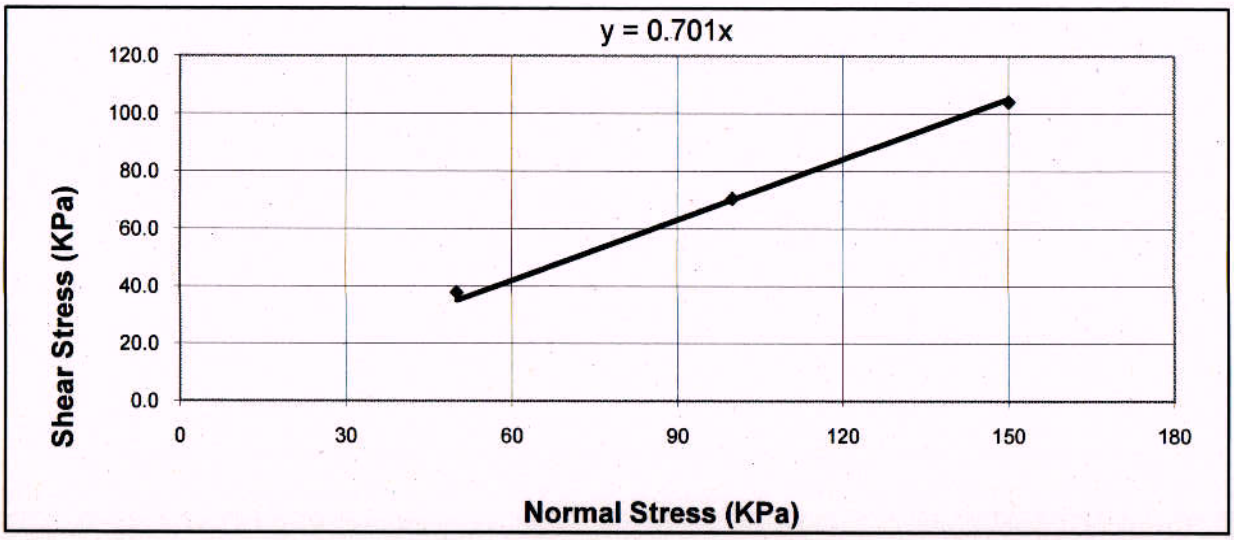
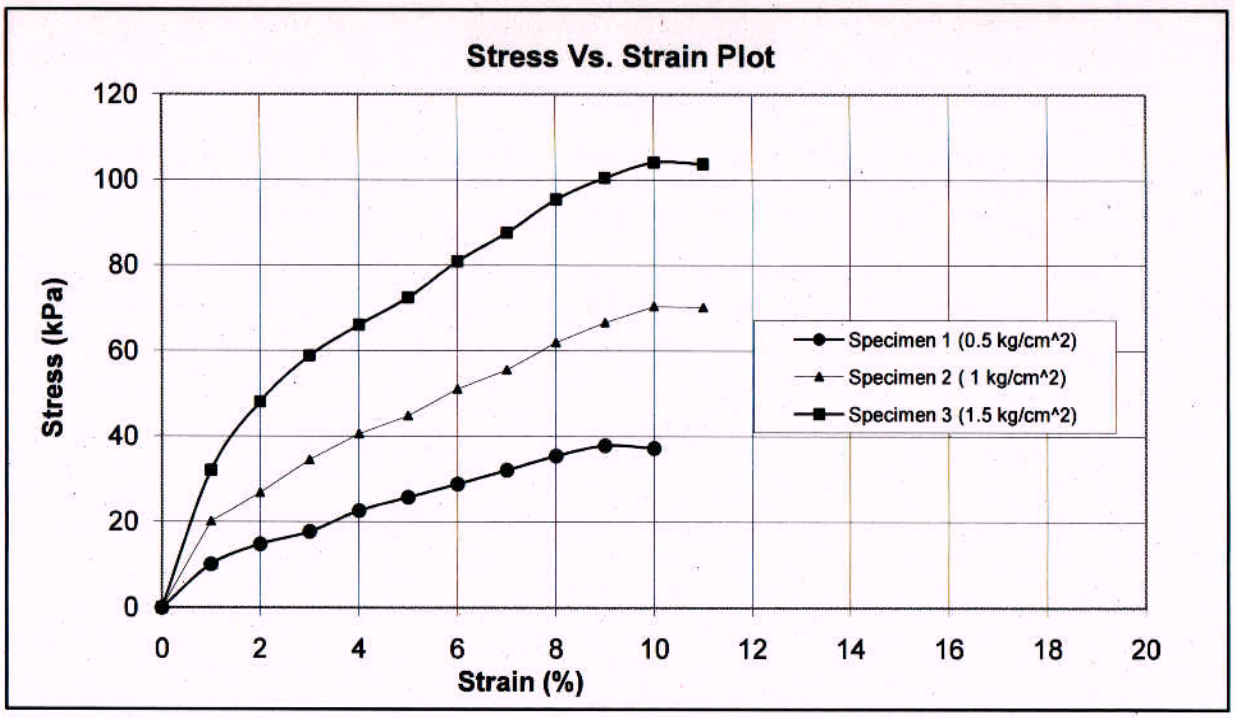
XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

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





Sample Details		Test Result	
Dry-density,(mg/m³)=	1.85	c =	0.0 kPa
Poorly Graded SAND(SP)		ϕ =	35.0 °

BH No: 1	Chainage 63+570	Sample No.: SPT-17	Depth (m): 25.50
Site Ref:	Hapur - Meerut Section		Job No : 1342
			Test Report No: XPL/2015-16/02

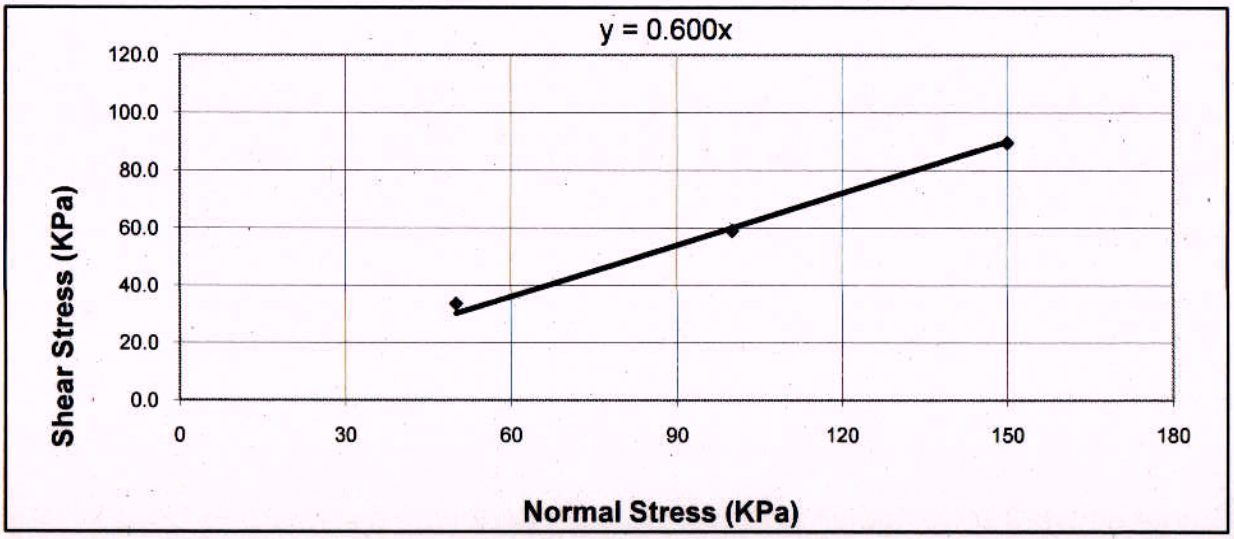
Tested by: **Checked by:** **Authorised Signatory:**

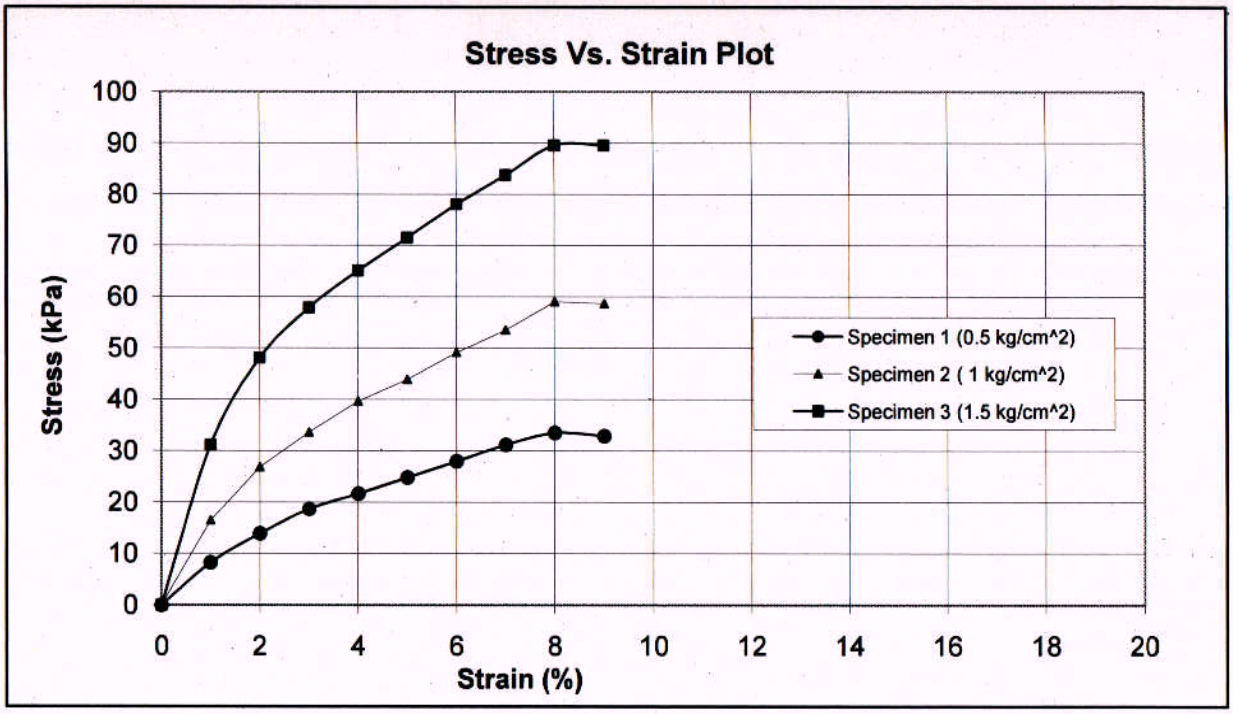
Date: 2/3/16 **Date:** 14/3/16 **Date:** 14/3/16

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)=	1.69	c =	0.0 kPa
Brownish Silty SAND(SM)		ϕ =	31.0 °

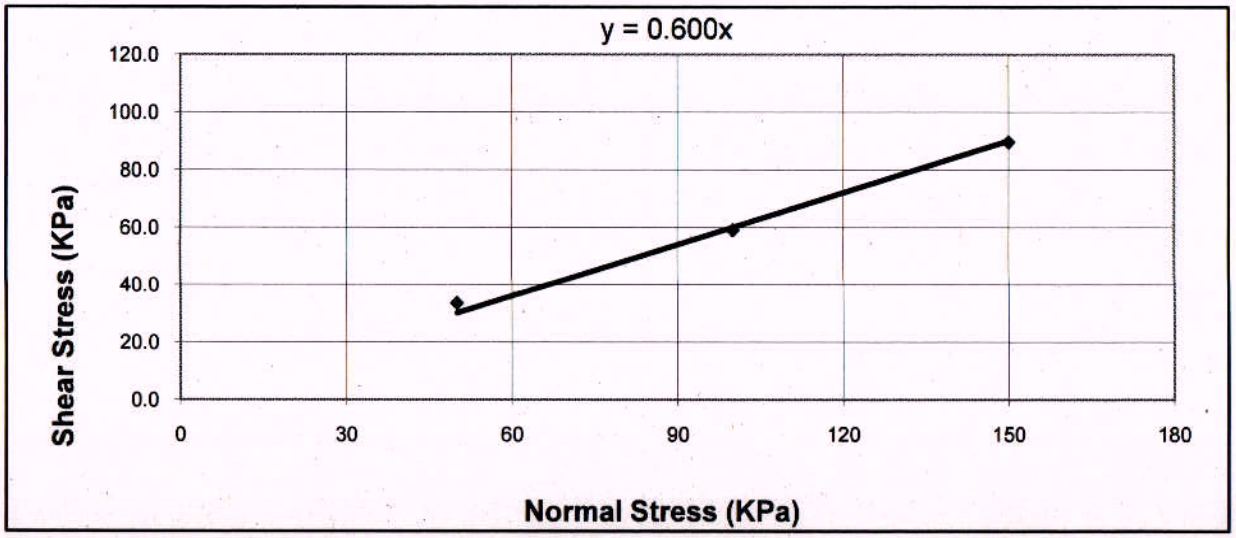
BH No: 1	Chainage 64+270	Sample No.: SPT-1	Depth (m): 1.50
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

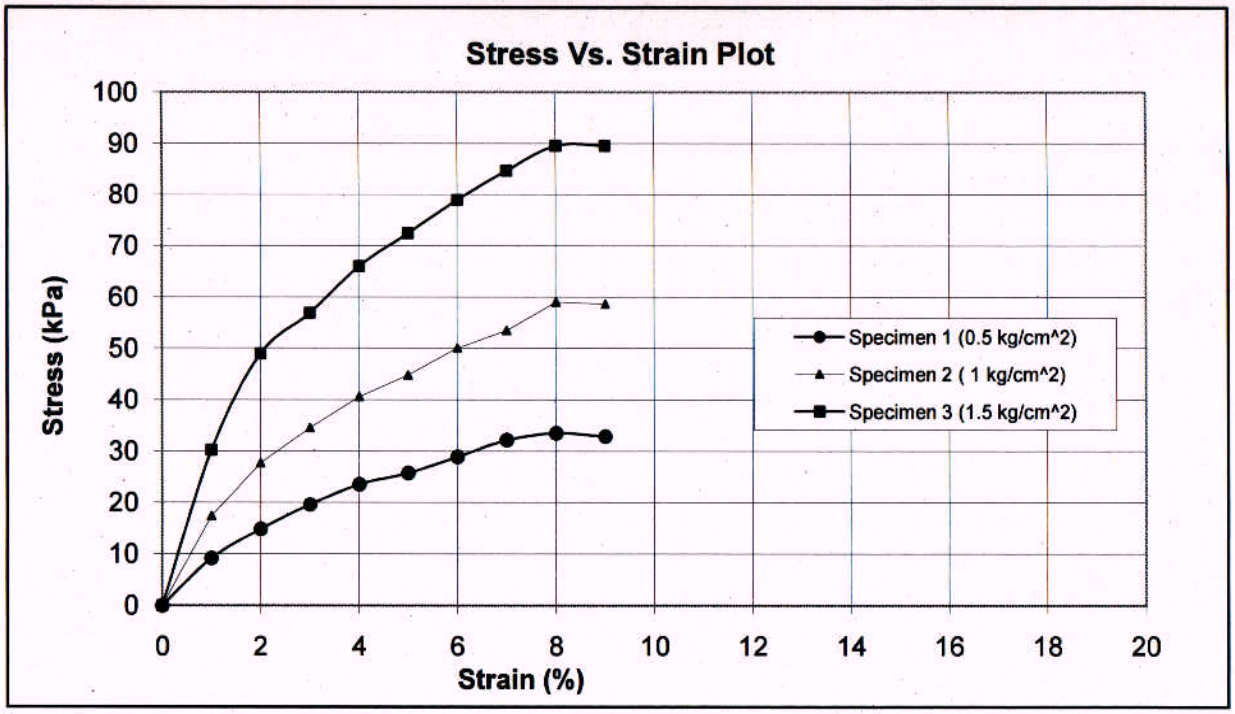
Tested by:	**Checked by:**	**Authorised Signatory:**
Date: 2/3/16	**Date:** 14/3/16	**Date:** 14/3/16

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)=	1.73	c =	0.0 kPa
Brownish Sandy SILT (ML)		ϕ =	31.0 °

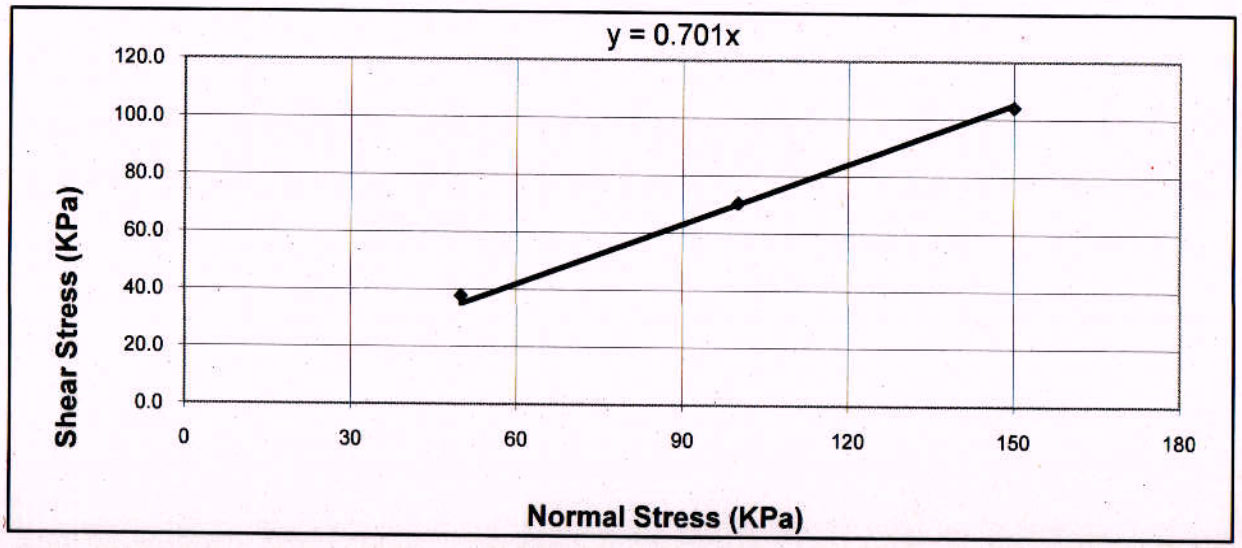
BH No: 1	Chainage 64+270	Sample No.: UDS-4	Depth (m): 11.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

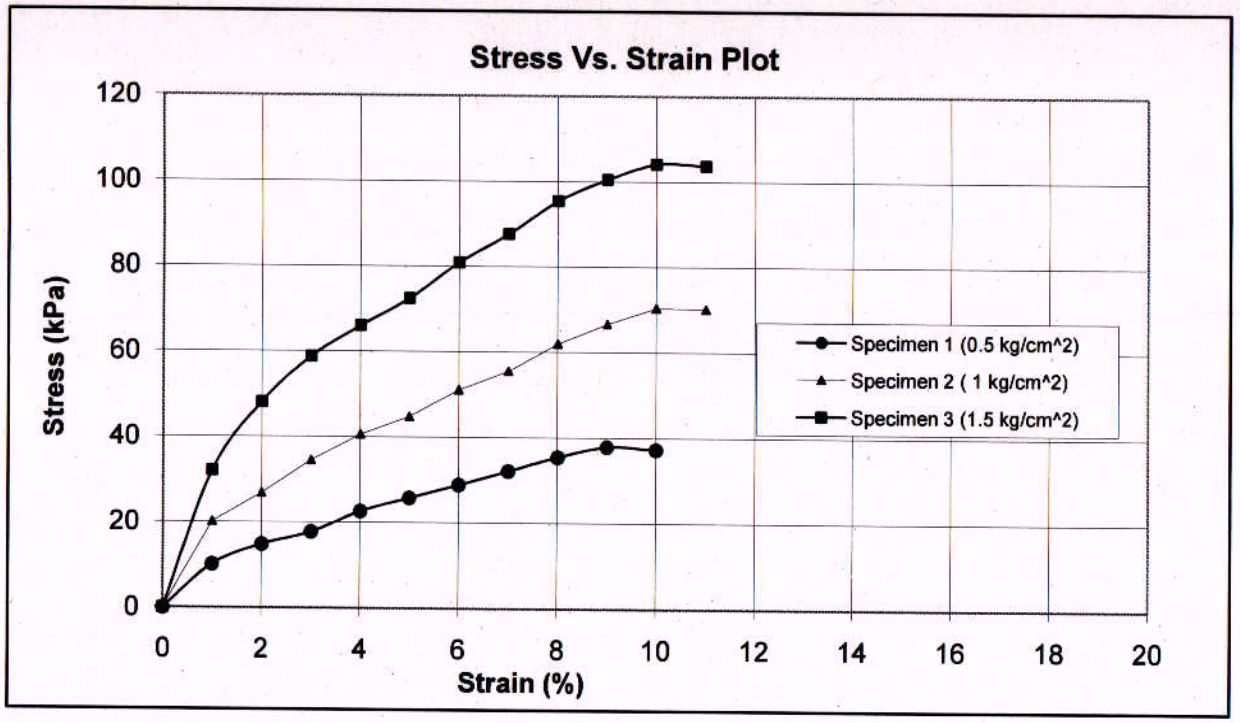
Tested by:	**Checked by:**	**Authorised Signatory:**
Date: 3/3/16	**Date:** 14/3/16	**Date:** 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

