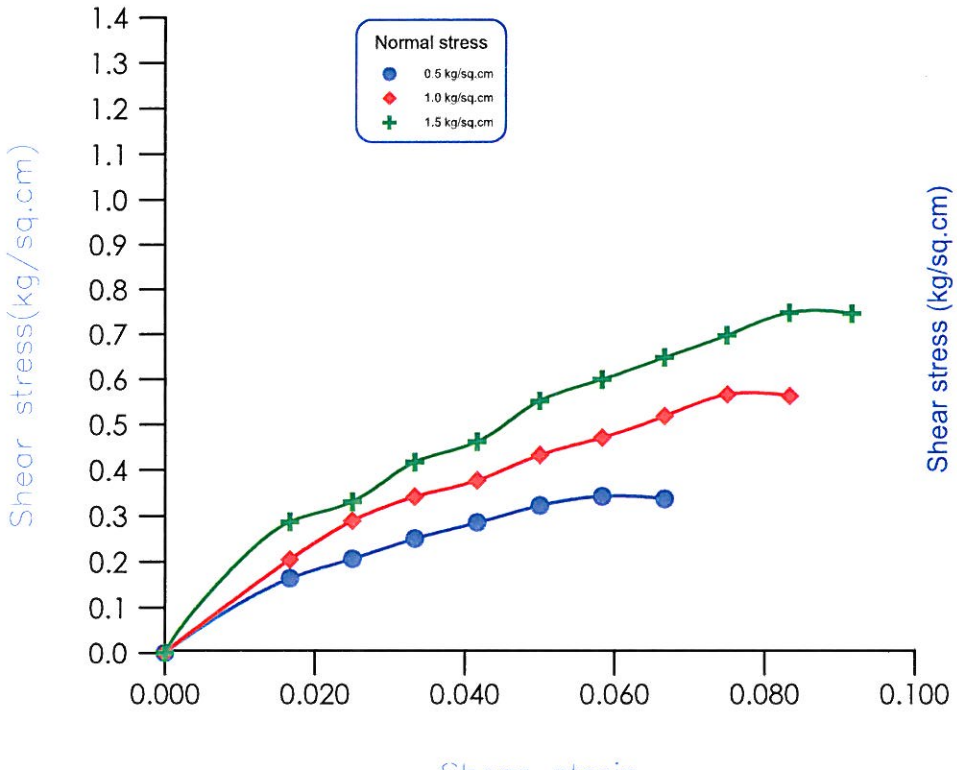
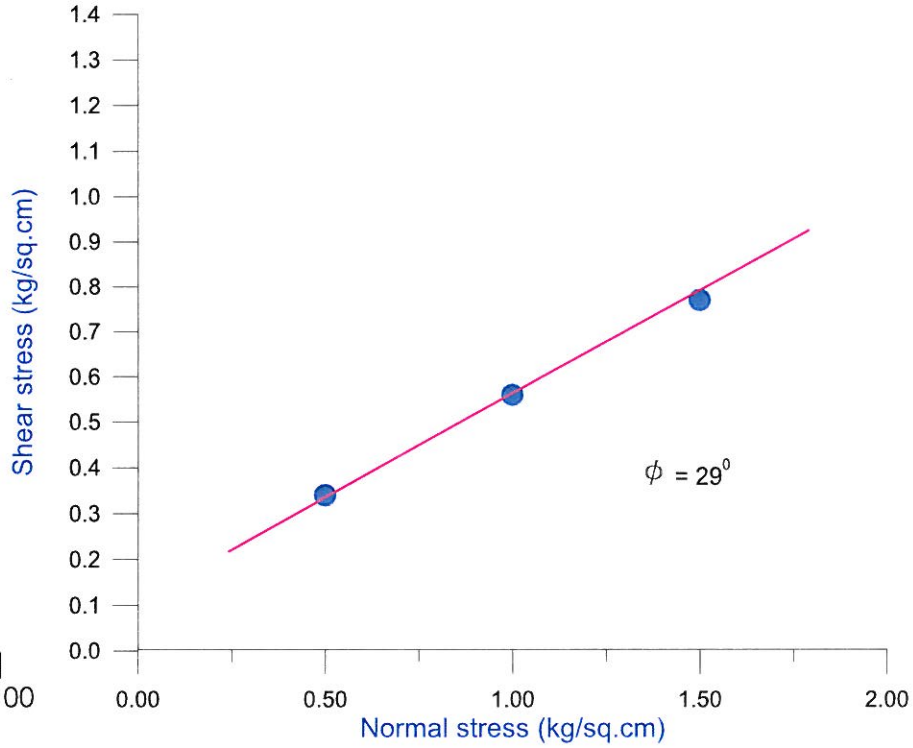
BH-1
DEPTH = 5.50 m.

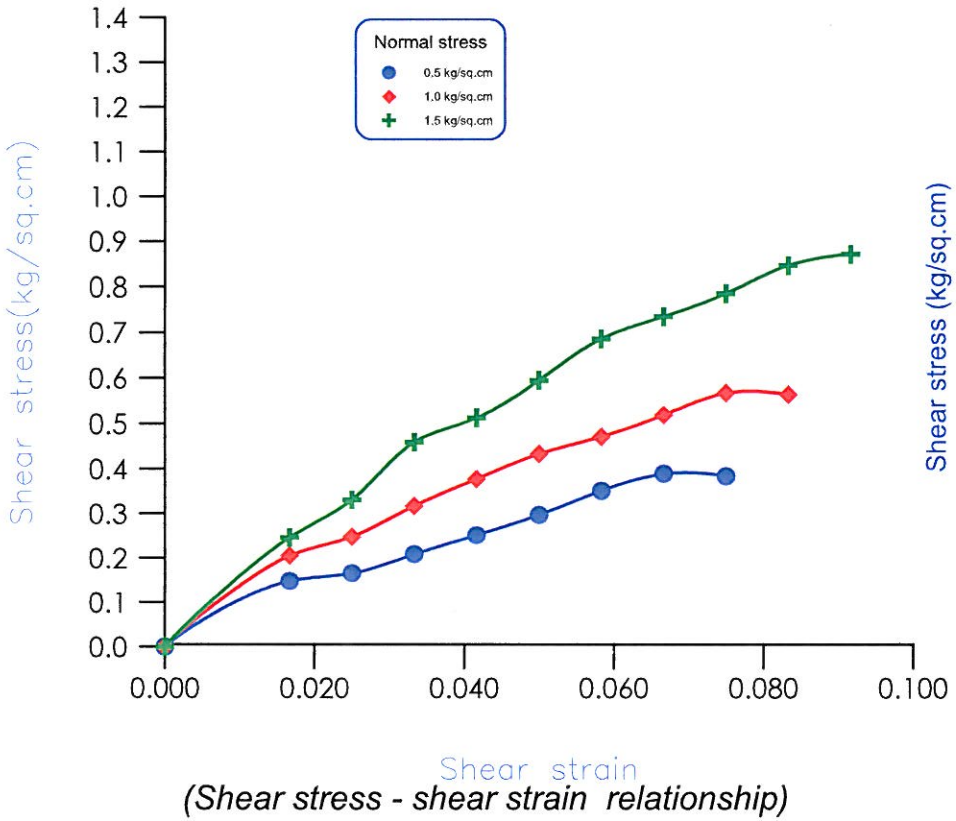


(Shear stress - shear strain relationship)

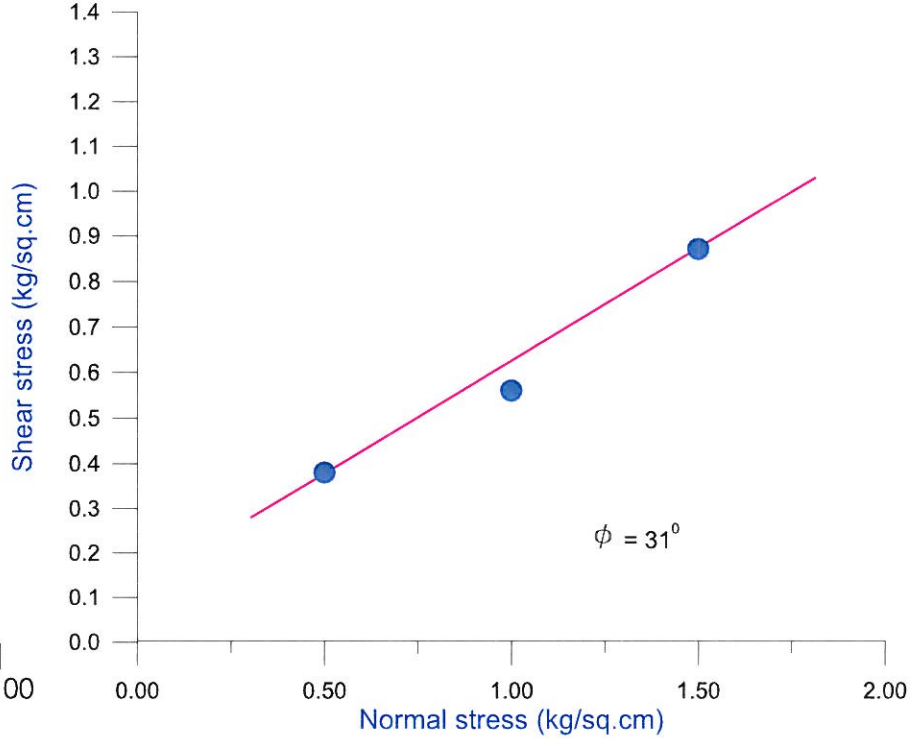


(Shear stress - Normal stress relationship)

BH-1
DEPTH = 11.50 m.



(Shear stress - shear strain relationship)

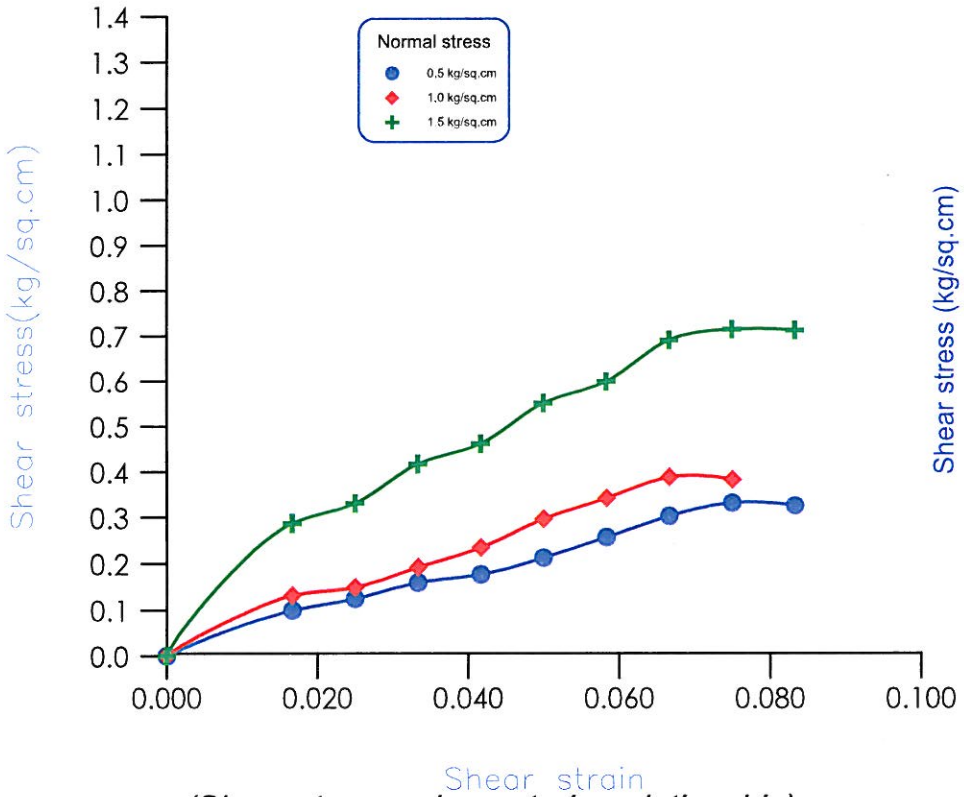


(Shear stress - Normal stress relationship)

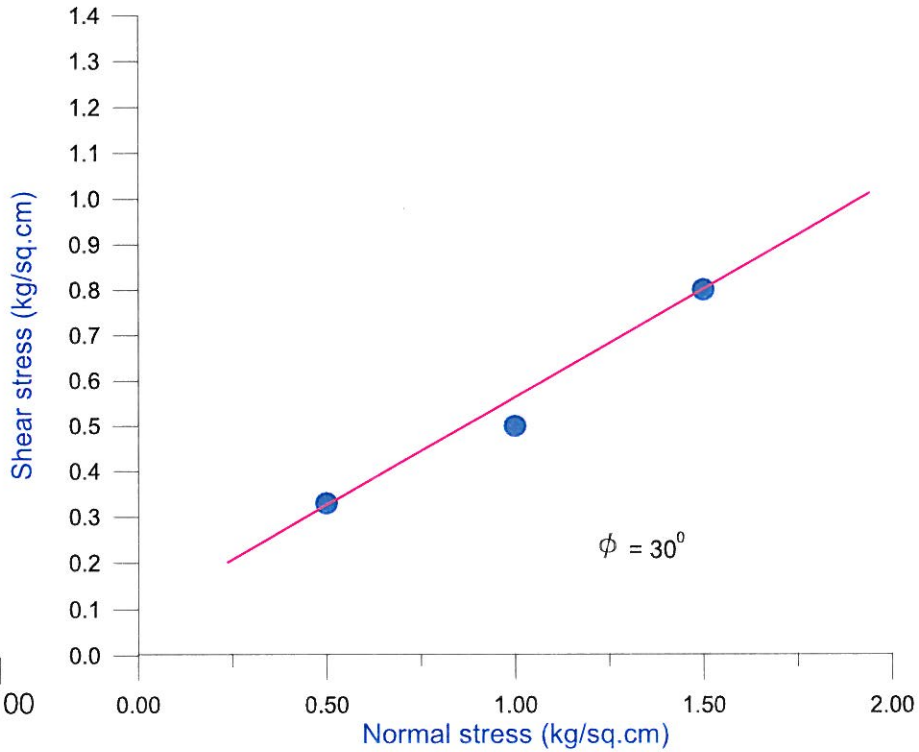
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BH2

BH-1
DEPTH = 23.50 m.



(Shear stress - shear strain relationship)



(Shear stress - Normal stress relationship)

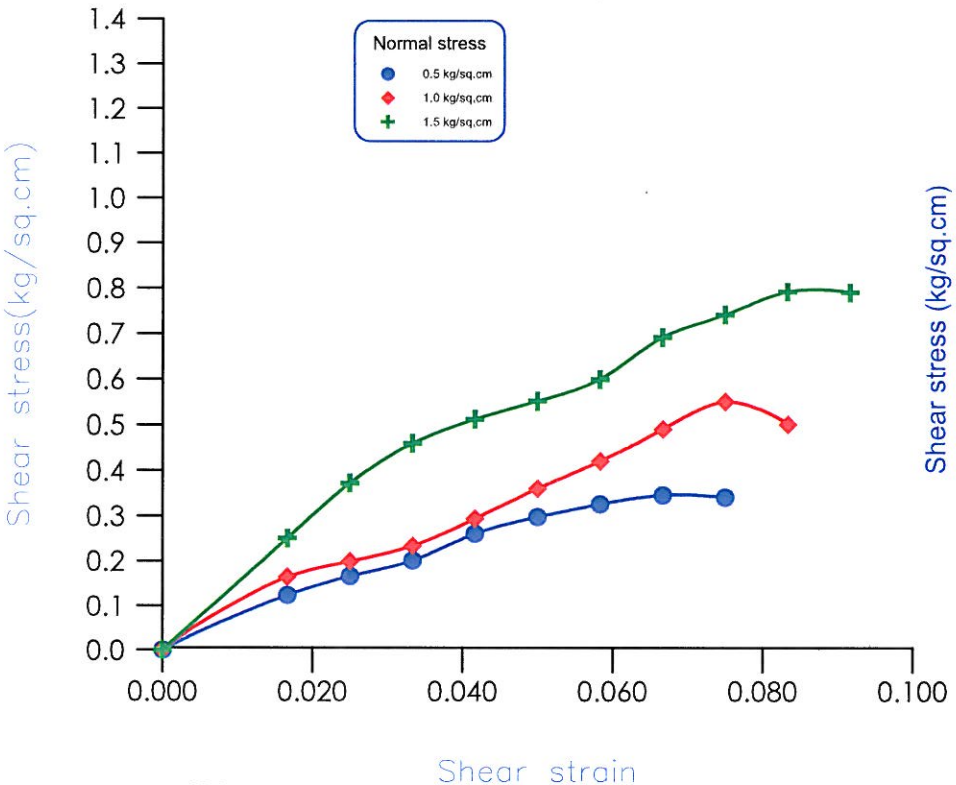
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BH3

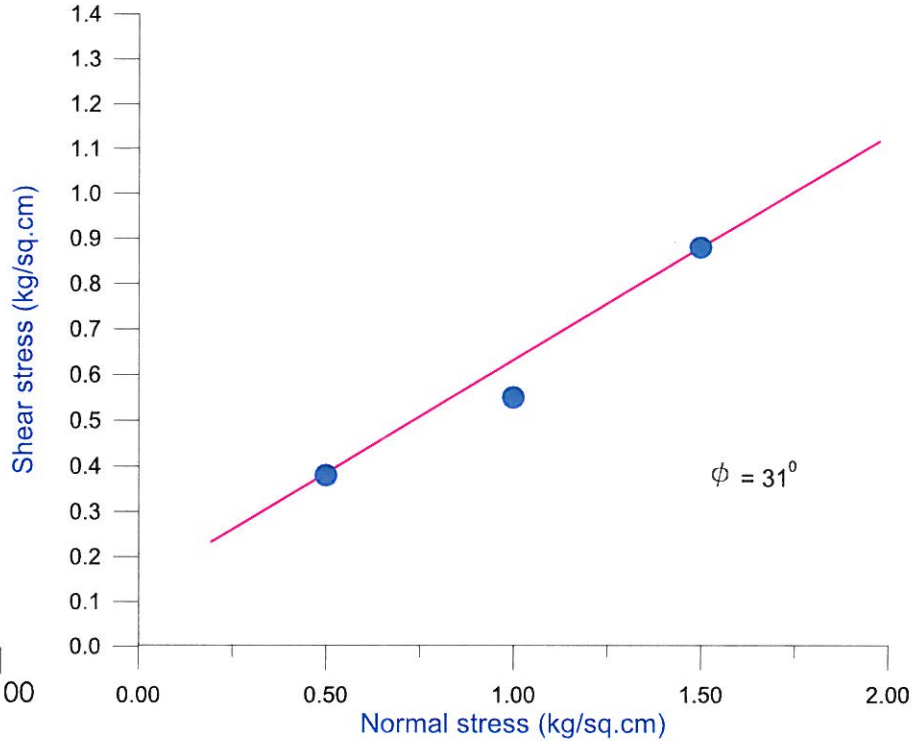
0169

0126

BH-2
DEPTH = 2.50 m.



(Shear stress - shear strain relationship)

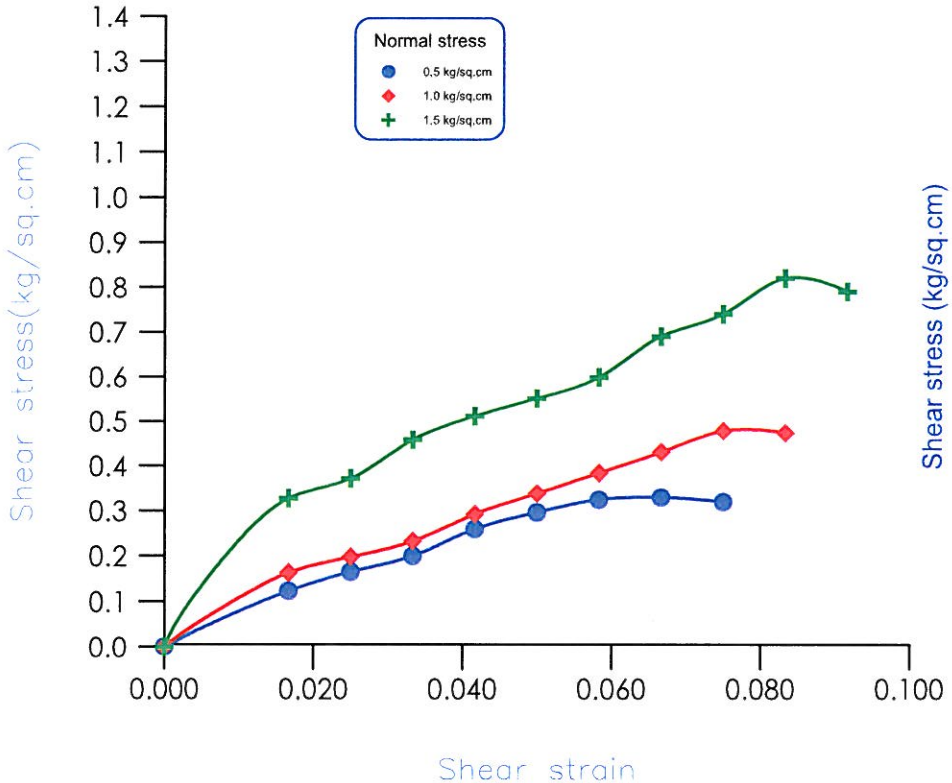


(Shear stress - Normal stress relationship)

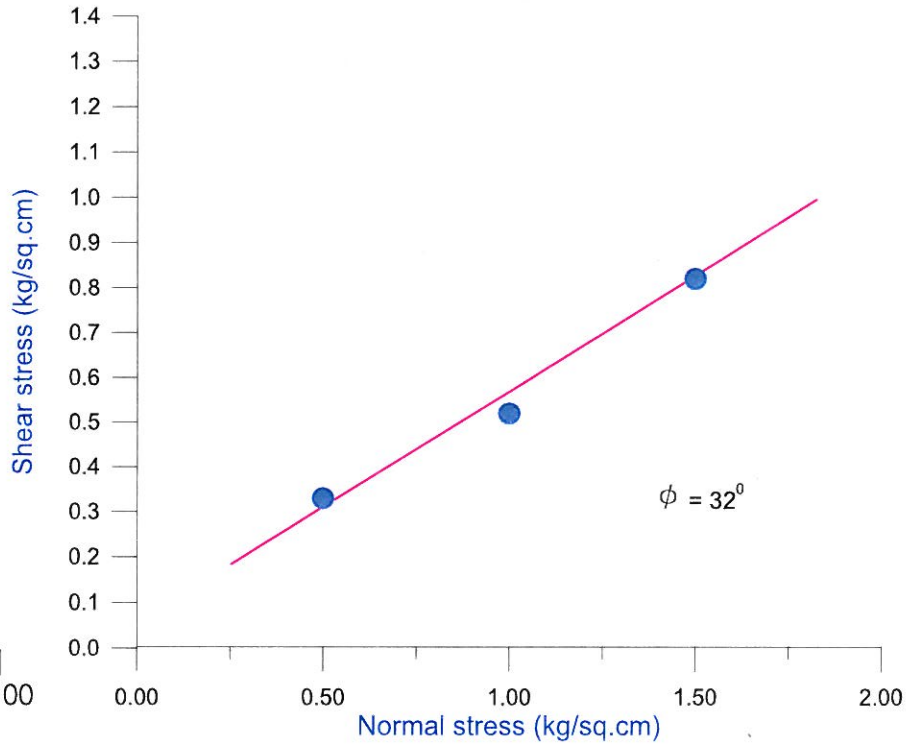
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BH4

BH-2
DEPTH = 11.50 m.



