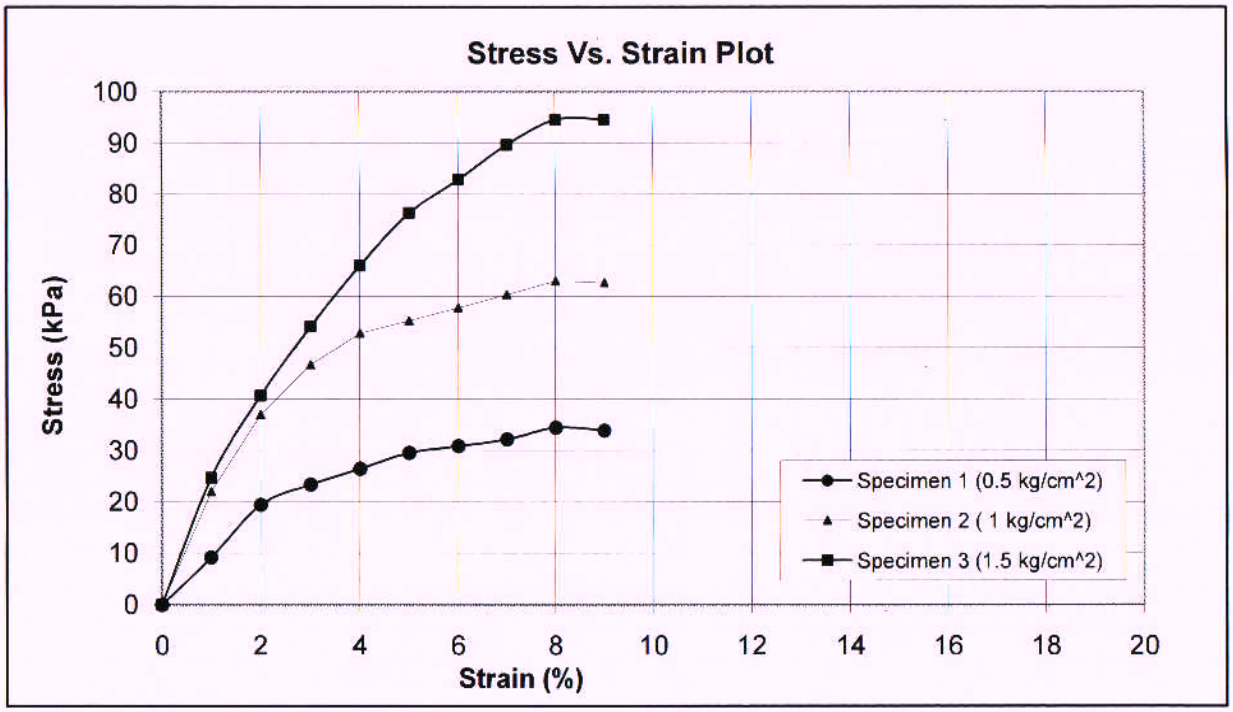
CONSULTANCY SERVICES PVT. LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.70	c =	0.0 kPa
Brownish Sandy SILT (ML)		ϕ =	32.4 °

BH No: 1	Chainage 30+780	Sample No.: SPT-6	Depth (m): 9.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by:	**Checked by:**	**Authorised Signatory:**
Date: 28/1/2016	**Date:** 22/2/16	**Date:** 22/2/16

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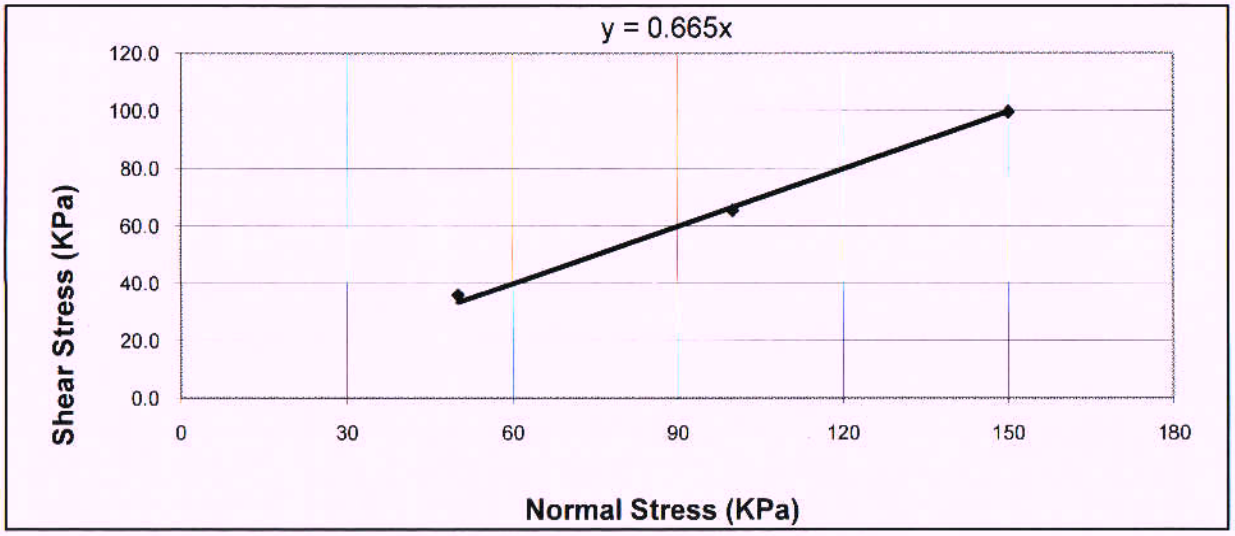
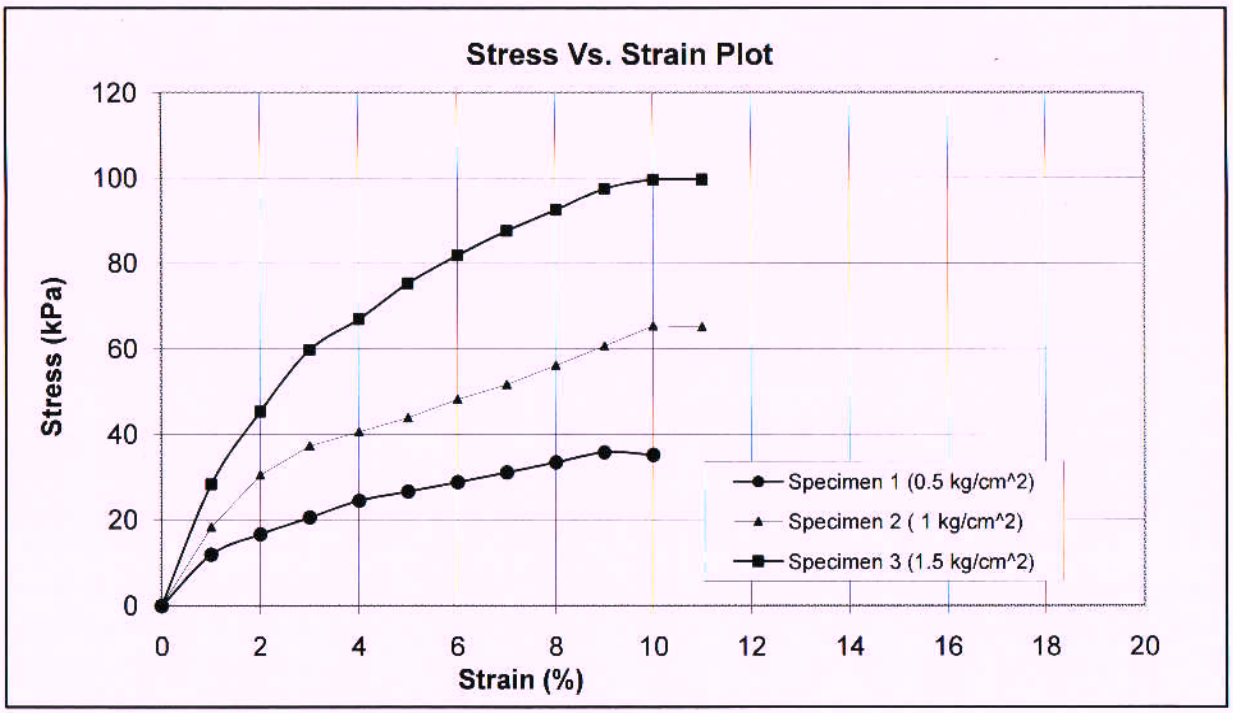
NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.75	c =	0.0 kPa
Brownish Silty SAND(SM)		ϕ =	33.6 °