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





Sample Details

Dry-density,(mg/m³)= 1.80

Poorly Graded SAND(SP)

Test Result

c = 0.0 kPa

ϕ = 35.0 °

BH No: 1	Chainage 64+270	Sample No.: SPT-17	Depth (m): 25.50
Site Ref: Hapur - Meerut Section			Job No : 1342
			Test Report No: XPL/2015-16/02

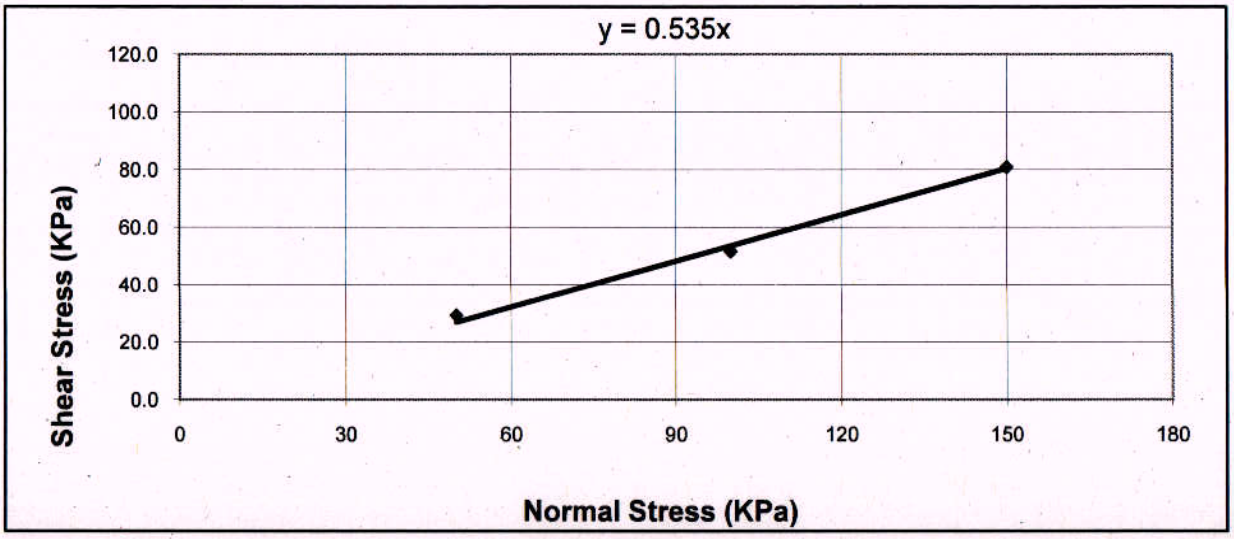
Tested by: **Checked by:** **Authorised Signatory:**

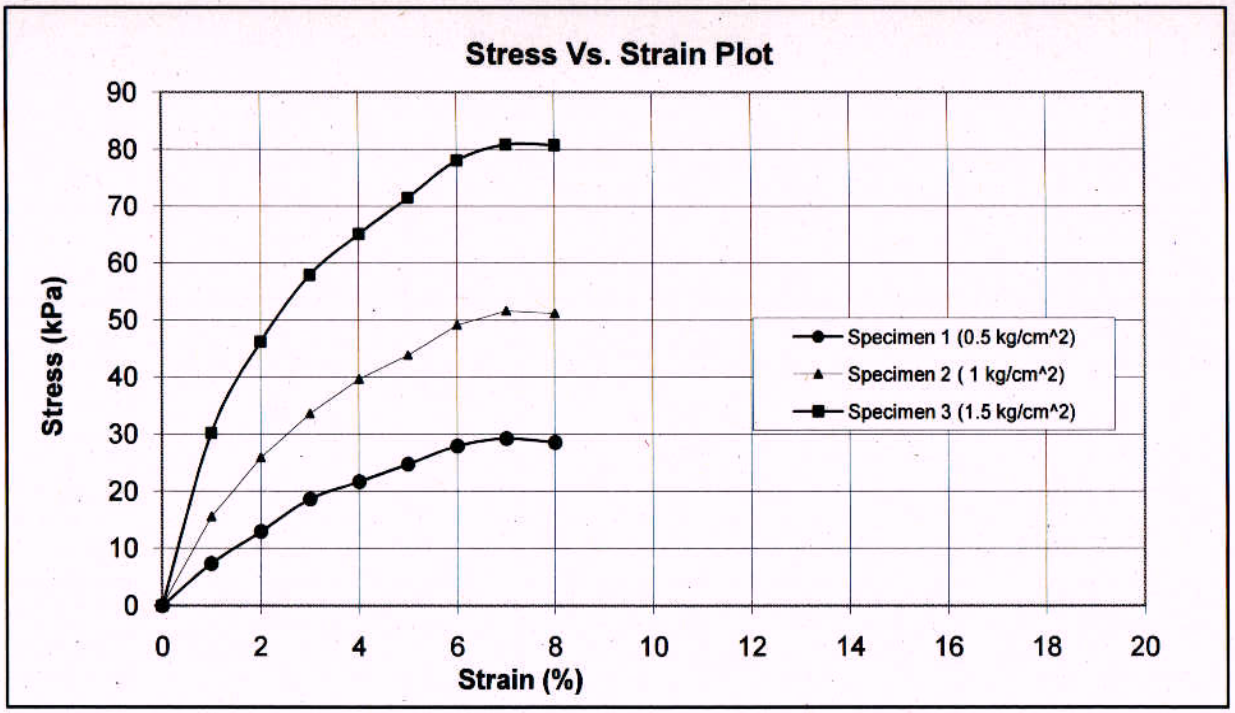
Date: 3/3/16 **Date:** 14/3/16 **Date:** 14/3/16

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)=	1.62	c =	0.0 kPa
Brownish Sandy SILT (ML)		ϕ =	28.1 °

BH No: 1	Chainage 65+780	Sample No.: UDS-1	Depth (m): 2.00
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

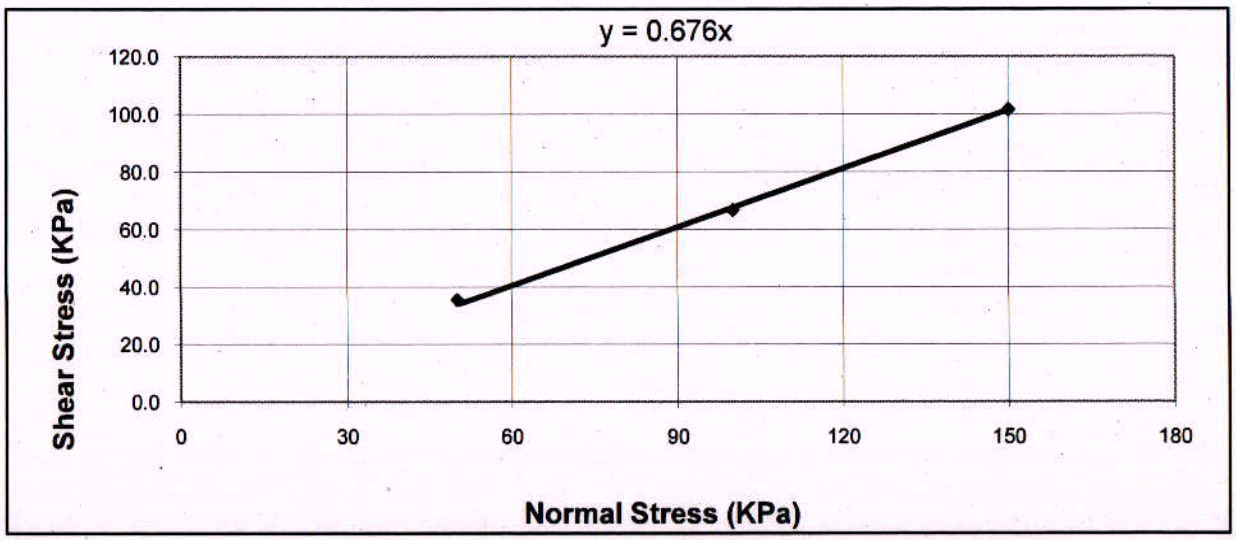
Tested by: **Checked by:** **Authorised Signatory:**

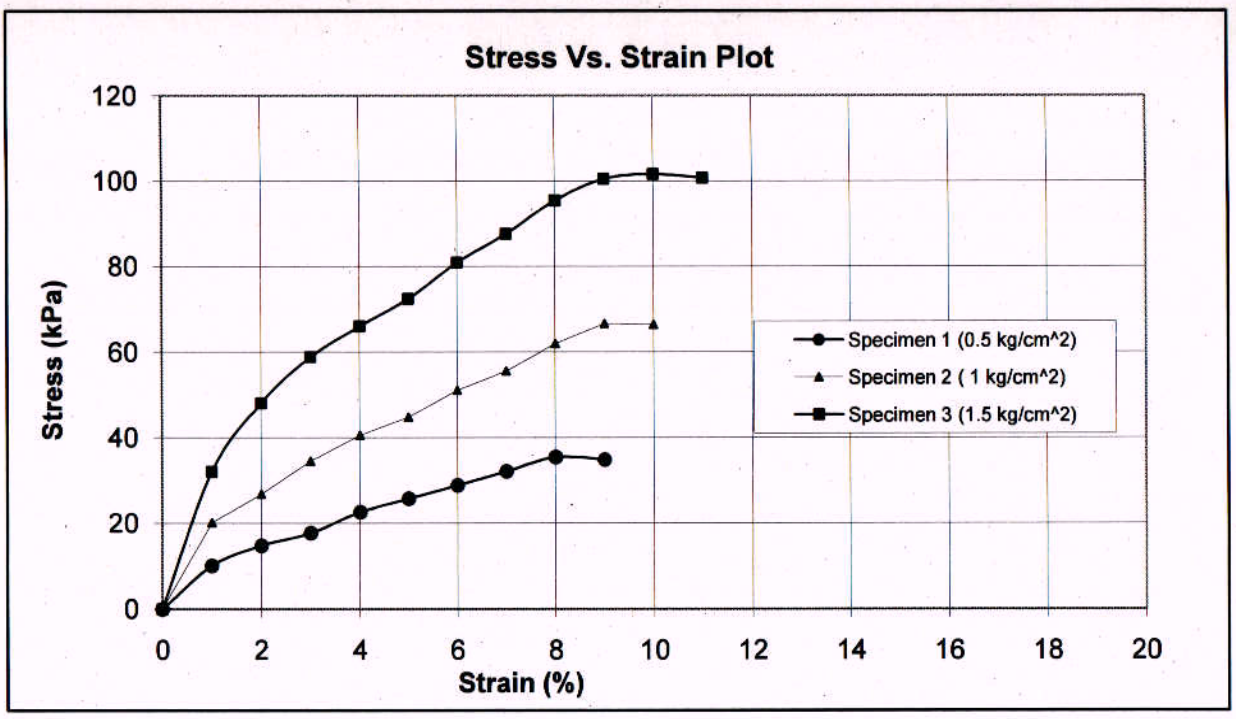
Date: 3/3/16 **Date:** 14/3/16 **Date:** 14/3/16

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)=	1.88	c =	0.0 kPa
Brownish Silty SAND(SW-SM)		ϕ =	34.0 °

BH No: 1	Chainage 65+780	Sample No.: SPT-15	Depth (m): 22.50
Site Ref:	**Hapur - Meerut Section**		**Job No :** 1342
			Test Report No: XPL/2015-16/02

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

Date: 3/3/016 **Date:** 14/3/16 **Date:** 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

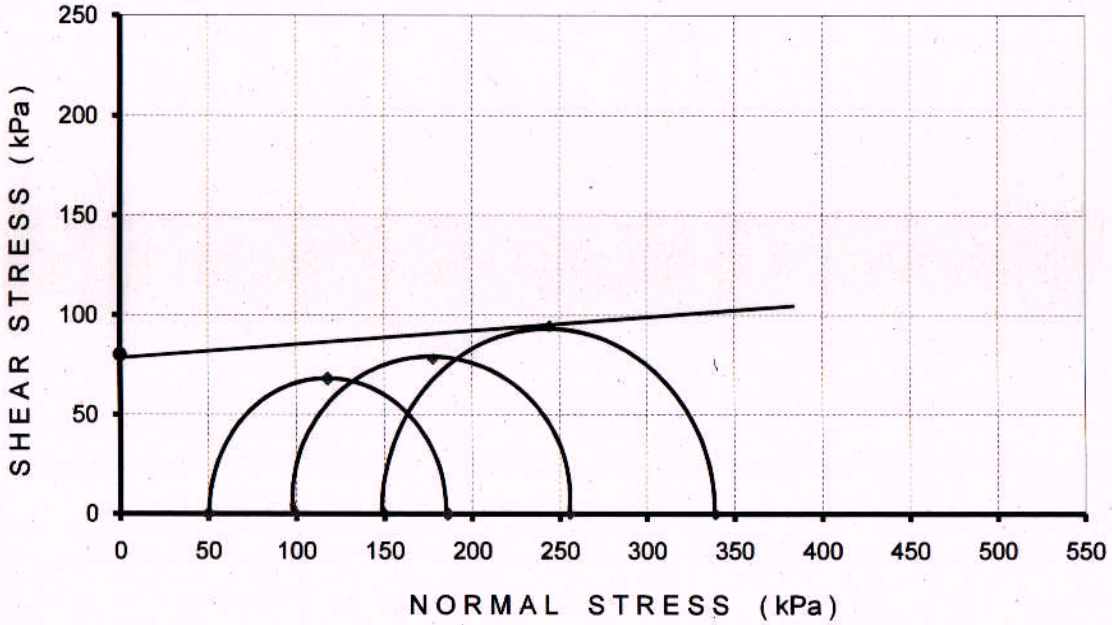
IS: 2720 , PART-11

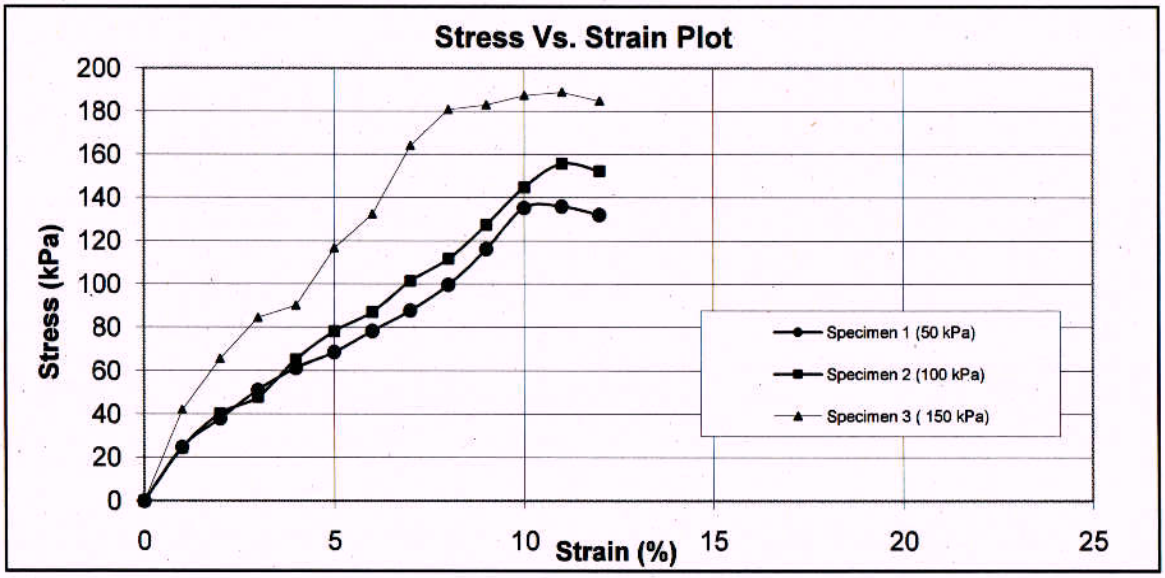
Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.72	1.51	13.60

c Value kPa	ϕ Value Degree
80	0.0

'Type of Sample Undisturbed

'Type of Soil Silty CLAY (CL)





Borehole No:- BH-1	Sample No:- UDS-1	Depth (m) :- 2.00
CH (Km.):- 41+916	Site Ref :- Hapur - Meerut Section	Job No :- 1342 Test Report No:XPL/2015-16/02
Operator : Date : 5/3/16	Checked by Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY

CERTIFICATE NO-T-1678

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

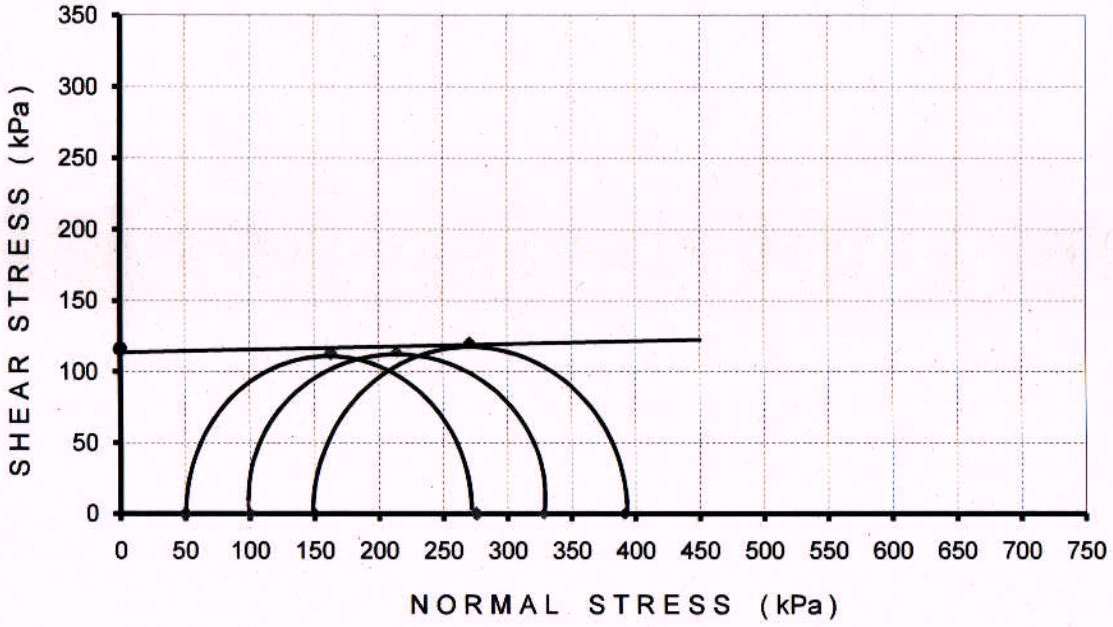
IS: 2720 , PART-11

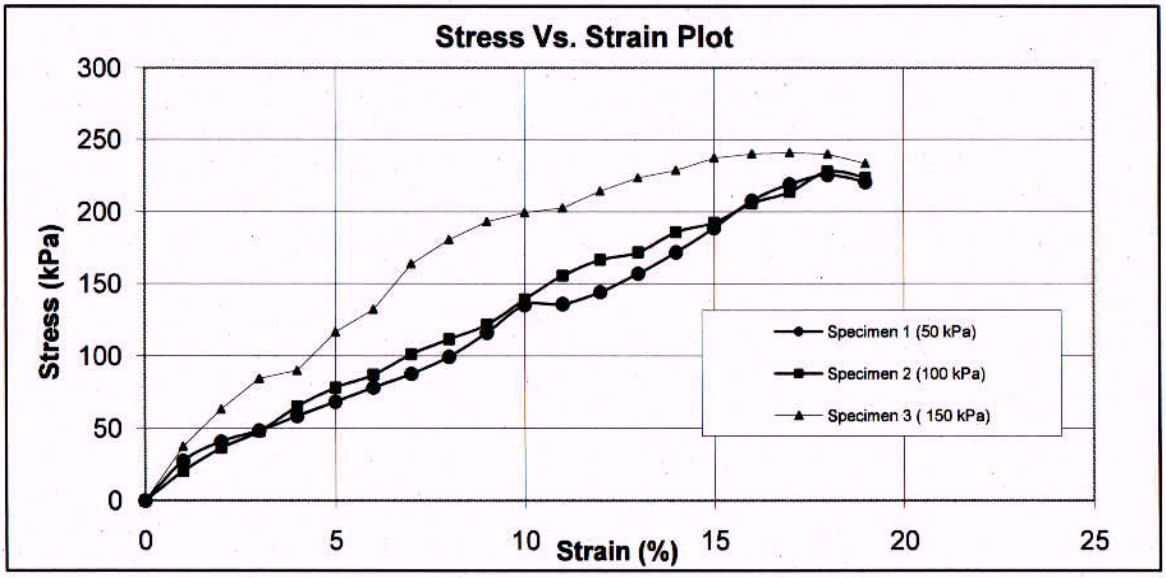
Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.06	1.69	21.80

c Value kPa	ϕ Value Degree
116	0.0

'Type of Sample Undisturbed

'Type of Soil Silty CLAY (CL)