(Shear stress - shear strain relationship)



(Shear stress - Normal stress relationship)

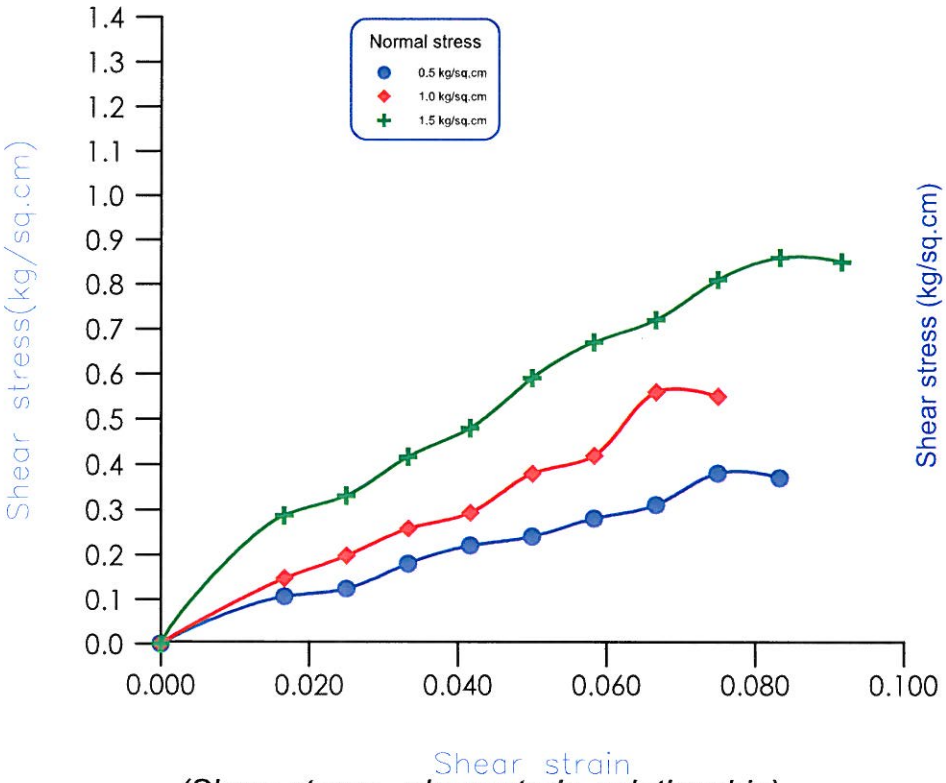
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BH5

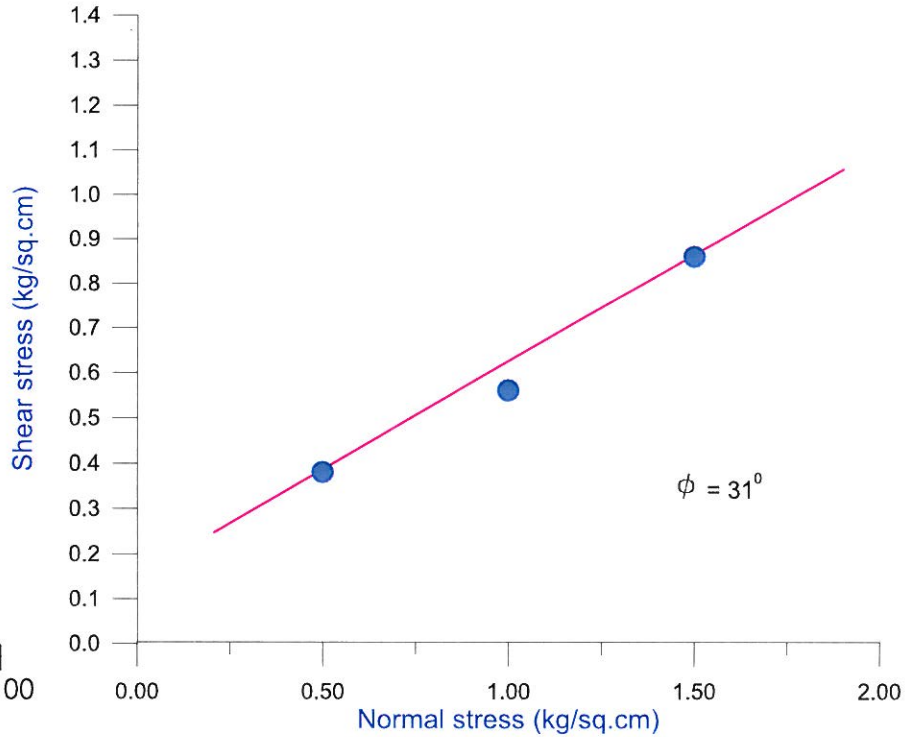
0474

0172

BH-3
DEPTH = 2.50 m.



(Shear stress - shear strain relationship)

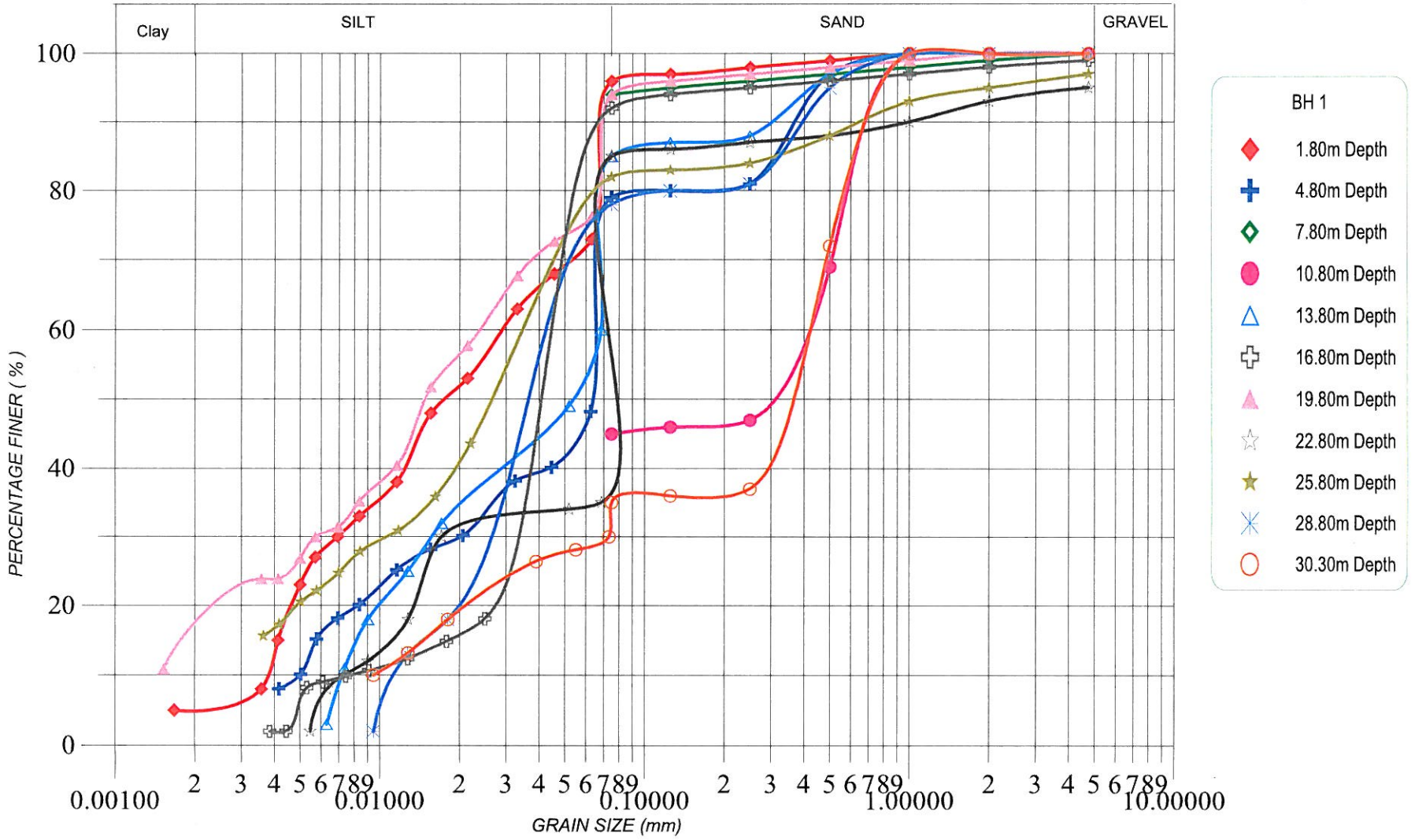


(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BH6

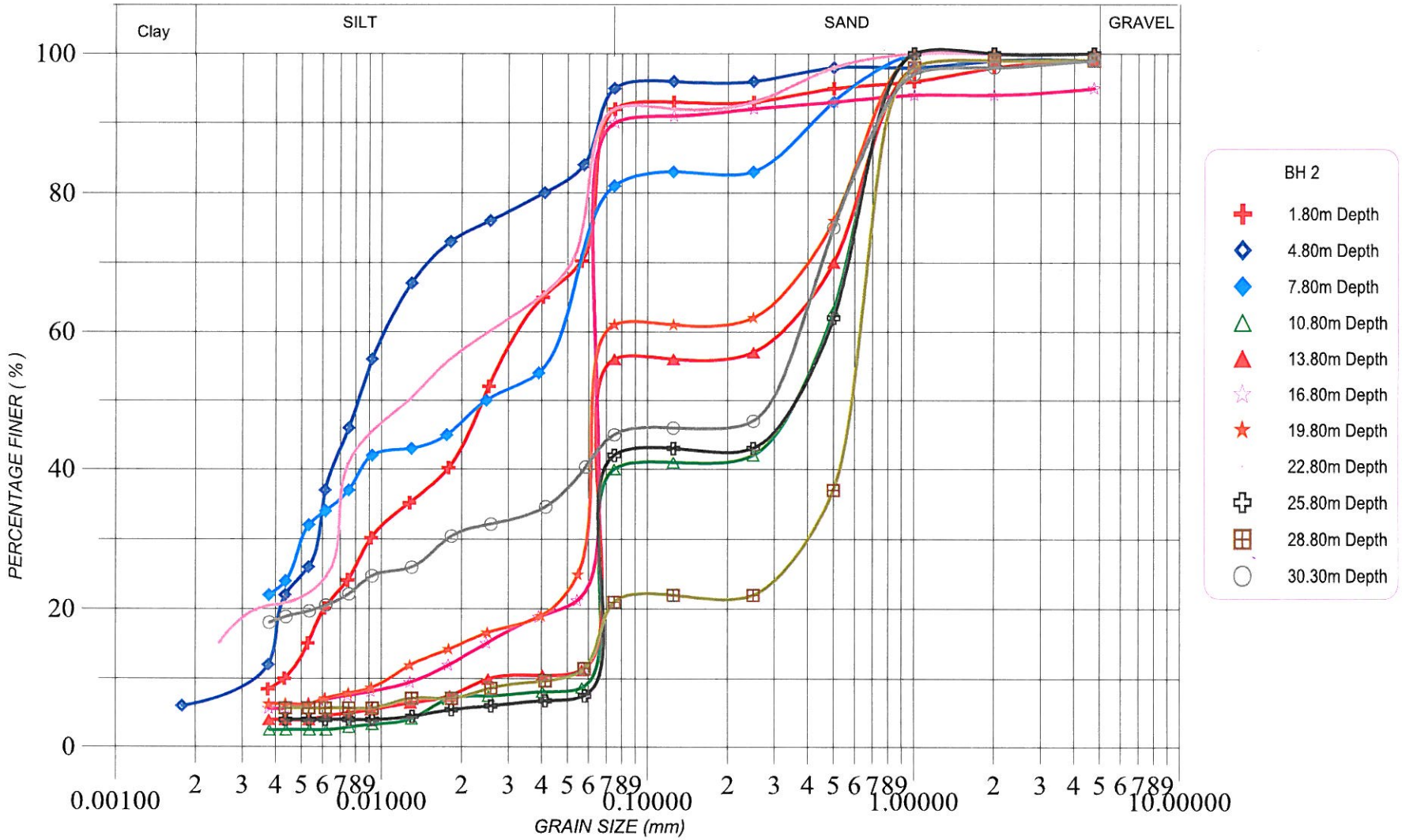
GRAIN SIZE DRISTRIBUTION CURVE



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BH1

GRAIN SIZE DRISTRIBUTION CURVE



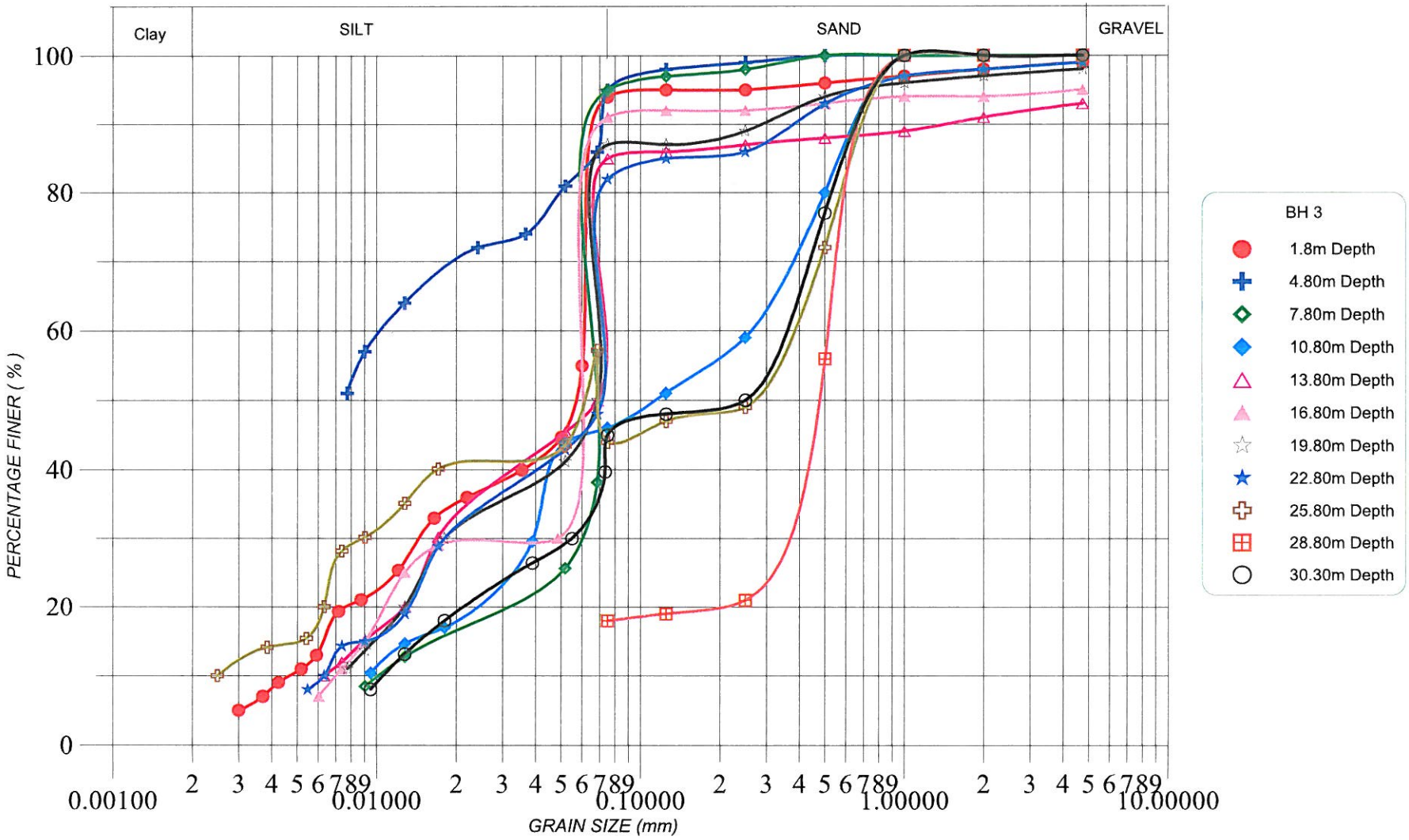
PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BH-2