BH No: 1	Chainage 30+780	Sample No.: SPT-8	Depth (m): 12.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: Bhimsingh **Date:** 28/1/2016

Checked by: **Date:** 22/2/16

Authorised Signatory: **Date:** 22/2/16

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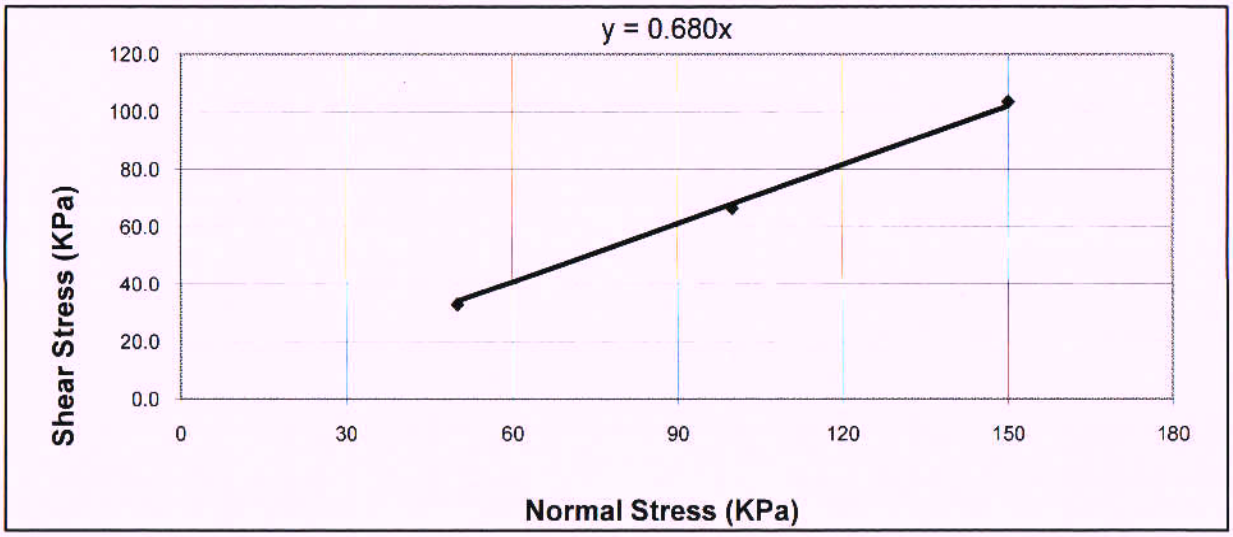
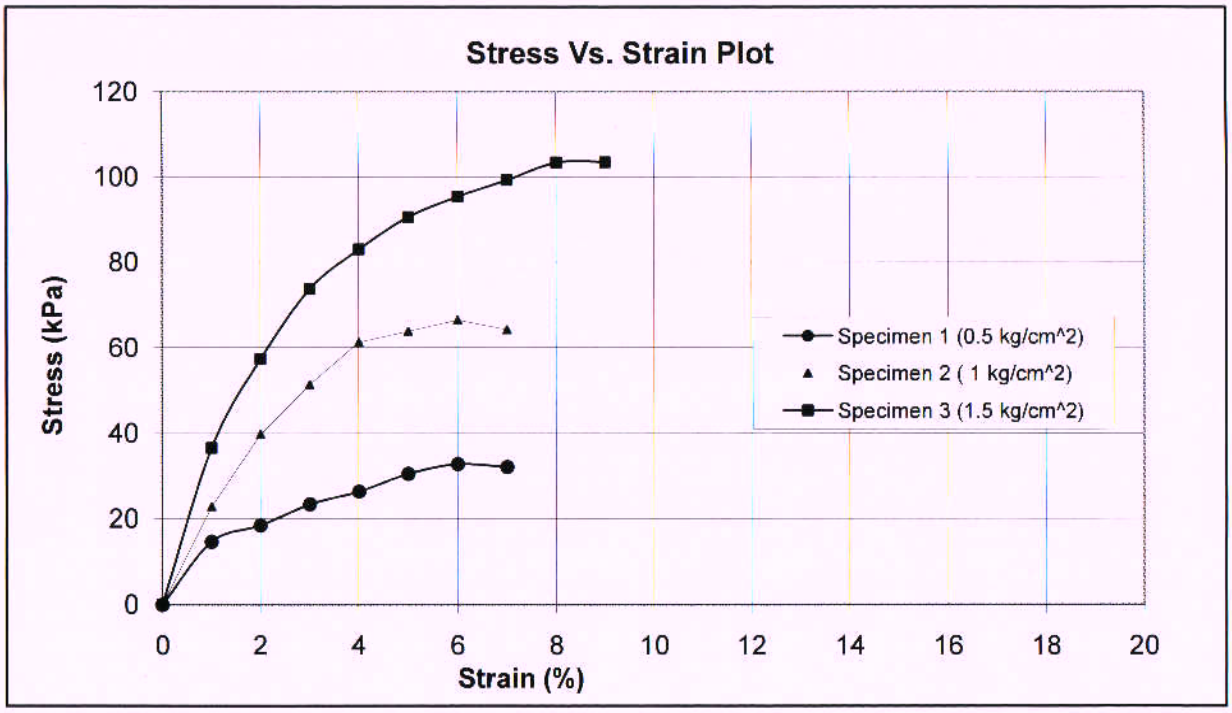
CONSULTANCY SERVICES (I) PVT. LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.58	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	34.2 °

BH No: 1	Chainage 33+050	Sample No.: SPT-4	Depth (m): 6.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by:	**Checked by:**	**Authorised Signatory:**
Bir Singh		
Date: 28/1/16	**Date:** 22/2/16	**Date:** 22/2/16