Borehole No:- BH-1	Sample No:- UDS-4	Depth (m) :- 11.00	
CH (Km.):- 41+916	Site Ref :- Hapur - Meerut Section	Job No :- 1342	Test Report No:XPL/2015-16/02
Operator :	Checked by	Authorised Signatory:	
Date : 8/3/16	Date: 14/3/16	Date: 14/3/16	

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

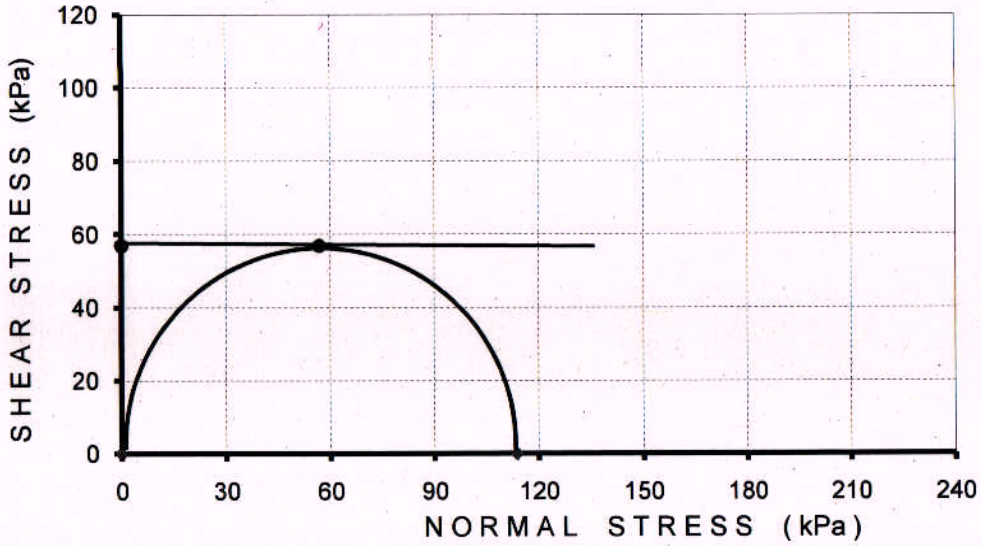
UNCONFINED COMPRESSIVE STRENGTH TEST

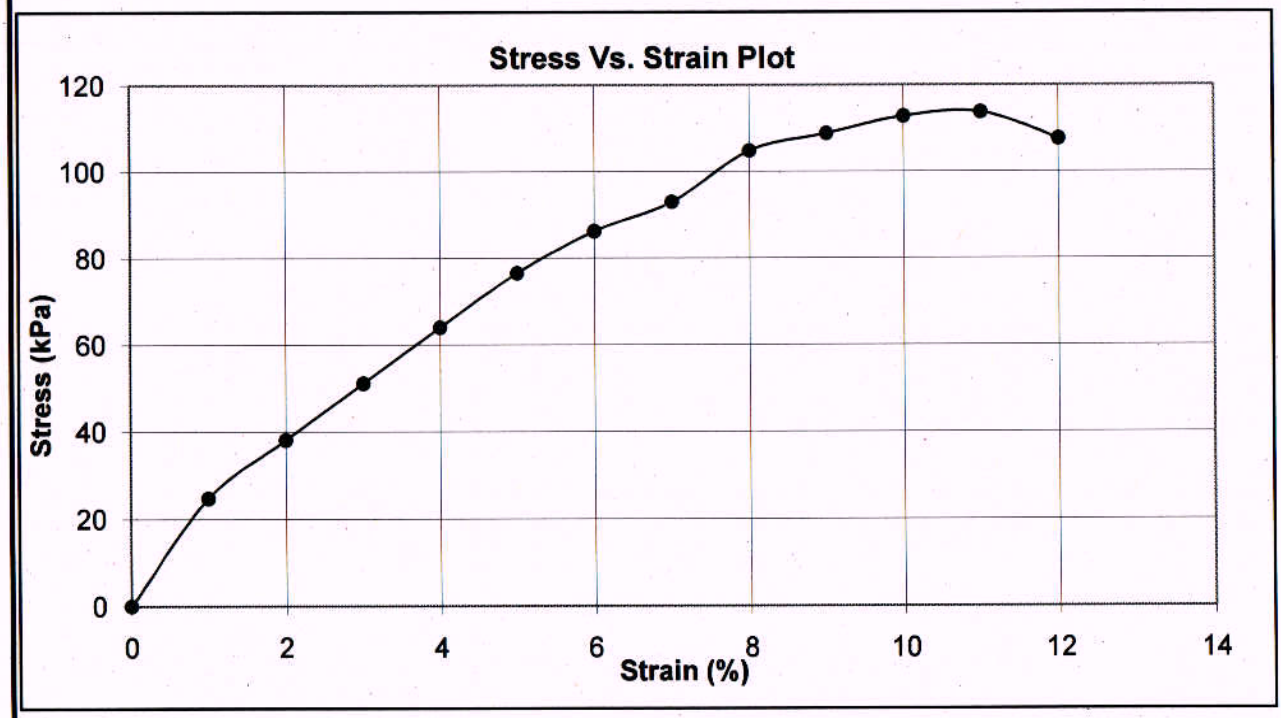
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.92	1.58	21.70

c value kPa	ϕ Value Degree
57	0.0

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





Borehole No: 1/ 41+916	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 : Date : 5/2/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

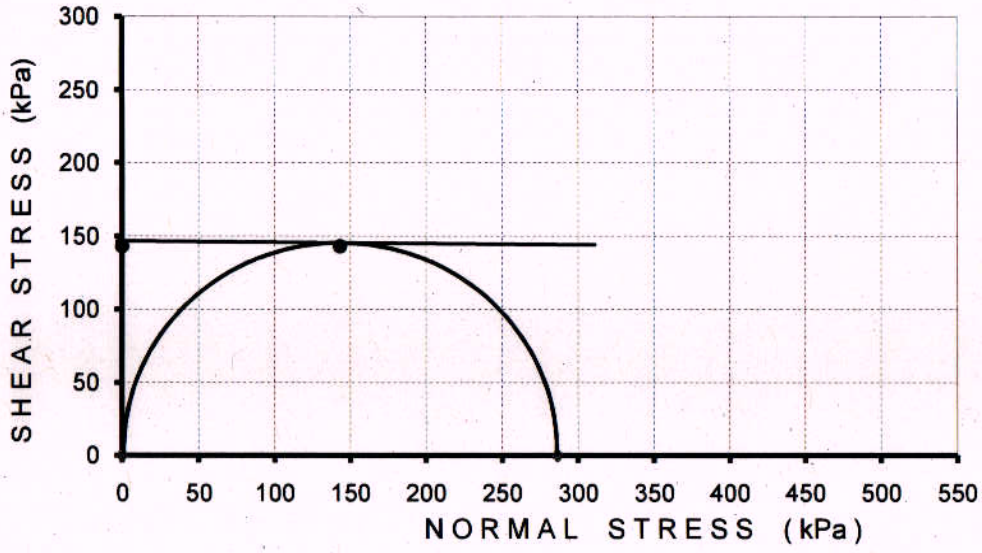
UNCONFINED COMPRESSIVE STRENGTH TEST

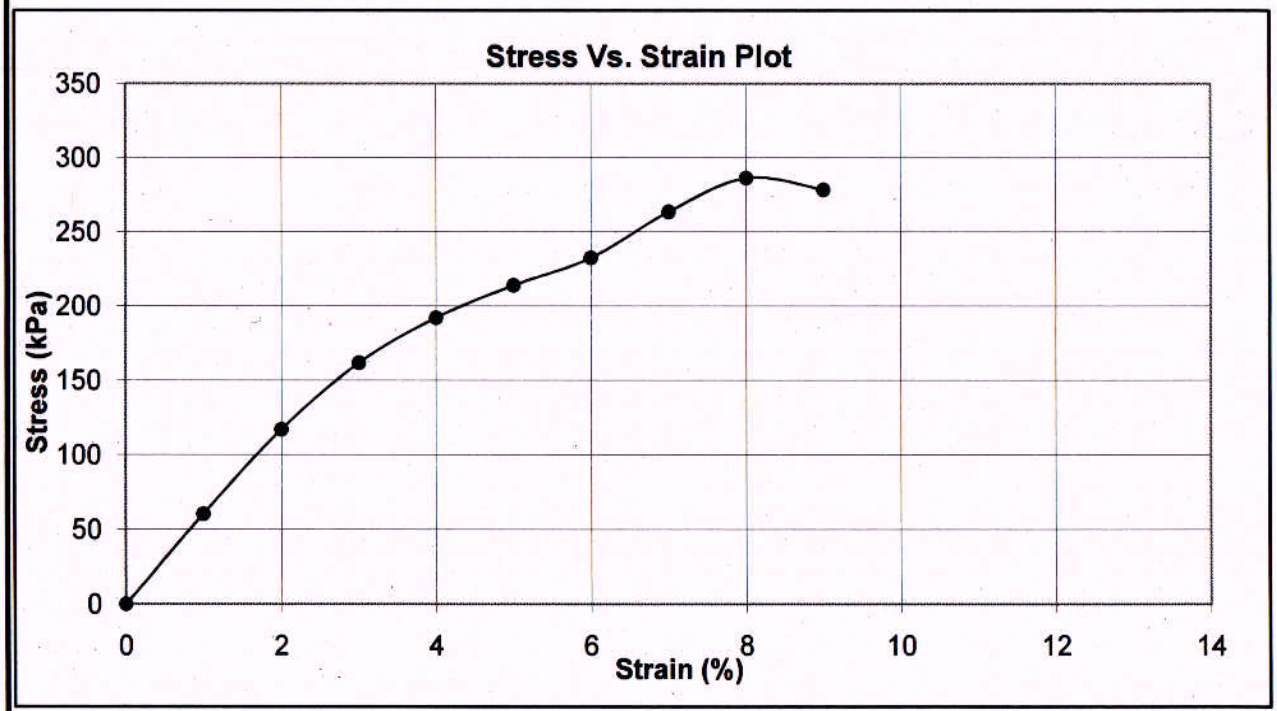
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.02	1.71	18.40

c value kPa	ϕ Value Degree
143	0.0

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





Borehole No: 1/ 41+916	Sample No: UDS-3	Depth (m) : 8.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 5/2/016	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

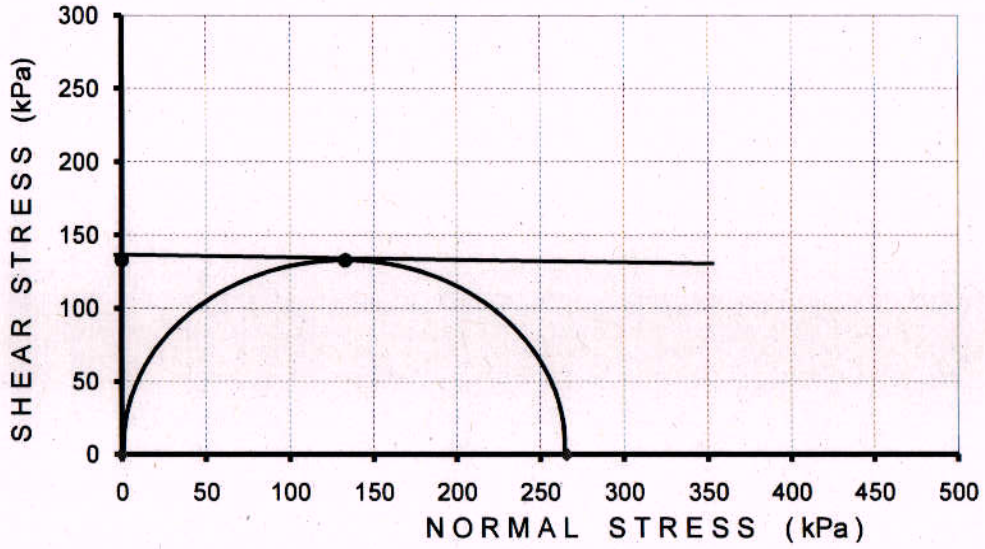
UNCONFINED COMPRESSIVE STRENGTH TEST

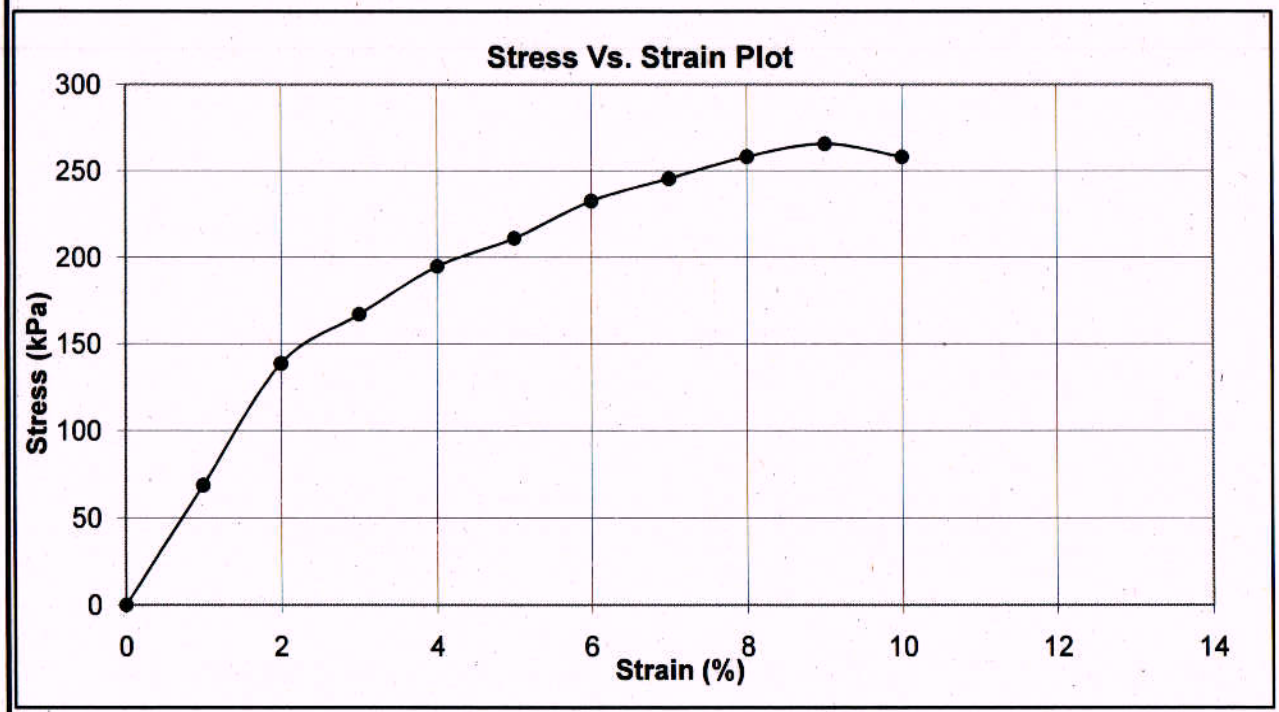
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.00	1.64	22.10

c value kPa	ϕ Value Degree
133	0.0

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





Borehole No: 1/ 41+916	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 : Date : 5/2/016	Checked : 14/3/16 Date:	Authorised Signatory: 14/3/16 Date:

XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

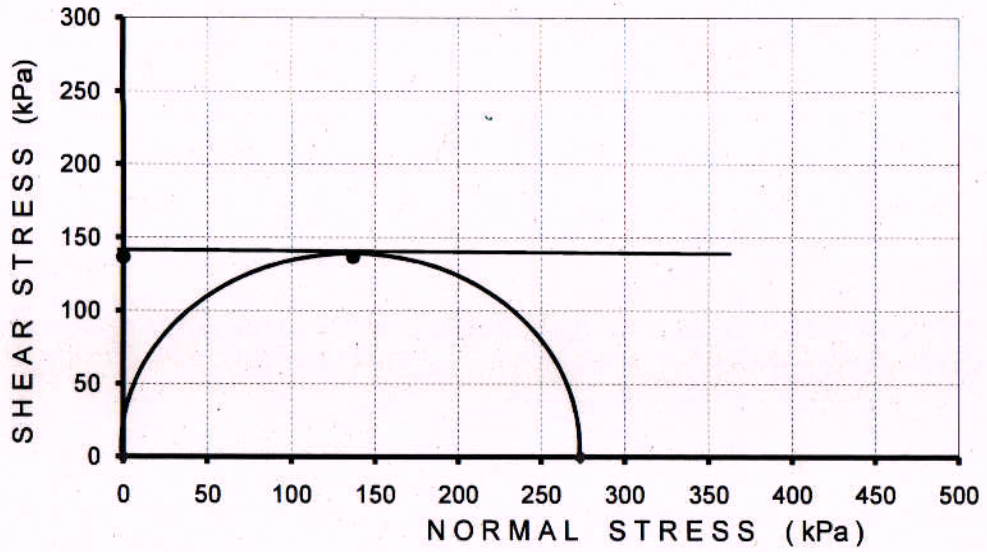
UNCONFINED COMPRESSIVE STRENGTH TEST

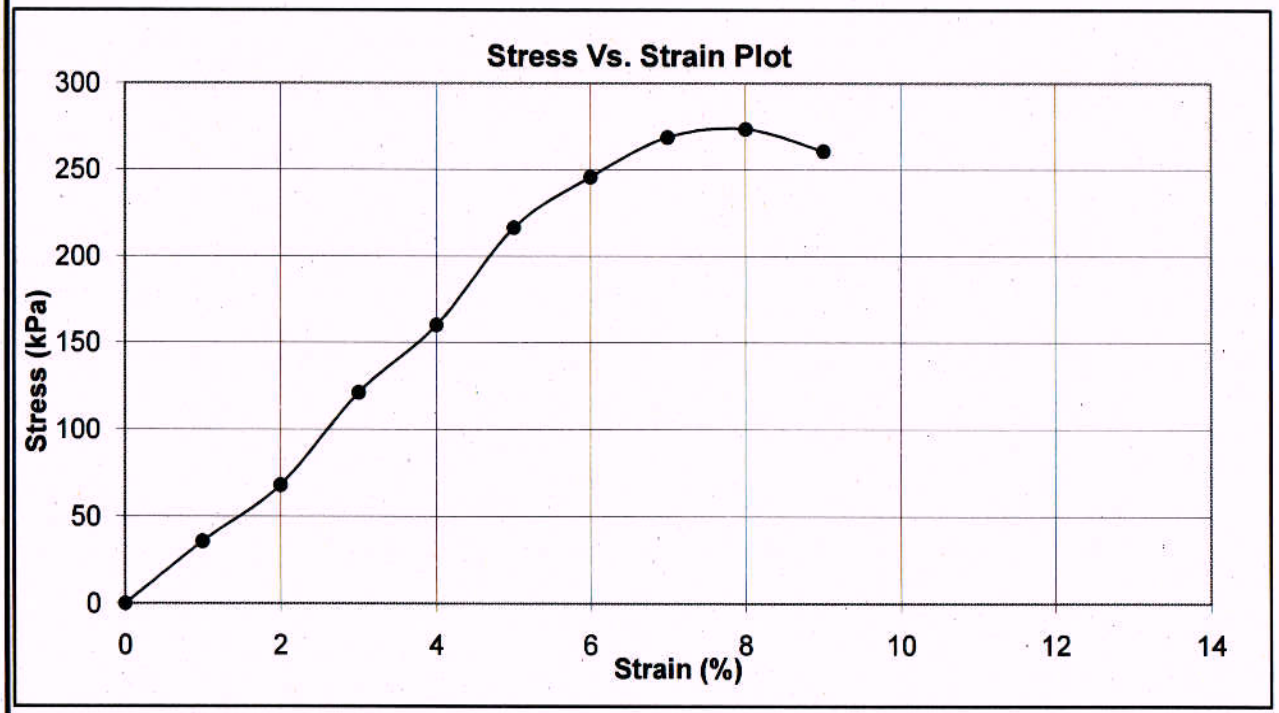
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.98	1.64	20.70

c value kPa	ϕ Value Degree
137	0.0

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





Borehole No: 1/ 46+362	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 : Date : 6/2/2016	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

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NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