Soil Engineering Consultants

Job:1813

GRAIN SIZE DRISTRIBUTION CURVE

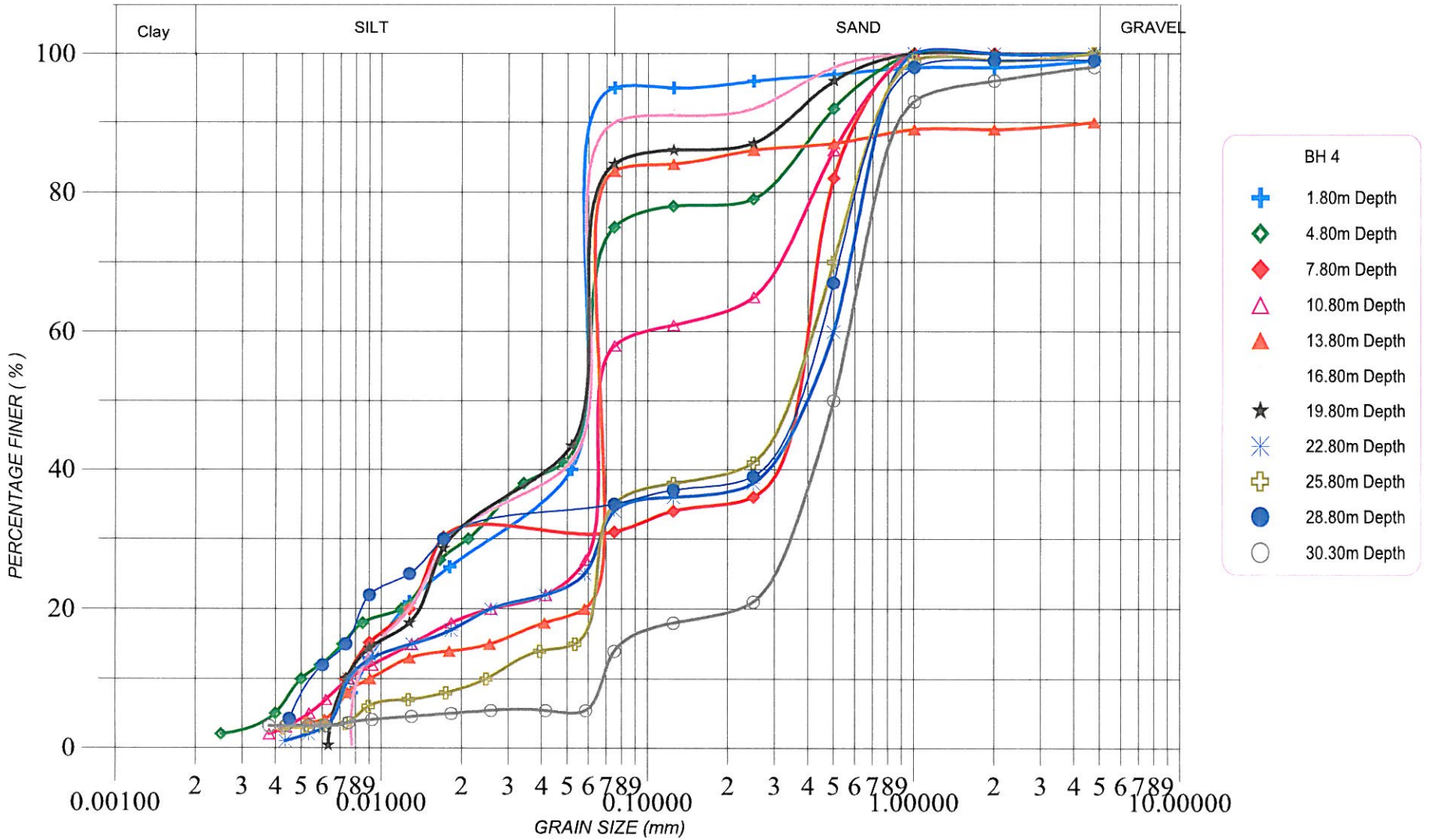


PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BH3

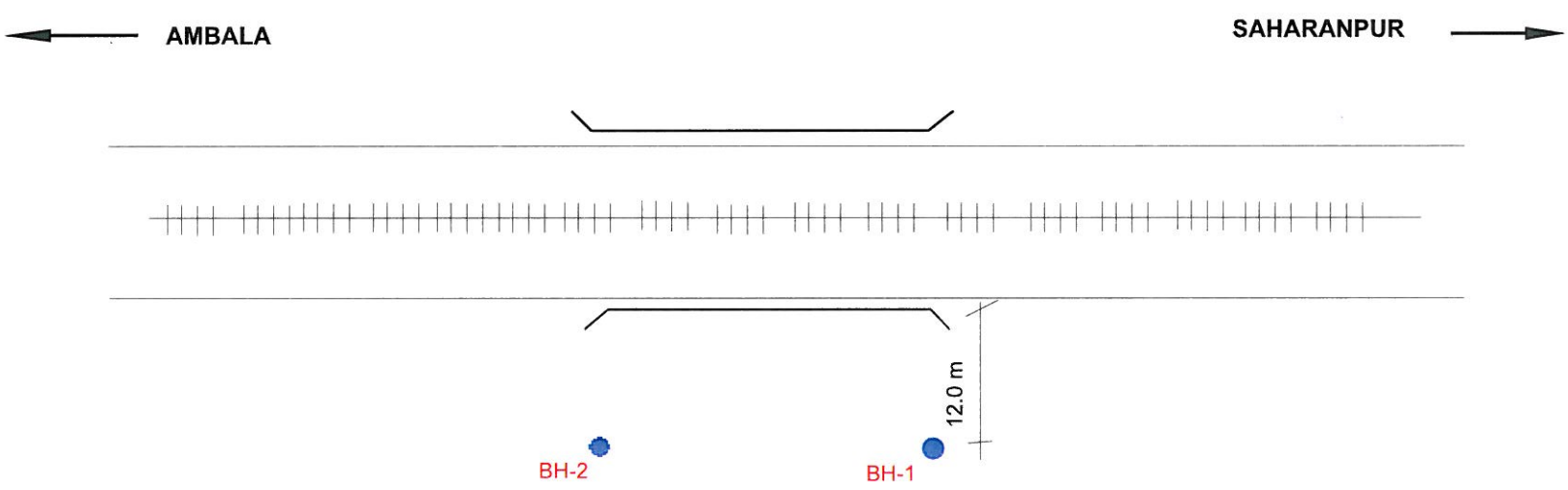
0175

GRAIN SIZE DRISTRIBUTION CURVE



SOIL ENGINEERING CONSULTANTS

Job No: 1813



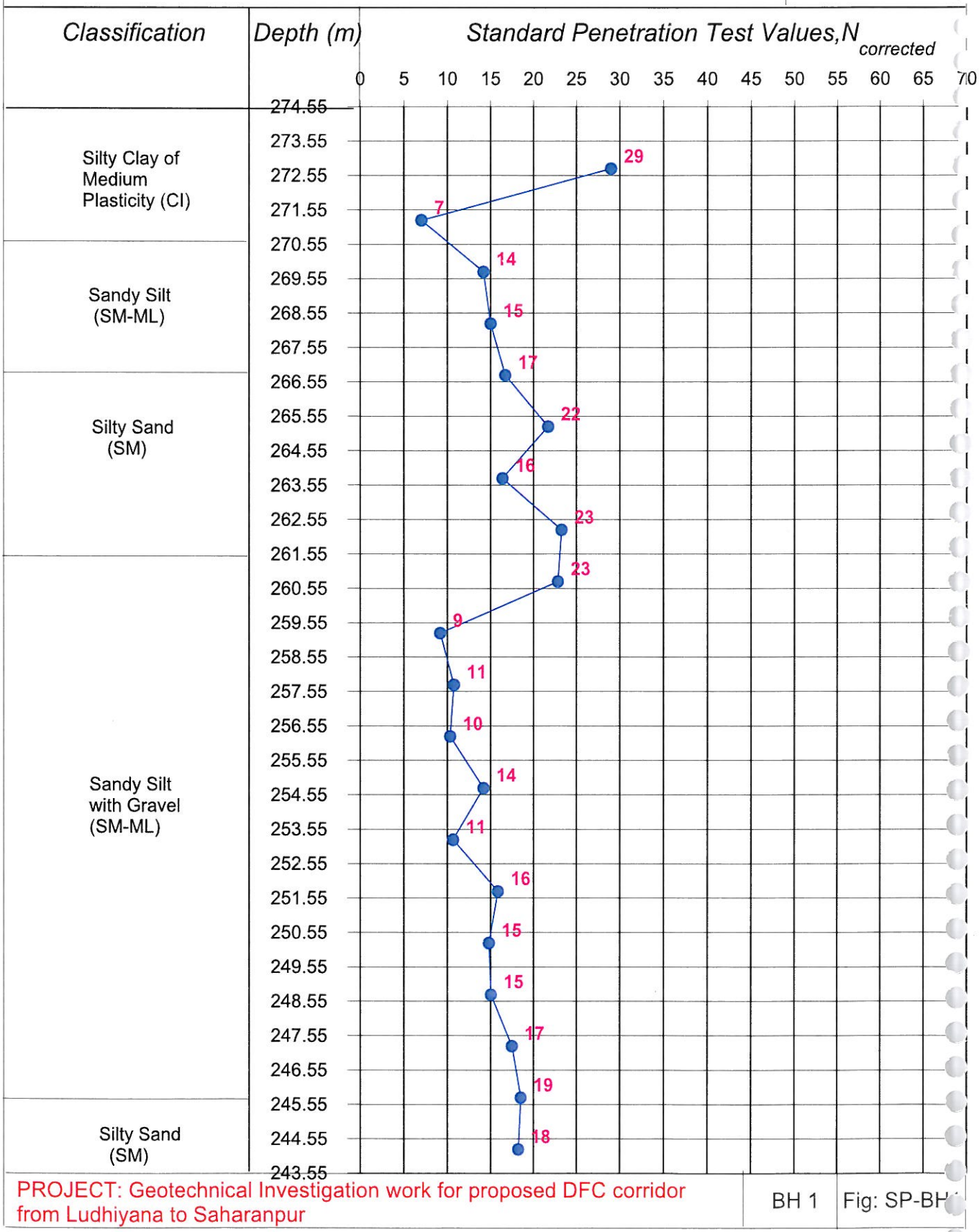
BRIDGE 262 @ CH 222/9-10

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig: Plan-BH

0177

SOIL ENGINEERING CONSULTANTS BR-262 Project No: 1813

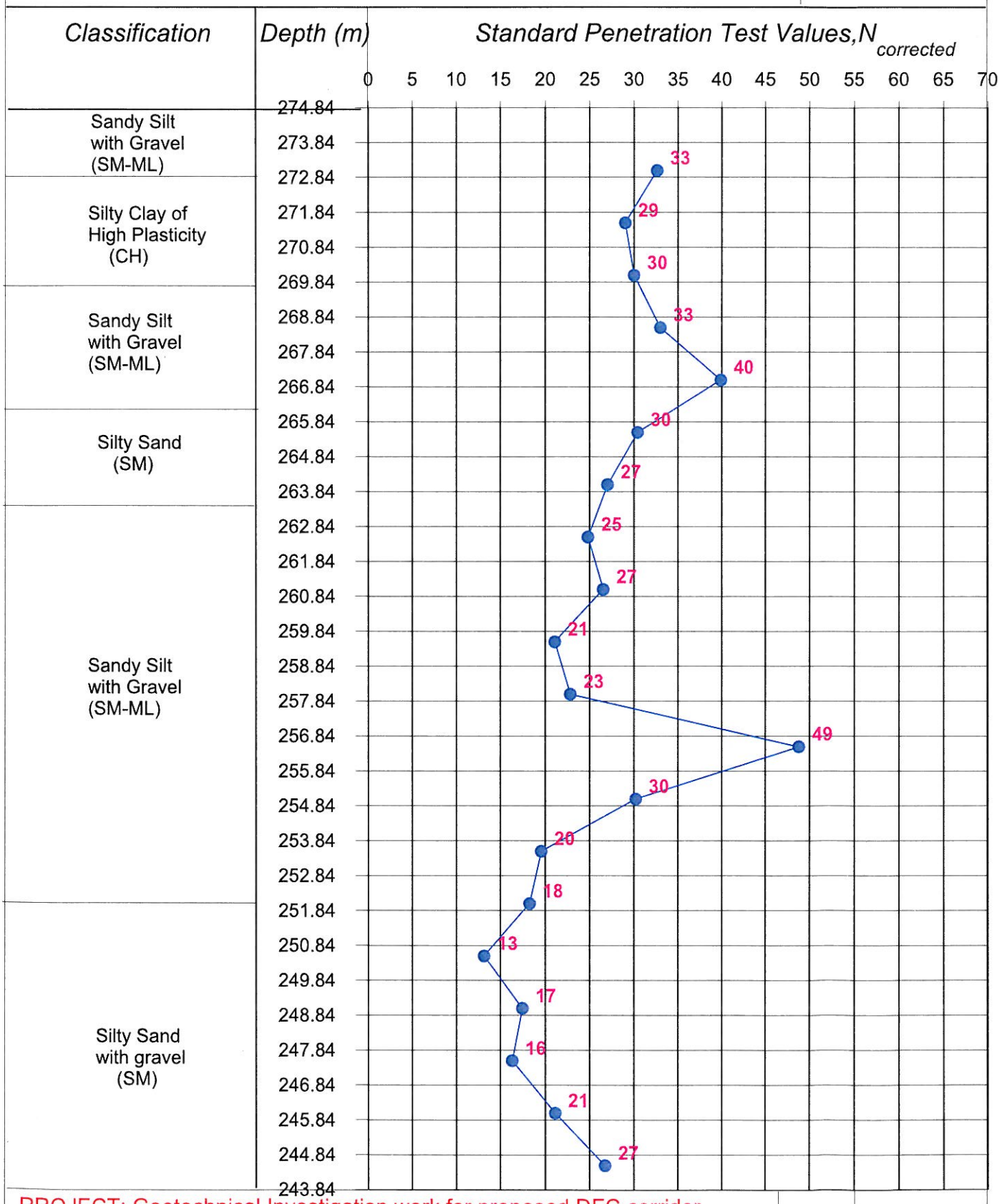


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

BH 1 Fig: SP-BH

0178

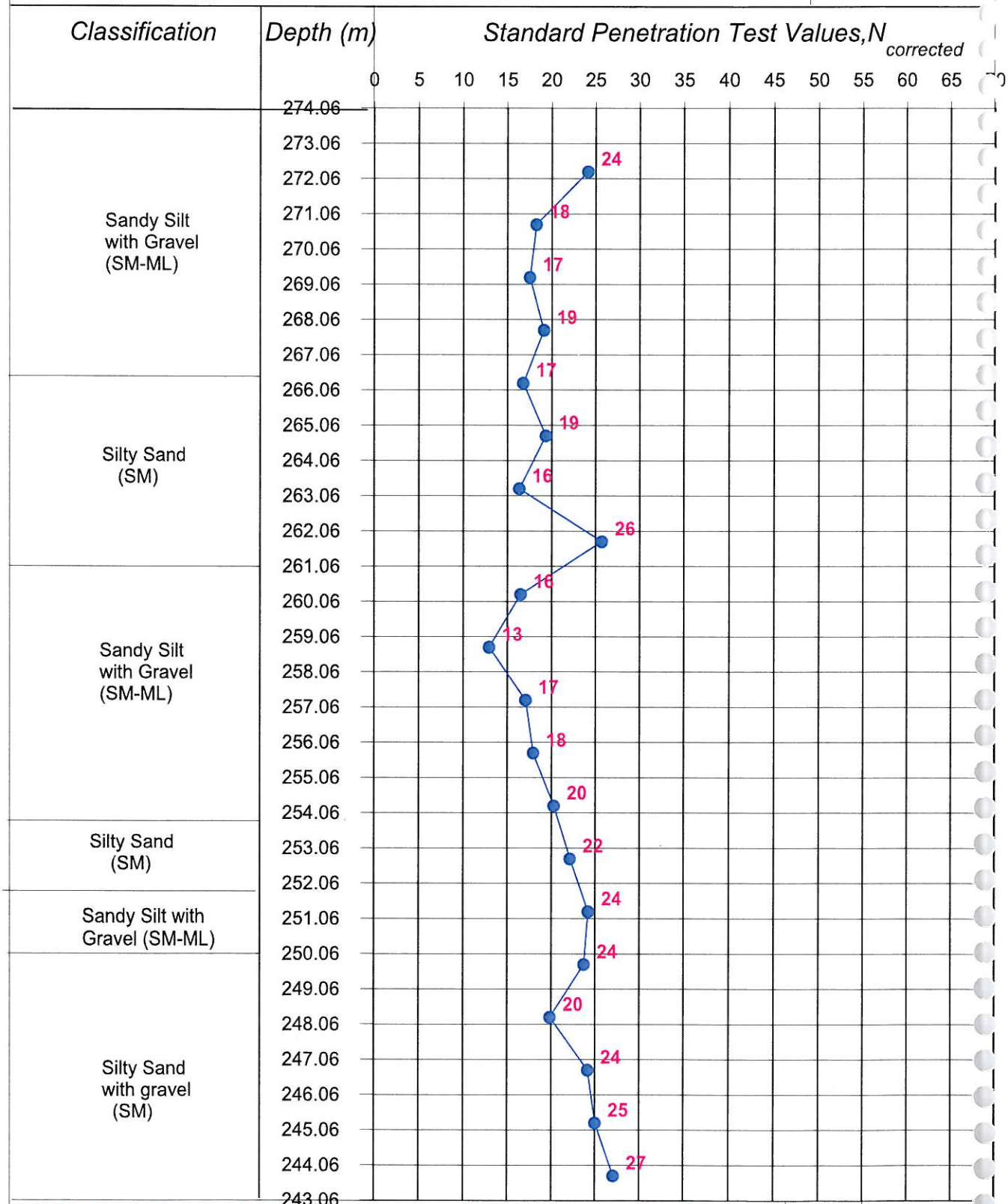
SOIL ENGINEERING CONSULTANTS BR-262 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH 2 | Fig: SP-BH2

0179

SOIL ENGINEERING CONSULTANTS BR-262 Project No: 1813

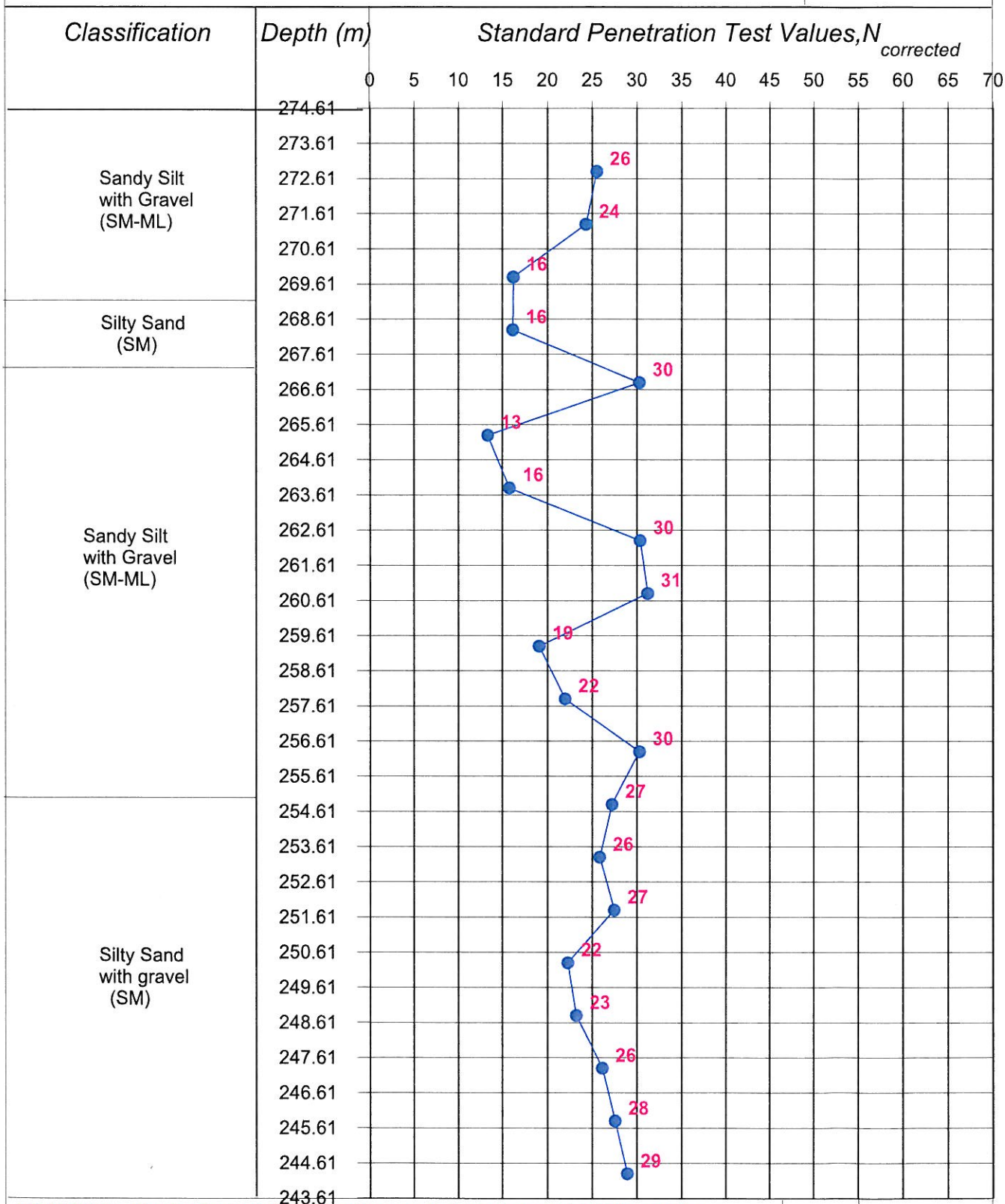


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

BH 3 Fig: SP-BH3

0180

SOIL ENGINEERING CONSULTANTS BR-262 Project No: 1813

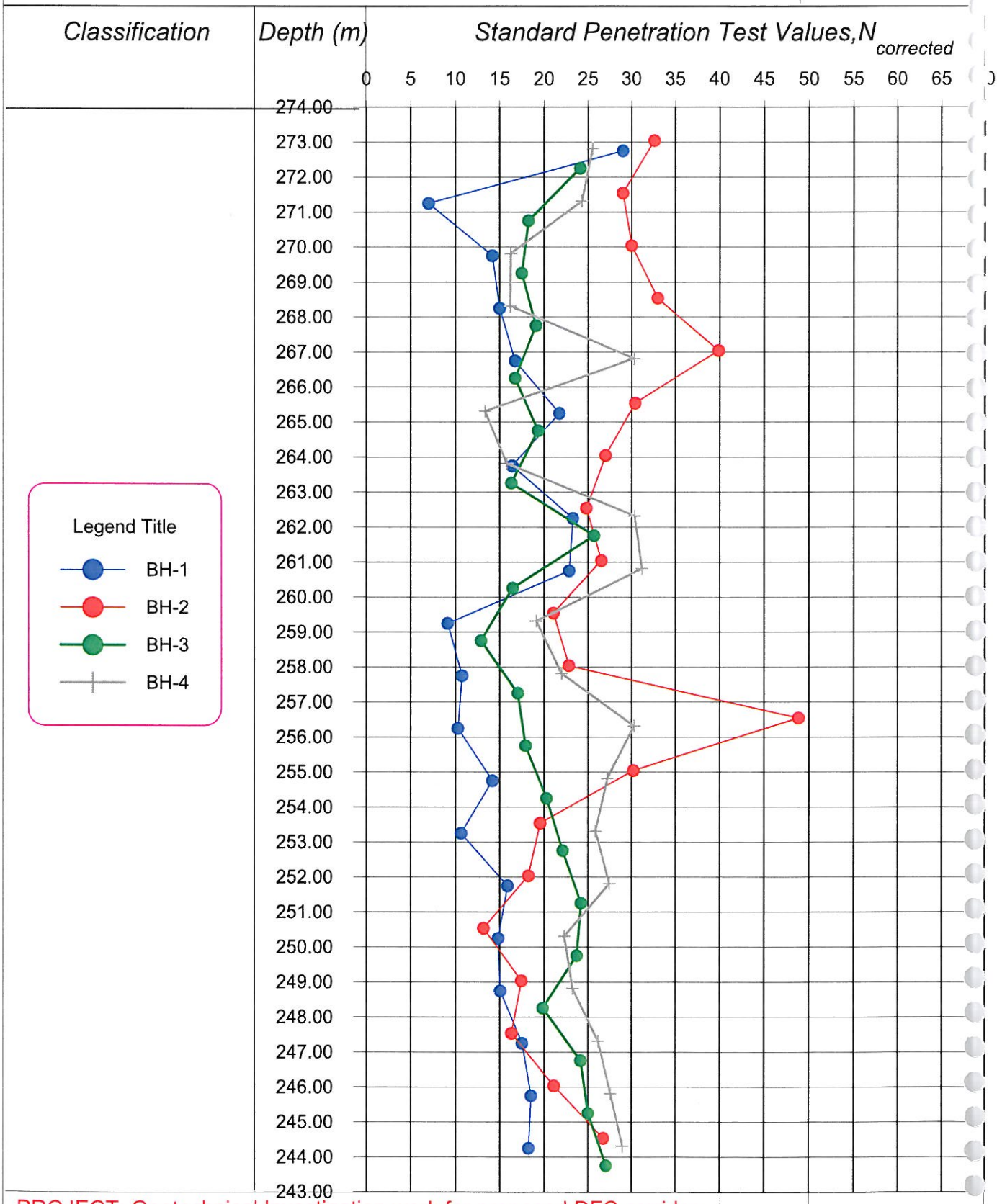


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

BH 4 Fig: SP-BH4

0181

SOIL ENGINEERING CONSULTANTS | BR-262 @ 222/9-10 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

BH1 to 4 Fig: ASP-BH

0182

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 263 RL: 277.550

Location: 224/9-11
BH No.: 1
Depth : 30.00 m
Depth of Water table : 24.00m.

Date of start : 20/04/2008
Date of finish : 22/04/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	Density (gm/cc) r(dry)	W/C W(%)	Limits (%) L.L	Limits (%) P . L	Sp.Gr	Shear Parameters Type of test	Shear Parameters C(kg/sq.cm)	Shear Parameters phi(degrees)	Cc
277.550																	
277.050	0.50	DS	Sandy Silt (SM-ML)		2	8	90				Non	Plastic					
275.750	1.80	SPT		6	1	24	75				Non	Plastic					
275.050	2.50	UDS						1.65	1.46	12.57				DST	0.15	27	
274.250	3.30	SPT	Silty Sand (SM)	14	0	55	45				Non	Plastic					
272.750	4.80	SPT	Sandy Silt (SM-ML)	9	0	45	55				Non	Plastic					
272.050	5.50	UDS						1.76	1.55	13.28			2.67	DST	0.15	29	
271.250	6.30	SPT		15	0	46	54				Non	Plastic					
269.750	7.80	SPT	Silty Sand (SM)	16	0	61	39				Non	Plastic					
269.050	8.50	UDS						1.75	1.53	14.17			2.69	DST		30	
268.250	9.30	SPT		36	0	61	39				Non	Plastic					
266.750	10.80	SPT		38	0	70	30				Non	Plastic					
266.050	11.50	UDS						1.8	1.57	14.55				DST		32	
265.250	12.30	SPT		27	1	61	38				Non	Plastic					
263.750	13.80	SPT	Sandy Silt with Gravel (SM-ML)	35	4	10	86				Non	Plastic					
263.050	14.50	UDS						1.84	1.58	16.27			2.72	DST	0.1	31	
262.250	15.30	SPT		38	3	7	90				Non	Plastic					
260.750	16.80	SPT		45	0	33	67				Non	Plastic					
260.050	17.50	UDS						1.88	1.60	17.78				DST	0.1	31	
259.250	18.30	SPT		40	1	10	89				Non	Plastic					
257.750	19.80	SPT		38	3	10	87				Non	Plastic					
256.250	21.30	SPT		39	2	7	91				Non	Plastic					
254.750	22.80	SPT		33	5	8	87				Non	Plastic					
253.250	24.30	SPT	Silty Sand (SM)	40	0	55	45				Non	Plastic					
251.750	25.80	SPT		43	0	80	20				Non	Plastic					
250.250	27.30	SPT		52	0	75	25				Non	Plastic					
248.750	28.80	SPT		57	0	68	32				Non	Plastic					
247.250	30.30	SPT		58	0	64	36				Non	Plastic					

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 263 RL: 277.150

Location: 224/9-11
BH No.: 2
Depth : 30.00 m
Depth of Water table : 23.00m.

Date of start : 18/04/2008
Date of finish : 20/04/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
277.150																	
276.650	0.50	DS	Sandy Silt (SM-ML)		4	38	58				Non	Plastic					
275.350	1.80	SPT		6	0	40	60				Non	Plastic					
274.650	2.50	UDS						1.68	1.51	11.41			2.67	DST	0.15	24	
273.850	3.30	SPT	Silty Sand (SM)	10	0	60	40				Non	Plastic					
272.350	4.80	SPT		12	1	20	79				Non	Plastic					
271.650	5.50	UDS	Sandy Silt (SM-ML)					1.77	1.55	13.78				DST	0.1	29	
270.850	6.30	SPT		16	0	39	61				Non	Plastic					
269.350	7.80	SPT		24	0	80	20				Non	Plastic					
268.650	8.50	UDS						1.82	1.57	16.14			2.69	DST		31	
267.850	9.30	SPT	Silty Sand (SM)	28	1	56	43				Non	Plastic					
266.350	10.80	SPT		30	0	66	34				Non	Plastic					
265.650	11.50	UDS						1.85	1.58	17.11				DST		31	
264.850	12.30	SPT	Sandy Silt with Gravel (SM-ML)	42	3	8	89				Non	Plastic					
263.350	13.80	SPT		52	1	43	56				Non	Plastic					
262.650	14.50	UDS						1.91	1.61	18.42			2.68	DST	0.1	32	
261.850	15.30	SPT	Silty Sand (SM)	55	4	75	21				Non	Plastic					
260.350	16.80	SPT	Sandy Silt (SM-ML)	43	10	6	84				Non	Plastic					
259.650	17.50	UDS						1.9	1.59	19.23				DST	0.1	31	
258.850	18.30	SPT	Silty Saw (SM)	32	1	82	17				Non	Plastic					
257.350	19.80	SPT		43	6	6	88				Non	Plastic					
256.650	20.50	UDS						1.9	1.59	19.45				DST	0.1	31	
255.850	21.30	SPT	Sandy Silt (SM-ML)	33	14	11	75				Non	Plastic					
254.350	22.80	SPT		27	12	12	76				Non	Plastic					
252.850	24.30	SPT		40	0	57	43				Non	Plastic					
251.350	25.80	SPT	Sity Sand (SM)	37	0	69	31				Non	Plastic					
249.850	27.30	SPT		42	0	77	23				Non	Plastic					
248.350	28.80	SPT		54	1	66	33				Non	Plastic					
[illegible]	[illegible]	SPT	Sandy Silt (SM-ML)	5[illegible]	[illegible]	[illegible]	39				[illegible]	[illegible]					

0184

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 263 RL: 277.269

Location: 224/9-11
BH No.: 3
Depth : 30.00 m
Depth of Water table :27.5m.

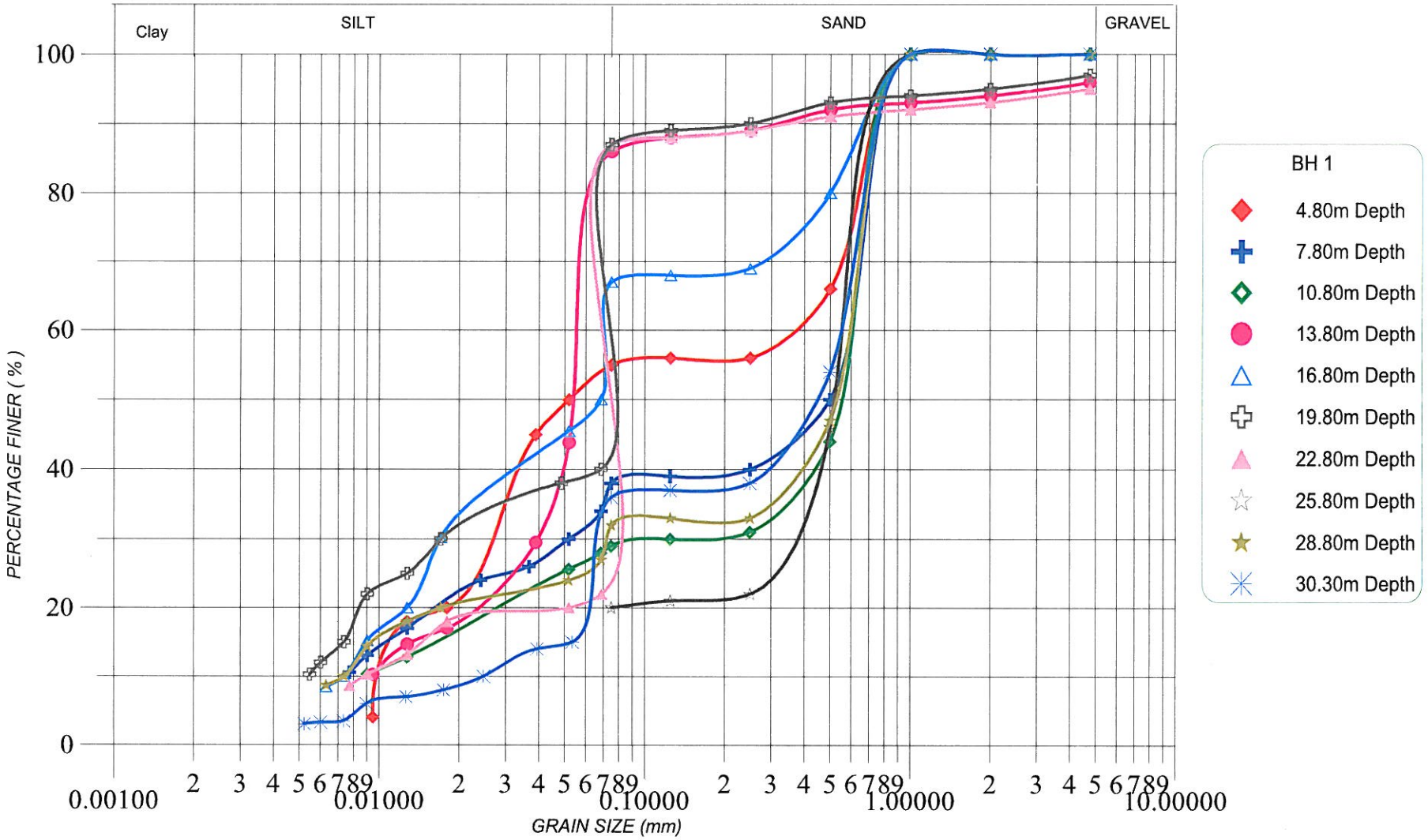
Date of start : 22/04/2008

Date of finish : 25/04/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
277.269																	
276.769	0.50	DS			1	8	91				Non	Plastic					
275.469	1.80	SPT		13	1	3	96				Non	Plastic					
274.769	2.50	UDS	Sandy Silt (SM-ML)					1.72	1.56	10.46				DST	0.15	30	
273.969	3.30	SPT		17	0	50	50				Non	Plastic					
272.469	4.80	SPT		18	0	6	94				Non	Plastic					
271.769	5.50	UDS						1.79	1.62	10.76			2.66	DST	0.15	30	
270.969	6.30	SPT		24	0	5	95				Non	Plastic					
269.469	7.80	SPT		25	0	91	9				Non	Plastic					
268.769	8.50	UDS						1.8	1.62	11.29				DST		31	
267.969	9.30	SPT	Silty Sand (SM)	21	0	91	9				Non	Plastic					
266.469	10.80	SPT		18	0	85	15				Non	Plastic					
265.769	11.50	UDS						1.8	1.60	12.36			2.68	DST		31	
264.969	12.30	SPT		15	0	60	40				Non	Plastic					
263.469	13.80	SPT		39	0	79	21				Non	Plastic					
262.769	14.50	UDS						1.92	1.68	13.89				DST	0.15	31	
261.969	15.30	SPT		45	0	14	86				Non	Plastic					
260.469	16.80	SPT		35	3	7	90				Non	Plastic					
259.769	17.50	UDS						2.01	1.74	15.68				DST	0.1	32	
258.969	18.30	SPT		52	0	42	58				Non	Plastic					
257.469	19.80	SPT	Sandy Silt with trash gravel (SM-ML)	47	1	4	95				Non	Plastic					
256.769	20.50	UDS						2.01	1.71	17.71			2.67	DST	0.1	31	
255.969	21.30	SPT		29	3	17	80				Non	Plastic					
254.469	22.80	SPT		39	3	4	93				Non	Plastic					
252.969	24.30	SPT		42	4	9	87				Non	Plastic					
251.469	25.80	SPT		42	18	9	73				Non	Plastic					
249.969	27.30	SPT	Silty Sand with traces Gravel (SM)	57	0	75	25				Non	Plastic					
248.469	28.80	SPT		42	2	87	11				Non	Plastic					
246.969	30.30	SPT		47	3	66	31				Non	Plastic					