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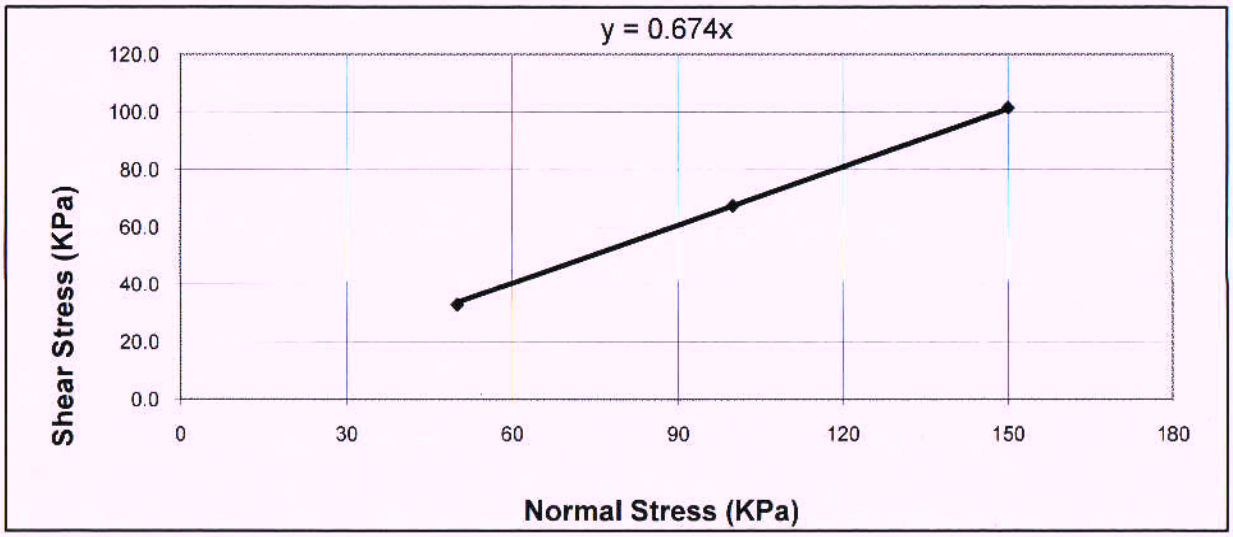
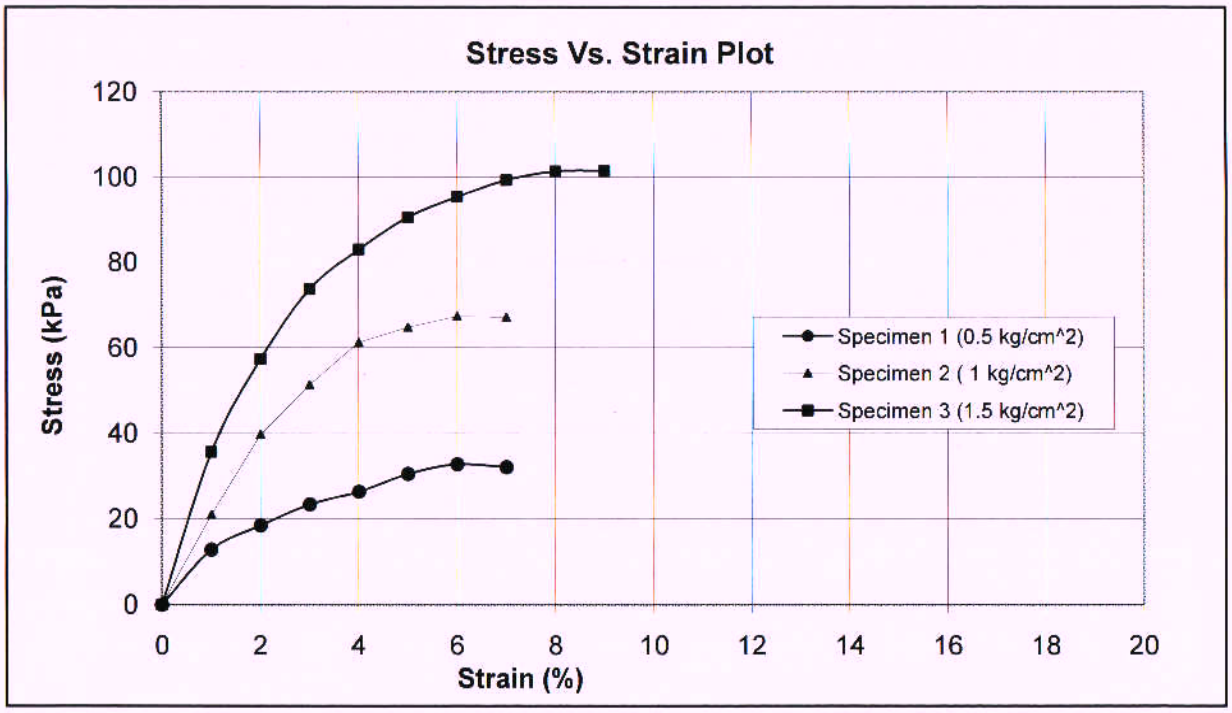
NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.64	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	34.0 °

BH No: 1	Chainage 33+050	Sample No.: SPT-11	Depth (m): 16.50
Site Ref:	Hapur - Meerut Section		Job No : 1342
			Test Report No: XPL/2015-16/02

Tested by:	Checked by:	Authorised Signatory:
Date: 28/1/016	Date: 22/2/16	Date: 22/2/16

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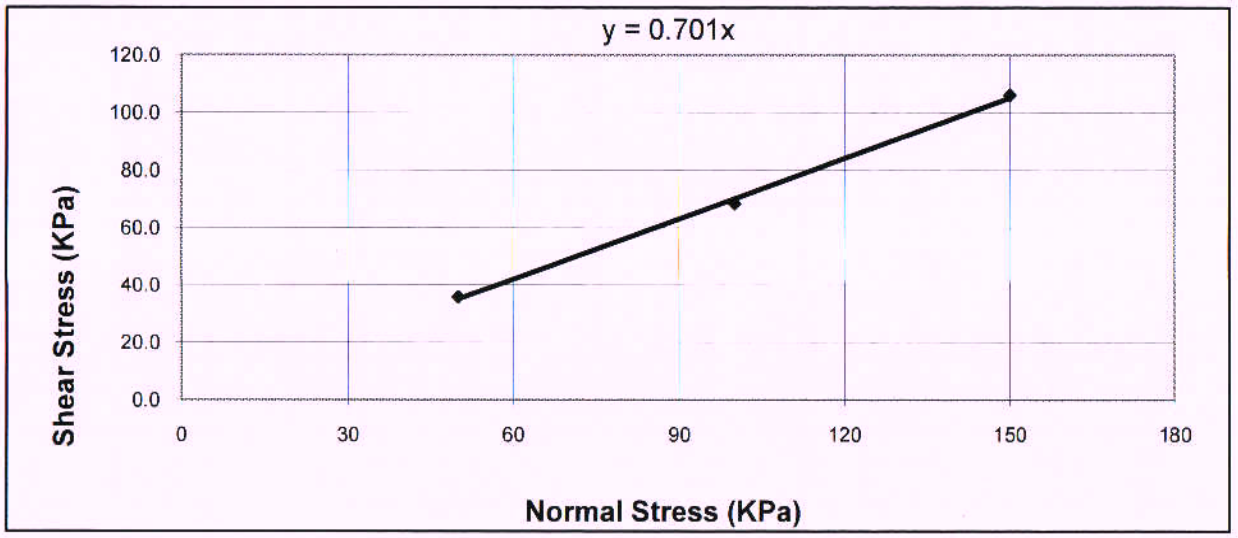
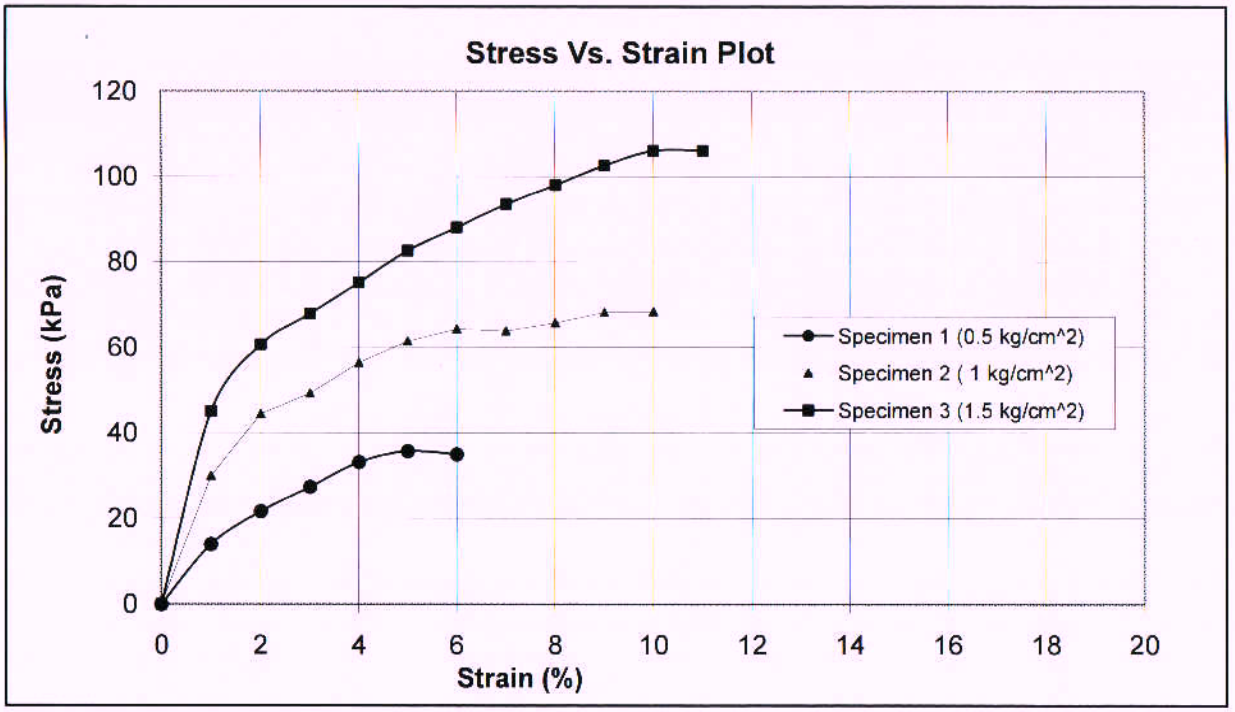
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.68	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	35.0 °