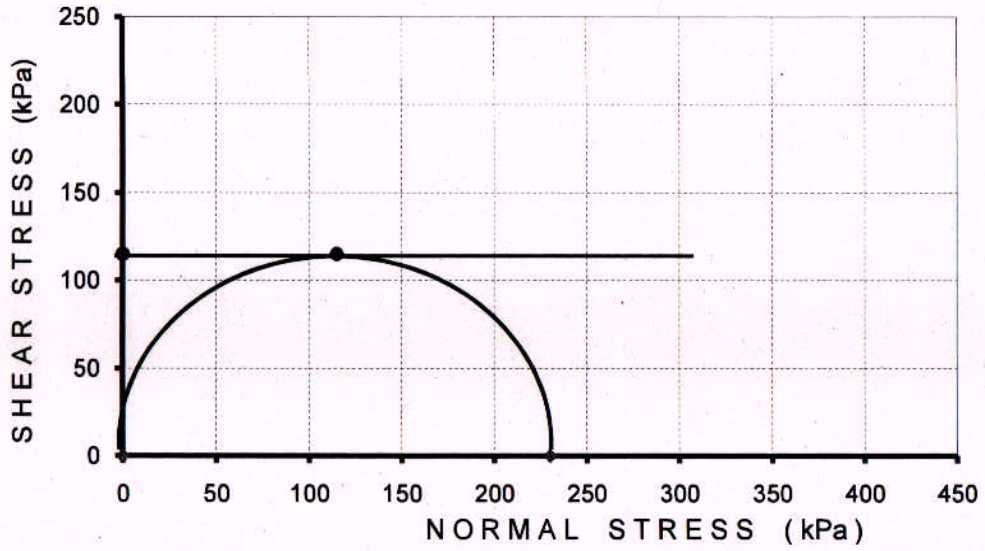
UNCONFINED COMPRESSIVE STRENGTH TEST

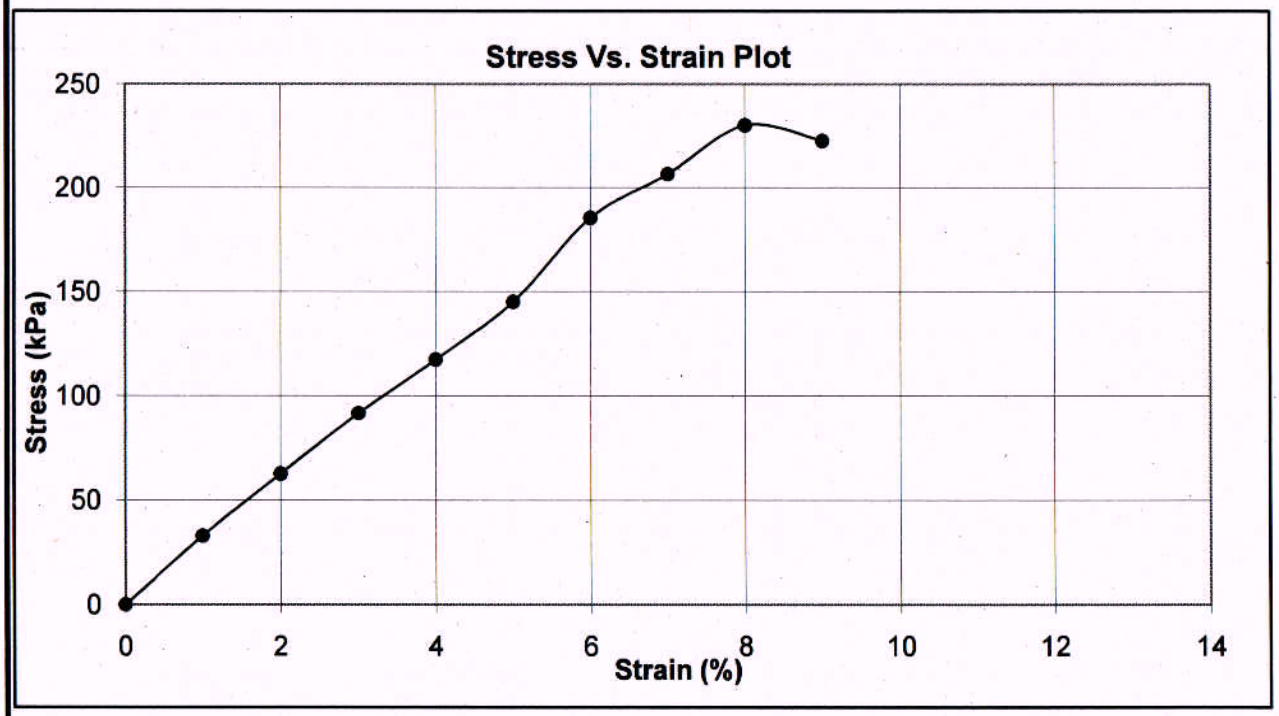
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.91	1.51	26.30

c value kPa	ϕ Value Degree
115	0.0

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





Borehole No: 1/ 46+362	Sample No: UDS-5	Depth (m) : 14.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 6/2/2016	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

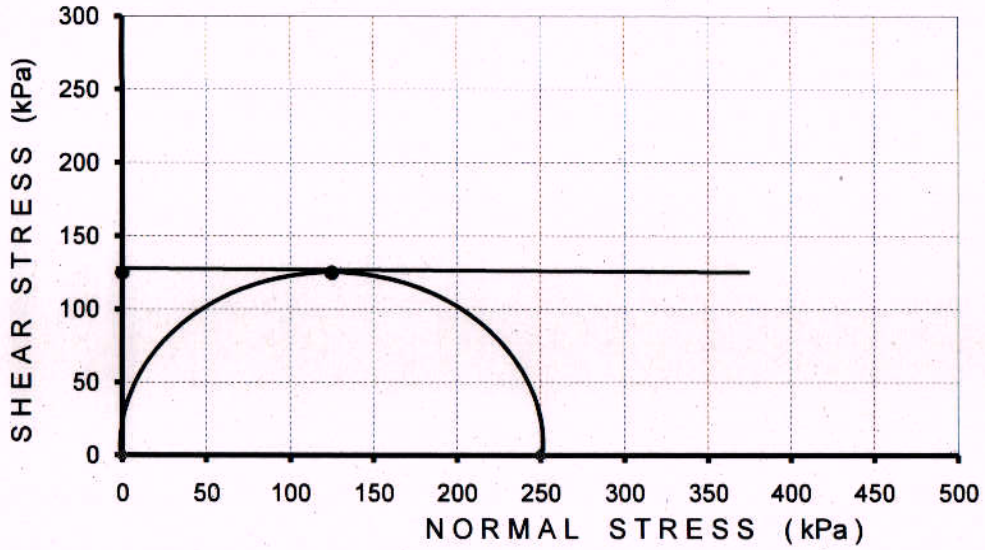
UNCONFINED COMPRESSIVE STRENGTH TEST

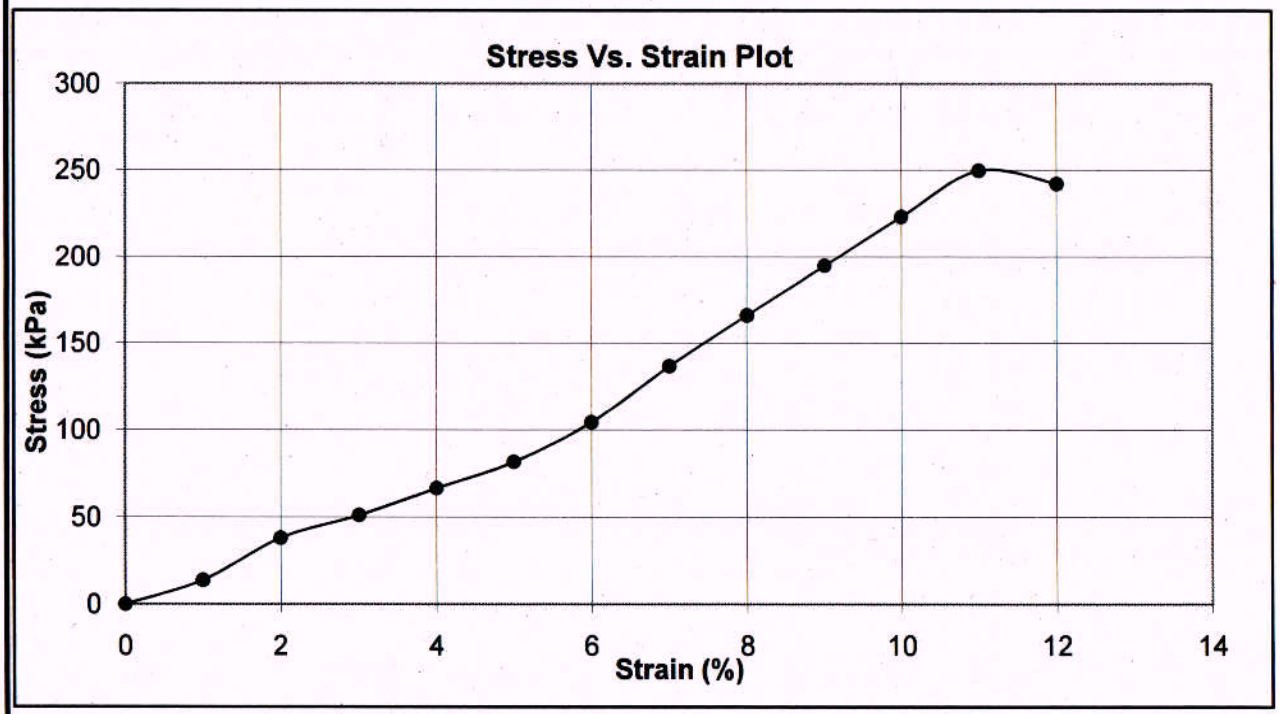
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.05	1.64	24.80

c value kPa	ϕ Value Degree
125	0.0

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





Borehole No: 1/ 46+362	Sample No: UDS-6	Depth (m) : 17.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 6/2/16	Checked : Date: 14/2/16	Authorised Signatory: Date: 14/2/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

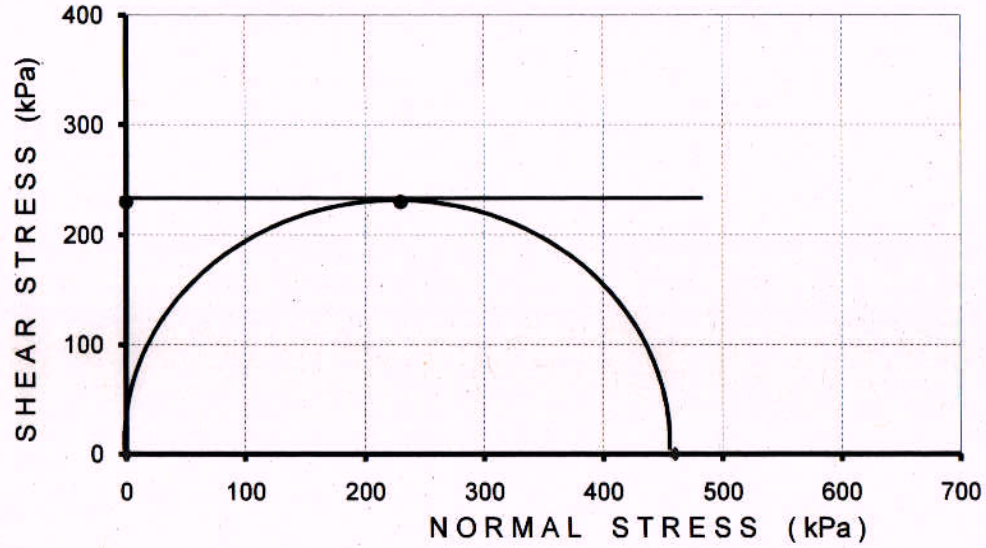
UNCONFINED COMPRESSIVE STRENGTH TEST

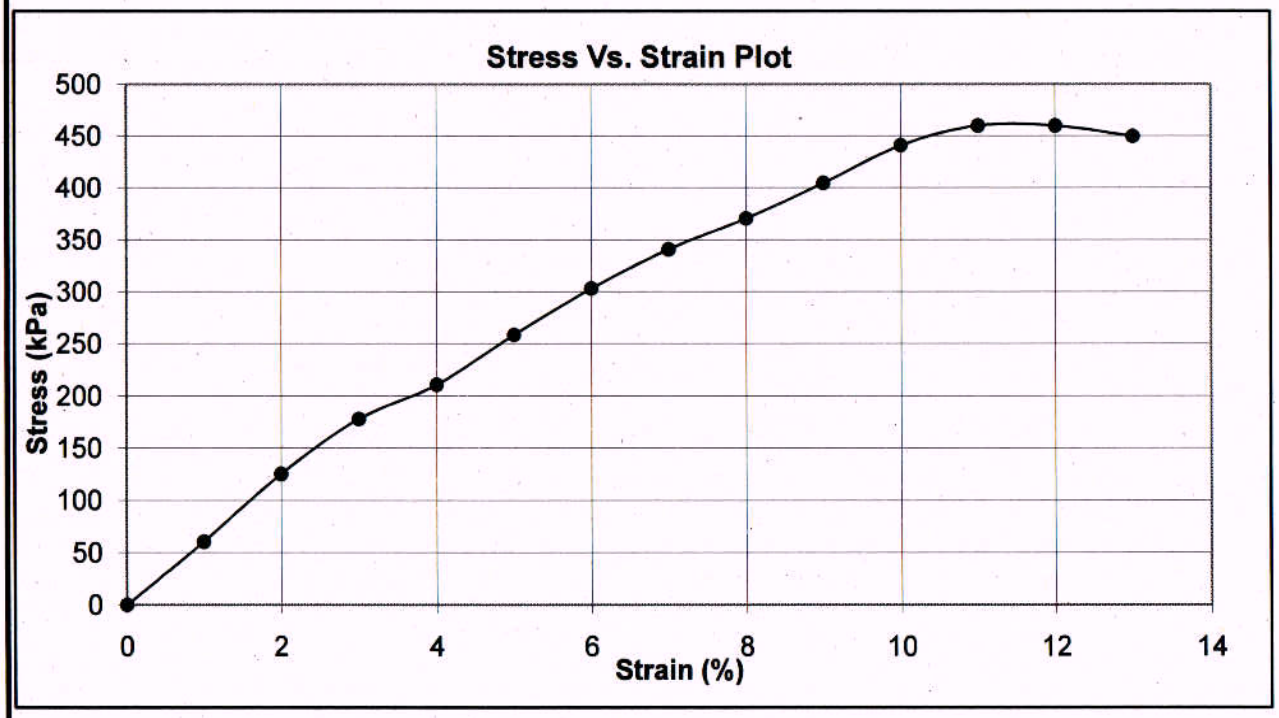
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.02	1.63	23.70

c value kPa	ϕ Value Degree
230	0.0

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





Borehole No: 1/ 46+362	Sample No: UDS-8	Depth (m) : 23.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 8/2/016	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1078

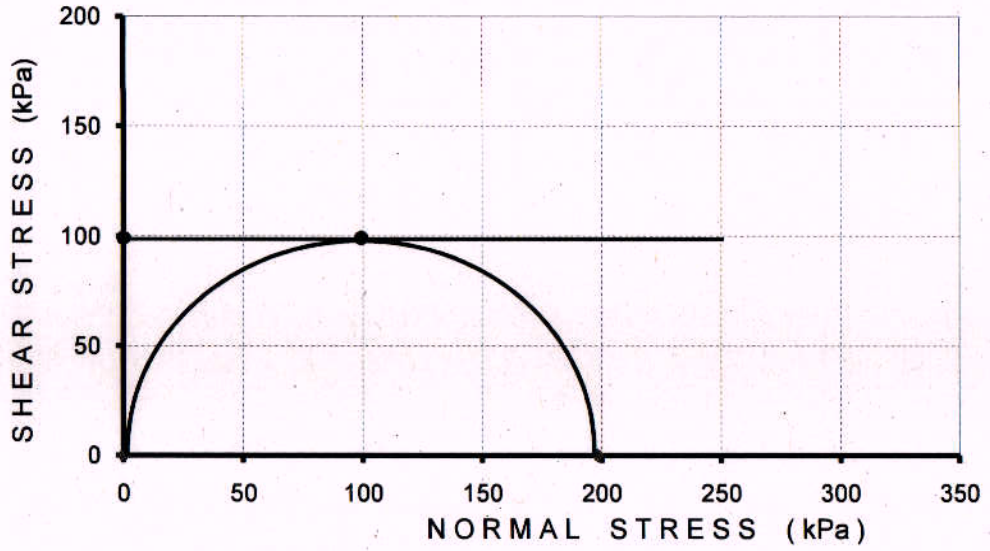
UNCONFINED COMPRESSIVE STRENGTH TEST

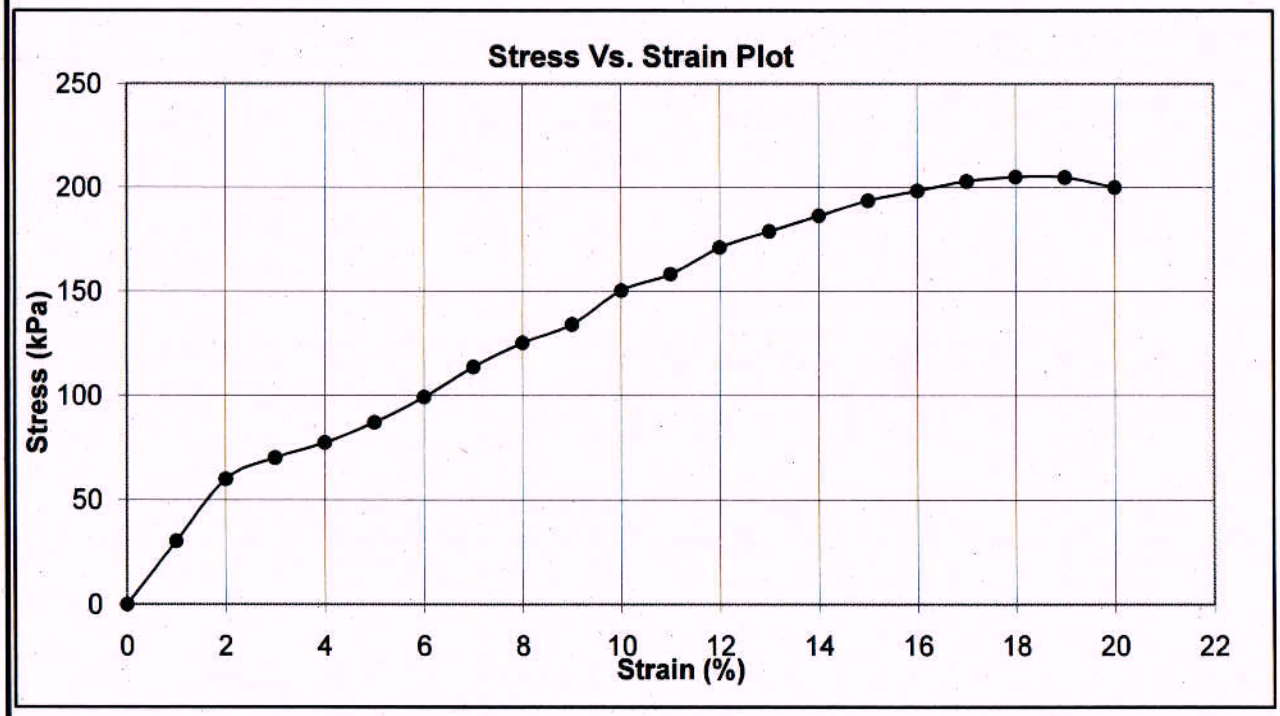
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.96	1.63	20.40

c value kPa	ϕ Value Degree
99	0.0

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





Borehole No: 1/ 48+122	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 : Date : 7/10/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