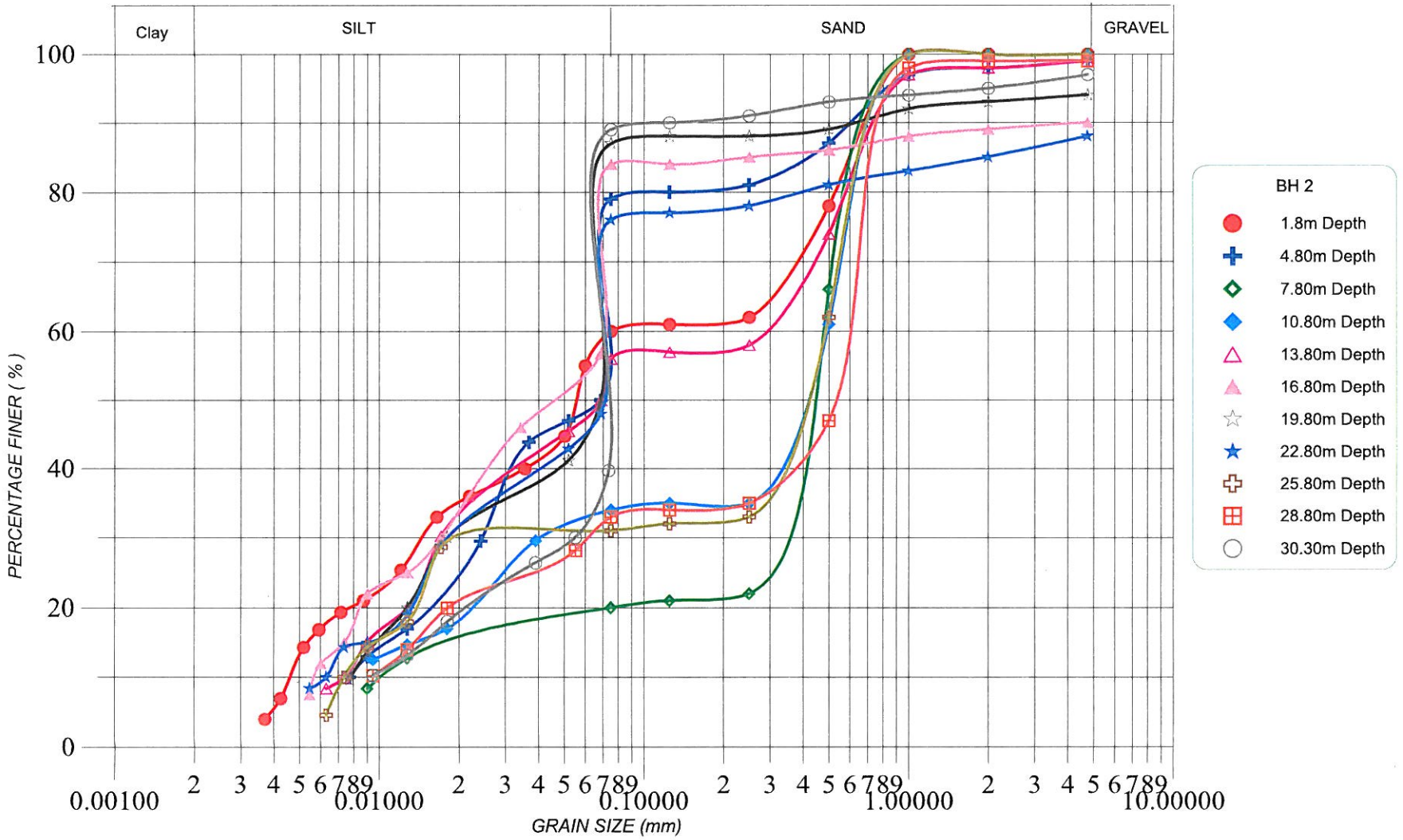
GRAIN SIZE DRISTRIBUTION CURVE



PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BJ1

GRAIN SIZE DRISTRIBUTION CURVE

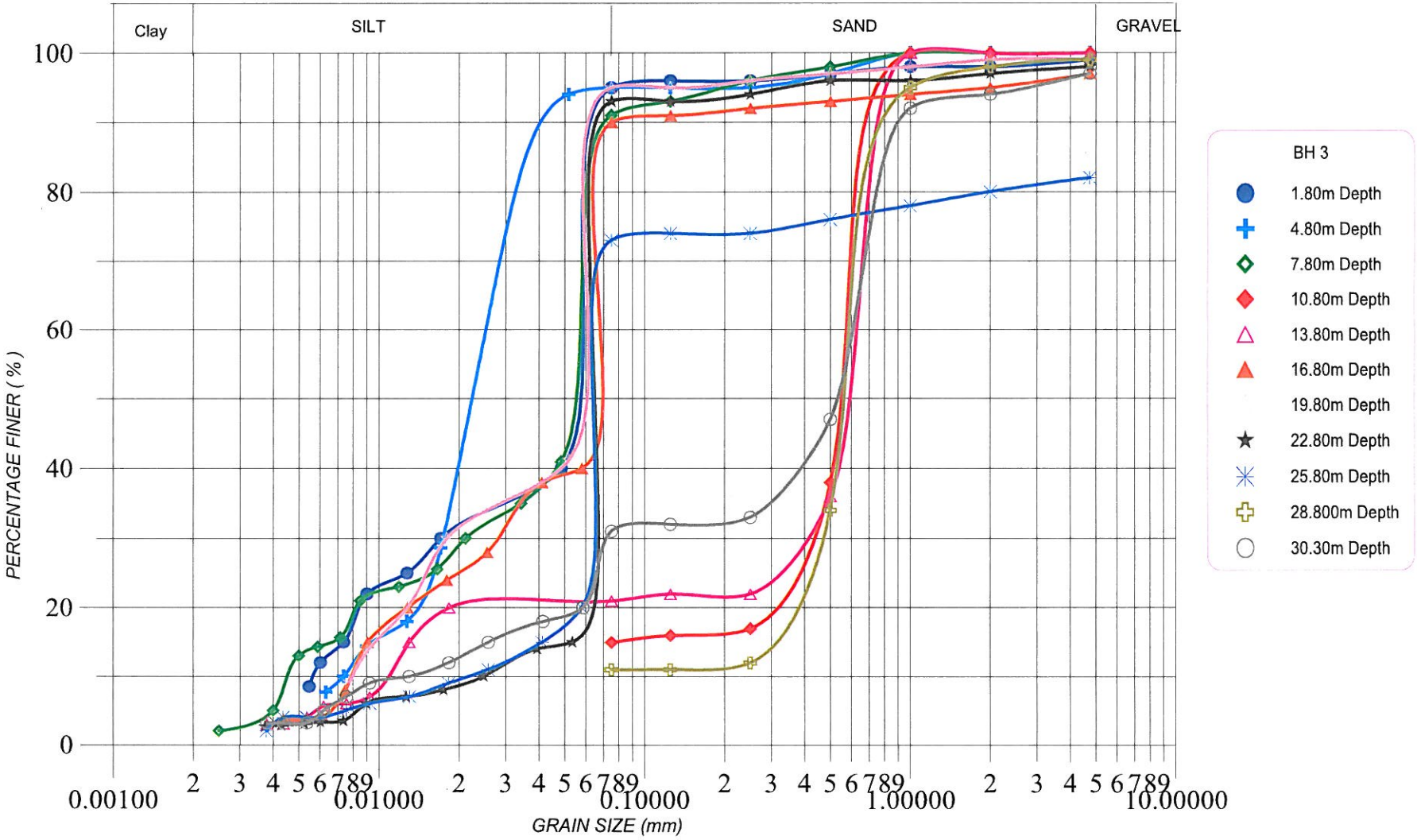


PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BJ2

0187

GRAIN SIZE DRISTRIBUTION CURVE



PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BJ3

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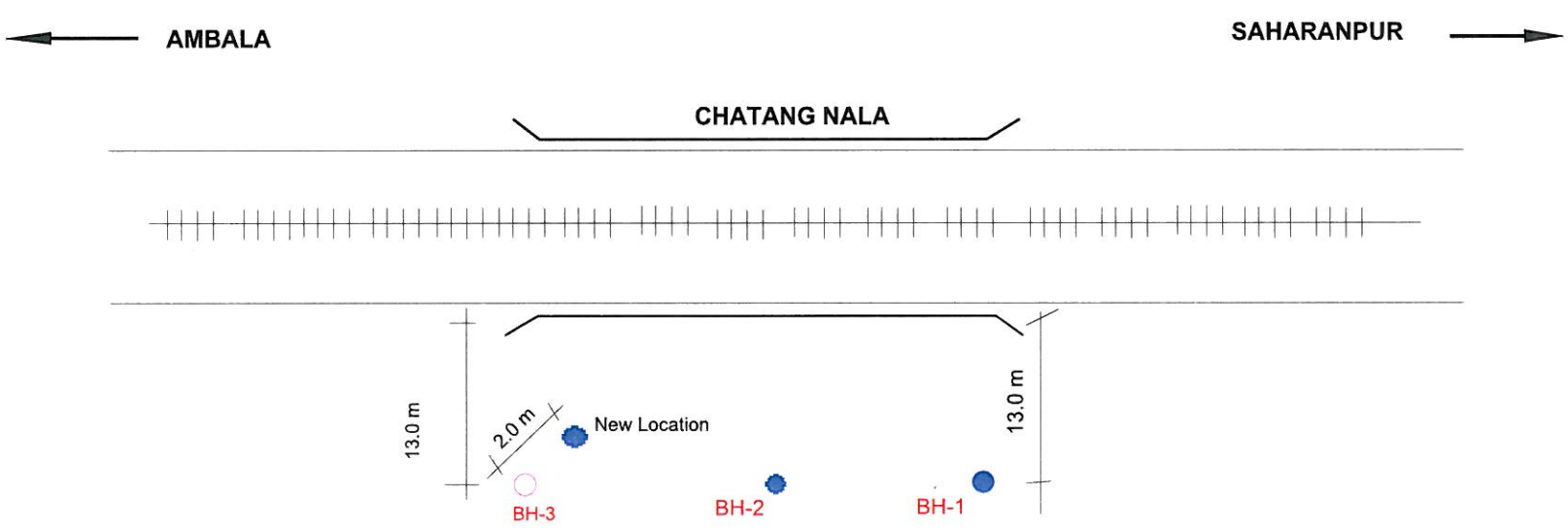
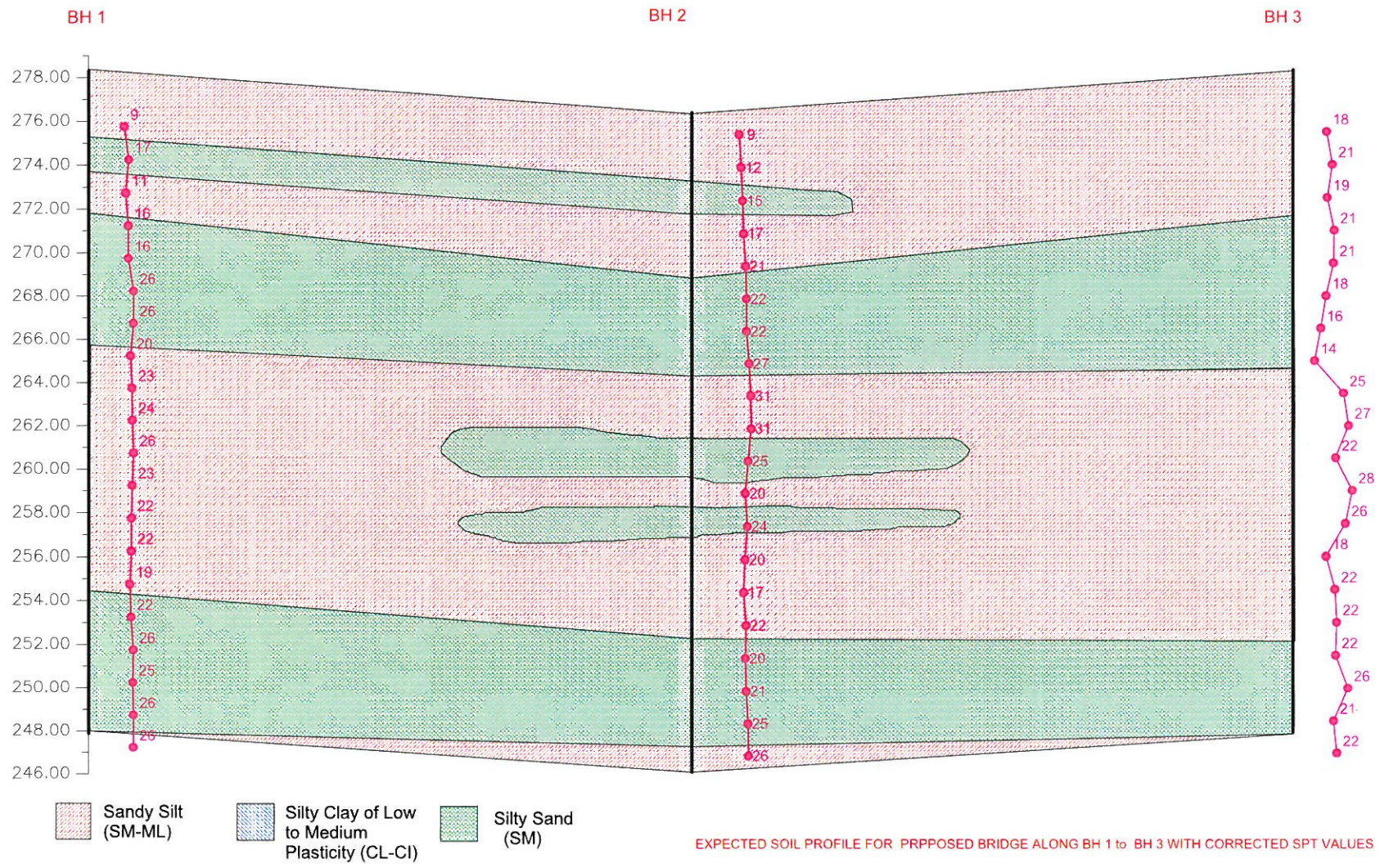


BRIDGE 263 @ CH 224/9-11

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig: Plan-BJ

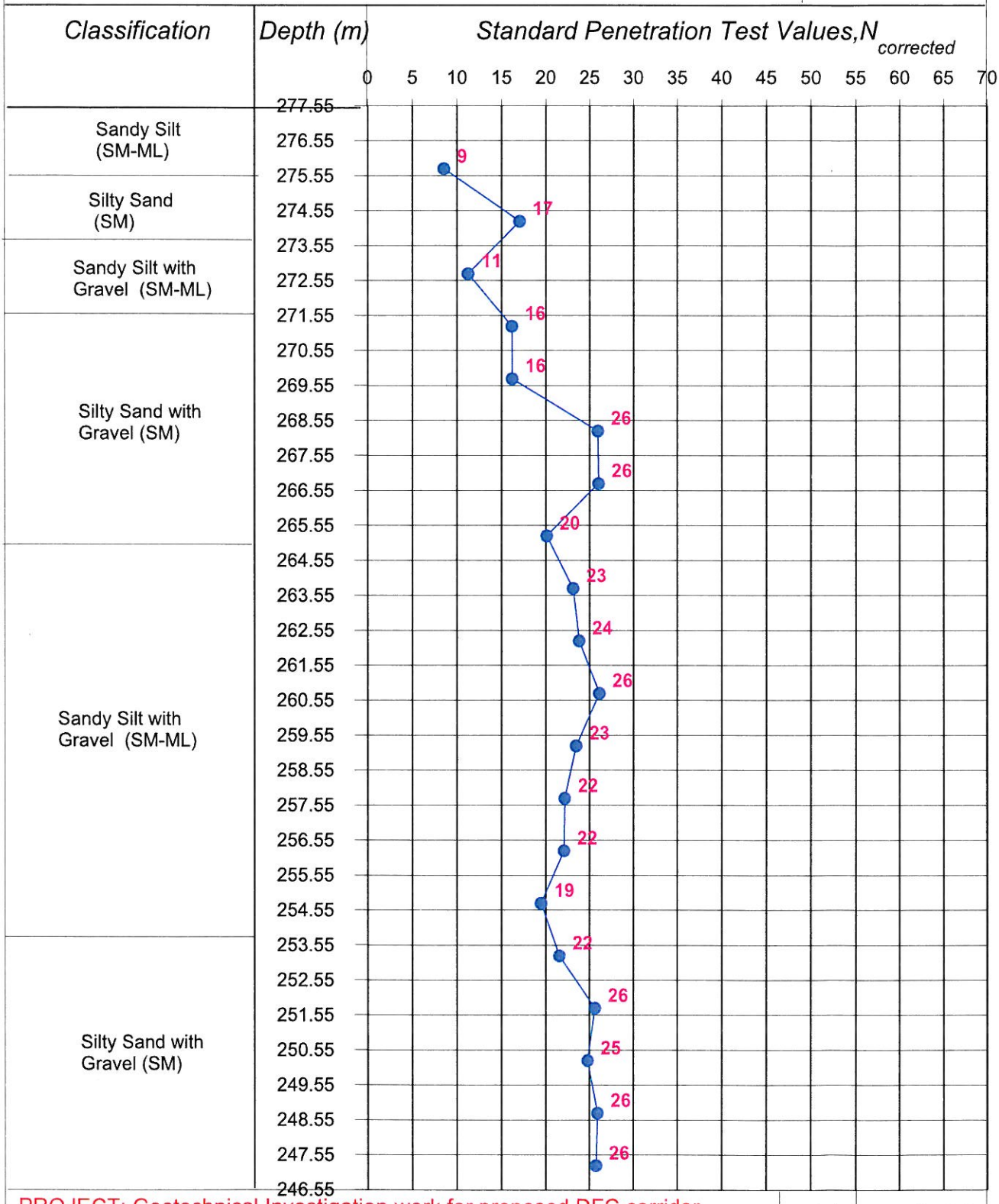


EXPECTED SOIL PROFILE FOR PRPPOSED BRIDGE ALONG BH 1 to BH 3 WITH CORRECTED SPT VALUES

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Figure : Soilpro BJ

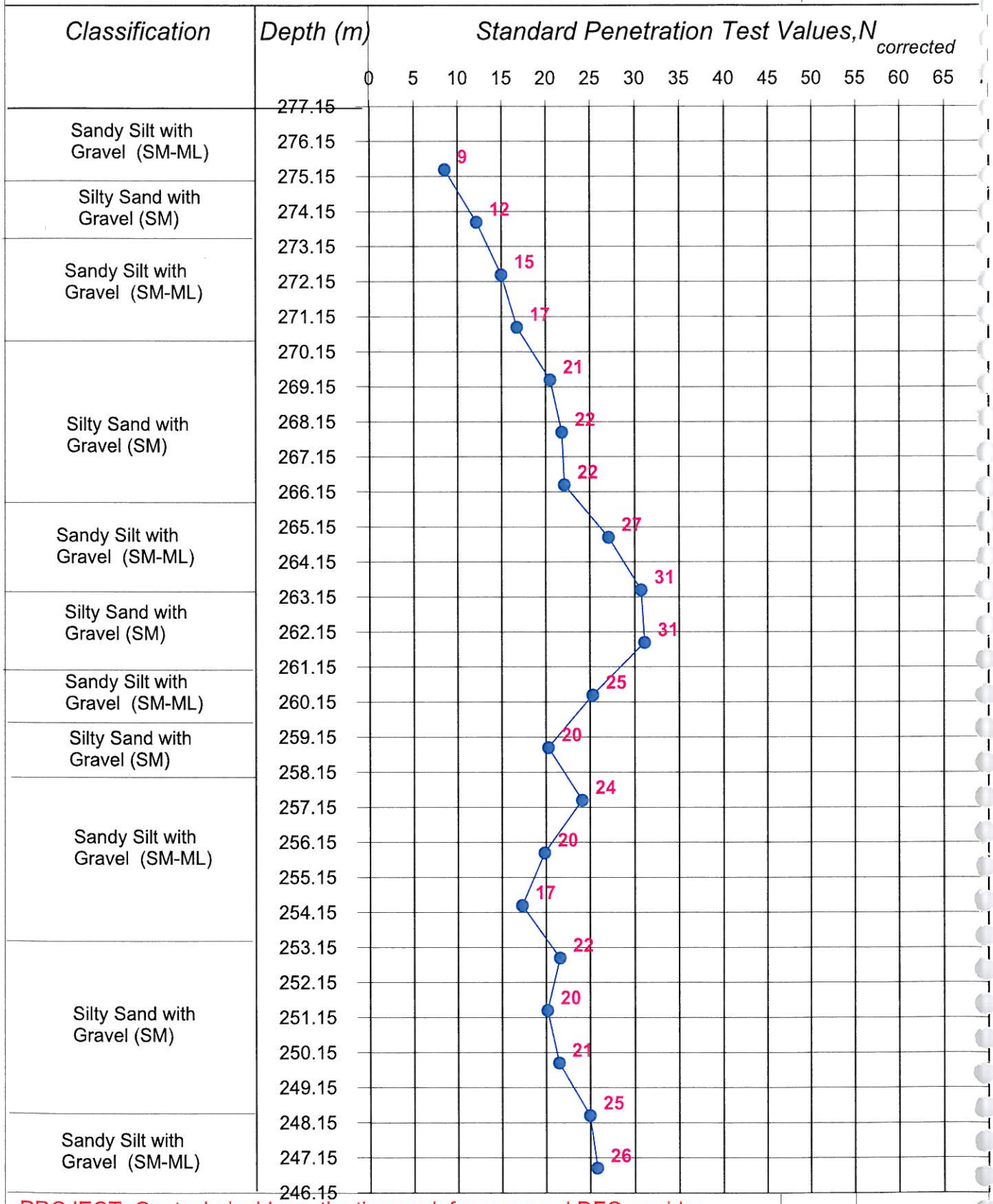
SOIL ENGINEERING CONSULTANTS | BR@ 263 -2249/11 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH 1 | Fig: SP-BJ1