BH No: 1	Chainage 33+050	Sample No.: SPT-18	Depth (m): 27.00
Site Ref:	Hapur - Meerut Section		Job No : 1342
			Test Report No: XPL/2015-16/02

Tested by:	Checked by:	Authorised Signatory:
Date: 28/1/2016	Date: 22/2/16	Date: 22/2/16

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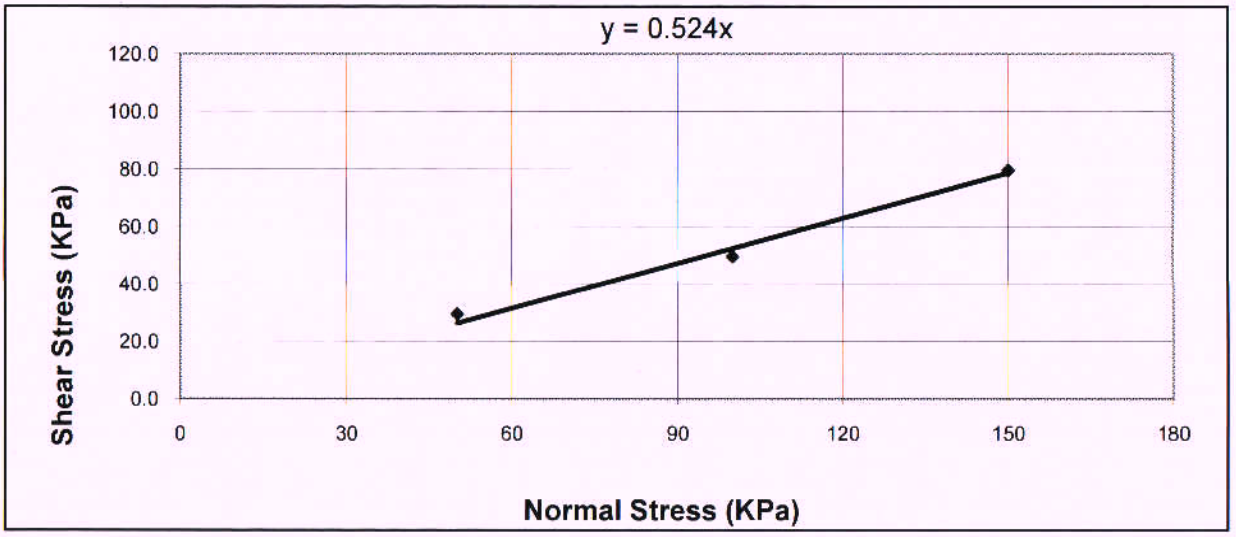
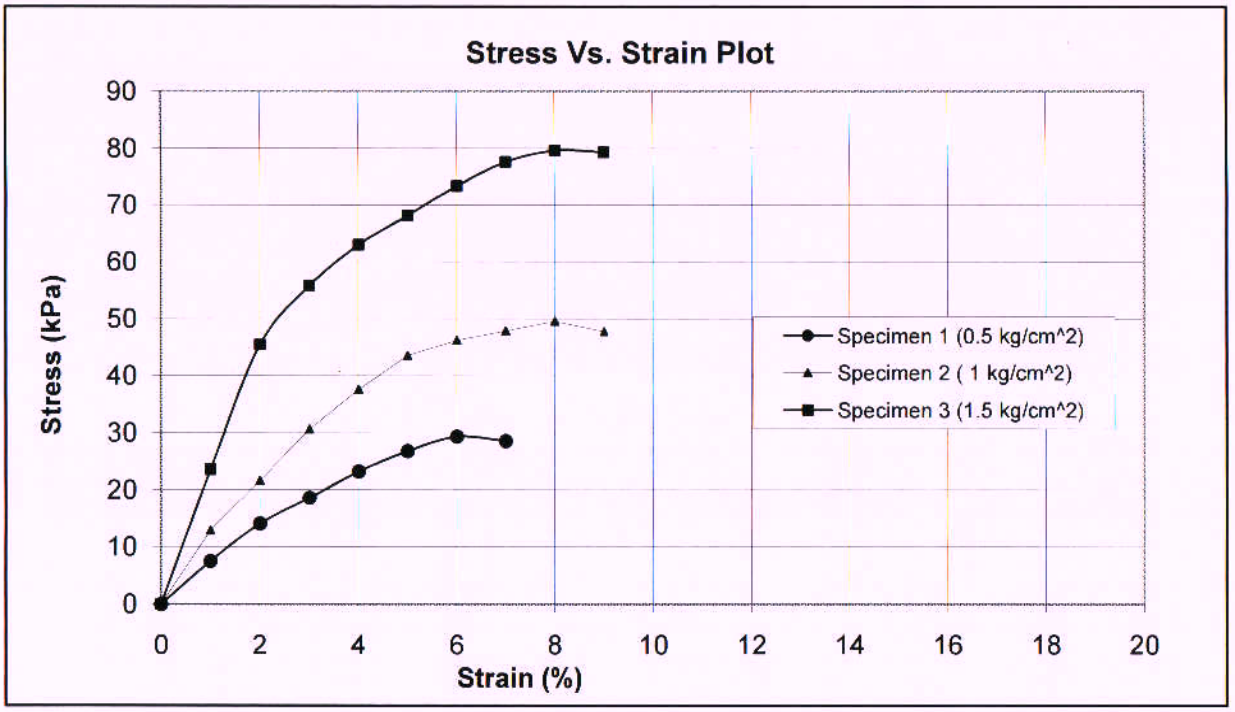
NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.64	c =	0.0 kPa
Brownish Sandy SILT(ML)		ϕ =	27.6 °

BH No: 1	Chainage 34+986	Sample No.: UDS-1	Depth (m): 2.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: **Checked by:** **Authorised Signatory:**