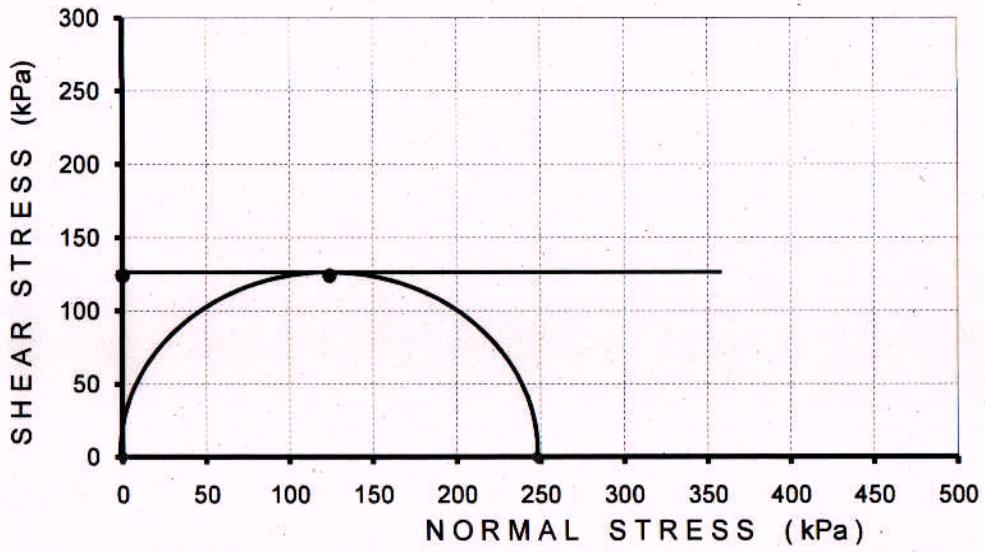
UNCONFINED COMPRESSIVE STRENGTH TEST

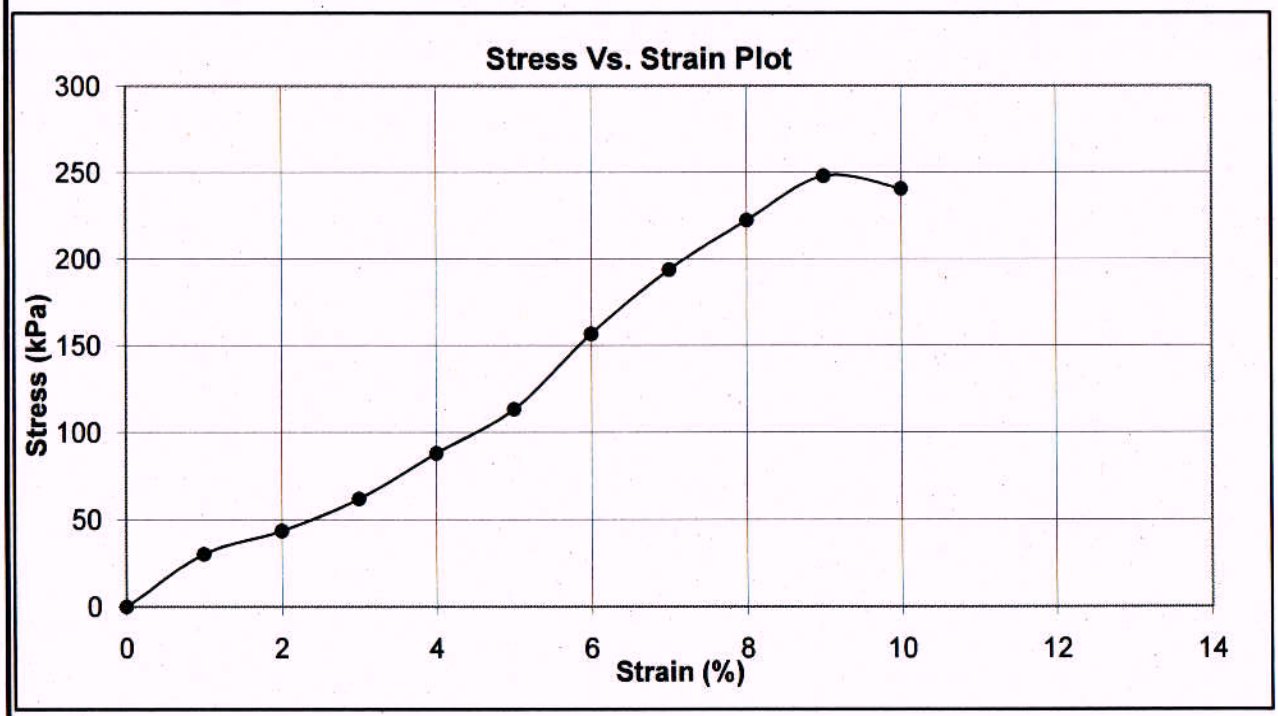
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.06	1.69	21.80

c value kPa	ϕ Value Degree
124	0.0

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





Borehole No: 1/ 48+122	Sample No: UDS-6	Depth (m) : 17.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 7/2/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

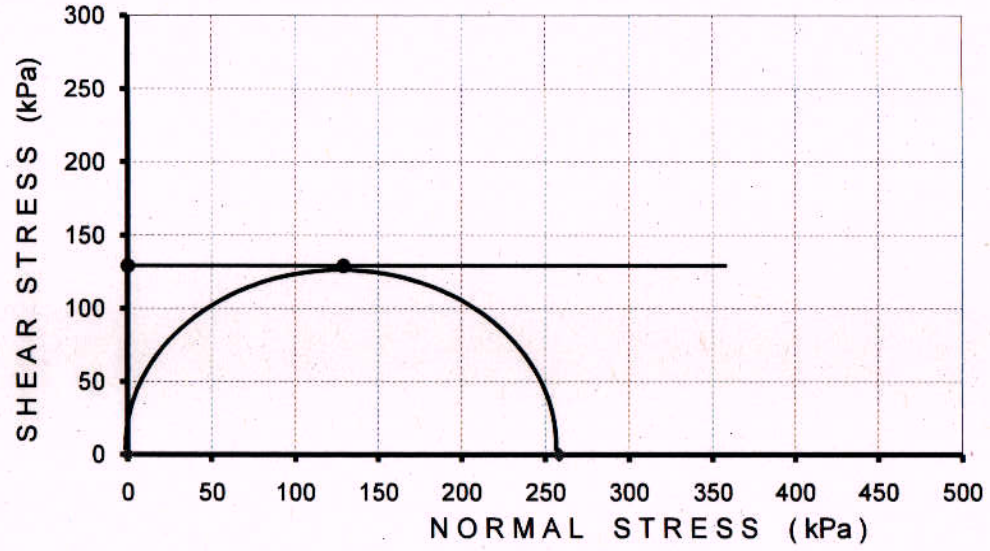
UNCONFINED COMPRESSIVE STRENGTH TEST

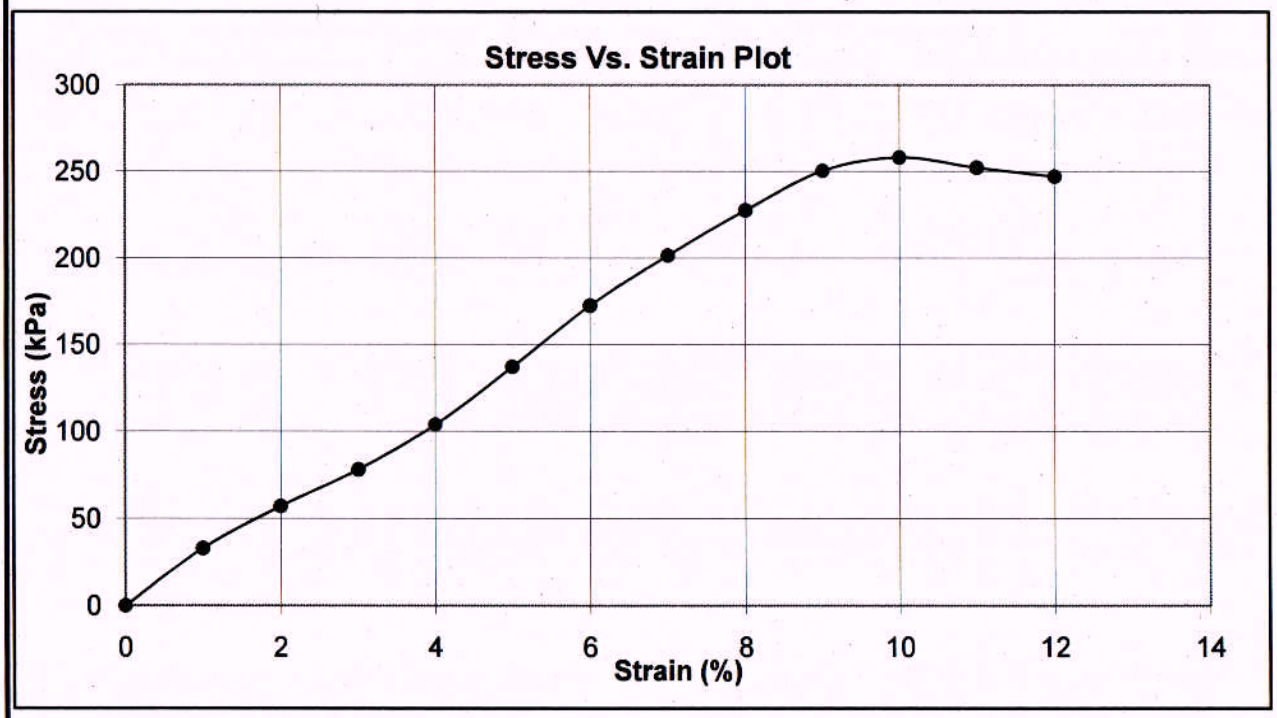
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.18	1.83	18.60

c value kPa	ϕ Value Degree
129	0.0

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





Borehole No: 1/ 48+122	Sample No: UDS-7	Depth (m) : 20.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 7/2/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

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CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

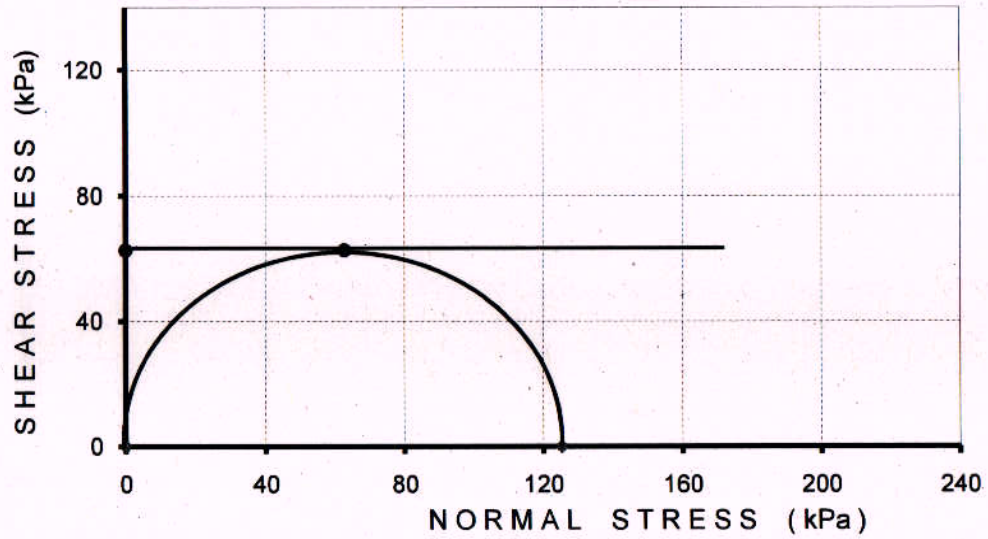
UNCONFINED COMPRESSIVE STRENGTH TEST

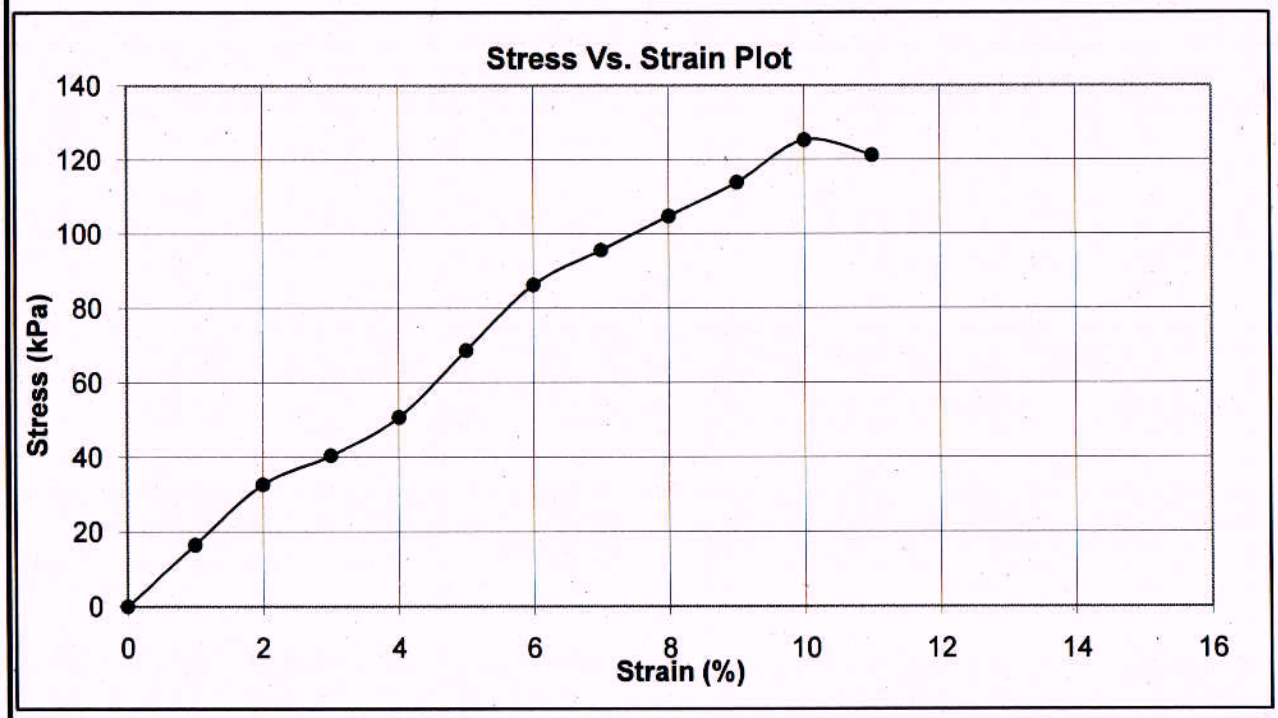
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.18	1.85	17.70

c value kPa	ϕ Value Degree
63	0.0

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





Borehole No: 1/ 58+400	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 Date : 7/2/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/15

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CONSULTANCY SERVICES (P) LTD.

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

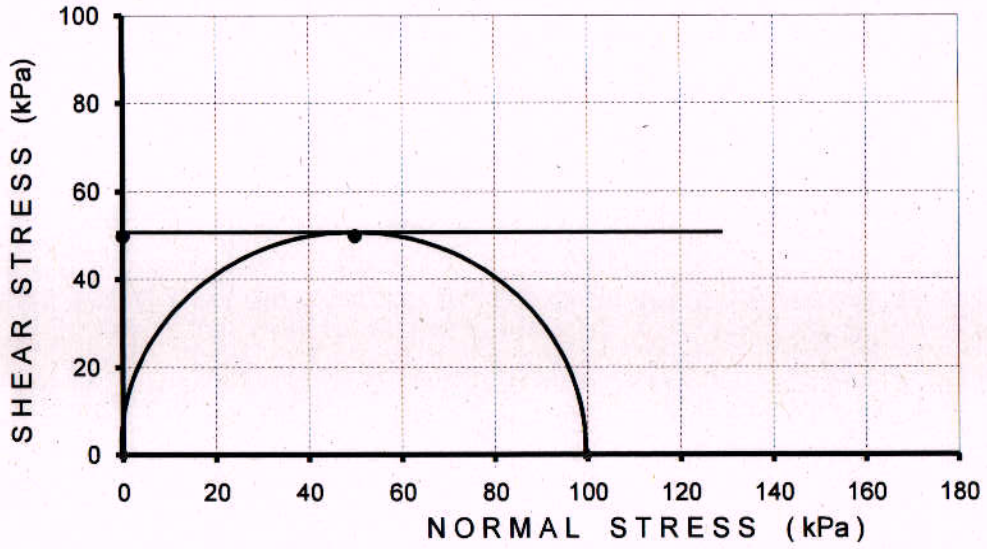
UNCONFINED COMPRESSIVE STRENGTH TEST

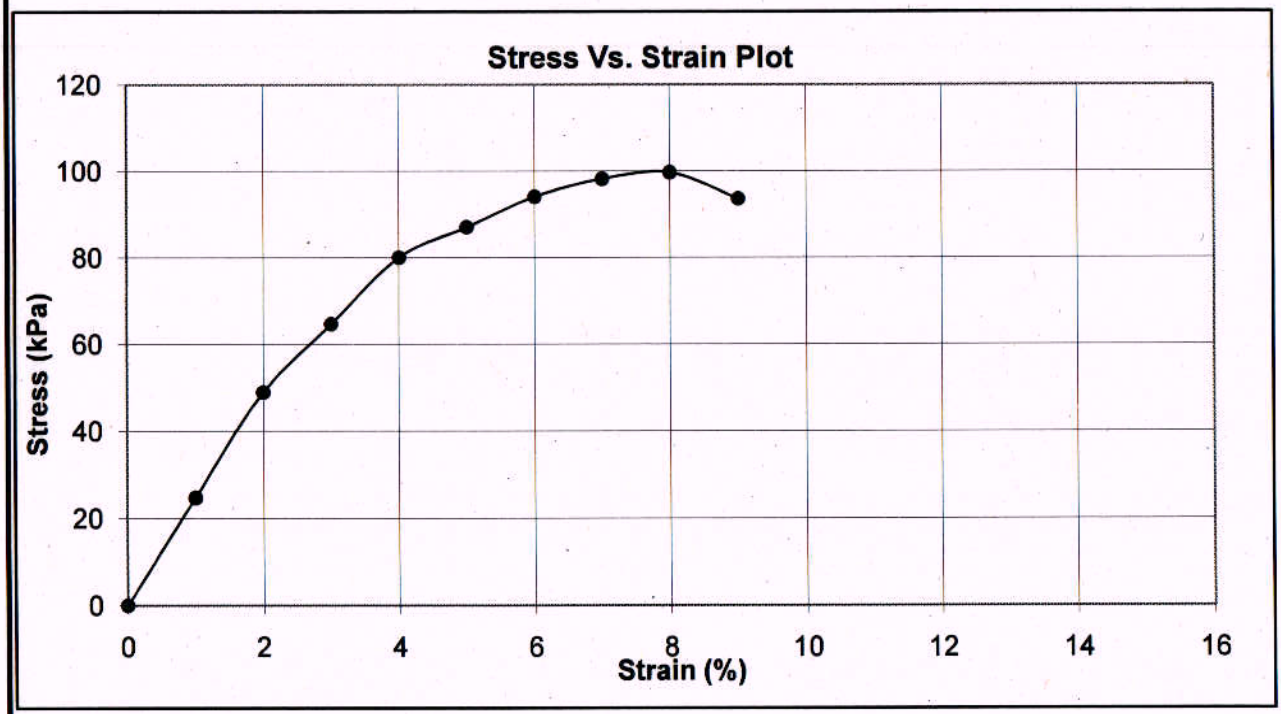
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.06	1.69	21.70

c value kPa	ϕ Value Degree
50	0.0

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





Borehole No: 1/ 59+305	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 Date : 7/2/16	Checked : Date: 14/3/16	Authorised Signatory: 14/3/16 Date:

XPLORER
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NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

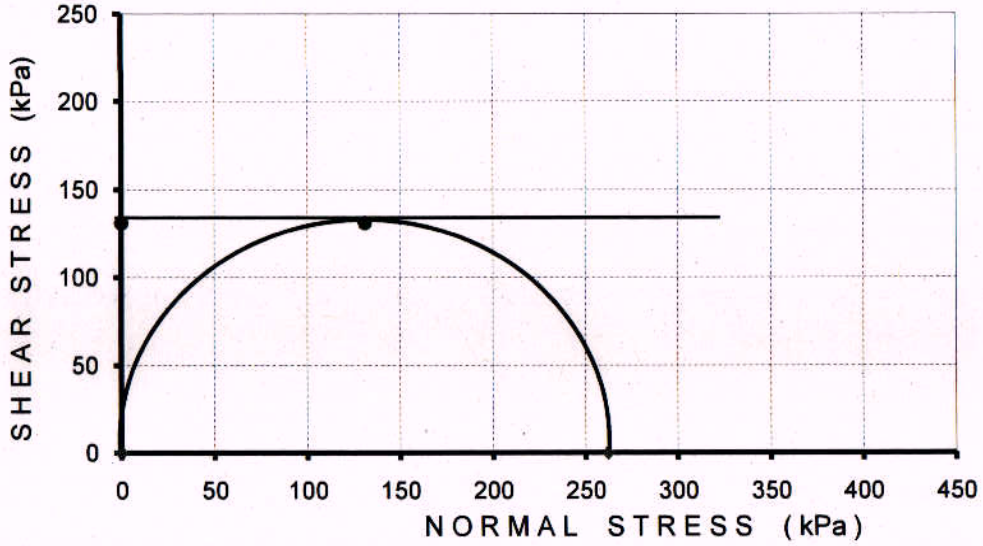
UNCONFINED COMPRESSIVE STRENGTH TEST

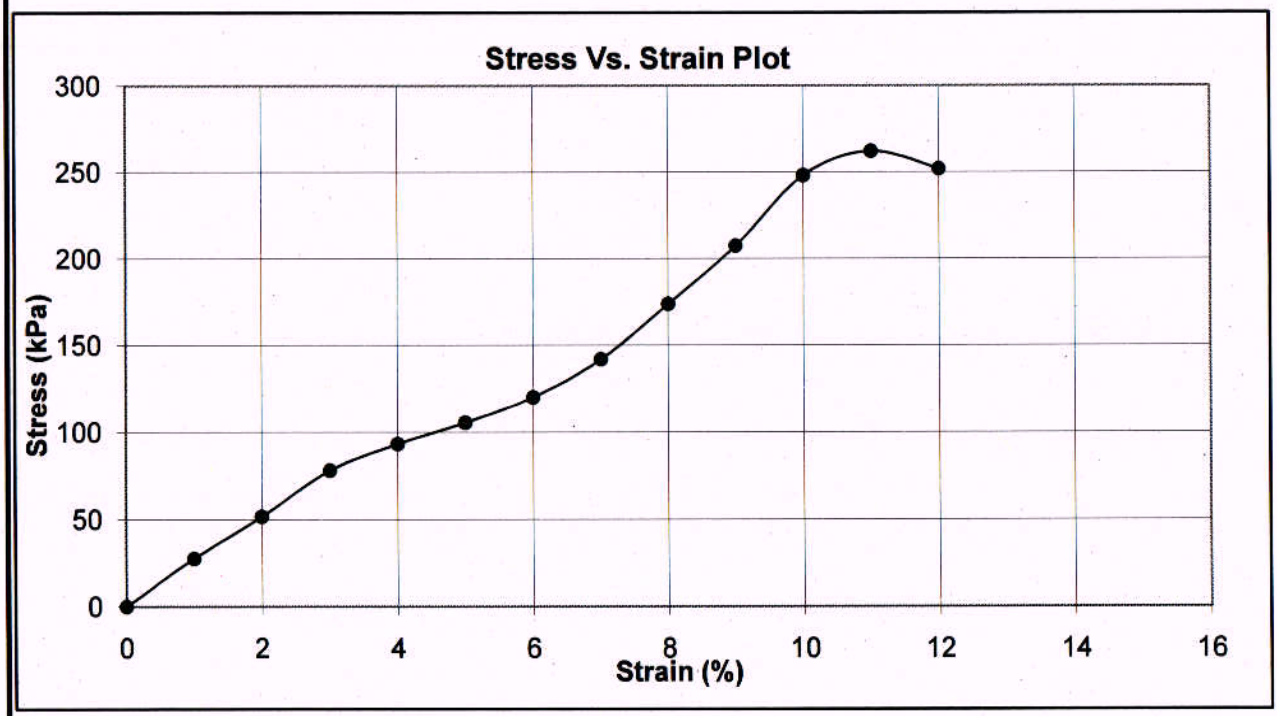
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.88	1.35	38.80

c value kPa	ϕ Value Degree
131	0.0

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





Borehole No: 1/ 59+305	Sample No: UDS-3	Depth (m) : 8.00
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342 Test Report No: XPL/2015-16/02
Operator : Date : 7/3/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