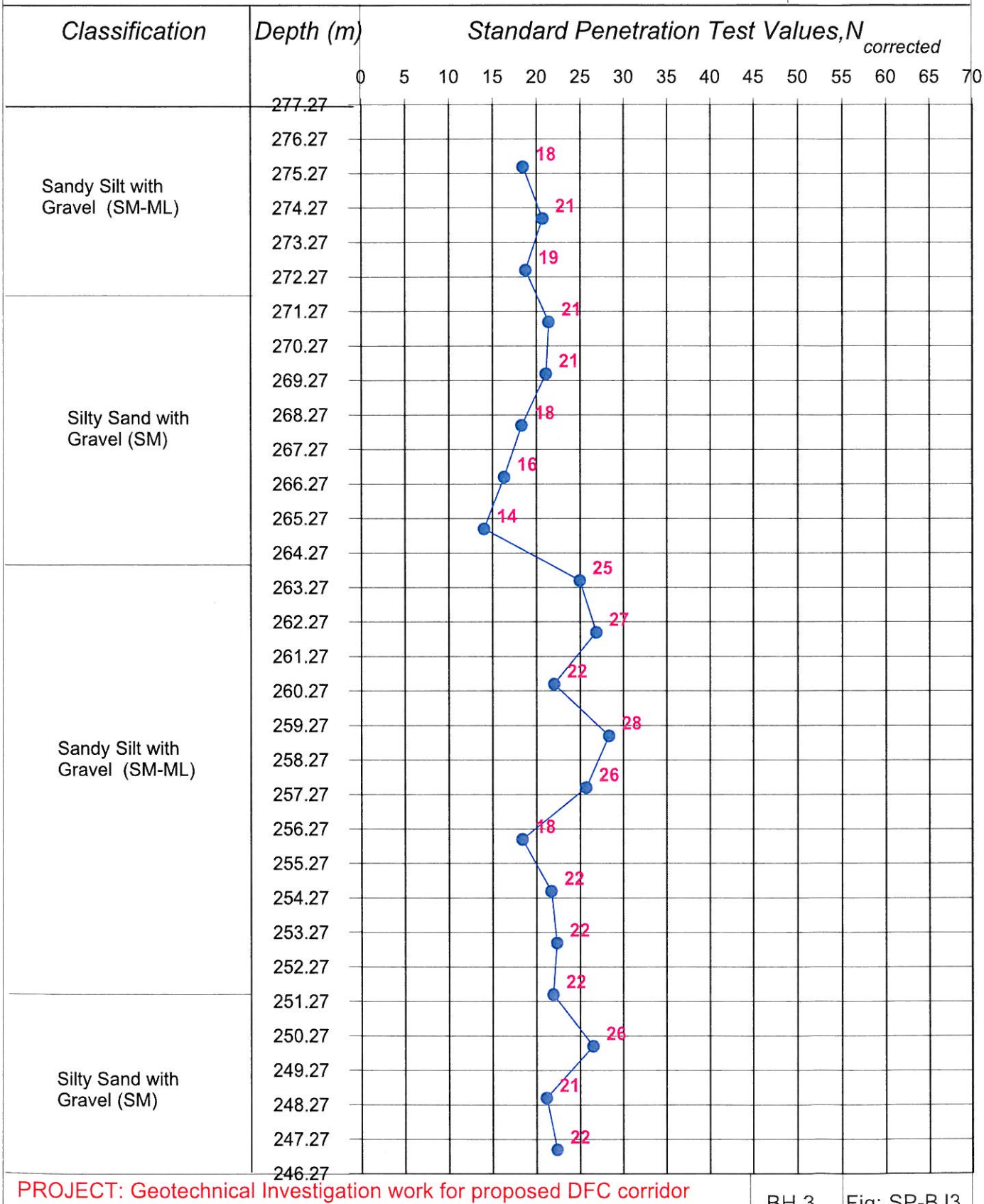
0191

SOIL ENGINEERING CONSULTANTS BR:263@ 224/9-11 | Project No: 1813



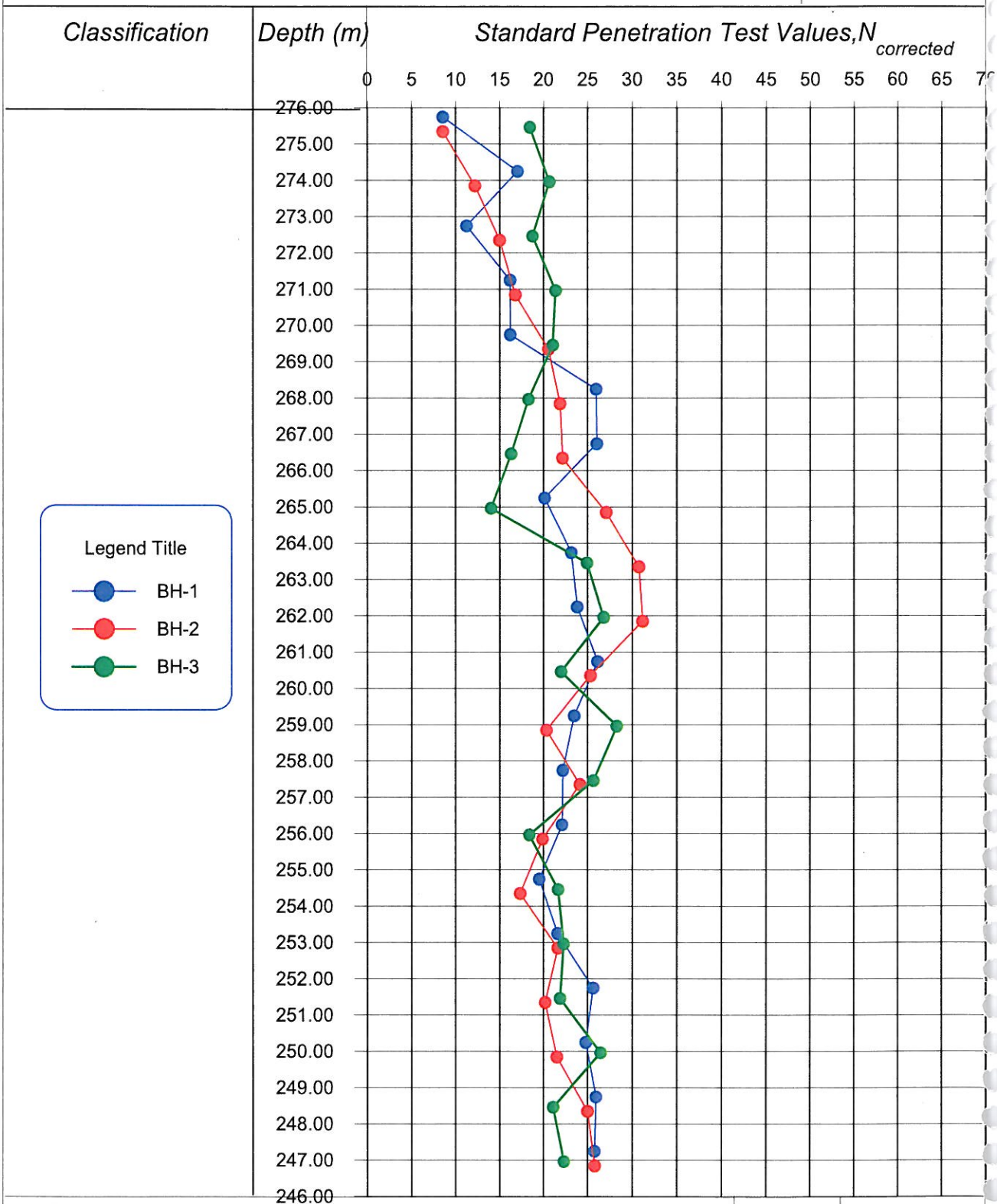
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH 2 | Fig: SP-BJ2

SOIL ENGINEERING CONSULTANTS | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH.3 | Fig: SP-BJ3

SOIL ENGINEERING CONSULTANTS BR-263-224/9-11 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH1 to 3 | Fig: ASP-BJ

BORE LOG

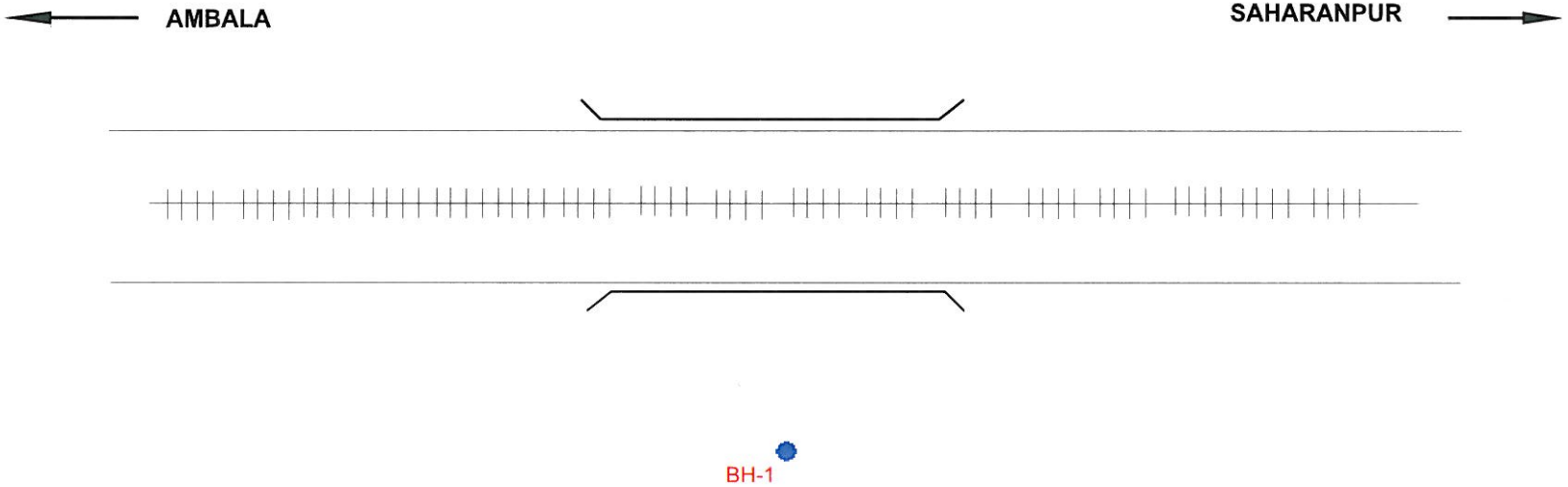
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 264 RL: 274.532

Location; 225/5-7
BH No.: 1
Depth : 12.00M
Depth of Water table : Not Met

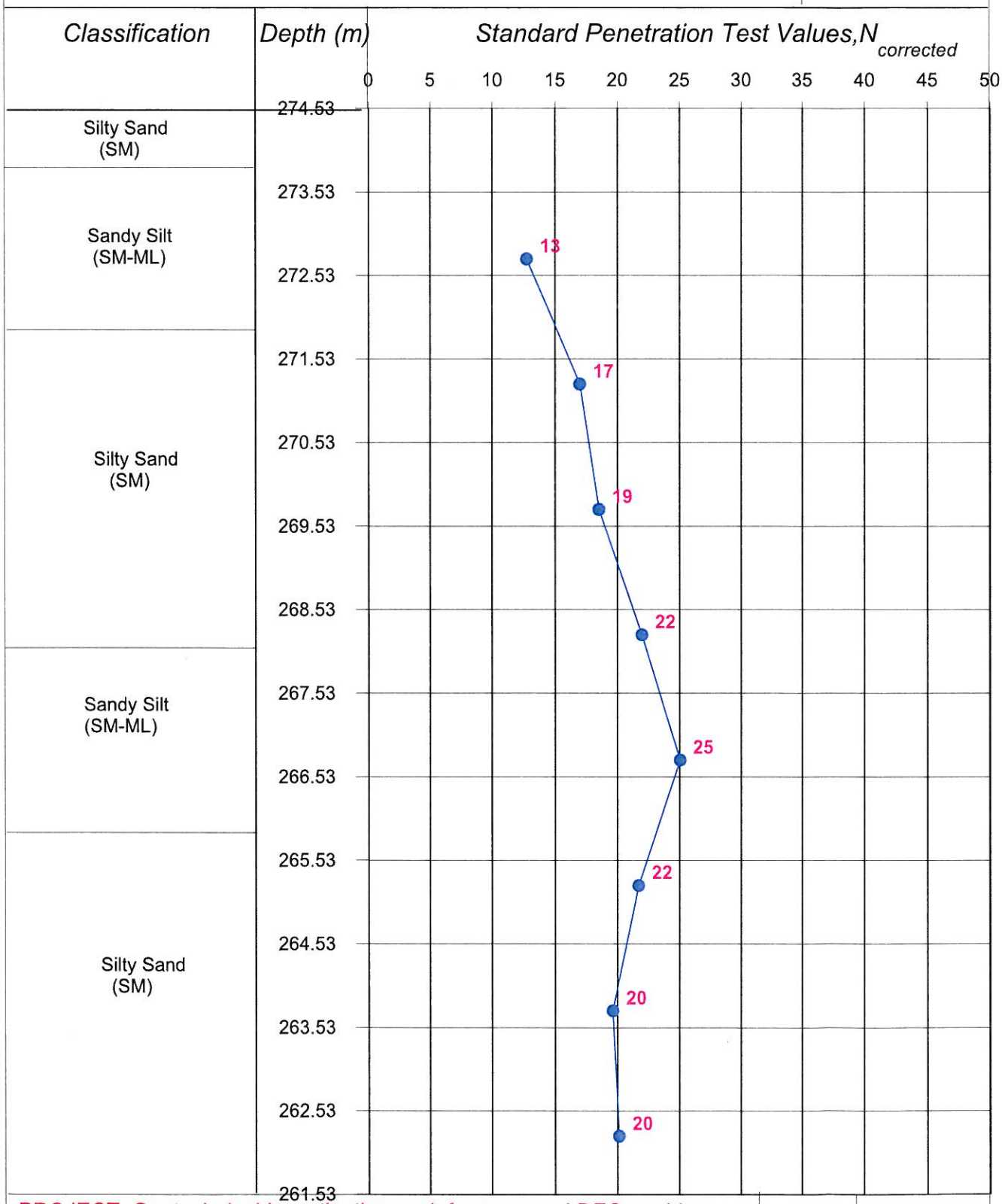
Date of start : 26/04/2008
Date of finish : 27/04/2008

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
274.532																	
274.032	0.50	DS	Silty Sand (SM)		2	49	49				Non	Plastic					
272.732	1.80	SPT	Sandy Silt (SM-ML)	9	10	9	81				Non	Plastic					
272.032	2.50	UDS						1.74	1.59	9.67			2.65	DST	0.15	29	
271.232	3.30	SPT		14	0	45	55				Non	Plastic					
269.732	4.80	SPT	Silty Sand (SM)	17	1	72	27				Non	Plastic					
269.032	5.50	UDS						1.8	1.61	11.80				DST		30	
268.232	6.30	SPT		22	0	73	27				Non	Plastic					
266.732	7.80	SPT	Sandy Silt (SM-ML)	27	0	45	55				Non	Plastic					
266.032	8.50	UDS						1.84	1.63	12.89			2.66	DST	0.15	30	
265.232	9.30	SPT	Silty Sand (SM)	25	0	82	18				Non	Plastic					
263.732	10.80	SPT		24	0	78	22				Non	Plastic					
263.032	11.50	UDS						1.84	1.63	13.07				DST		31	
262.232	12.30	SPT		26	0	69	31				Non	Plastic					



MINOR BRIDGE 264 @ CH 225/5-7

SOIL ENGINEERING CONSULTANTS BR-264 Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH 1 | Fig: SP-BK1

0197

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Location:226/17-19
BH No.: 1
Depth : 30.00m
Depth of Water table :24.90m

Date of start : 18/04/2008
Date of finish : 19/04/2008

Project No. 1813 Bridge : 265 RL: 273.896

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
273.896																	
273.096	0.80	DS			3	7	90				Non	Plastic					
272.096	1.80	SPT	Sandy Silt with Gravel (SM-ML)	10	1	7	92				Non	Plastic					
271.396	2.50	UDS						1.78	1.58	12.47			2.66	DST	0.15	29	
270.596	3.30	SPT		14	0	37	63				Non	Plastic					
269.096	4.80	SPT		17	0	15	85				Non	Plastic					
268.396	5.50	UDS						1.78	1.55	14.60				DST	0.15	30	
267.596	6.30	SPT	Silty Sand (SM)	21	0	66	34				Non	Plastic					
266.096	7.80	SPT		27	10	6	84				Non	Plastic					
265.396	8.50	UDS	Sandy Silt with Gravel (SM-ML)					1.83	1.58	15.81			2.68	DST	0.2	31	
264.596	9.30	SPT		20	3	8	89				Non	Plastic					
263.096	10.80	SPT		22	1	4	95				Non	Plastic					
262.396	11.50	UDS						1.84	1.58	17.68				DST	0.1	31	
261.596	12.30	SPT		27	4	8	88				47	22					
260.096	13.80	SPT	Silty Clay of Medium Plasticity (CI)	30	3	3	94										
259.396	14.50	UDS						1.88	1.59	17.89			2.71	UU	1.68		0.049
258.596	15.30	SPT		28	0	32	68				Non	Plastic					
257.096	16.80	SPT		39	0	69	31				Non	Plastic					
256.396	17.50	UDS	Silty Sand (SM)					1.91	1.62	17.92			2.69	DST		31	
255.596	18.30	SPT		41	0	94	6				Non	Plastic					
254.096	19.80	SPT		33	0	88	12				Non	Plastic					
253.396	20.50	UDS						1.93	1.63	18.19				DST		31	
252.596	21.30	SPT		42	1	53	46				Non	Plastic					
251.096	22.80	SPT	Sandy Silt (SM-ML)	45	0	14	86				Non	Plastic					
249.596	24.30	SPT		43	0	77	23				Non	Plastic					
248.096	25.80	SPT		47	1	85	14				Non	Plastic					
246.596	27.30	SPT	Silty Sand with gravel (SM)	52	1	78	21				Non	Plastic					
245.096	28.80	SPT		50	1	81	18				Non	Plastic					
243.096	30.3	SPT		5		64	36										

0198

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 265 RL: 274.389

Location:226/17-18
BH No.: 2
Depth : 30.00m
Depth of Water table :25.00

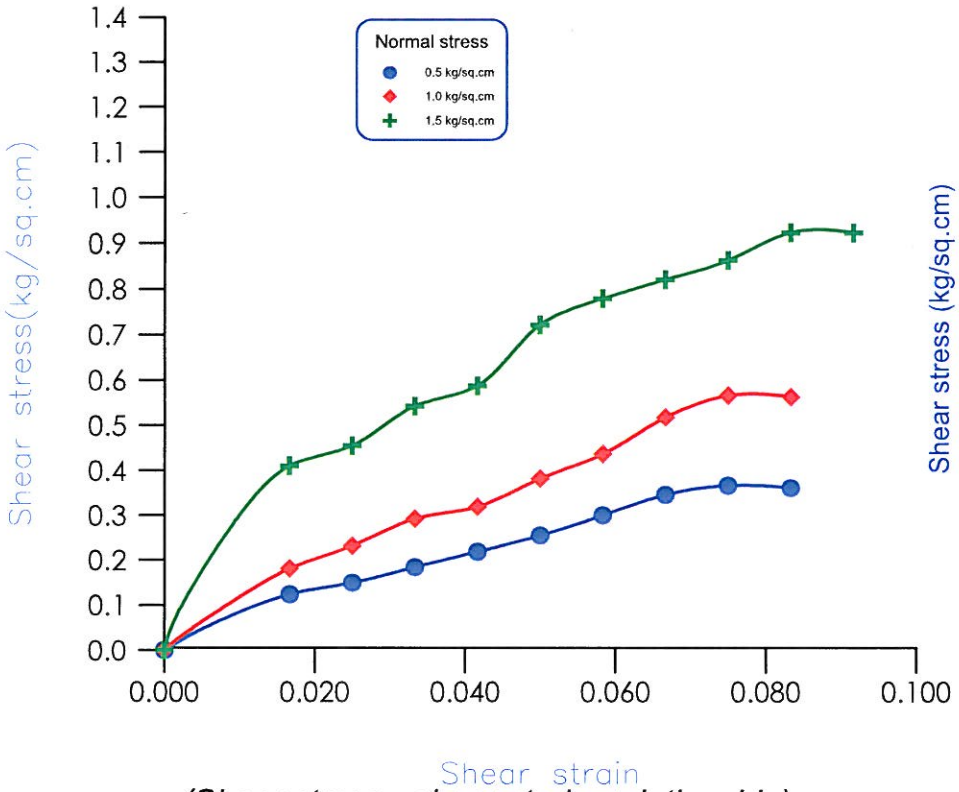
Date of start : 20/04/2008
Date of finish : 21/04/2008

SOIL ENGINEERING CONSULTANTS

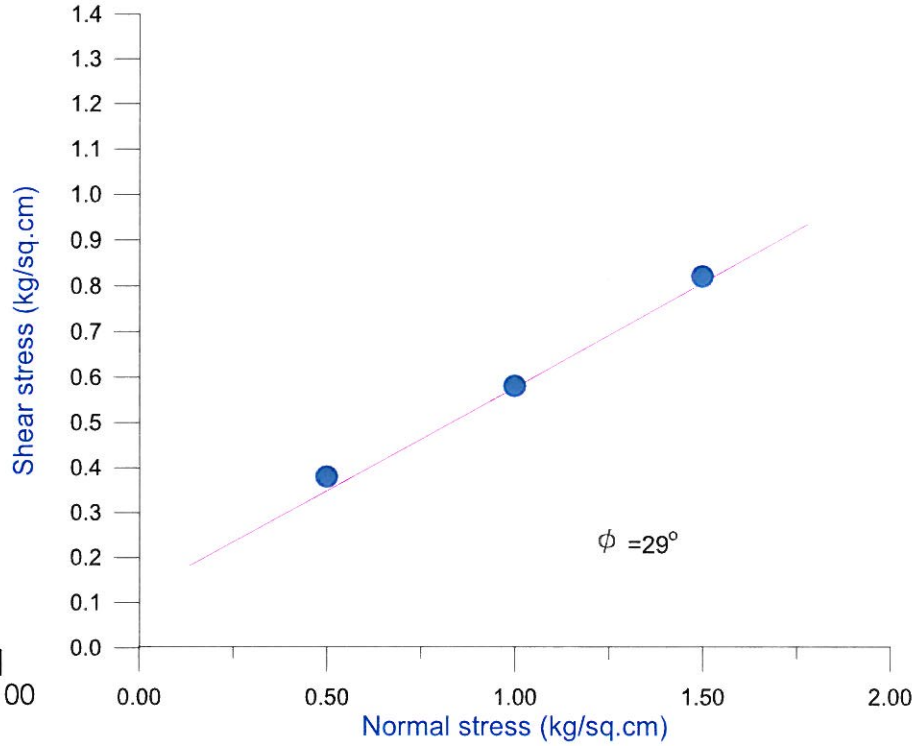
Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%)			Density (gm/cc)		W/C	Limits (%)		Sp.Gr	Shear Parameters			Cc
					Gravel	Sand	Silt/clay	r(wet)	r(dry)	W(%)	L.L	P . L		Type of test	C(kg/sq.cm)	phi(degrees)	
274.389																	
273.889	0.50	DS	Sandy Silt with gravel (SM-ML)	14	1	10	89				Non	Plastic					
272.589	1.80	SPT		18	2	6	92	1.8	1.63	10.86	Non	Plastic		DST	0.15	30	
271.889	2.50	UDS															
271.089	3.30	SPT		20	0	40	60				Non	Plastic					
269.589	4.80	SPT	Silty Sand (SM)	21	6	68	26				Non	Plastic					
268.889	5.50	UDS						1.83	1.60	12.45			2.66	DST		31	
268.089	6.30	SPT		24	0	92	8				Non	Plastic					
266.589	7.80	SPT		26	0	90	10				Non	Plastic					
265.889	8.50	UDS						1.83	1.37	13.92				DST		31	
265.089	9.30	SPT	Sandy Silt with gravel (SM-ML)	31	2	7	91				Non	Plastic					
263.589	10.80	SPT		25	6	6	88				Non	Plastic					
262.889	11.50	UDS						1.85	1.52	15.17			2.67	DST		30	
262.089	12.30	SPT	Sandy Gravel with Silt (GS)	21	47	20	33				Non	Plastic					
260.589	13.80	SPT	Silty clay of Medium plasticity (CI)	32	3	7	90				47	23					
259.889	14.50	UDS						1.83	1.43	16.23			2.69		UU	1.18	0.039
259.089	15.30	SPT	Silty Sand (SM)	35	0	71	29				Non	Plastic					
257.589	16.80	SPT		38	0	70	30				Non	Plastic					
256.889	17.50	UDS						1.86	1.60	19.85				DST		31	
256.089	18.30	SPT		41	0	95	5				Non	Plastic					
254.589	19.80	SPT		44	0	72	28				Non	Plastic					
253.889	20.50	UDS	Sandy Silt (SM-ML)	52				1.88	1.54	21.45			2.67	DST	0.15	31	
253.089	21.30	SPT		48	1	43	56				Non	Plastic					
251.589	22.80	SPT	Silty Sand (SM)	47	0	80	20				Non	Plastic					
250.089	24.30	SPT		51	0	79	21				Non	Plastic					
248.589	25.80	SPT		57	0	90	10				Non	Plastic					
247.089	27.30	SPT		61	0	51	49				Non	Plastic					
245.589	28.80	SPT			0	95	5				Non	Plastic					
244.089	30.30	SPT			0	52	48				Non	Plastic					

0139

BH-1
DEPTH = 2.50 m.