Date: 28/11/2016 **Date:** 22/2/16 **Date:** 22/2/16

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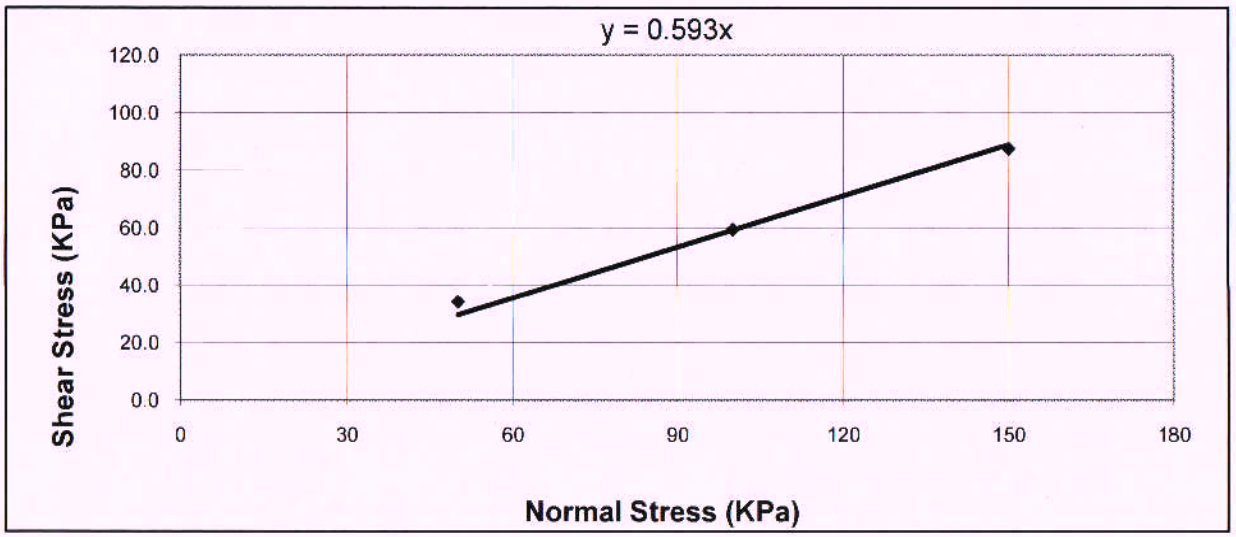
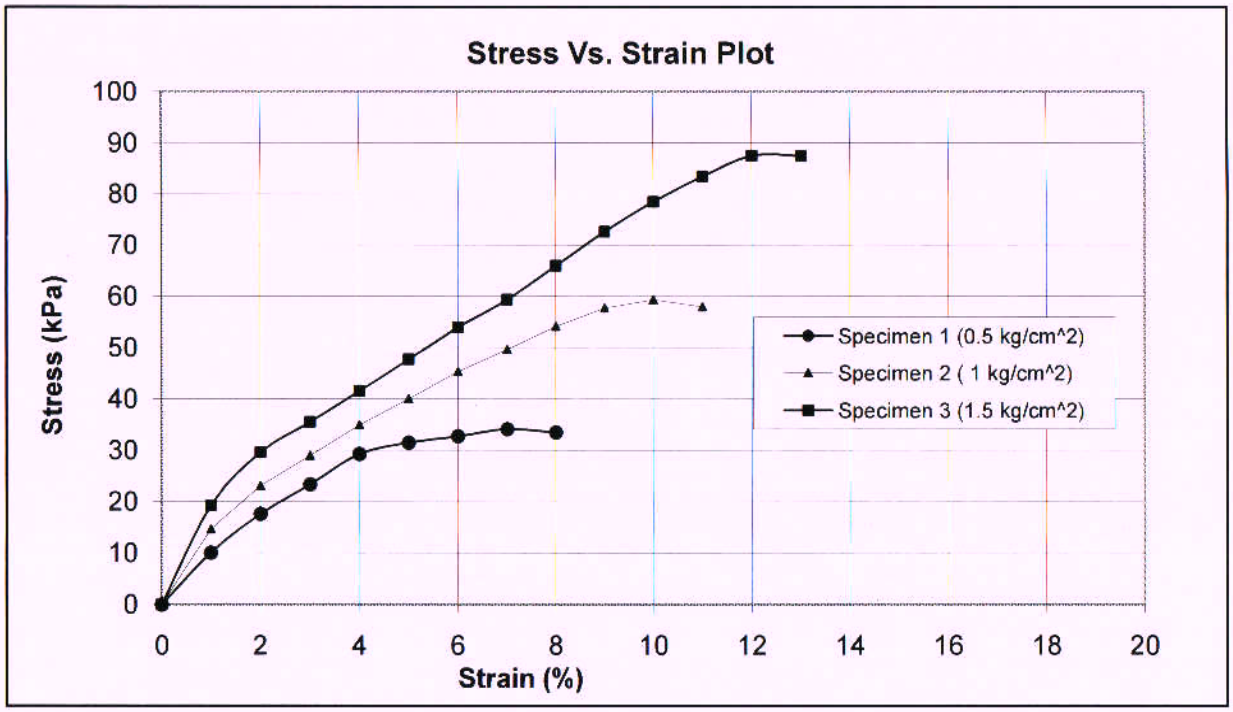
NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.63	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	30.7 °

BH No: 1	Chainage 34+986	Sample No.: SPT-5	Depth (m): 7.50
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: **Checked by:** **Authorised Signatory:**

Date: 22/2/16 **Date:** 22/2/16 **Date:** 22/2/16

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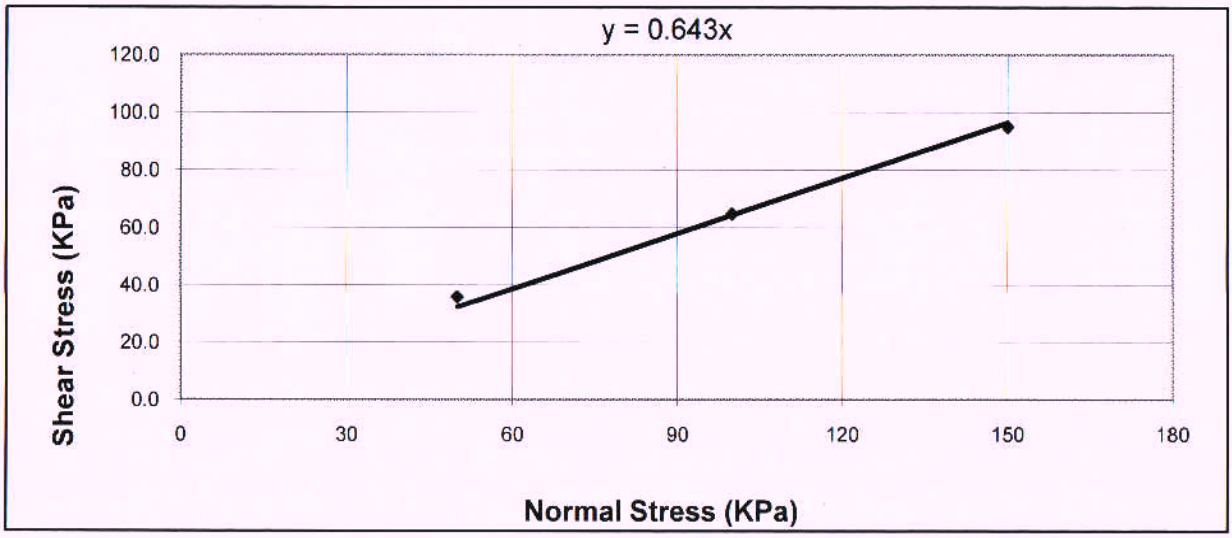
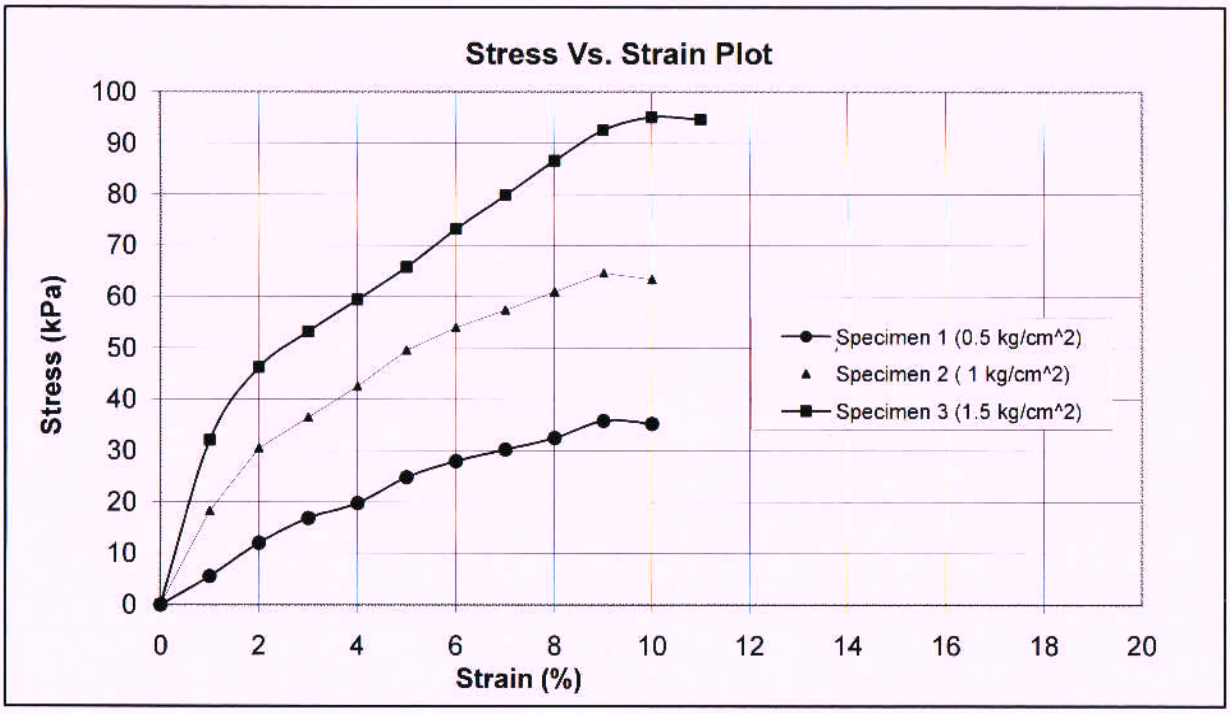
NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.70	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	32.7 °