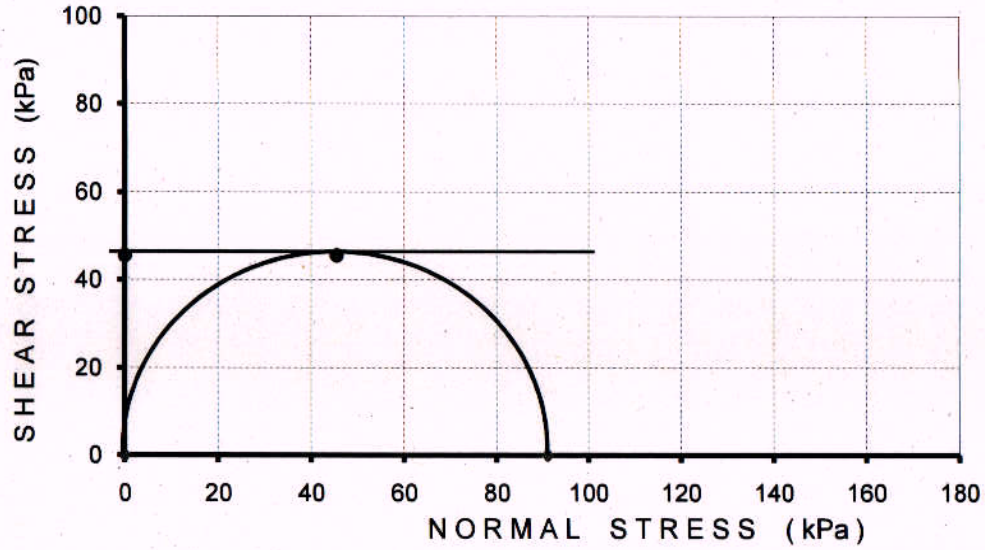
UNCONFINED COMPRESSIVE STRENGTH TEST

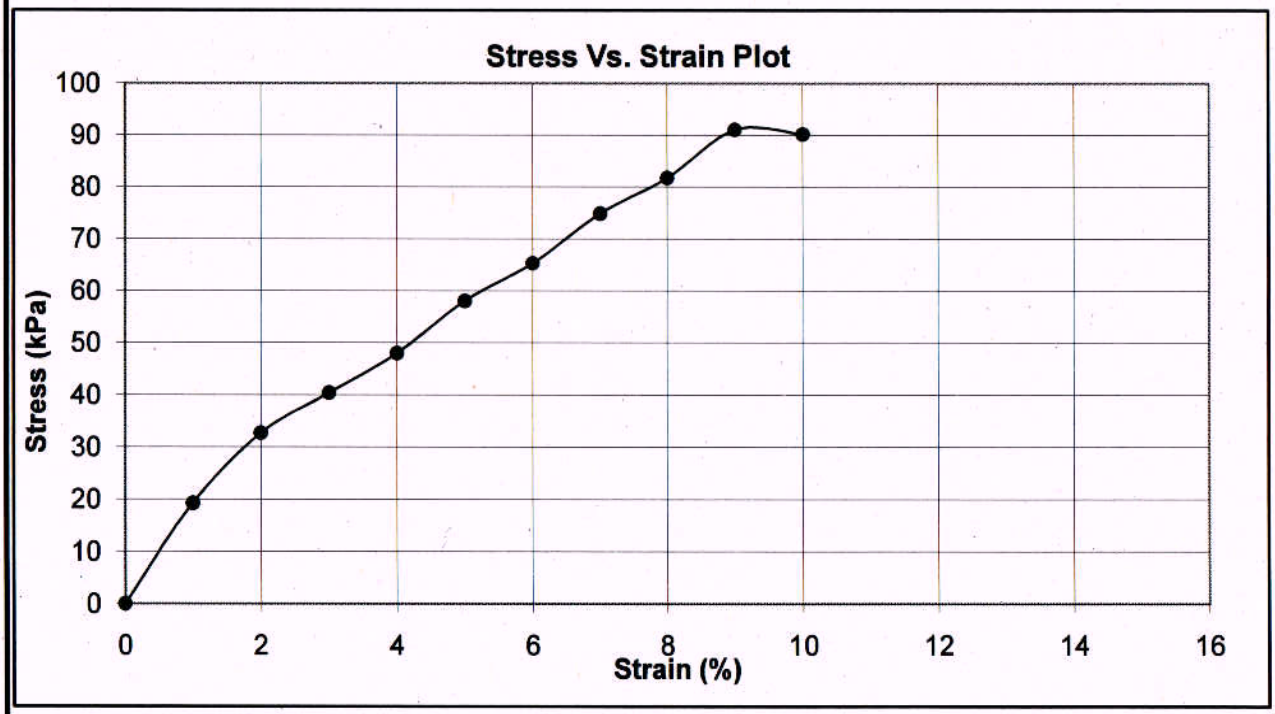
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
2.06	1.70	21.00

c value kPa	ϕ Value Degree
46	0.0

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





Borehole No: 1/ 63+570	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 : Date : 7/9/16	Checked : Date: 14/9/16	Authorised Signatory: Date: 14/9/16

XPLORER
CONSULTANCY SERVICES (P) LTD

NABL ACCREDITATED LABORATORY
CERTIFICATE NO-T-1678

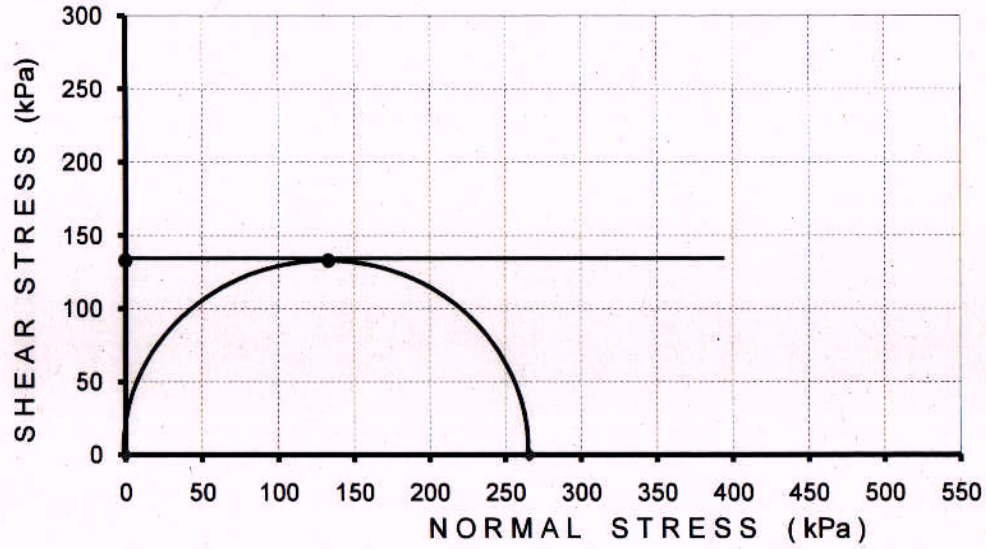
UNCONFINED COMPRESSIVE STRENGTH TEST

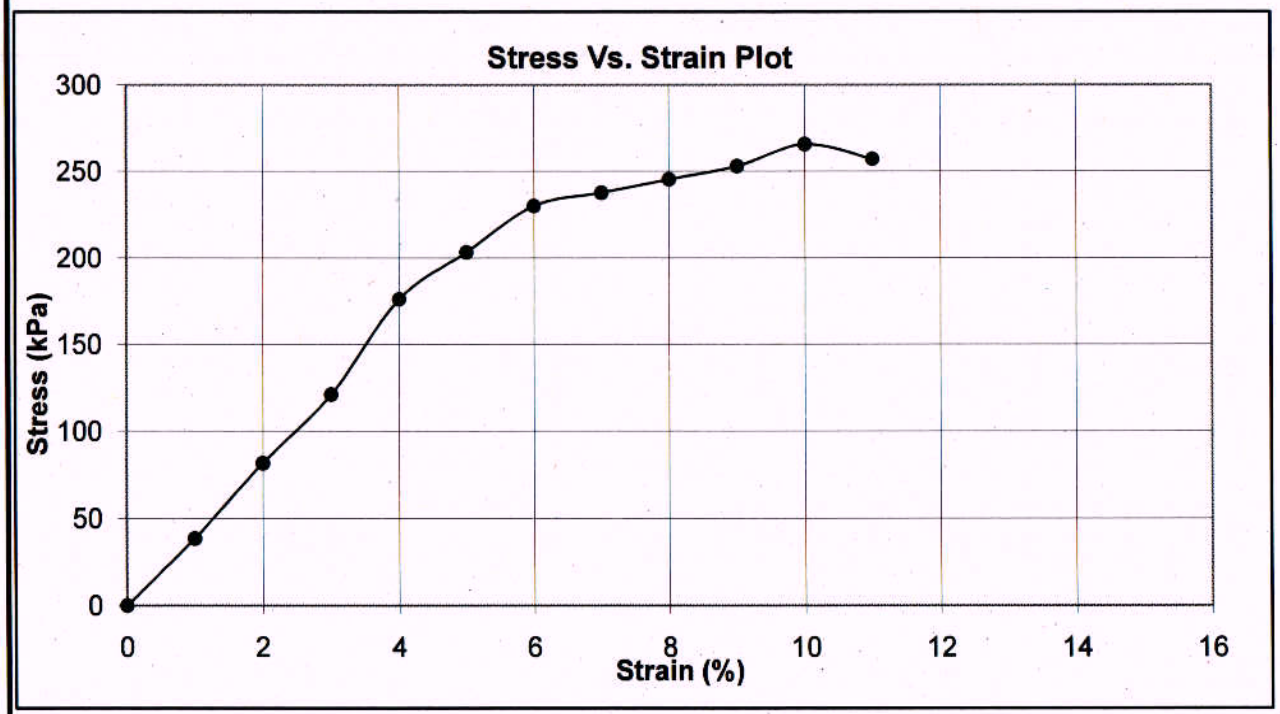
IS: 2720 , PART-10

Bulk Density gm/cc	Dry Density gm/cc	Moisture Content %
1.98	1.51	31.20

c value kPa	ϕ Value Degree
133	0.0

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





Borehole No: 1/ 65+740	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 : Date : 7/2/16	Checked : Date: 14/3/16	Authorised Signatory: Date: 14/7/16

XPLORER
CONSULTANCY SERVICES (P) LTD

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

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD

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

Location :

S. No.	Description of Data	Borehole No: 1 / 41+916 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1 / 43+900 Sample No : UDS-2 Depth (m): 5.00
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: 1 / 46+362 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1/ 48+122 Sample No : SPT-4 Depth (m): 6.00
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)	29.2604	NA
5	Weight of crucible + Barium Sulphate gm (W_2)	29.2809	No ppt
6	Sulphate (as SO3) gm/l	0.0703	NIL

Tested By	Checked By:	Authorised Signatory :
Date: 4/3/016	Date: 14/3/16	Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

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

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD

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**
Location :	

S. No.	Description of Data	Borehole No: 1 / 48+510 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1 / 51+000 Sample No : SPT-4 Depth (m): 6.00
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: 1 / 52+640 Sample No : SPT-4 Depth (m): 6.00	Borehole No: 1/ 54+825 Sample No : SPT-5 Depth (m): 7.50
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: 5/3/16	Date: 14/3/16	Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD

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

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD

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**
Location :	

S. No.	Description of Data	Borehole No: 1 / 55+850 Sample No : SPT-5 Depth (m): 7.50	Borehole No: 1 / 56+780 Sample No : UDS-5 Depth (m): 14.00
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: 1 / 57+555 Sample No : SPT-6 Depth (m): 9.00	Borehole No: 1/ 58+400 Sample No : UDS-5 Depth (m): 14.00
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: 5/3/16	Date: 14/3/16	Date: 12/7/15

XPLORER
CONSULTANCY SERVICES (P) LTD.

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

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD	
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
Location :	

S. No.	Description of Data	Borehole No: 1 / 59+305 Sample No : UDS-5 Depth (m): 8.00	Borehole No: 1 / 62+160 Sample No : SPT-3 Depth (m): 4.50
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: 1 / 63+570 Sample No : SPT-9 Depth (m): 13.50	Borehole No: 1/ 64+270 Sample No : UDS-4 Depth (m): 11.00
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: 6/3/16	Date: 14/2/16	Date: 14/3/15

XPLORER
CONSULTANCY SERVICES (P) LTD

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

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD	
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
Location :	

S. No.	Description of Data	Borehole No: 1 / 65+740	Borehole No:
		Sample No : UDS-4	Sample No :
		Depth (m): 11.00	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: 6/3/16	Date: 10/3/16	Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD

DETERMINATION OF TOTAL SOLUBLE CHLORIDE OF SOIL

Vogel"s Text Book of Quantitative Chemical Analysis

CLIENT / CONSULTANT: 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
SITE REF: Hapur - Meerut Section	

S. No.	Description of Data	Borehole No: 1 / 41+916	Borehole No: 1 /43+900	Borehole No: 1 / 46+362
		Sample No : UDS-3	Sample No : UDS-2	Sample No : UDS-3
		Depth (m): 8.00	Depth (m): 5.00	Depth (m): 8.00
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	2.4
6	Final burette reading V_2	1.4	2.4	3.5
7	Chloride (mg/l or ppm), Y	27.80	19.86	21.84
8	Total Chlorides in soil sample (mg/l or ppm)	139.00	99.29	109.22

S. No.	Description of Data	Borehole No: 1/ 48+122	Borehole No: 1 / 48+510	Borehole No: 1 /51+000
		Sample No : SPT-4	Sample No : UDS-3	Sample No : SPT-4
		Depth (m): 6.00	Depth (m): 8.00	Depth (m): 6.00
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	3.5	4.5	5.7
6	Final burette reading V_2	4.5	5.7	6.6
7	Chloride (mg/l or ppm), Y	19.86	23.83	17.87
8	Total Chlorides in soil sample (mg/l or ppm)	99.29	119.15	89.36

Tested By :	Checked By:	Authorised Signatory :
Date: 7/3/16	Date: 14/3/16	Date: 14/7/15

XPLORER
CONSULTANCY SERVICES (P) LTD.

DETERMINATION OF TOTAL SOLUBLE CHLORIDE OF SOIL

Vogel"s Text Book of Quantitative Chemical Analysis

CLIENT / CONSULTANT: 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**
SITE REF: Hapur - Meerut Section	

S. No.	Description of Data	Borehole No: 1 / 52+640 Sample No : SPT-4 Depth (m): 6.00	Borehole No: 1 /54+825 Sample No : SPT-5 Depth (m): 7.50	Borehole No: 1 / 55+850 Sample No : SPT-5 Depth (m): 7.50
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	1.2	2.1
6	Final burette reading V_2	1.2	2.1	3.0
7	Chloride (mg/l or ppm), Y	23.83	17.87	17.87
8	Total Chlorides in soil sample (mg/l or ppm)	119.15	89.36	89.36

S. No.	Description of Data	Borehole No: 1/ 56+780 Sample No : UDS-5 Depth (m): 14.00	Borehole No: 1 / 57+555 Sample No : SPT-6 Depth (m): 9.00	Borehole No: 1 /58+400 Sample No : UDS-5 Depth (m): 14.00
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	3.0	4.1	5.0
6	Final burette reading V_2	4.1	5.0	6.0
7	Chloride (mg/l or ppm), Y	21.84	17.87	19.86
8	Total Chlorides in soil sample (mg/l or ppm)	109.22	89.36	99.29

Tested By	Checked By:	Authorised Signatory :
Date: 7/3/16	Date: 14/3/16	Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

DETERMINATION OF TOTAL SOLUBLE CHLORIDE OF SOIL

Vogel"s Text Book of Quantitative Chemical Analysis

CLIENT / CONSULTANT: 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
SITE REF: Hapur - Meerut Section	

S. No.	Description of Data	Borehole No: 1 / 59+305	Borehole No: 1 /62+160	Borehole No: 1 / 63+570
		Sample No : UDS-3	Sample No : SPT-3	Sample No : SPT-9
		Depth (m): 8.00	Depth (m): 4.50	Depth (m): 13.50
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	1.0	2.1	3.3
6	Final burette reading V_2	2.1	3.3	4.1
7	Chloride (mg/l or ppm), Y	21.84	23.83	15.89
8	Total Chlorides in soil sample (mg/l or ppm)	109.22	119.15	79.43

S. No.	Description of Data	Borehole No: 1/ 64+270	Borehole No: 1 / 65+740	Borehole No:
		Sample No : UDS-4	Sample No : UDS-4	Sample No :
		Depth (m): 11.00	Depth (m): 11.00	Depth (m):
1	Mass of soil sample taken (gm)	40	40	
2	Volume of Distilled water added (ml)	200	200	
3	Normality of $AgNO_3$	0.014N	0.014N	
4	Volume of soil water extract taken for titration (ml)	25	25	
5	Initial burette reading V_1	4.1	5.0	
6	Final burette reading V_2	5.0	6.1	
7	Chloride (mg/l or ppm), Y	17.87	21.84	
8	Total Chlorides in soil sample (mg/l or ppm)	89.36	109.22	

Tested By	Checked By:	Authorised Signatory :
Date: 7/3/016	Date: 14/3/16	Date: 14/7/15

XPLORER
CONSULTANCY SERVICES (P) LTD

DETERMINATION OF pH VALUE OF SOIL

IS 2720: (PART-26) -1987

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD

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

S. No.	Description of Data	Borehole No: 1 / 41+916 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1 / 43+900 Sample No : UDS-2 Depth (m): 5.00
1	Soil Identification	Silty CLAY	Sandy SILT
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)	23	23.1
6	pH meter reading	8.02	7.52

S. No.	Description of Data	Borehole No: 1 / 46+362 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1/ 48+122 Sample No : SPT-4 Depth (m): 6.00
1	Soil Identification	Silty CLAY	Sandy SILT
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)	23.2	23.4
6	pH meter reading	8.16	6.67

S. No.	Description of Data	Borehole No: 1 / 48+510 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1 / 51+000 Sample No : SPT-4 Depth (m): 6.00
1	Soil Identification	Sandy SILT	Silty 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)	23	23.8
6	pH meter reading	7.63	7.76

Tested By:	Checked By:	Authorised Signatory:
Date: 7/3/16	Date: 14/3/16	Date: 14/3/15

XPLORER
CONSULTANCY SERVICES (P) LTD.

DETERMINATION OF pH VALUE OF SOIL

IS 2720: (PART-26) -1987

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD

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

S. No.	Description of Data	Borehole No: 1 / 52+640 Sample No : SPT-4 Depth (m): 6.00	Borehole No: 1 / 54+825 Sample No : SPT-5 Depth (m): 7.50
1	Soil Identification	Sandy SILT	Silty 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)	23.1	23.8
6	pH meter reading	6.83	7.03

S. No.	Description of Data	Borehole No: 1 / 55+850 Sample No : SPT-5 Depth (m): 7.50	Borehole No: 1/ 56+780 Sample No : UDS-5 Depth (m): 14.00
1	Soil Identification	Silty SAND	Sandy SILT
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)	23.1	23.2
6	pH meter reading	7.96	7.59

S. No.	Description of Data	Borehole No: 1 / 57+555 Sample No : SPT-6 Depth (m): 9.00	Borehole No: 1 / 58+400 Sample No : UDS-5 Depth (m): 14.00
1	Soil Identification	Silty SAND	Sandy SILT
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)	22.9	22.6
6	pH meter reading	7.03	7.40

Tested By	Checked By:	Authorised Signatory :
Date: 7/3/16	Date: 14/3/16	Date: 14/3/16

XPLORER
CONSULTANCY SERVICES (P) LTD.