(Shear stress - shear strain relationship)

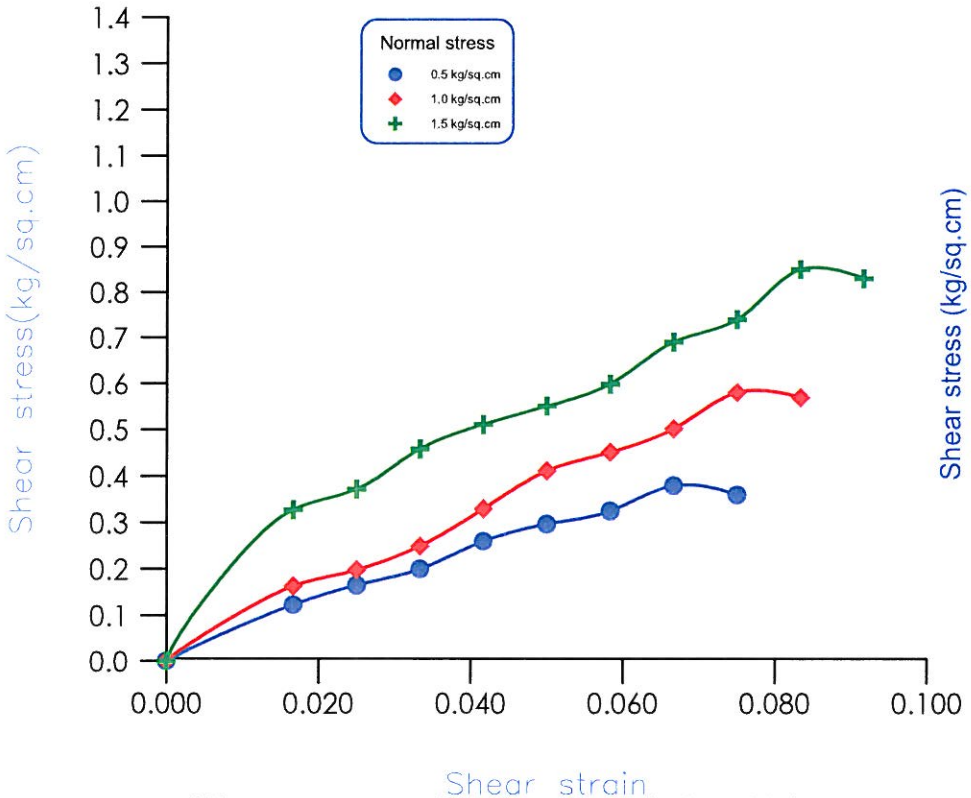


(Shear stress - Normal stress relationship)

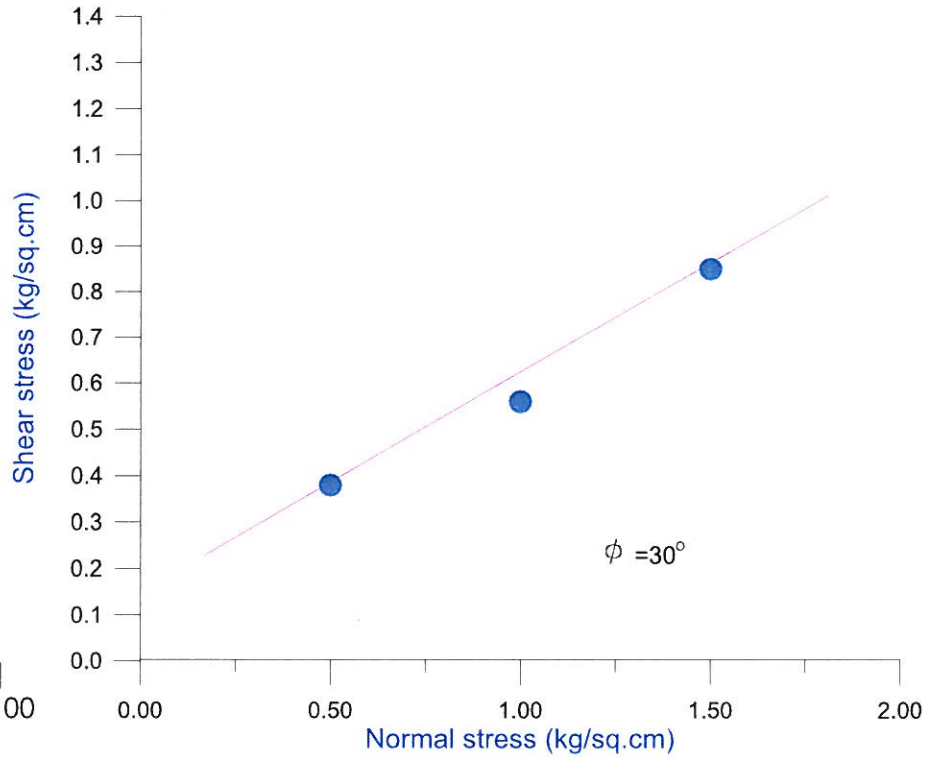
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BM1

BH-1
DEPTH = 5.50 m.



(Shear stress - shear strain relationship)

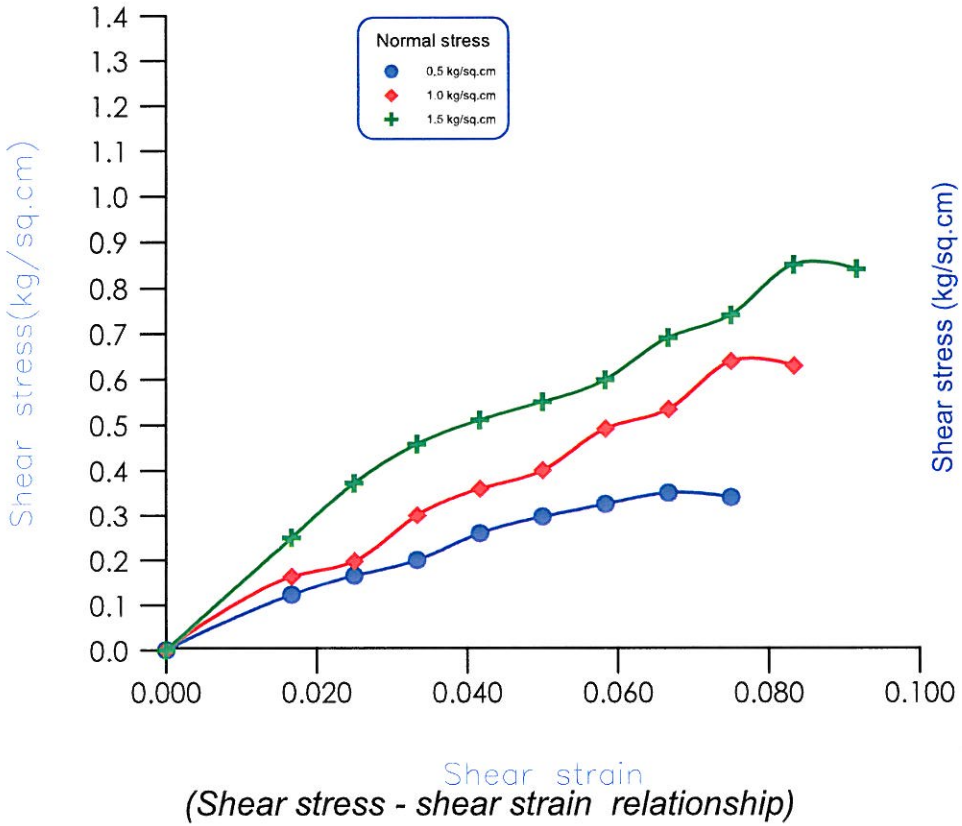


(Shear stress - Normal stress relationship)

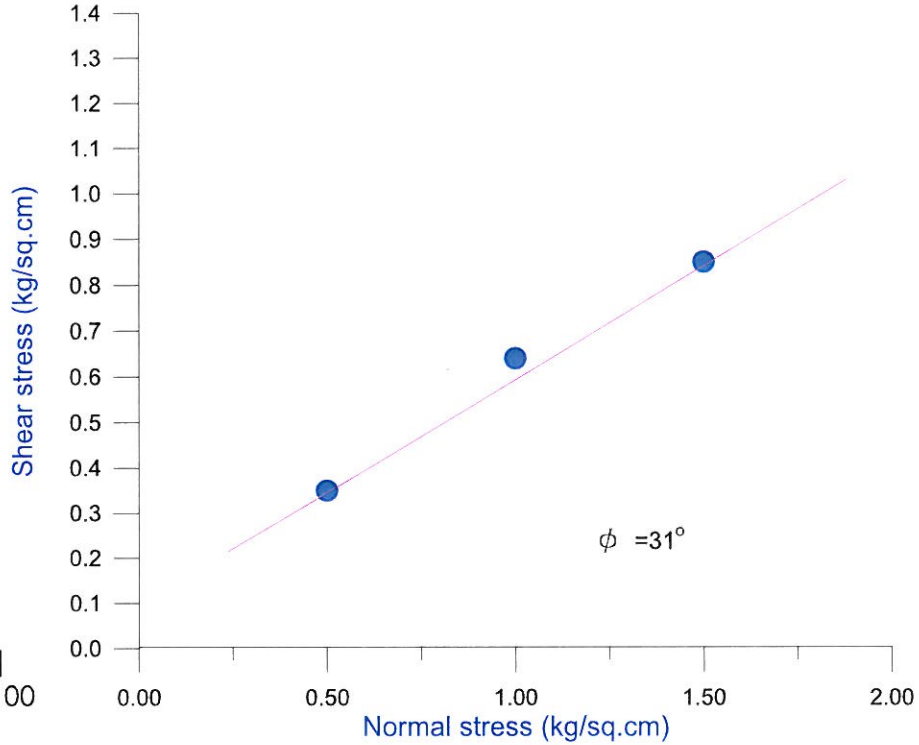
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BM2

BH-1
DEPTH =17.50 m.



(Shear stress - shear strain relationship)

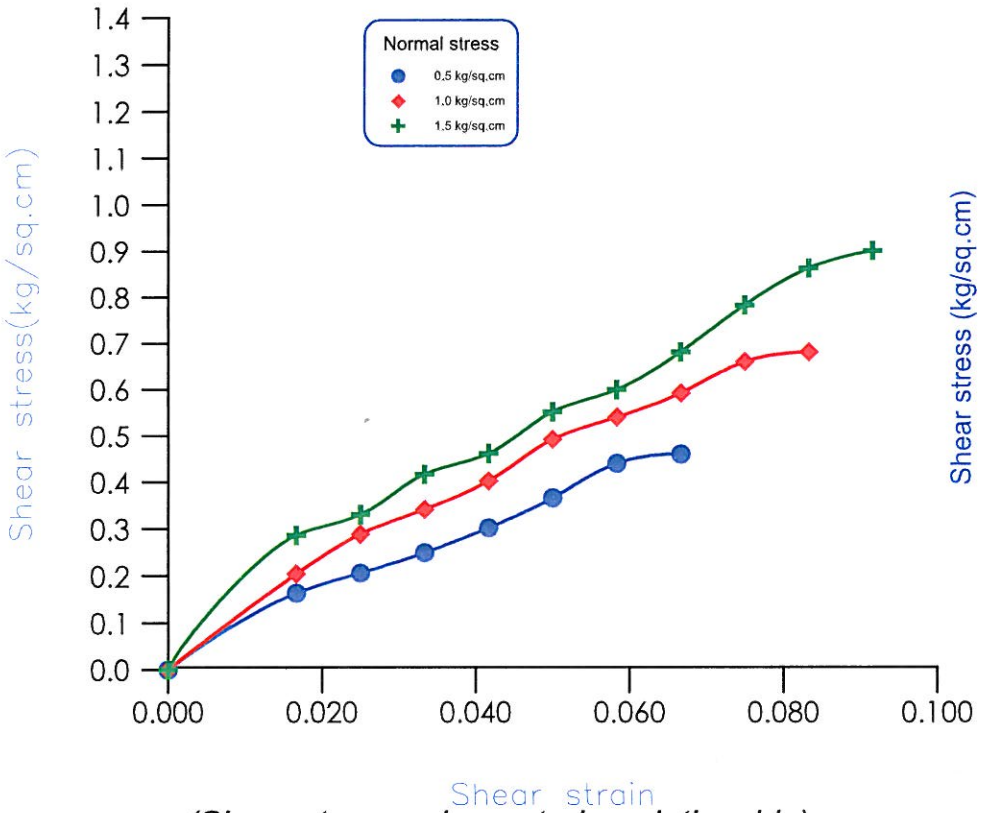


(Shear stress - Normal stress relationship)

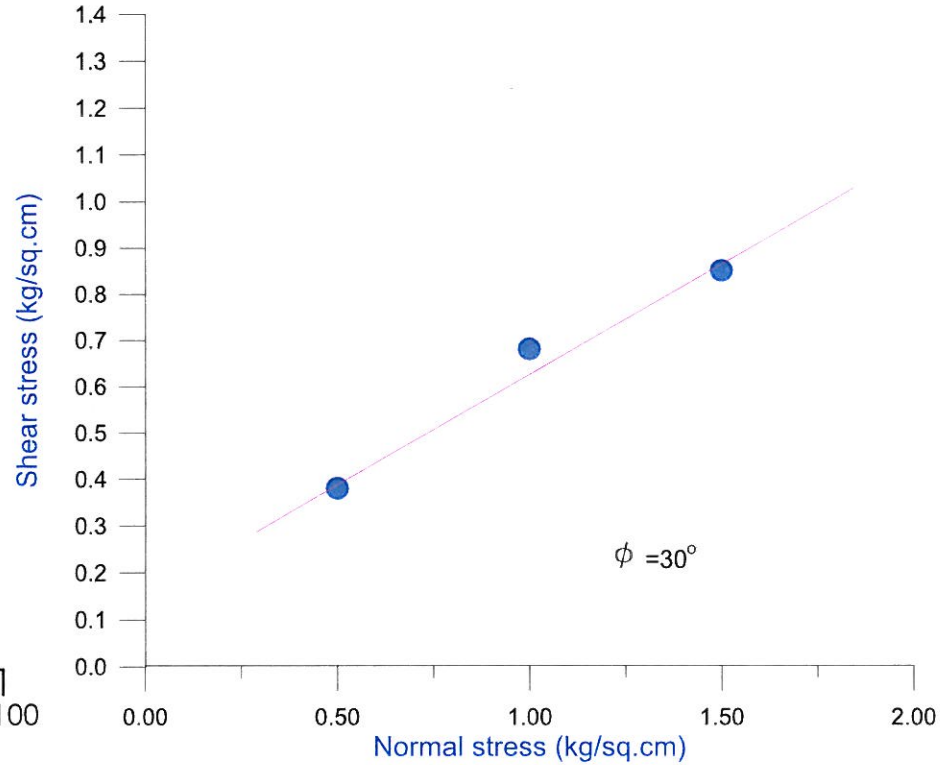
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DSBM3

BH-2
DEPTH = 2.50 m.



(Shear stress - shear strain relationship)



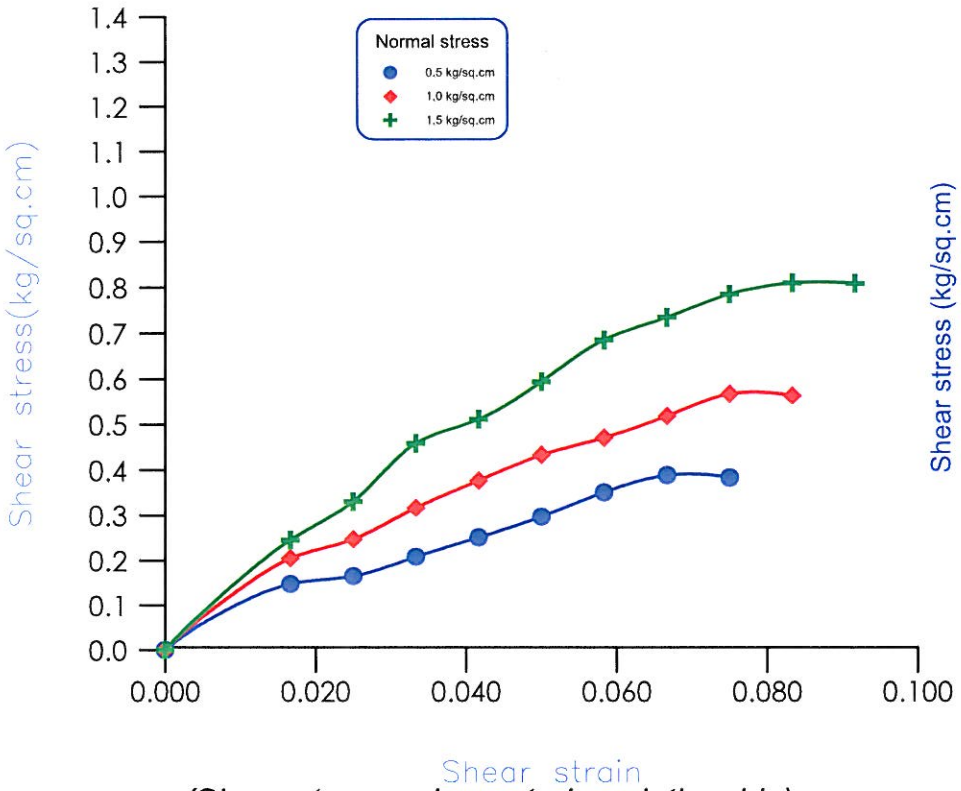
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

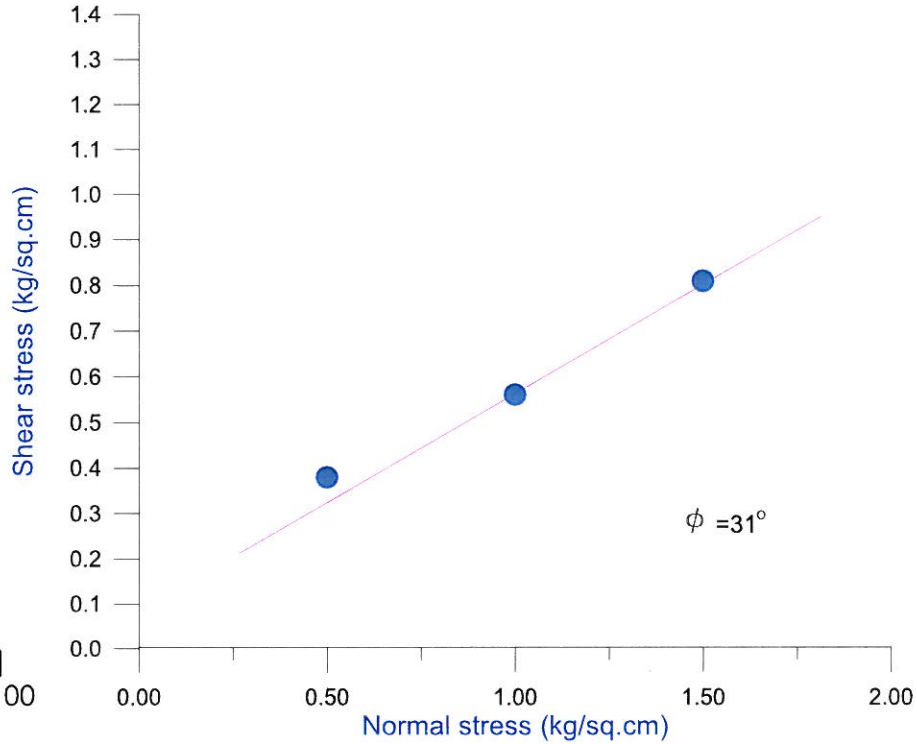
FIG- DS-BM4

0203

BH-2
DEPTH = 8.50 m.



(Shear stress - shear strain relationship)

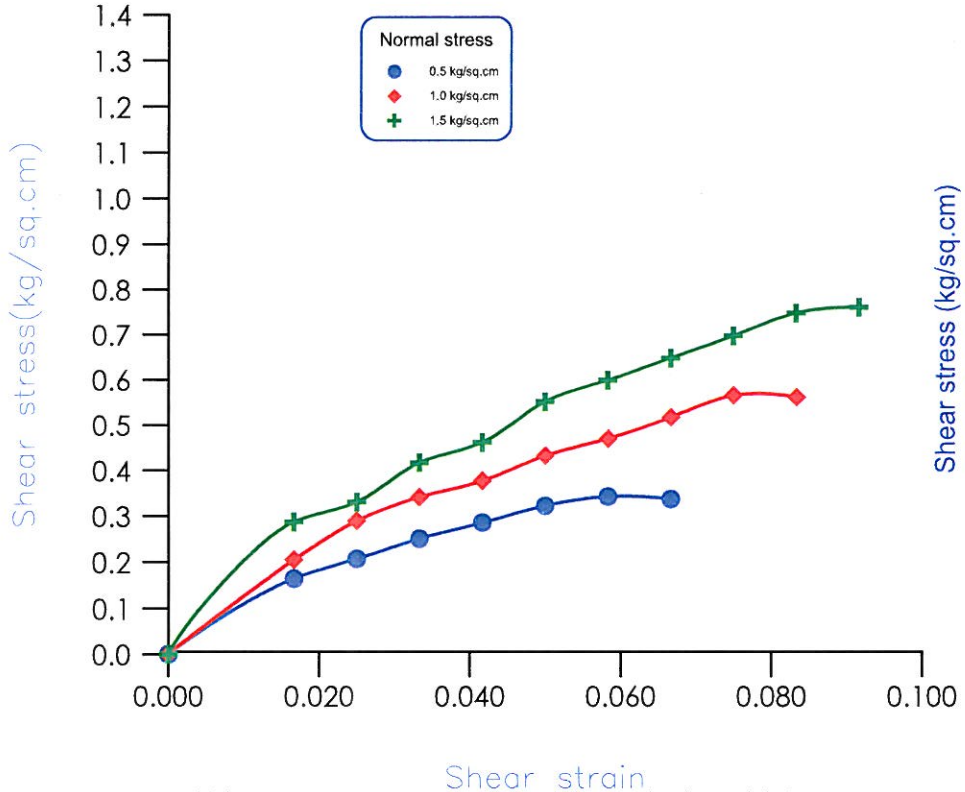


(Shear stress - Normal stress relationship)

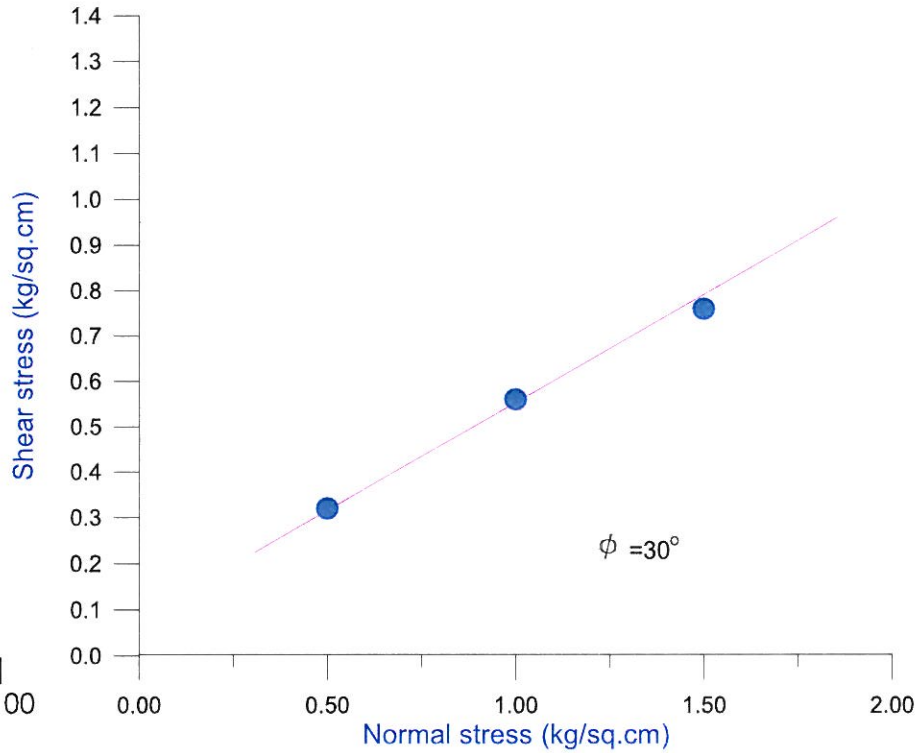
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-AM5

BH-2
DEPTH = 11.50 m



(Shear stress - shear strain relationship)