BH No: 1	Chainage 34+986	Sample No.: SPT-12	Depth (m): 18.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: **Checked by:** **Authorised Signatory:**

Date: 29/11/16 **Date:** 22/12/16 **Date:** 22/12/16

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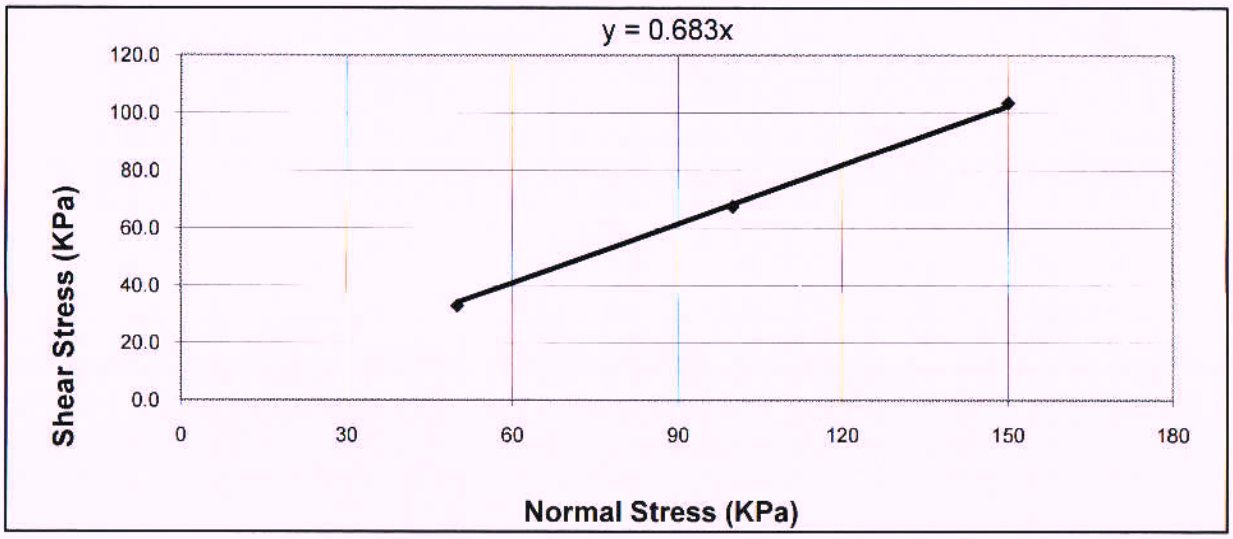
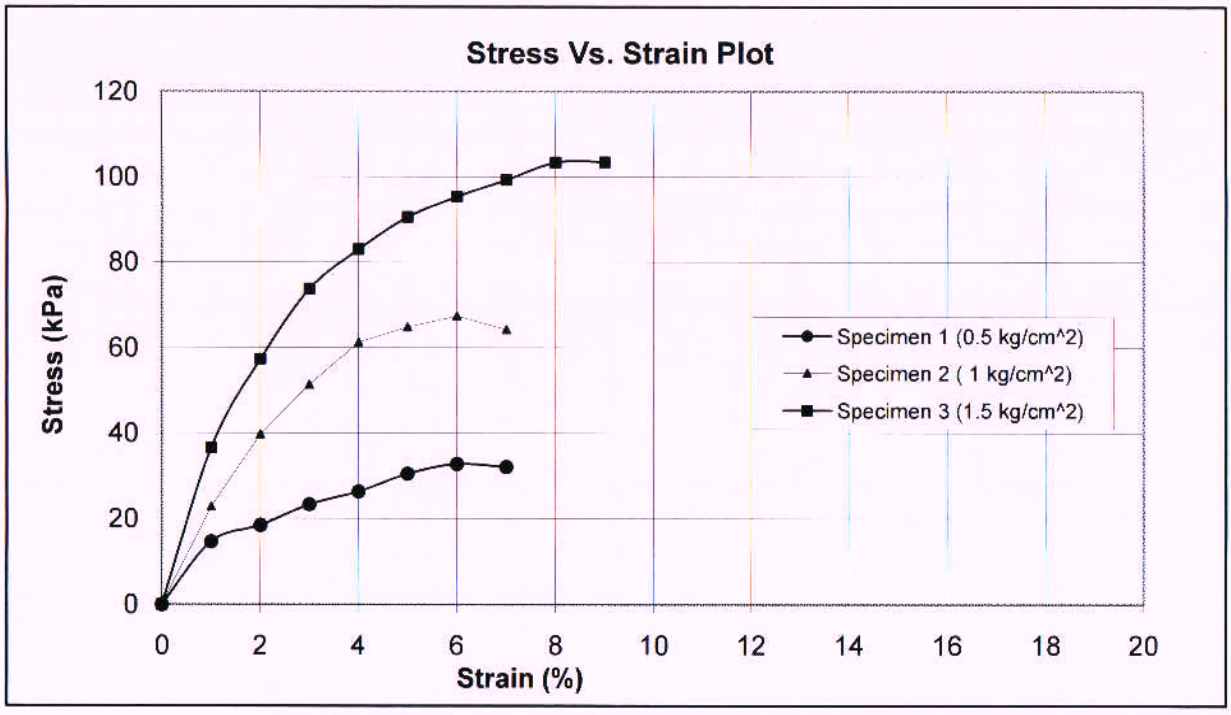
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.75	c =	0.0 kPa
Brownish Silty SAND (SW-SM)		ϕ =	34.3 °

BH No: 1	Chainage 34+986	Sample No.: SPT-19	Depth (m): 28.50
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by:	**Checked by:**	**Authorised Signatory:**
Date: 28/11/16	Date: 22/12/16	Date: 22/12/16