DETERMINATION OF pH VALUE OF SOIL

IS 2720: (PART-26) -1987

CLIENT / CONSULTANT: SKYLARK DESIGNER AND ENGINEERS (P) LTD

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

S. No.	Description of Data	Borehole No: 1 / 59+305 Sample No : UDS-3 Depth (m): 8.00	Borehole No: 1 / 62+160 Sample No : SPT-3 Depth (m): 4.50
1	Soil Identification	Silty CLAY	Silty 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)	23.3	23.5
6	pH meter reading	7.88	7.28

S. No.	Description of Data	Borehole No: 1 / 63+570 Sample No : SPT-9 Depth (m): 13.50	Borehole No: 1/ 64+270 Sample No : UDS-4 Depth (m): 11.00
1	Soil Identification	Poorly Graded SAND	Sandy SILT
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)	23.5	23.1
6	pH meter reading	7.18	7.98

S. No.	Description of Data	Borehole No: 1 / 65+740 Sample No : UDS--4 Depth (m): 11.00	Borehole No: Sample No : Depth (m):
1	Soil Identification	Silty CLAY	
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)	23.1	
6	pH meter reading	7.87	

Tested By	Checked By:	Authorised Signatory :
Date: 7/3/16	Date: 14/3/16	Date: 14/3/16

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_r			Sulphates mg/l	Chlorides mg/l	pH Value
									Silt	Clay																									
1	34+360 / BH-1	SPT-1	1.50				9	16	68	7	34	NP		ML									0	29.0										
2		SPT-6	9.00				0	94	6					SW-SM									0	32.2									Nil	129.07	7.92
3		UDS-7	20.00	21.00	1.98	1.64	0	7	67	26	45	23	22	CI		2.64																		
4		SPT-18	27.00				0	94	6					SW-SM									0	35.6										
5	48+400/ BH-1	UDS-1	2.00	16.30	1.70	1.46	0	12	76	12	34	22	12	CL		2.63										51.0							Nil	89.36	7.15
6		UDS-3	8.00	17.50	1.85	1.58																													
7		UDS-4	11.00	26.00	2.04	1.62																													
8		UDS-5	14.00	26.20	2.01	1.60	2	7	74	17	37	17	20	CI											155.0										
9		UDS-6	17.00	28.50	1.94	1.51	5	7	68	20	43	21	22	CI																					
10		UDS-7	20.00	20.70	2.02	1.68																													
11		UDS-8	23.00	30.50	1.99	1.53	0	6	77	17	39	20	19	CI																					
12		SPT-19	28.50				1	93	6					SW-SM									0	34.1										
13	49+250/ BH-1	UDS-1	2.00	18.20	2.10	1.78	1	7	71	21	46	23	23	CI		2.64									63.0								Nil	99.29	7.60
14		UDS-4	11.00	21.80	2.09	1.71																													
15		UDS-5	14.00	18.20	2.16	1.83	1	6	72	21	45	22	23	CI											111.0										
16		UDS-8	23.00	16.00	2.00	1.72	0	5	89	6	30	NP		ML																					
17		UDS-9	26.00	16.30	2.10	1.80	0	3	89	8	33	NP		ML									0	32.7										
18	50+100/ BH-1	UDS-1	2.00	13.80	1.90	1.67	0	9	87	4	26	NP		ML		2.67							0	28.9									Nil	129.07	7.54
19		SPT-8	12.00				2	92	6					SW-SM									0	35.3										
20	64+270/ BH-2	SPT-1	1.50				0	43	51	6	22	NP		ML									0	28.9									Nil	89.36	7.12
21		SPT-8	12.00				1	94	5					SW-SM		2.70																			
22		SPT-15	22.50				0	94	6					SW-SM									0	34.1										

Remark * Not in NABL Scope
* NP - Non Plastic

Checked by: 21/3/16
Date:

Authorised Signatory:
Date: 21/3/16

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XPLORER
CONSULTANCY ENGINEERS (P) LTD

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_r			Sulphates mg/l	Chlorides mg/l	pH Value
									Silt	Clay																									
1	65+740/ BH-2	UDS-1	2.00	14.30	2.01	1.76	0	24	56	20	44	23	21	CI		2.65								58.0										
2		UDS-4	11.00	21.20	1.96	1.61	0	5	88	7				ML																			Nil	109.22	7.89
3		SPT-14	21.00				0	97	3					SP									0	34.2										
4	54+825/ BH-2	UDS-1	2.00	10.70	1.95	1.76	0	43	50	7	30	NP		ML		2.60							0	28.8									Nil	89.36	7.38
5		SPT-8	12.00				0	95	5					SW-SM																					
6		SPT-15	22.50				1	94	5					SW-SM									0	33.4										
7	63+570/ BH-2	UDS-1	2.00	19.40	1.93	1.62	0	16	62	22	46	18	28	CI		2.66									49.0								Nil	89.36	7.28
8		SPT-8	12.00				1	94	5					SW-SM																					
9		SPT-16	24.00				0	91	9					SW-SM									0	34.4										
10																																			
11																																			
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21																																			
22																																			

Remark * Not in NABL Scope
* NP - Non Plastic

Checked by: RAC
Date: 21/3/16

Authorised Signatory:
Date: 21/3/16

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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	CH-34+360	CH-48+400			
Borehole No./Pit no.	BH-1	BH-1			
Sample No.	UDS-7	UDS-1	UDS-3	UDS-4	UDS-5
Depth (m)	20.00	2.00	8.00	11.00	14.00
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	Silty CLAY	Silty CLAY	Silty CLAY	Silty CLAY	Silty CLAY
Container No.	ST-41	ST-53	ST-2	ST-17	ST-5
Wt.Can. W1,g	22.70	23.15	23.44	21.67	22.84
Wt.Can.+ Wet Soil,(W2),g	59.53	59.04	52.40	55.23	58.74
Wt.Can.+ Dry Soil,(W3),g	53.13	54.00	48.08	48.31	51.29
Wt.Water (W2-W3),g	6.40	5.04	4.32	6.92	7.45
Wt.Dry Soil (W3-W1),g	30.43	30.85	24.64	26.64	28.45
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**21.0**	**16.3**	**17.5**	**26.0**	**26.2**
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-9	B-5	B-60	B-51	B-001
Wt. Tube+Soil, g	5874	6931	8783	7656	9748
Wt.of Tube	3139	3454	5415	2874	5736
Dia of Tube, g(Average) cm	8.3	10	10.5	10.5	10.5
Length of sample, cm	25.5	26.0	21.0	27.0	23.0
Wt Soil (W)	2735	3477	3368	4782	4012
Vol. Soil (V), cm^3	1380	2043	1819	2339	1992
In-Situ Density, g_t =(W/V) g/cm^3	1.98	1.70	1.85	2.04	2.01
Dry Density, γd =[gt/(1+w)] g/cm^3	**1.64**	**1.46**	**1.58**	**1.62**	**1.60**

Tested by	Cheked By	Authorised Signatory
Date: 14/3/2016	Date: 21/3/16	Date: 21/3/2016

XPLORER
CONSULTANCY SERVICES (P) LTD

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	CH-48+400			CH-49+250		
Borehole No./Pit no.	BH-1			BH-1		
Sample No.	UDS-6	UDS-7	UDS-8	UDS-1	UDS-4	UDS-5
Depth (m)	17.00	20.00	23.00	2.00	11.00	14.00
Oven No.	XPL/OV-2	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	XPL/SE-1
Balance No.	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06	XPL/EB-06
Soil Type	Silty CLAY	Silty CLAY	Silty CLAY	Silty CLAY	Silty CLAY	Silty CLAY
Container No.	ST-18	ST-154	ST-123	ST-56	ST-124	ST-56
Wt.Can. W1,g	25.10	26.49	24.67	23.97	20.97	23.97
Wt.Can.+ Wet Soil,(W2),g	70.24	62.47	64.44	67.02	60.61	67.02
Wt.Can.+ Dry Soil,(W3),g	60.23	56.29	55.14	60.40	53.51	60.40
Wt.Water (W2-W3),g	10.01	6.18	9.30	6.62	7.10	6.62
Wt.Dry Soil (W3-W1),g	35.13	29.80	30.47	36.43	32.54	36.43
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**28.5**	**20.7**	**30.5**	**18.2**	**21.8**	**18.2**
IN-SITU DENSITY						
Balance No.	XPL/EB-04	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	XPL/VC-1
Steel Tape No.	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1	XPL/ST-1
Container No.	B-115	B-58	B-55	B-103	B-98	B-103
Wt. Tube+Soil, g	9391	5695	8679	6677	5494	6677
Wt.of Tube	5265	4003	4884	3618	2601	3618
Dia of Tube, g(Average) cm	10	7.8	10.5	10	10.5	10
Length of sample, cm	27.0	17.5	22.0	18.5	16.0	18.0
Wt Soil (W)	4126	1692	3795	3059	2893	3059
Vol. Soil (V), cm^3	2121	837	1906	1454	1386	1414
In-Situ Density, g_t =(W/V) g/cm^3	1.94	2.02	1.99	2.10	2.09	2.16
Dry Density, γd =[gt/(1+w)] g/cm^3	**1.51**	**1.68**	**1.53**	**1.78**	**1.71**	**1.83**

Tested by	Cheked By	Authorised Signatory
Date: 16/3/2016	Date: 21/3/16	Date: 21/3/2016

XPLORER
CONSULTANCY SERVICES (P) LTD.

MOISTURE CONTENT & DENSITY TEST OF SOIL

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

NABL ACCREDITATED LABORATORY
CERTIFICATE NO.T-3678

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	CH-49+250		CH-50+100	CH-65+740	
Borehole No./Pit no.	BH-1		BH-1	BH-2	
Sample No.	UDS-8	UDS-9	UDS-1	UDS-1	UDS-4
Depth (m)	23.00	26.00	2.00	2.00	11.00
Oven No.	XPL/OV-2	XPL/OV-2	XPL/OV-2	XPL/OV-1	XPL/OV-2
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	Silty CLAY	Sandy SILT
Container No.	ST-65	ST-176	ST-67	ST-186	ST-77
Wt.Can. W1,g	22.67	19.81	19.77	15.04	21.13
Wt.Can.+ Wet Soil,(W2),g	66.8	57.47	54.25	40.20	60.05
Wt.Can.+ Dry Soil,(W3),g	60.70	52.18	50.08	37.05	53.23
Wt.Water (W2-W3),g	6.10	5.29	4.17	3.15	6.82
Wt.Dry Soil (W3-W1),g	38.03	32.37	30.31	22.01	32.10
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**16.0**	**16.3**	**13.8**	**14.3**	**21.2**
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-64	B-329	B-38	B-43	B-39
Wt. Tube+Soil, g	9900	8000	5613	9738	4960
Wt.of Tube	3460	3060	2340	6895	2100
Dia of Tube, g(Average) cm	10	10	9	10	8.3
Length of sample, cm	41.0	30.0	27.0	18.0	27.0
Wt Soil (W)	6440	4940	3273	2843	2860
Vol. Soil (V), cm^3	3221	2357	1718	1414	1461
In-Situ Density, g_t =(W/V) g/cm^3	2.00	2.10	1.90	2.01	1.96
Dry Density, yd =[gt/(1+w)] g/cm^3	**1.72**	**1.80**	**1.67**	**1.76**	**1.61**

Tested by	Cheked By	Authorised Signatory
Date: 14/3/2016	Date: 21/3/16	Date: 21/3/2016

XPLORER

MOISTURE CONTENT & DENSITY TEST OF SOIL

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

NABL ACCREDITATED LABORATORY
CERTIFICATE NO.T-1678

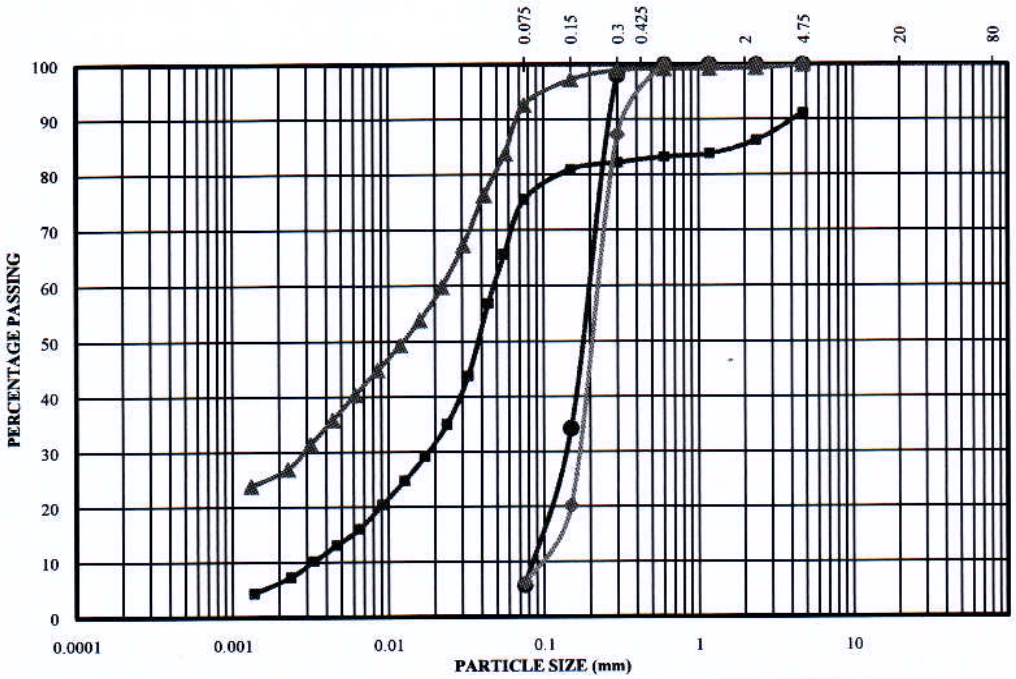
PROJECT: Geotechnical Investigation Works For Hapur - Meerut Section of DFCC Meerut — JOB NO: 1342

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

MOISTURE CONTENT	CH-54+825	CH-63+570			
Borehole No./Pit no.	BH-2	BH-2			
Sample No.	UDS-1	UDS-1			
Depth (m)	2.00	2.00			
Oven No.	XPL/OV-2	XPL/OV-2			
Sample Extruder No.	XPL/SE-1	XPL/SE-1			
Balance No.	XPL/EB-06	XPL/EB-06			
Soil Type	Sandy SILT	Silty CLAY			
Container No.	ST-104	ST-85			
Wt.Can. W1,g	23.85	20.34			
Wt.Can.+ Wet Soil,(W2),g	61.28	63.63			
Wt.Can.+ Dry Soil,(W3),g	57.67	56.60			
Wt.Water (W2-W3),g	3.61	7.03			
Wt.Dry Soil (W3-W1),g	33.82	36.26			
Water Content, w, %= {(W2-W3)/(W3-W1)}x 100	**10.7**	**19.4**			
IN-SITU DENSITY					
Balance No.	XPL/EB-04	XPL/EB-04			
Vernier Calliper No.	XPL/VC-1	XPL/VC-1			
Steel Tape No.	XPL/ST-1	XPL/ST-1			
Container No.	B-85	B-15			
Wt. Tube+Soil, g	8396	6300			
Wt.of Tube	4848	2663			
Dia of Tube, g(Average) cm	10.5	10			
Length of sample, cm	21.0	24.0			
Wt Soil (W)	3548	3637			
Vol. Soil (V), cm^3	1819	1886			
In-Situ Density, g_t =(W/V) g/cm^3	1.95	1.93			
Dry Density, γd =[gt/(1+w)] g/cm^3	**1.76**	**1.62**			

Tested by	Cheked By	Authorised Signatory
Date: 16/3/2016	Date: 21/3/16	Date: 21/3/2016

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-1/34+360	SPT-1	1.50	Brownish Sandy SILT (ML)	9	16	68	7
2		BH-1/34+360	SPT-6	9.00	Brownish Silty SAND (SW-SM)	0	94	6	
3		BH-1/34+360	UDS-7	20.00	Brownish Silty CLAY (CI)	0	7	67	26
4		BH-1/34+360	SPT-18	27.00	Greyish Silty SAND (SW-	0	94	6	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

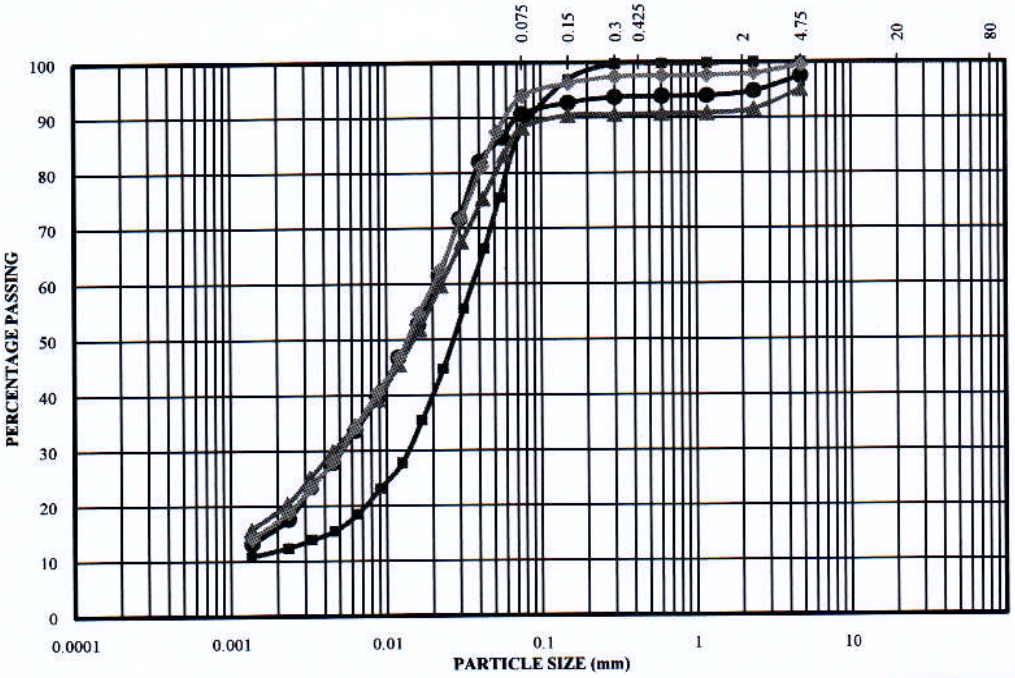
XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO. 1-6078

851

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-1/48+400	UDS-1	2.00	Brownish Silty CLAY (CL)	0	12	76	12
2	●—●	BH-1/48+400	UDS-5	14.00	Brownish Silty CLAY (CI)	2	7	74	17
3	▲—▲	BH-1/48+400	UDS-6	17.00	Brownish Silty CLAY (CI)	5	7	68	20
4	◆—◆	BH-1/48+400	UDS-8	23.00	Brownish Silty CLAY (CI)	0	6	77	17

XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO. C-1678

Site Ref: Hapur - Meerut Section

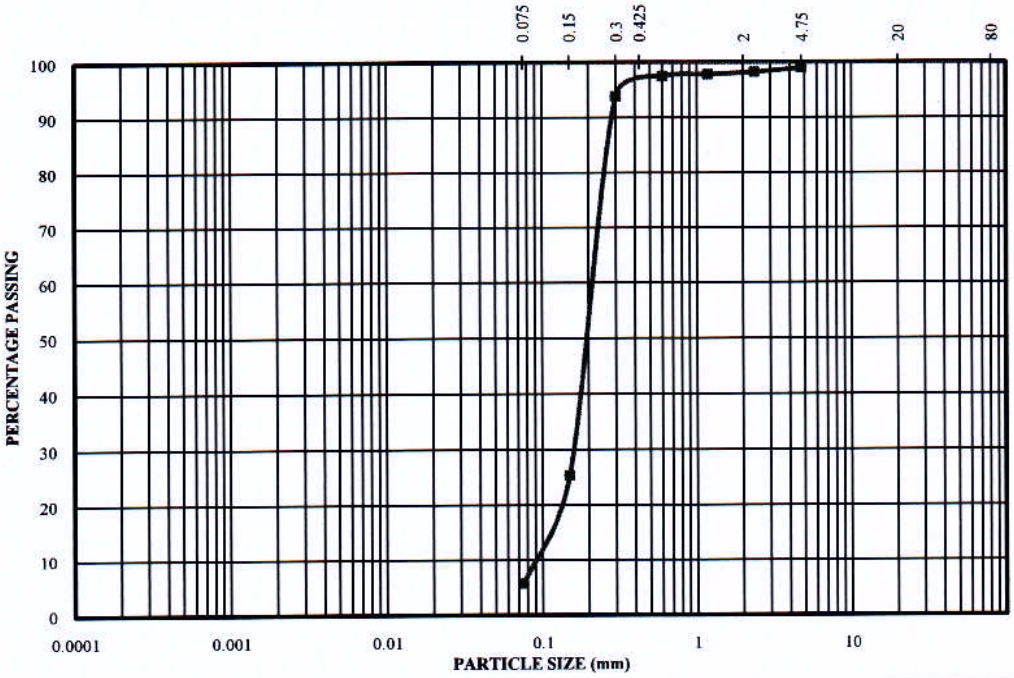
Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