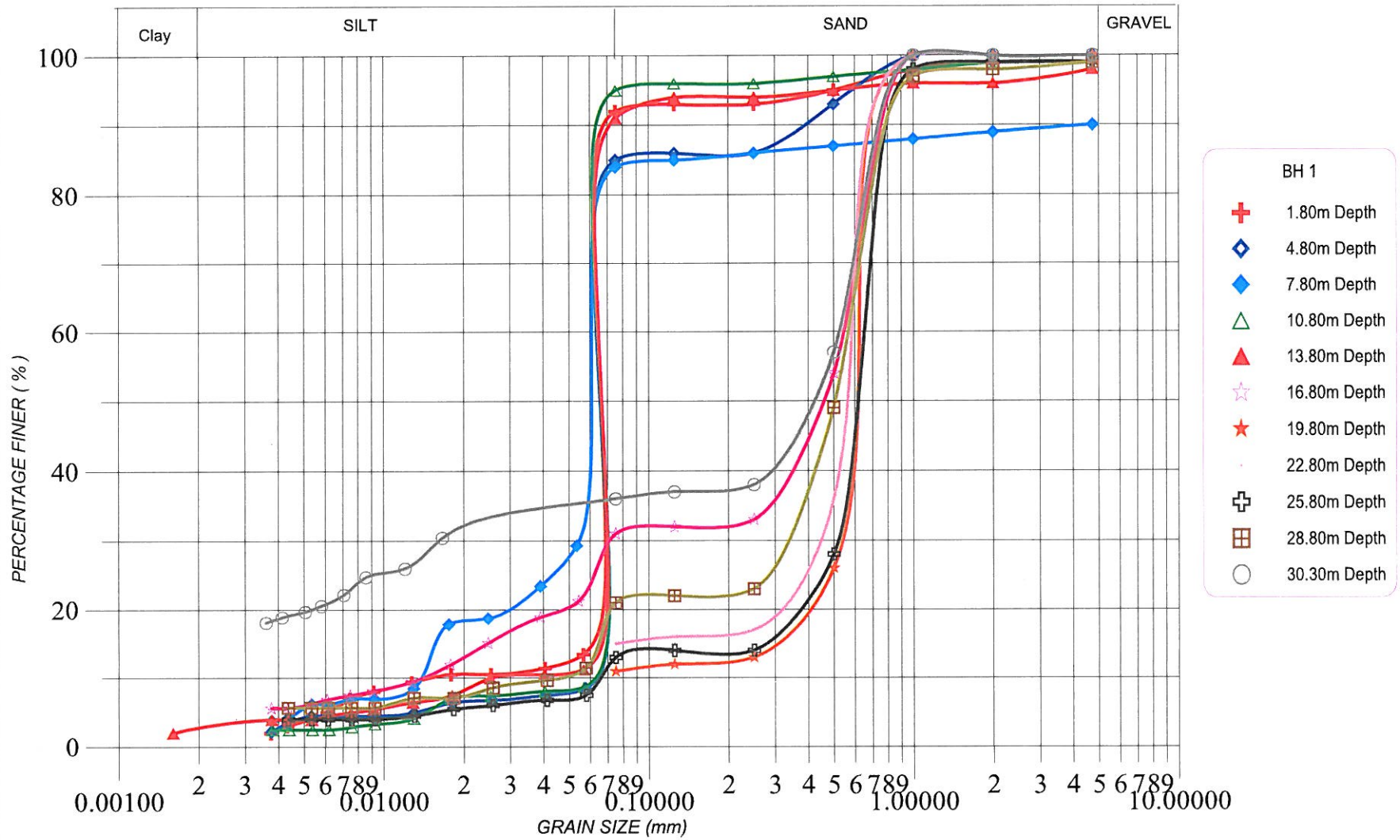


(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BM6

GRAIN SIZE DRISTRIBUTION CURVE



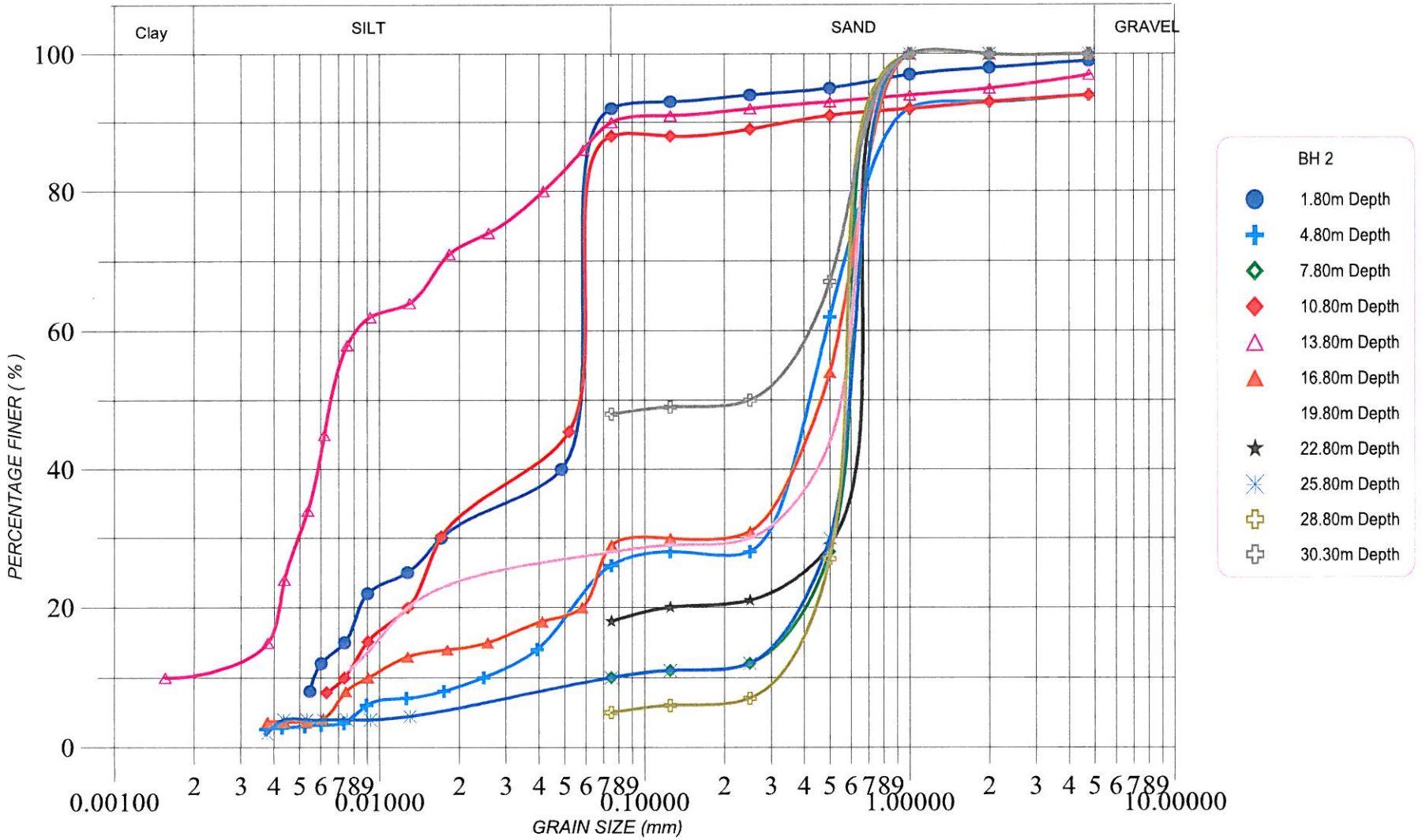
PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BM1

Soil Engineering Consultants

Job:1813

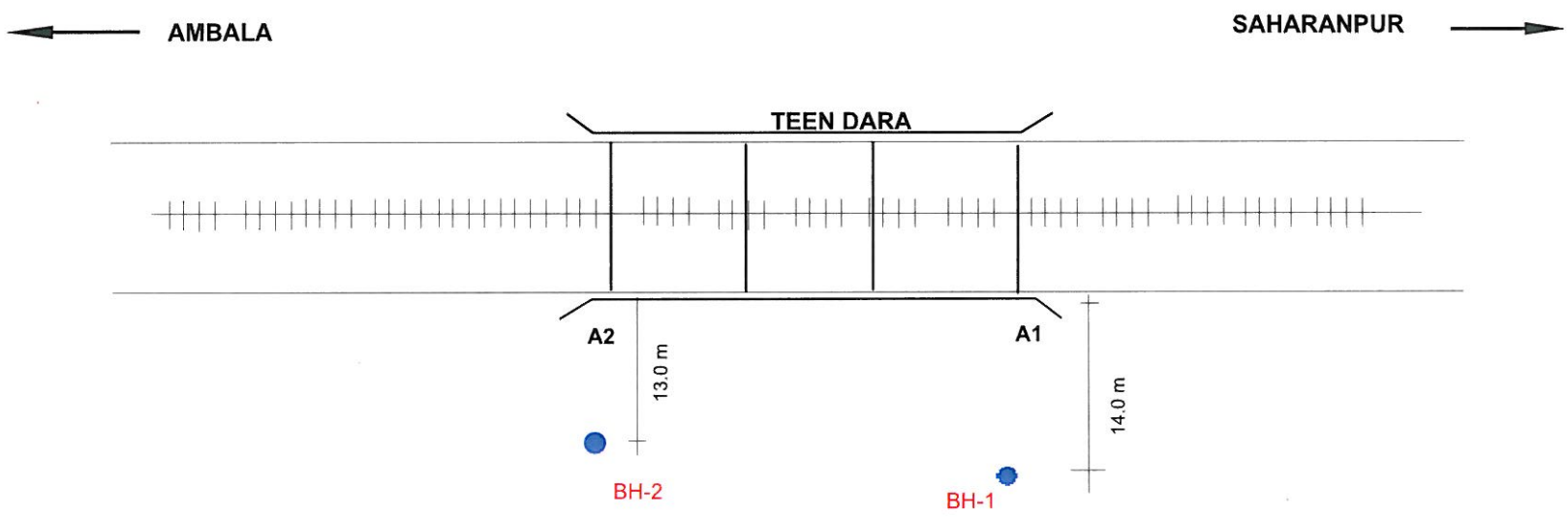
GRAIN SIZE DRISTRIBUTION CURVE



PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

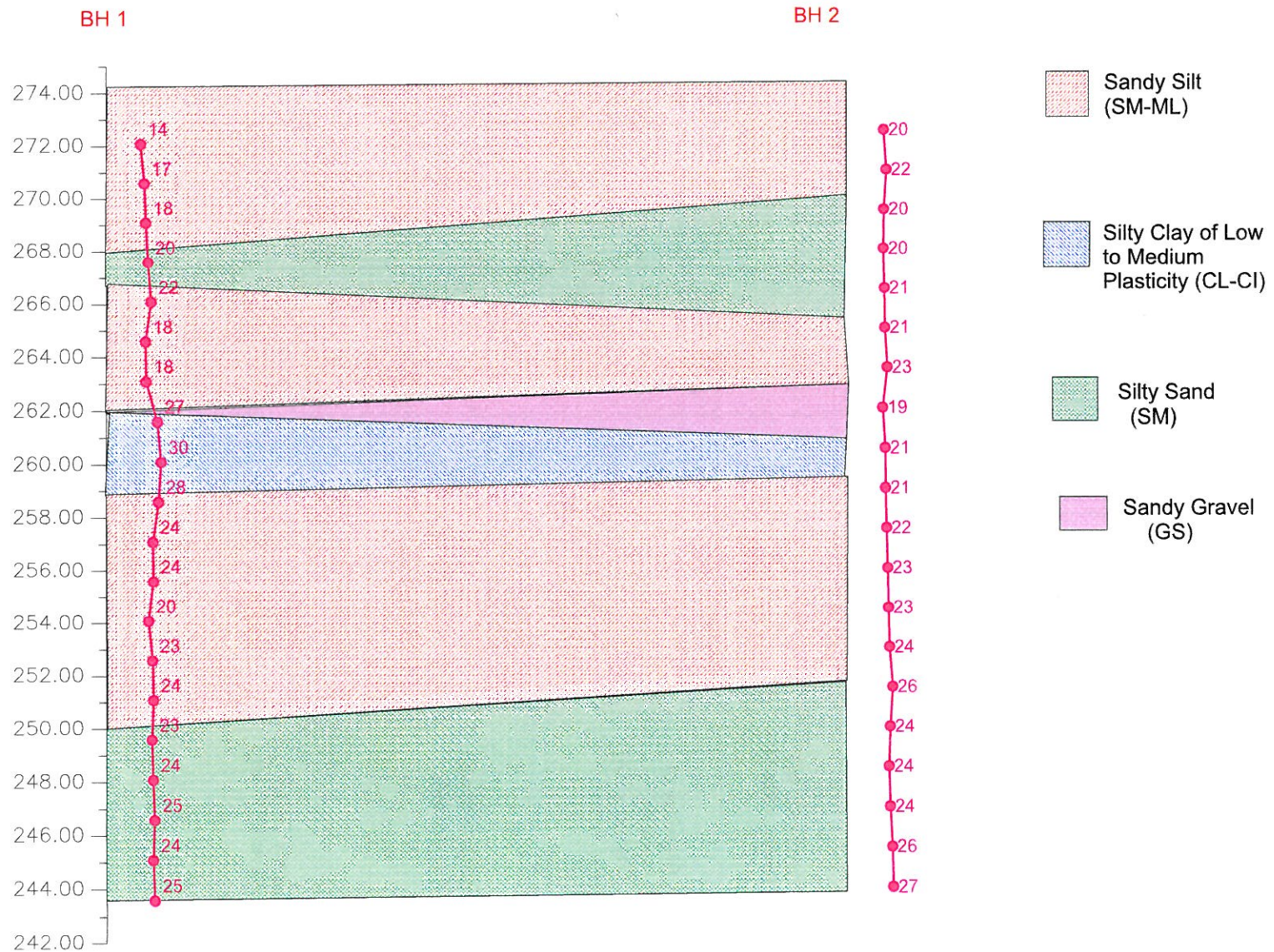
Fig : GSD-BM2

0207



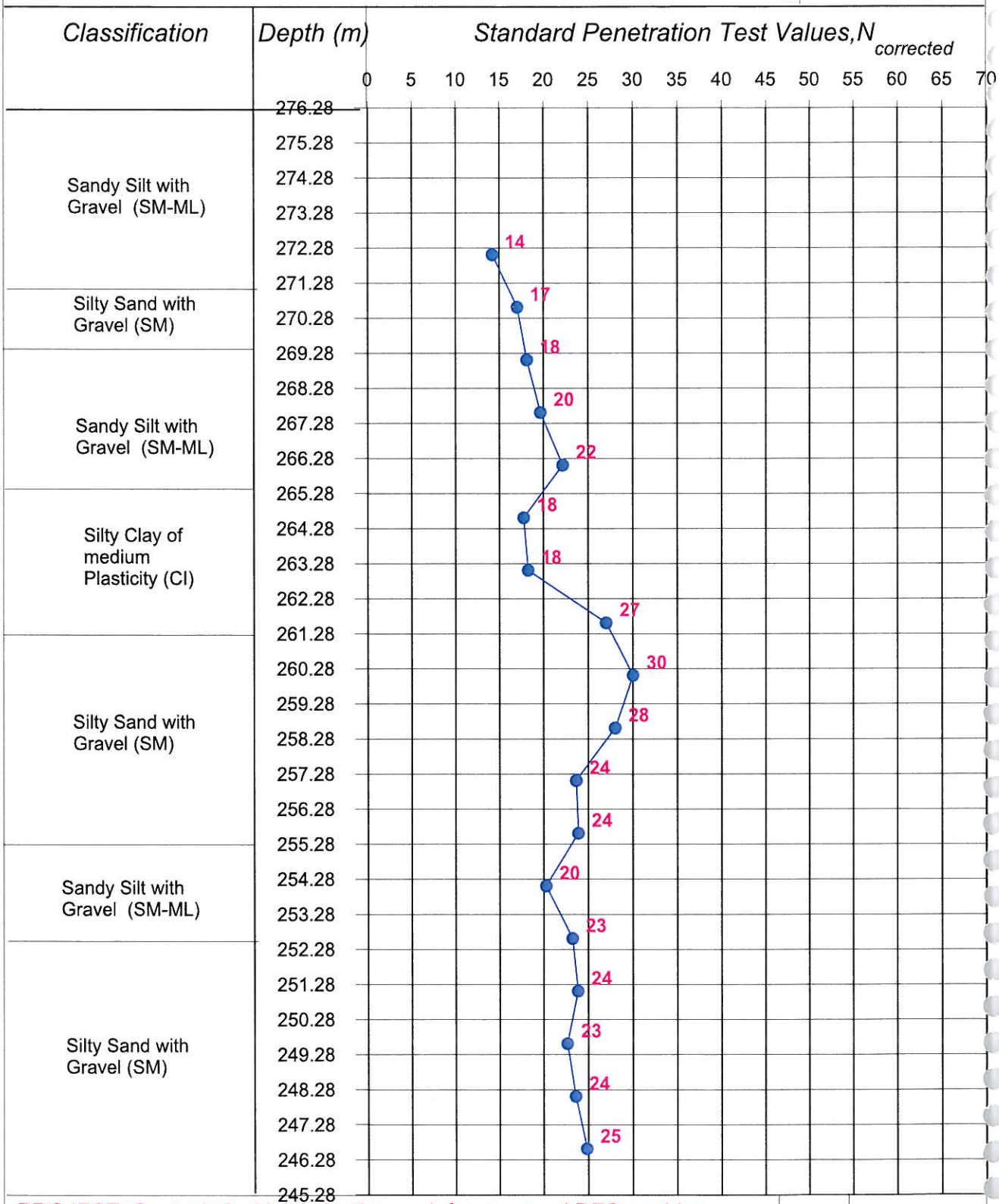
BRIDGE 265 @ CH 226/17-19

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur Fig: Plan-BM



EXPECTED SOIL PROFILE FOR PRPPOSED BRIDGE. ALONG BH 1 TO BH 2 WITH CORRECTED SPT VALUES

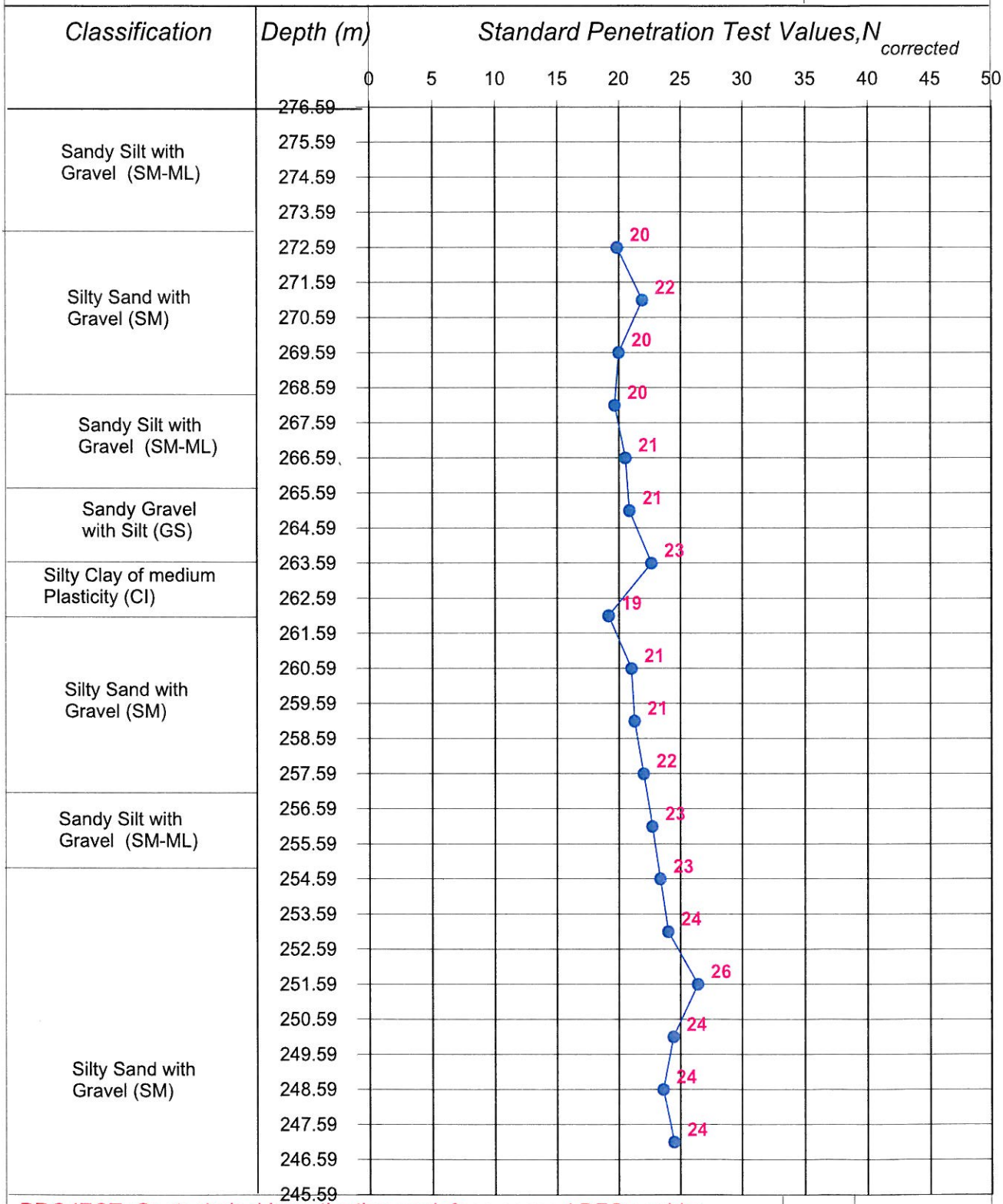
SOIL ENGINEERING CONSULTANTS | BR@ 265 226/17-18 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-1 | Fig: SP-BM1

0210

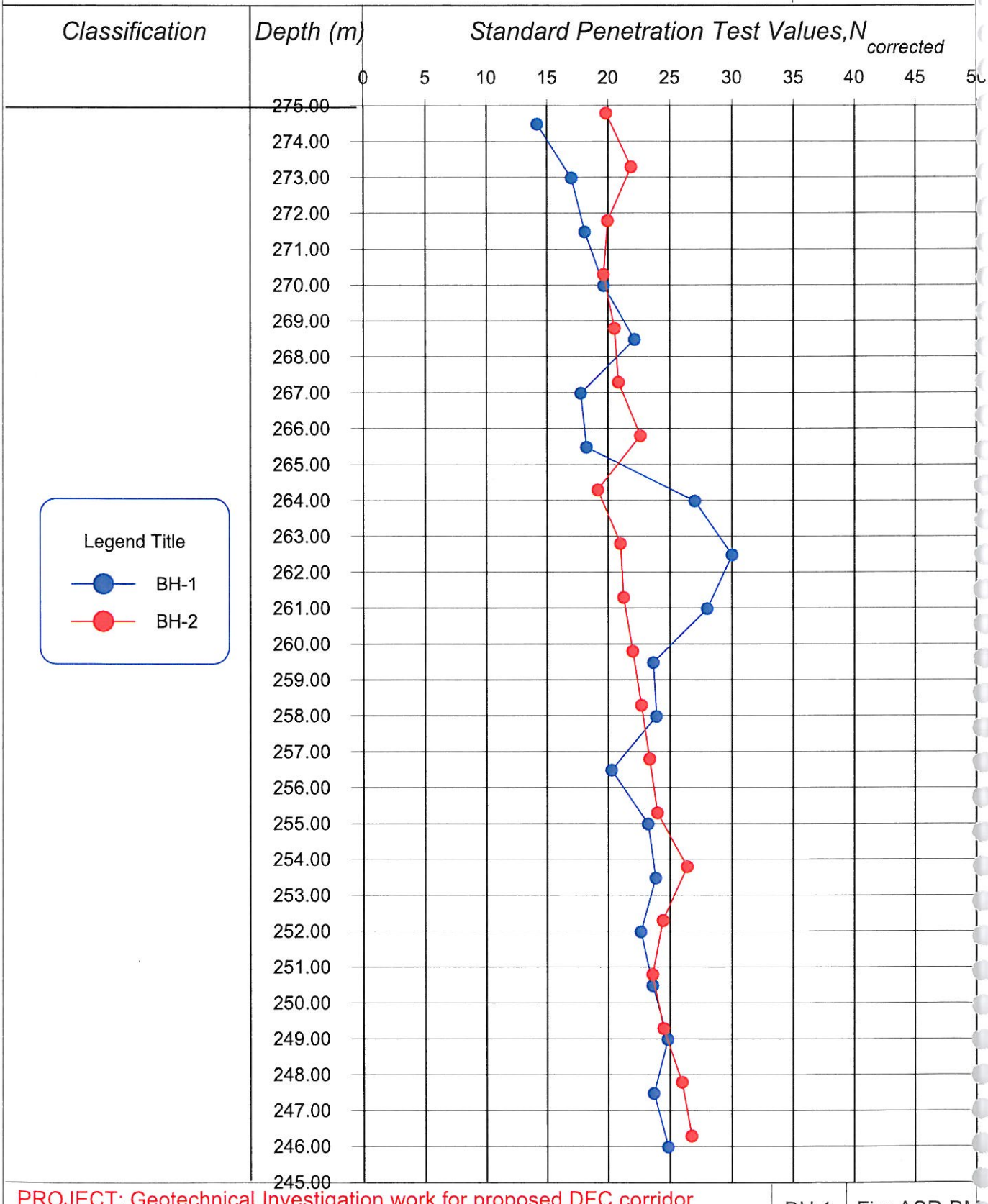
SOIL ENGINEERING CONSULTANTS | BR@ 265 226/17-18 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP-BM2

0211

SOIL ENGINEERING CONSULTANTS | BR-:265 @ 226/17-18 | Project No: 1813



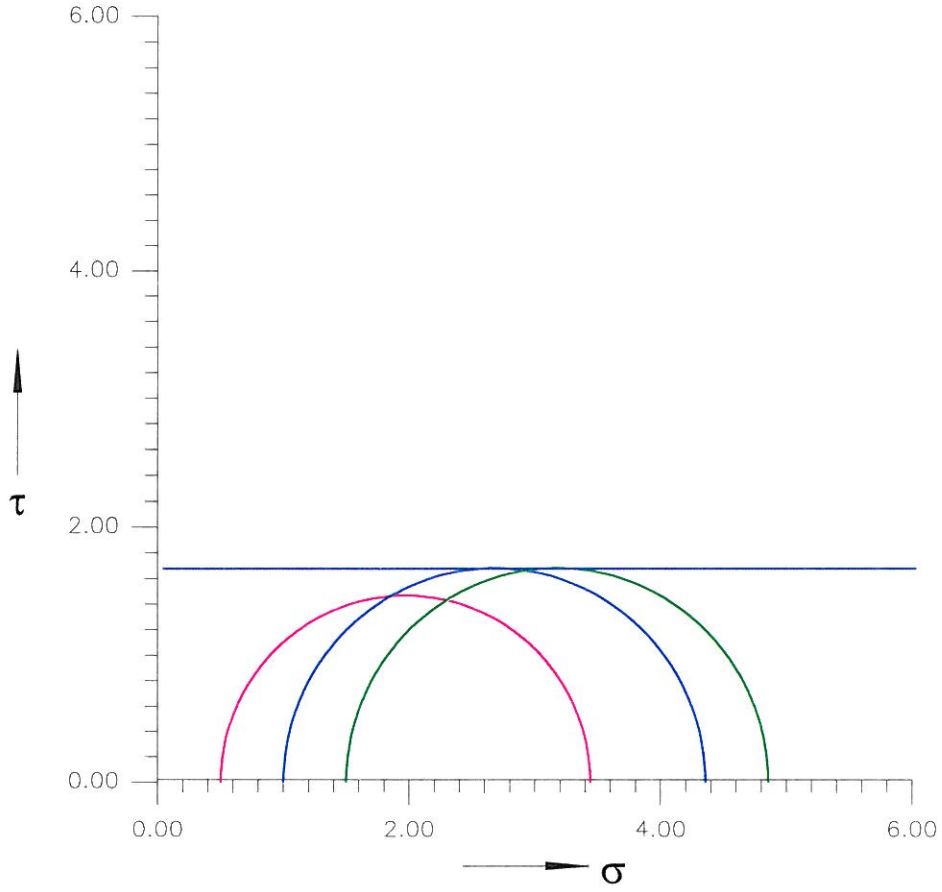
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH 1 | Fig: ASP-BH