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CERTIFICATE NO.T-1678

DIRECT SHEAR TEST RESULT
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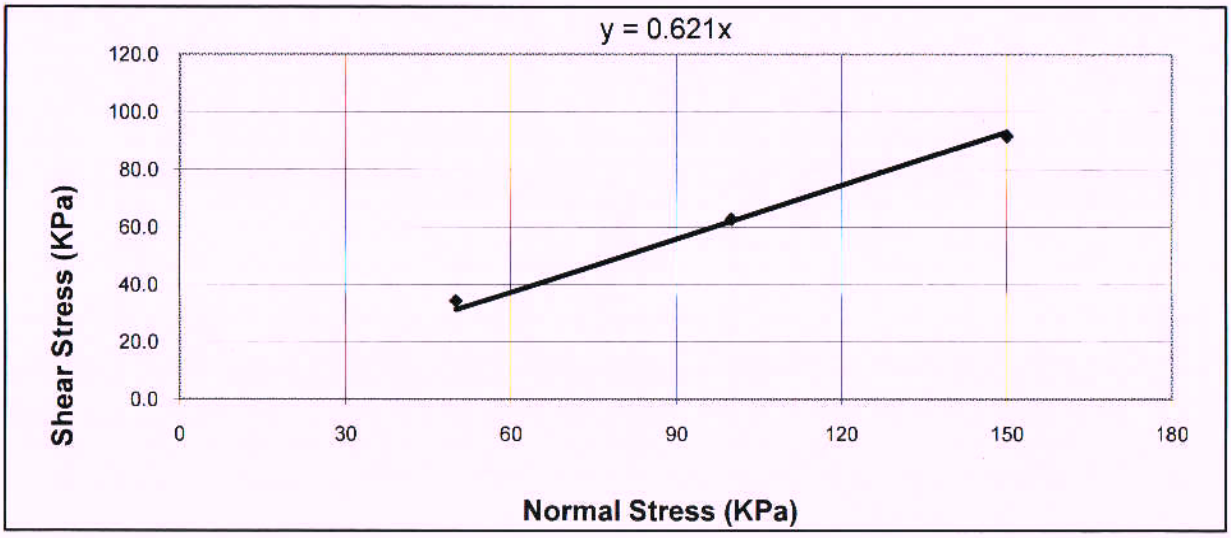

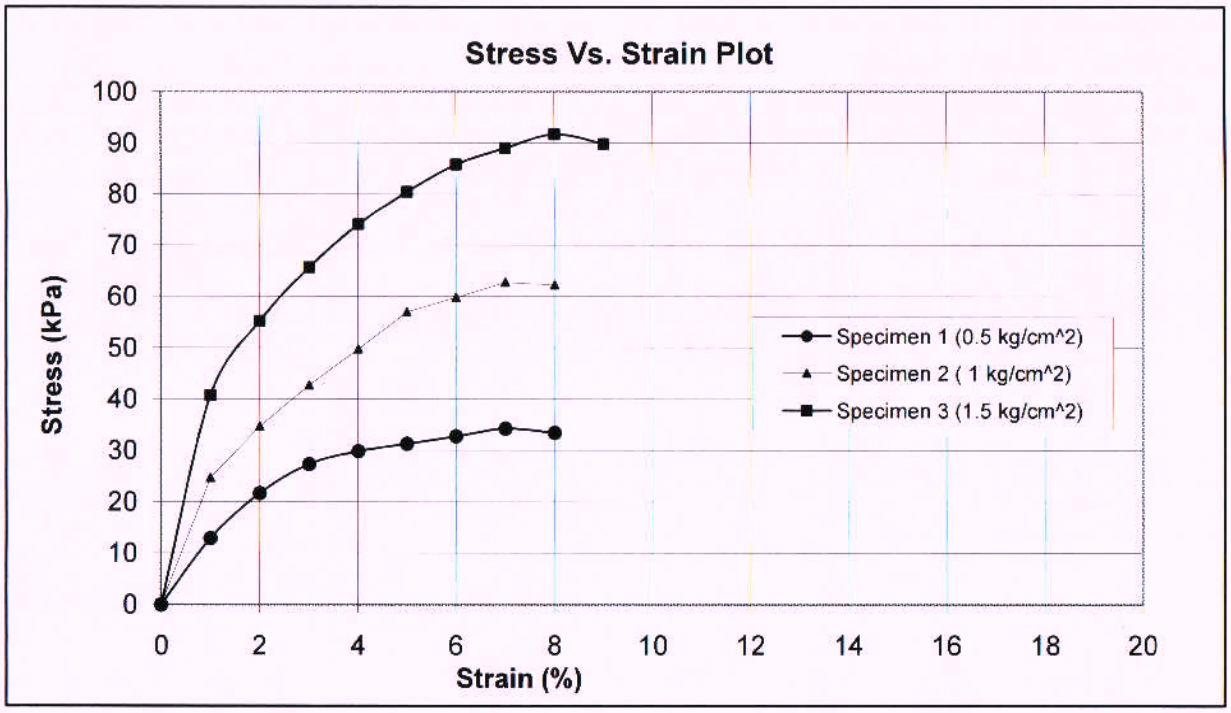

Sample Details		Test Result	
Dry-density,(mg/m³)=	1.57	c =	0.0 kPa
Brownish Silty SAND(SM)		ϕ =	31.8 °

BH No: 2	Chainage 34+986	Sample No.: UDS-1	Depth (m): 2.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: Date: 29/1/816

Checked by: Date: 22/2/16

Authorised Signatory: Date: 22/2/16

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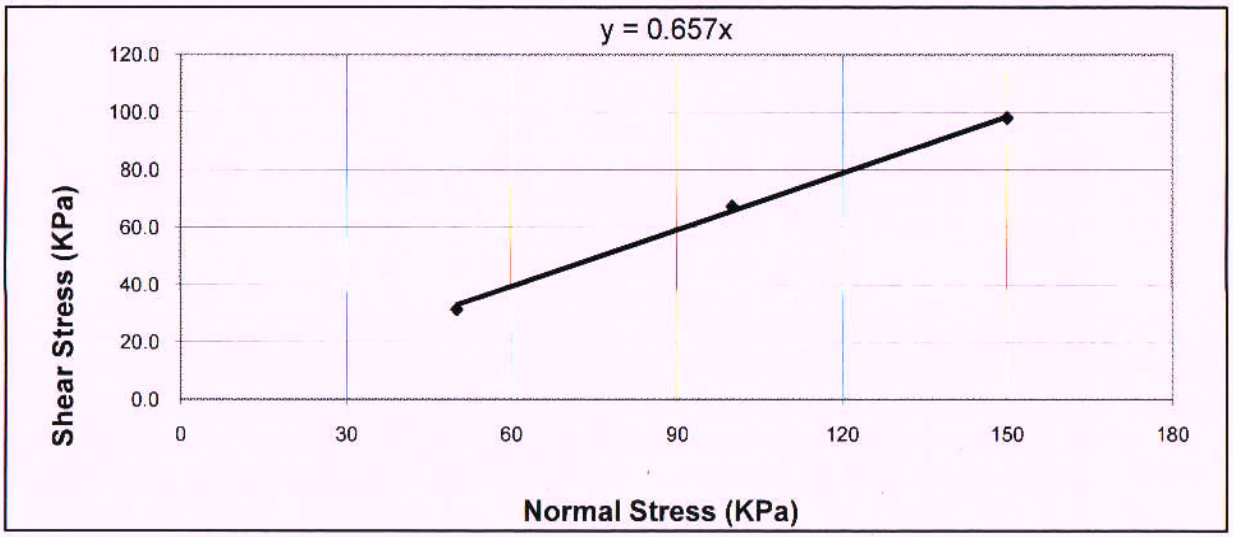
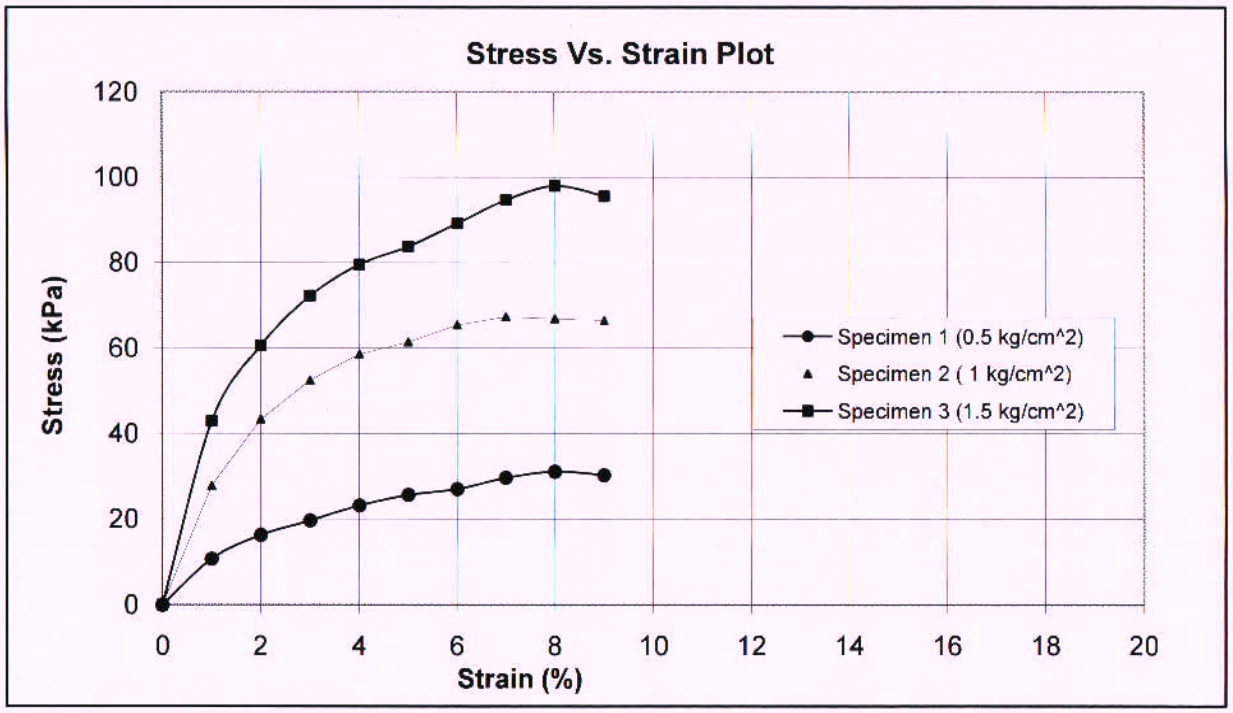
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
I.S.: 2720 : PART XIII