852

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-1/48+400	SPT-19	28.50	Greyish Silty SAND (SW-SM)	1	93	6	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

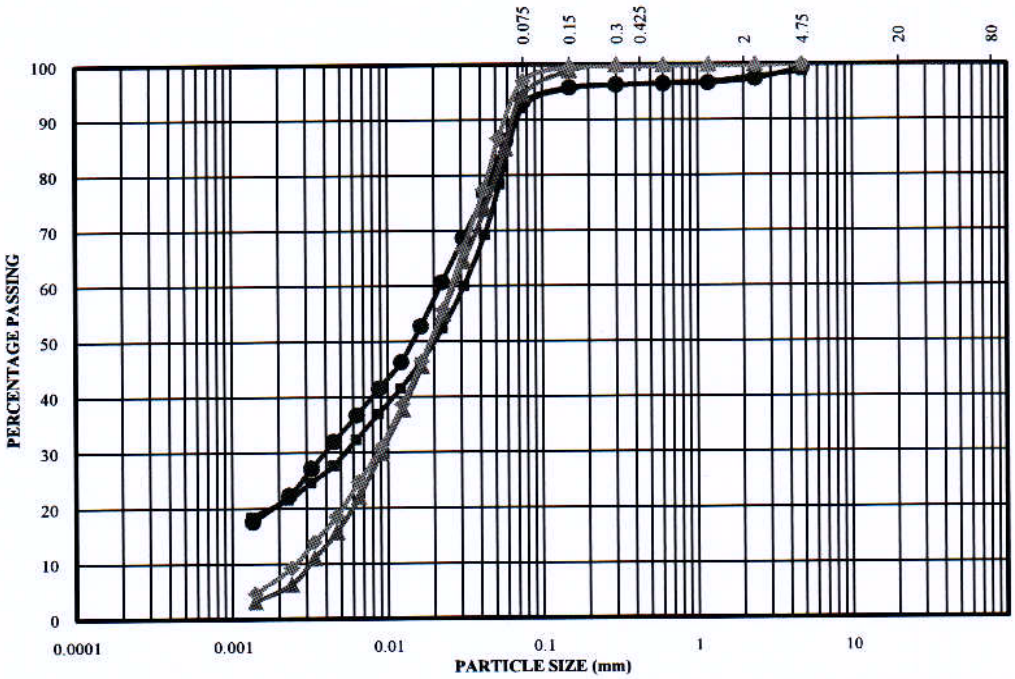
XPLORER CONSULTANCY SERVICES (P) LTD

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO.T-1678

852

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-1/49+250	UDS-1	2.00	Brownish Silty CLAY (CI)	1	7	71	21
2		BH-1/49+250	UDS-5	14.00	Brownish Silty CLAY (CI)	1	6	72	21
3		BH-1/49+250	UDS-8	23.00	Brownish Sandy SILT (ML)	0	5	89	6
4		BH-1/49+250	UDS-9	26.00	Brownish Sandy SILT (ML)	0	3	89	8

XPLORER CONSULTANCY SERVICES (I) LTD

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY CERTIFICATE NO.-1678

Site Ref: Hapur - Meerut Section

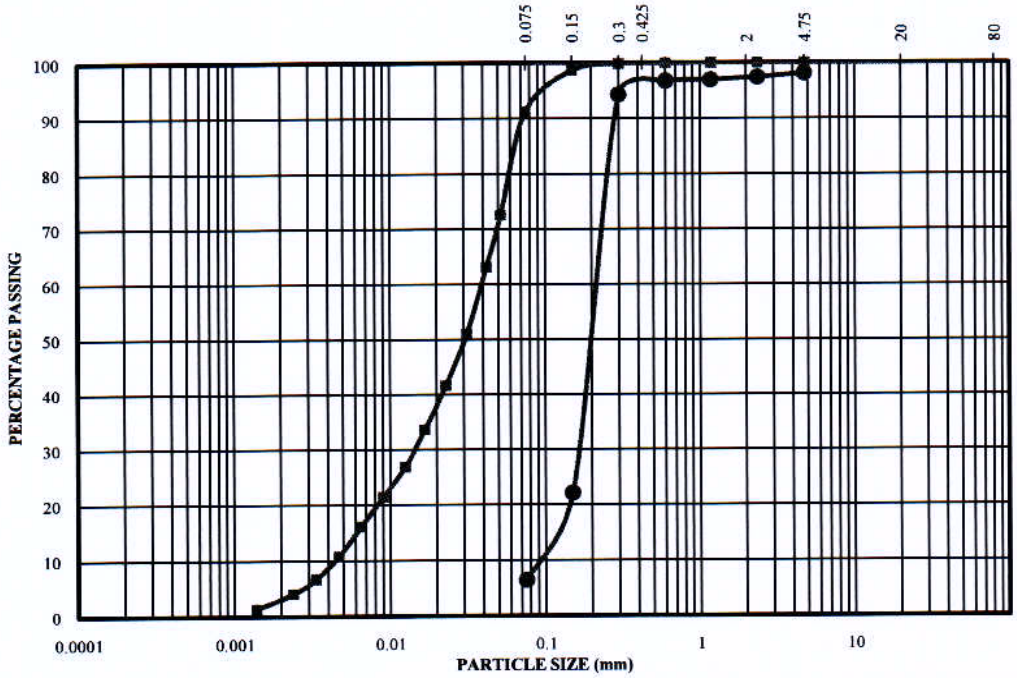
Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

854

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-1/50+100	UDS-1	2.00	Brownish Sandy SILT (ML)	0	9	87	4
2	●—●	BH-1/50+100	SPT-8	12.00	Greyish Silty SAND (SW-	2	92	6	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

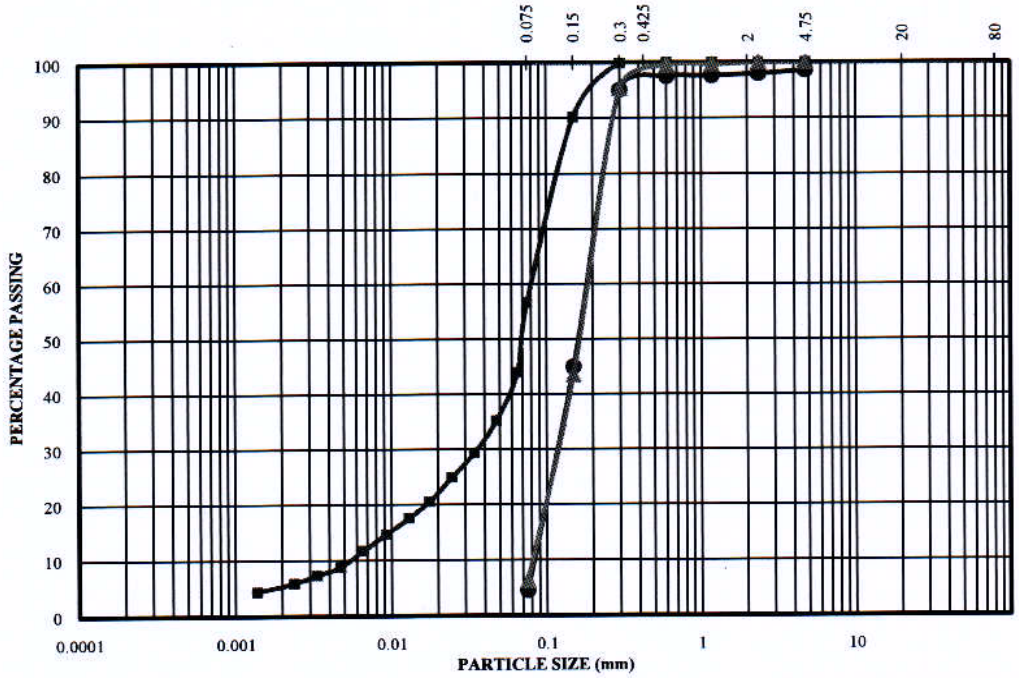
XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY CERTIFICATE NO. T-1678

855

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-2/64+270	SPT-1	1.50	Brownish Sandy SILT (ML)	0	43	51	6
2	●—●	BH-2/64+270	SPT-8	12.00	Greyish Poorly Graded SAND	1	94	5	
3	▲—▲	BH-2/64+270	SPT-15	22.50	Greyish Silty SAND (SW-	0	94	6	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

XPLORER CONSULTANCY SERVICES (P) LTD.

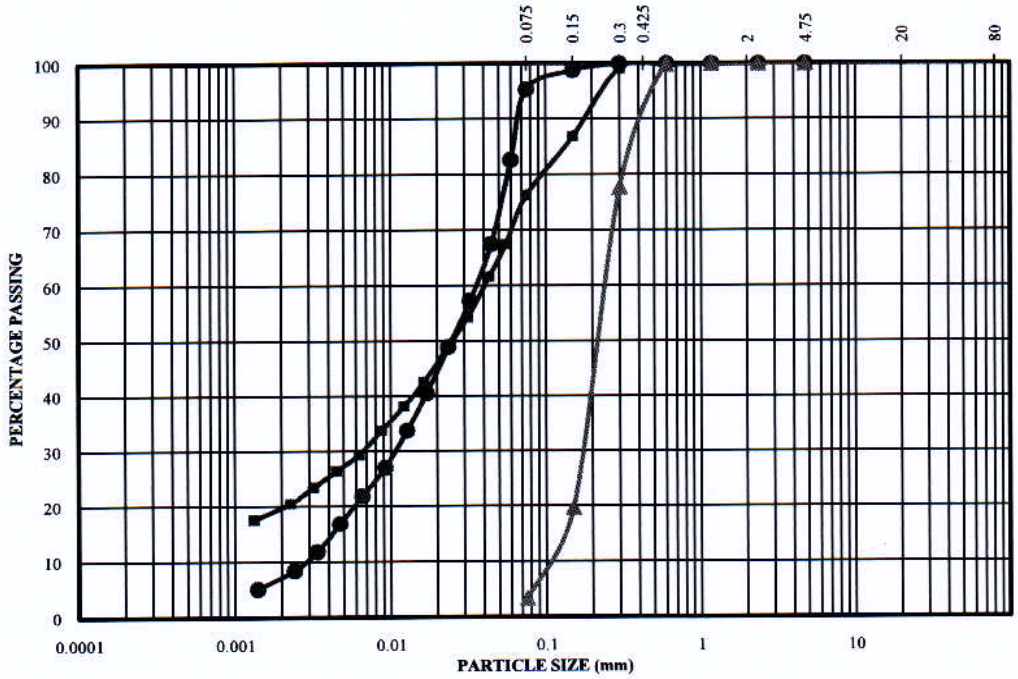
GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITATED LABORATORY

CERTIFICATE NO. T-1078

859

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-2/65+740	UDS-1	2.00	Brownish Silty CLAY (CI)	0	24	56	20
2	●—●	BH-2/65+740	UDS-4	11.00	Brownish Sandy SILT (ML)	0	5	88	7
3	▲—▲	BH-2/65+740	SPT-14	21.00	Greyish Poorly Graded SAND	0	97	3	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 17/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

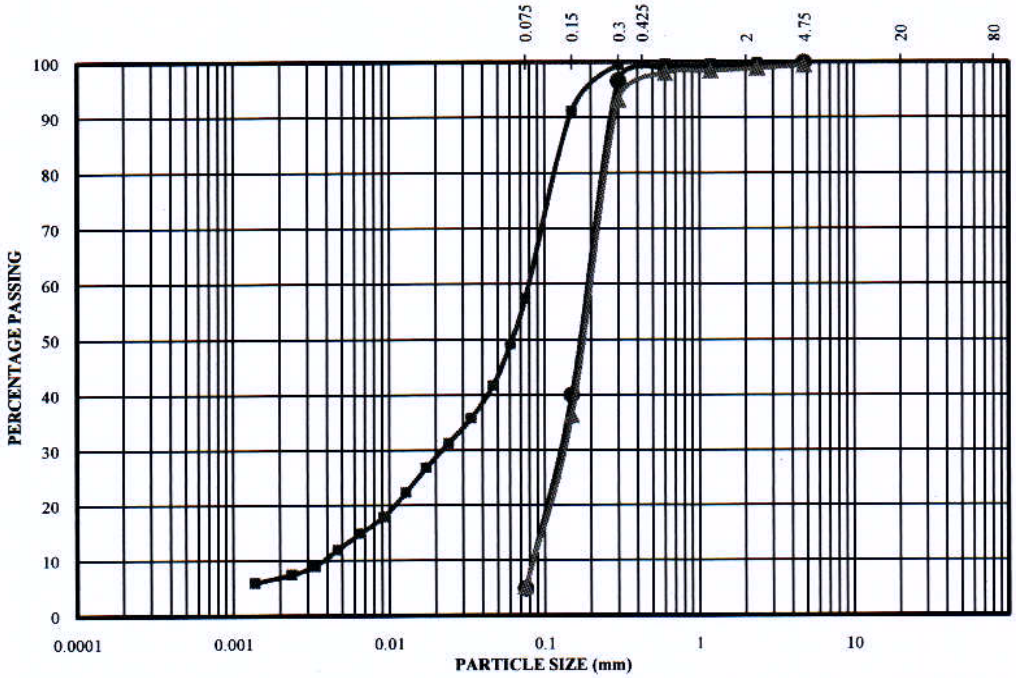
XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY CERTIFICATE NO. T-1678

857

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-2/54+825	UDS-1	2.00	Brownish Sandy SILT (ML)	0	43	50	7
2	●—●	BH-2/54+825	SPT-8	12.00	Greyish Silty SAND (SW-SM)	0	95	5	
3	▲—▲	BH-2/54+825	SPT-15	22.50	Greyish Silty SAND (SW-SM)	1	94	5	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 18/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

XPLORER CONSULTANCY SERVICES (I) PVT. LTD.

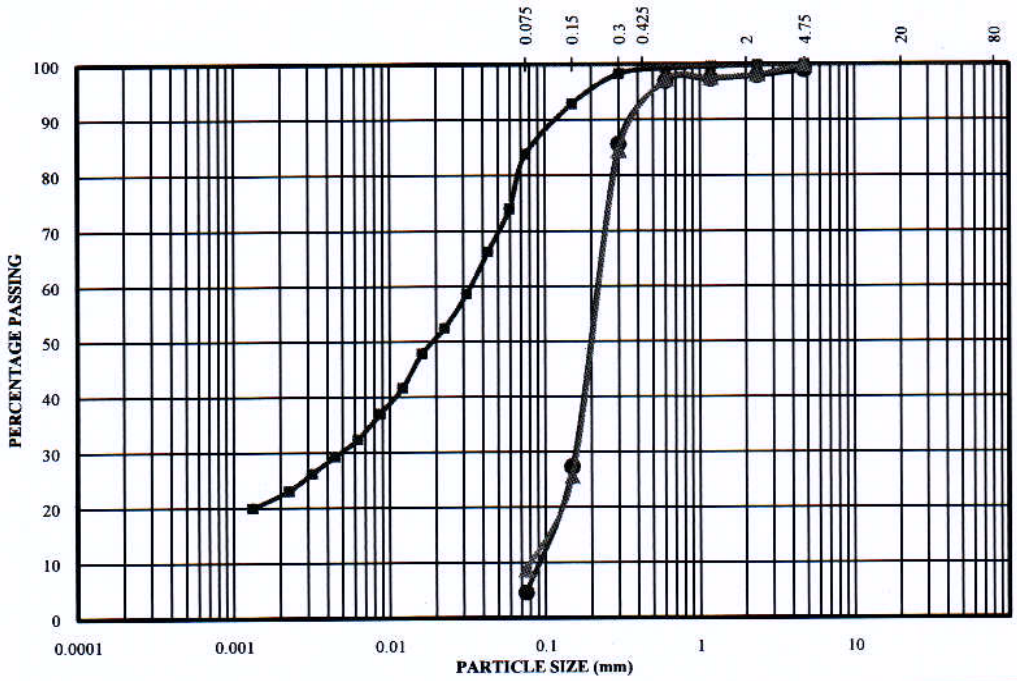
GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY

CERTIFICATE NO. T-1678

858

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-2/63+570	UDS-1	2.00	Brownish Silty CLAY (CI)	0	16	62	22
2		BH-2/63+570	SPT-8	12.00	Greyish Silty SAND (SW-	1	94	5	
3		BH-2/63+570	SPT-16	24.00	Greyish Silty SAND (SW-	0	91	9	

Site Ref: Hapur - Meerut Section

Job No: 1342

Test Report No: XPL/2015-16/02

Operator:	Date: 18/3/16	Checked:	Date: 21/3/16	Authorised Signatory	Date: 21/3/2016

XPLORER CONSULTANCY SERVICES (P) LTD.

GRAIN SIZE ANALYSIS (IS : 2720 : PART IV)

NABL ACCREDITED LABORATORY

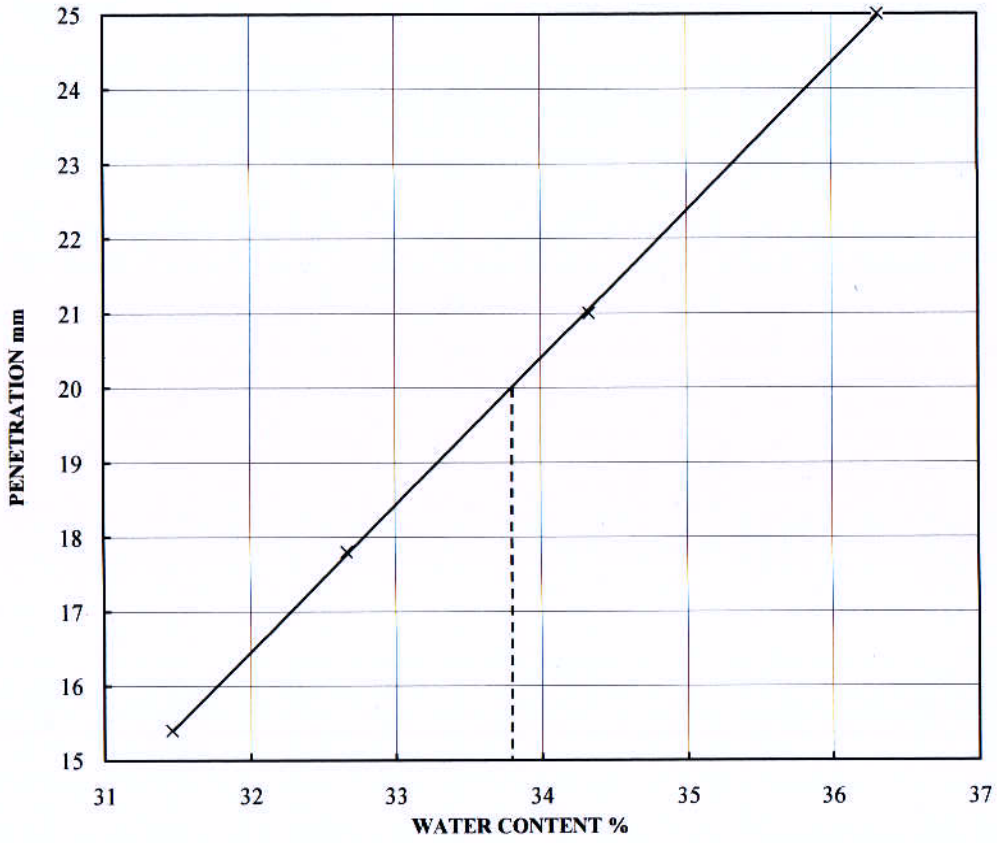
859

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 = 79%

		LIQUID LIMIT %				PLASTIC LIMIT %
Wet Weight + Tare (g)		21.86	24.23	25.73	26.10	
Dry Weight + Tare (g)		19.00	20.80	21.72	21.80	
Tare Weight	(g)	9.91	10.30	10.04	9.96	NP
Water Content	(%)	31.46	32.67	34.33	36.32	
Penetration	(mm)	15.40	17.80	21.00	25.00	

LIQUID LIMIT	(%)	34
PLASTIC LIMIT	(%)	NP
PLASTICITY INDEX	(%)	

Sample Type : SPT			
Borehole No. 1/34+360	Sample No: SPT-1	Depth (m): 1.50	
XPLORER	Site Ref: Hapur - Meerut Section	Job No : 1342	Test Report No: XPL/2015-16/02
Operator :	Checked :	Authorised Signaroty	
Date : 18/03/2016	Date: 21/3/16	Date: 21/3/2016	