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.60	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	33.3 °

BH No: 2	Chainage 34+986	Sample No.: SPT-11	Depth (m): 16.50
Site Ref:	Hapur - Meerut Section		Job No : 1342
			Test Report No: XPL/2015-16/02

Tested by:	Checked by:	Authorised Signatory:
Date: 29/1/2016	Date: 22/2/16	Date: 22/2/16

XPLORER
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NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

DIRECT SHEAR TEST RESULT
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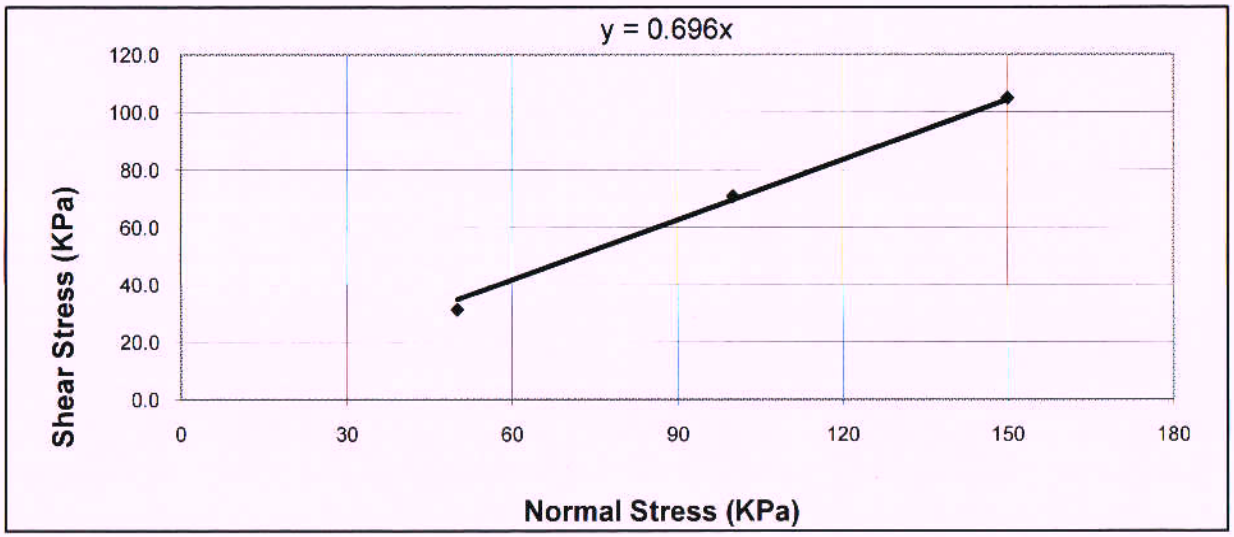

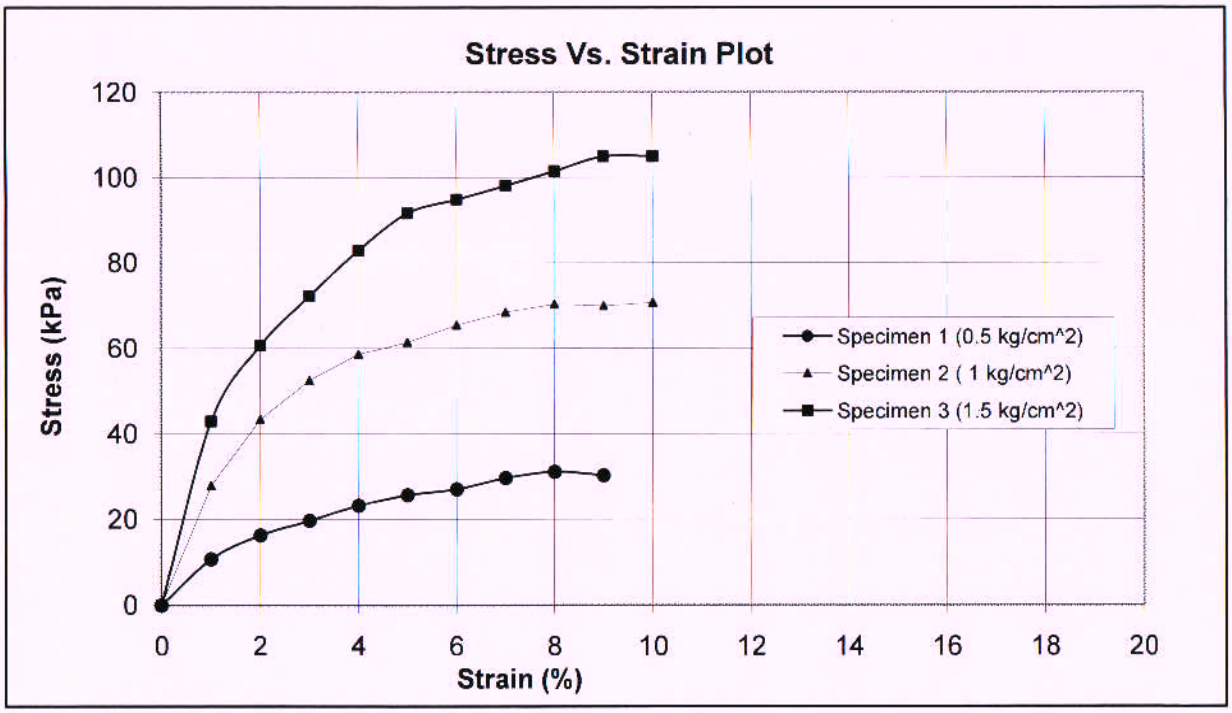

Sample Details		Test Result	
Dry-density,(mg/m³)=	1.72	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	34.8 °

BH No: 2	Chainage 34+986	Sample No.: SPT-18	Depth (m): 27.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

Tested by: Bhimsingh **Date:** 29/1/2016

Checked by: **Date:** 22/2/16

Authorised Signatory: **Date:** 22/2/16