0212

SOIL ENGINEERING CONSULTANTS

BR 265-226/17-18

Job No: 1813



BH 1
DEPTH : 14.50 m
C = 1.68 kg/cm^2

TRIAXIAL TEST RESULTS

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

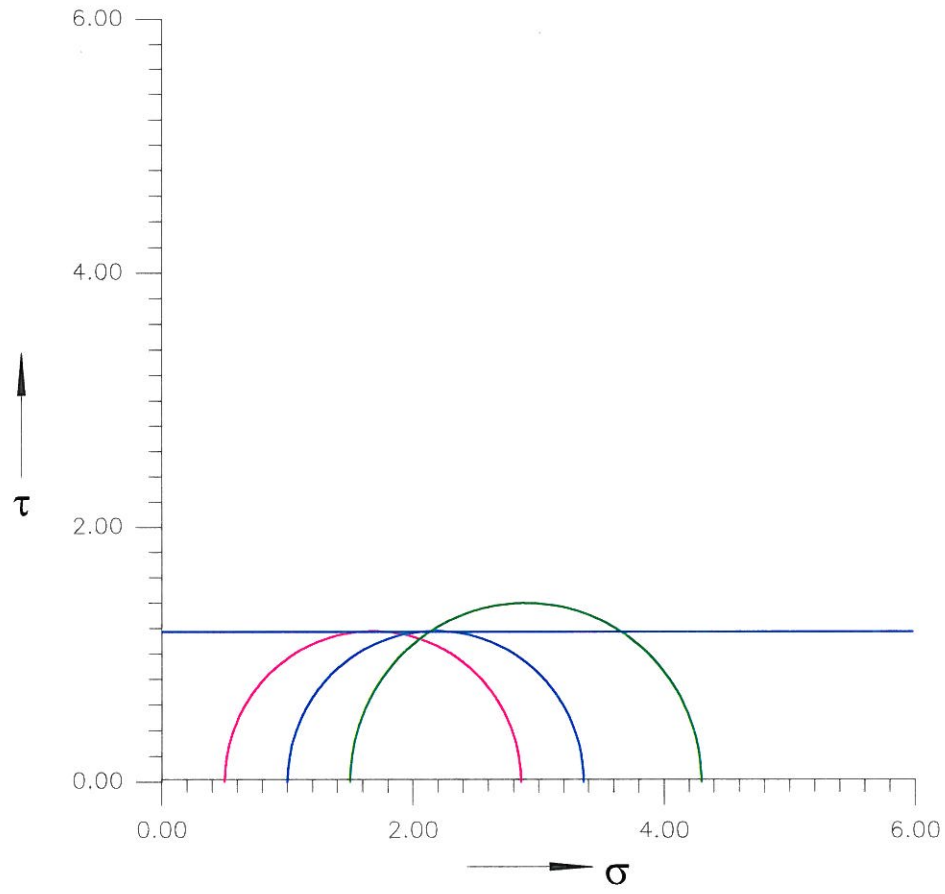
Figure : T-BM1

0213

SOIL ENGINEERING CONSULTANTS

BR 265-226/17-18

Job No: 1813



BH 2
DEPTH: 14.50
C= 1.18 Kg/Cm^2

TRIAXIAL TEST RESULTS

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Figure : T-BM2

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 266 RL: 276.141

Location; 227/1-2
BH No.: 1
Depth : 30.00M
Depth of Water table : 26.00M

Date of start : 24/04/2008
Date of finish : 28/04/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	Density (gm/cc) r(dry)	W/C W(%)	Limits (%) L.L	Limits (%) P. L	Sp.Gr	Shear Parameters Type of test	Shear Parameters C(kg/sq.cm)	Shear Parameters phi(degrees)	Cc
276.141																	
274.341	1.80	SPT		17	2	6	92					Non Plastic					
273.641	2.50	UDS						1.82	1.62	12.43				DST	0.15	31	
272.841	3.30	SPT		18	1	9	90					Non Plastic					
271.341	4.80	SPT		25	1	5	94					Non Plastic					
270.641	5.50	UDS	Sandy Silt with Gravel (SM-ML)					1.84	1.62	13.61			2.66	DST	0.15	31	
269.841	6.30	SPT		43	0	16	84					Non Plastic					
268.341	7.80	SPT		24	0	30	70					Non Plastic					
267.641	8.50	UDS						1.81	1.58	14.44				DST	0.1	30	
266.841	9.30	SPT		18	0	7	93					Non Plastic					
265.341	10.80	SPT		22	0	2	98					Non Plastic					
264.641	11.50	UDS						1.82	1.57	15.56			2.66	DST	0.1	30	
263.841	12.30	SPT		19	4	8	88					Non Plastic					
262.341	13.80	SPT		23	1	3	96					Non Plastic					
261.641	14.50	USD						1.84	1.58	16.72				DST	0.1	31	
260.841	15.30	SPT	Silty clay of Medium Plasticity(CI)	27	0	3	97				49	25					
259.341	16.80	SPT		28	2	4	94										
258.641	17.50	USD						1.89	1.58	19.64			2.72	UU	1.74	6	0.061
257.841	18.30	SPT		31	5	11	84				46	24					
256.341	19.80	SPT	Sandy Silt with Gravel (SM-ML)	34	0	2	98					Non Plastic					
254.841	21.30	SPT		36	2	21	77					Non Plastic					
253.341	22.80	SPT		49	1	91	8					Non Plastic					
251.841	24.30	SPT		47	0	56	44					Non Plastic					
250.341	25.80	SPT	Silty Sand with Gravel (SM)	42	0	77	23					Non Plastic					
248.841	27.30	SPT		46	1	90	9					Non Plastic					
247.341	28.80	SPT		47	0	87	13					Non Plastic					
245.841	30.30	SPT		68	1	90	9					Non Plastic					

S.P.T Plot scale: 0 10 20 30 40 50 60 70 80 90 100 110 120

0215

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

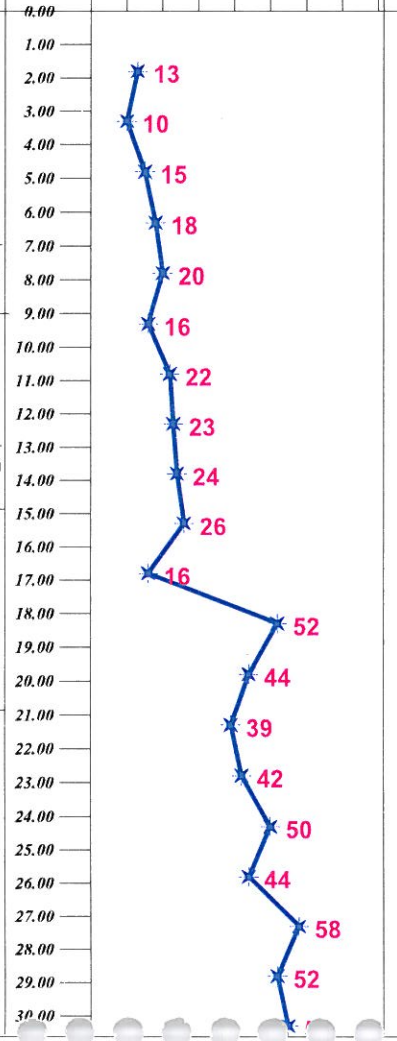
Location; 227/1-2
BH No.: 2
Depth : 30.00M
Depth of Water table : 25.00M

Date of start : 28/04/2008
Date of finish : 30/04/2008

Project No. 1813 Bridge : 266 RL: 272.719

Reduced Level	Depth (m)	Type of sample	Soil Classification	Gravel	Sand	Silt/clay	r(wet)	r(dry)	W/C W(%)	L.L	P. L	Sp.Gr	Shear Parameters: Type of test	C(kg/sq.cm)	phi(degrees)	Cc
272.719																
272.219	0.50	DS	Sandy Silt with Gravel (SM-ML)	5	10	85				Non	Plastic					
270.919	1.80	SPT		2	4	94				Non	Plastic					
270.219	2.50	UDS					1.73	1.57	10.23			2.66	DST	0.15	29	
269.419	3.30	SPT		1	8	91				Non	Plastic					
267.919	4.80	SPT		2	4	94				Non	Plastic					
267.219	5.50	UDS					1.77	1.61	11.47			2.66	DST	0.1	29	
266.419	6.30	SPT		0	60	40				Non	Plastic					
264.919	7.80	SPT	Silty clay of Medium Plasticity(CI)	0	8	92				43	27					
264.219	8.50	UDS					1.82	1.62	12.39			2.7	UU	0.92	3	0.071
263.419	9.30	SPT		0	8	92				Non	Plastic					
261.919	10.80	SPT	Sandy Silt with Gravel (SM-ML)	1	4	95				Non	Plastic					
261.219	11.50	UDS					1.83	1.61	13.88				DST	0.1	31	
260.419	12.30	SPT		0	5	95				Non	Plastic					
258.919	13.80	SPT	Silty clay of Medium Plasticity(CI)	0	3	97				47	28					
258.219	14.50	USD					1.86	1.61	15.40			2.72	UU	1.29	4	0.065
257.419	15.30	SPT		2	8	90				Non	Plastic					
255.919	16.80	SPT	Sandy Silt with Gravel (SM-ML)	0	5	95				Non	Plastic					
255.219	17.50	USD					1.84	1.58	16.24				DST	0.1	30	
254.419	18.30	SPT		0	18	82				Non	Plastic					
252.919	19.80	SPT		0	2	98				Non	Plastic					
251.419	21.30	SPT	Silty Sand with Gravel (SM)	0	83	17				Non	Plastic					
249.919	22.80	SPT		0	74	26				Non	Plastic					
248.419	24.30	SPT		0	89	11				Non	Plastic					
246.919	25.80	SPT		1	87	12				Non	Plastic					
245.419	27.30	SPT		2	83	15				Non	Plastic					
243.919	28.80	SPT		0	64	36				Non	Plastic					
242.419	30.3	SPT			82	20				Non	Plastic					

S.P.T Plot — Observed



BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 266 RL: 272.568

Location; 227/1-2
BH No.: 3
Depth : 30.00M
Depth of Water table : 25.00M

Date of start : 30/04/2008
Date of finish : 02/04/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
272.568																	
272.068	0.50	DS	Sandy Silt with Gravel (SM-ML)	7	3	22	75				Non	Plastic					
270.768	1.80	SPT		11	4	9	87				Non	Plastic					
270.068	2.50	UDS						1.74	1.59	9.68				DST	0.1	28	
269.268	3.30	SPT		14	6	10	84				Non	Plastic					
267.768	4.80	SPT			0	44	56				Non	Plastic					
267.068	5.50	UDS						1.77	1.60	10.45			2.66	DST	0.1	29	
266.268	6.30	SPT		22	0	52	48				Non	Plastic					
264.768	7.80	SPT		28	0	29	71				Non	Plastic					
264.068	8.50	UDS						1.8	1.62	11.23			2.72	UU	0.94	4	0.065
263.268	9.30	SPT	Silty Clay of medium plasticity (CI)	18	2	7	91				44	23					
261.768	10.80	SPT		21	2	4	94				Non	Plastic					
261.068	11.50	UDS						1.83	1.62	12.93				DST	0.15	31	
260.268	12.30	SPT	Sandy Silt with Gravel (SM-ML)	30	0	7	93				Non	Plastic					
258.768	13.80	SPT		25	0	2	98				Non	Plastic					
258.068	14.50	USD						1.83	1.61	13.88				DST	0.15	31	
257.268	15.30	SPT		27	2	7	91				53	28					
255.768	16.80	SPT	Silty Clay of medium to High plasticity (CI-CH)	20	6	6	88										
255.068	17.50	USD						1.85	1.61	14.62			2.7	UU	1.17	3	0.062
254.268	18.30	SPT		29	2	8	90				48	24					
252.768	19.80	SPT		31	5	90	5				Non	Plastic					
251.268	21.30	SPT		41	0	92	8				Non	Plastic					
249.768	22.80	SPT		44	0	89	11				Non	Plastic					
248.268	24.30	SPT	Silty Sand witrh Graavel (SM)	67	0	66	34				Non	Plastic					
246.768	25.80	SPT		35	0	88	12				Non	Plastic					
245.268	27.30	SPT		45	1	80	19				Non	Plastic					
243.768	28.80	SPT		51	1	76	23				Non	Plastic					
242.268	30.30	SPT		42	10	85	5				Non	Plastic					

0 10 20 30 40 50 60 70 80 90 100 110 120

0217

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 266 RL: 276.842

Location; 227/1-2
BH No.: 4
Depth : 30.00M
Depth of Water table :26.00M

Date of start : 03/05/2008

Date of finish : 06/05/2008

SOIL ENGINEERING CONSULTANTS

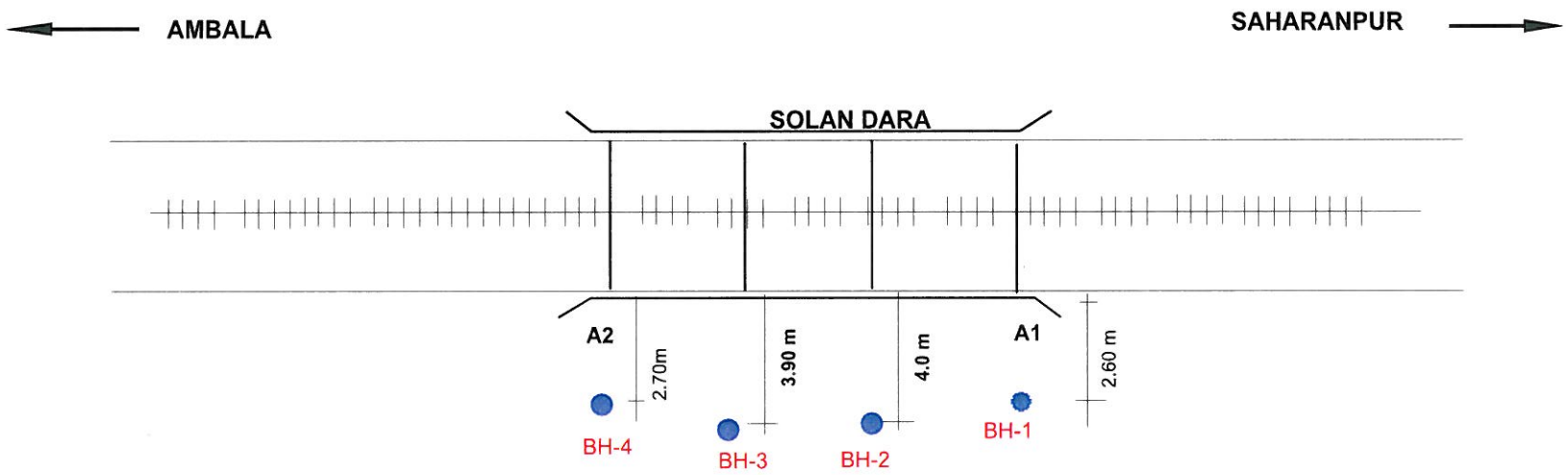
Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
276.842																	
276.042	0.80	DS	Silty clay of Medium Plasticity (CI)	19	5	18	77				Non	Plastic					
275.042	1.80	SPT			4	10	86	1.79	1.60	11.23	42	21	2.71	UU	0.62		0.081
274.342	2.50	UDS		11													
273.542	3.30	SPT			1	7	92										
272.042	4.80	SPT		13	2	7	91				38	18					
271.342	5.50	UDS	Sandy Silt with Gravel (SM-ML)					1.79	1.59	12.49				DST	0.15	29	
270.542	6.30	SPT		14	0	6	94				Non	Plastic					
269.042	7.80	SPT		28	0	22	78				Non	Plastic					
268.342	8.50	UDS						1.82	1.60	13.86			2.66	DST	0.1	30	
267.542	9.30	SPT		30	0	30	70				Non	Plastic					
266.042	10.80	SPT		33	1	6	93				Non	Plastic					
265.342	11.50	UDS						1.84	1.61	14.30				DST	0.15	31	
264.542	12.30	SPT		35	0	26	74				Non	Plastic					
263.042	13.80	SPT		34	0	12	88				Non	Plastic					
262.342	14.50	USD						1.83	1.59	15.17				DST	0.1	30	
261.542	15.30	SPT		22	0	3	97				Non	Plastic					
260.042	16.80	SPT		27	0	1	99				Non	Plastic					
259.342	17.50	USD	Silty clay of High Plasticity (CH)					1.83	1.57	16.23			2.69	UU	1.48	30	0.071
258.542	18.30	SPT		25	0	3	97				53	27					
257.042	19.80	SPT		39	0	39	61				Non	Plastic					
255.542	21.30	SPT	Sandy Silt with Gravel (SM-ML)	46	0	47	53				Non	Plastic					
254.042	22.80	SPT		48	0	34	66				Non	Plastic					
252.542	24.30	SPT		47	0	42	58				Non	Plastic					
251.042	25.80	SPT		56	1	60	39				Non	Plastic					
249.542	27.30	SPT	Silty Sand with Gravel (SM)	42	0	55	45				Non	Plastic					
248.042	28.80	SPT		51	1	84	15				Non	Plastic					
246.542	30.30	SPT		43	1	67	32				Non	Plastic					

0 10 20 30 40 50 60 70 80

0238

SOIL ENGINEERING CONSULTANTS

Job No: 1813



BRIDGE 266 @ CH 227/1-2

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

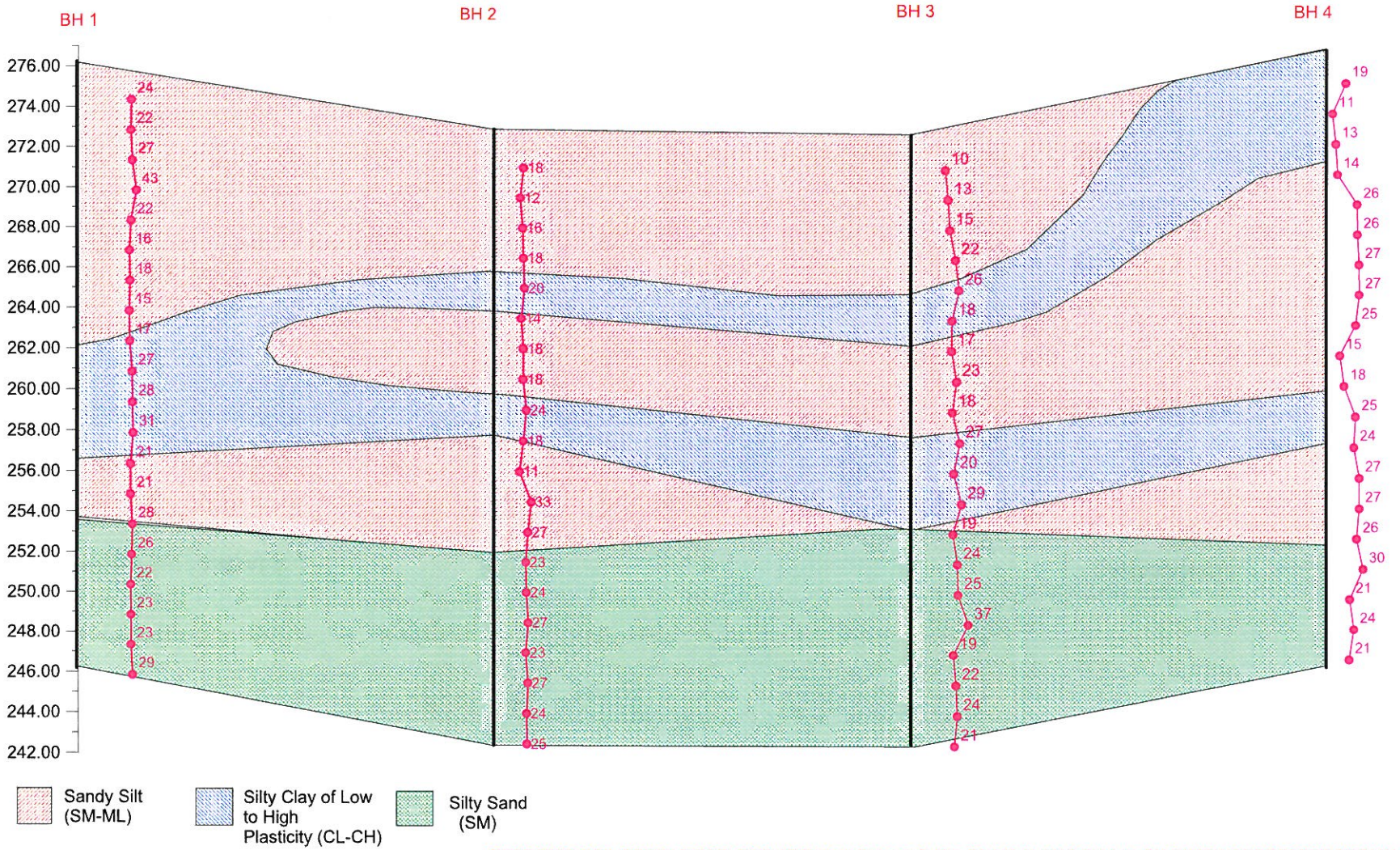
Fig: Plan-BN

6120

Soil Enginering Consultants

BR 266@ 227/1-2

Project No. 1813

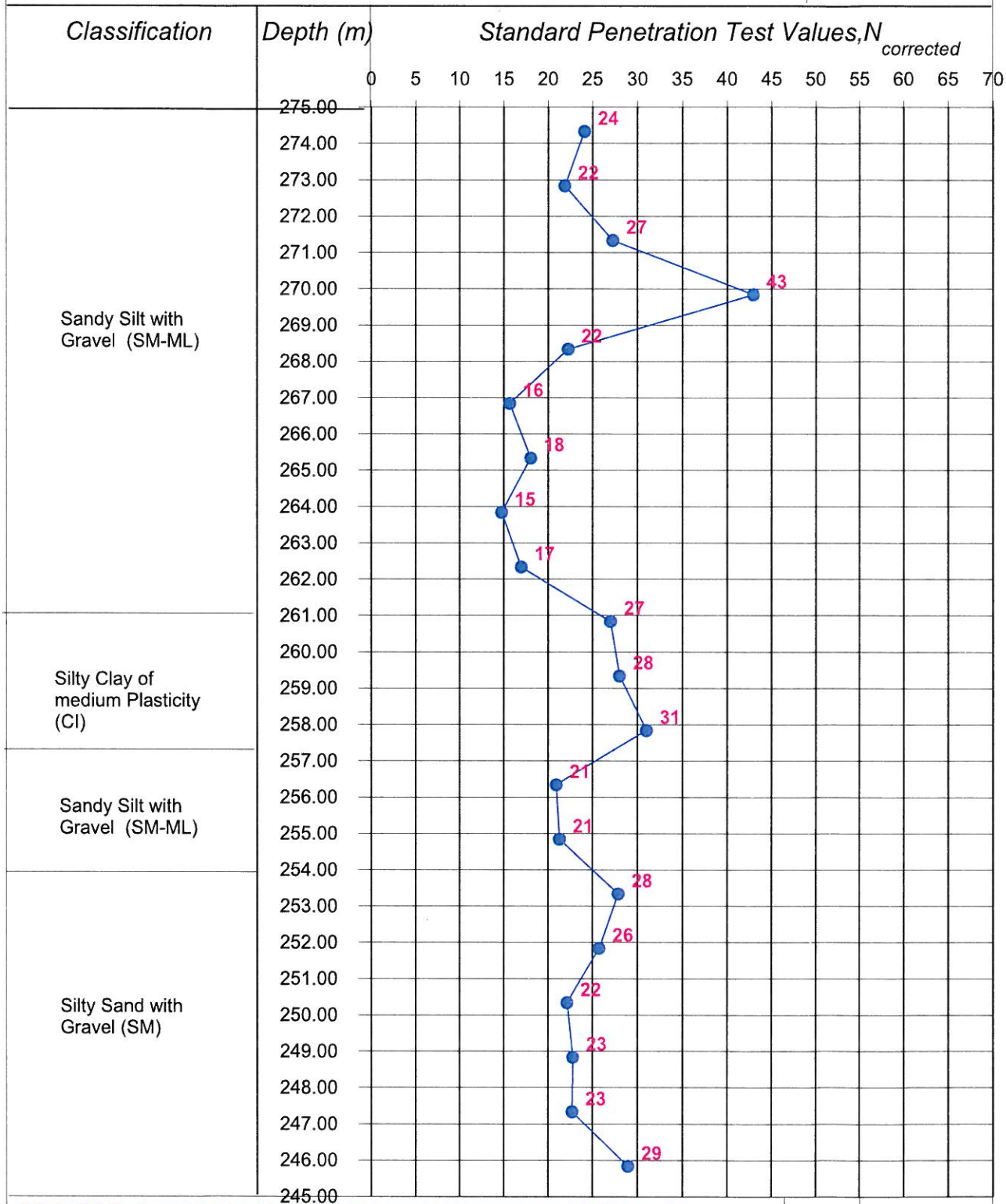


EXPECTED SOIL PROFILE FOR ROB AT Rothak Bypass @ Km. 70.012 ALONG BH 1 to BH 5 WITH CORRECTED SPT VALUES

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Figure : Soilpro BN

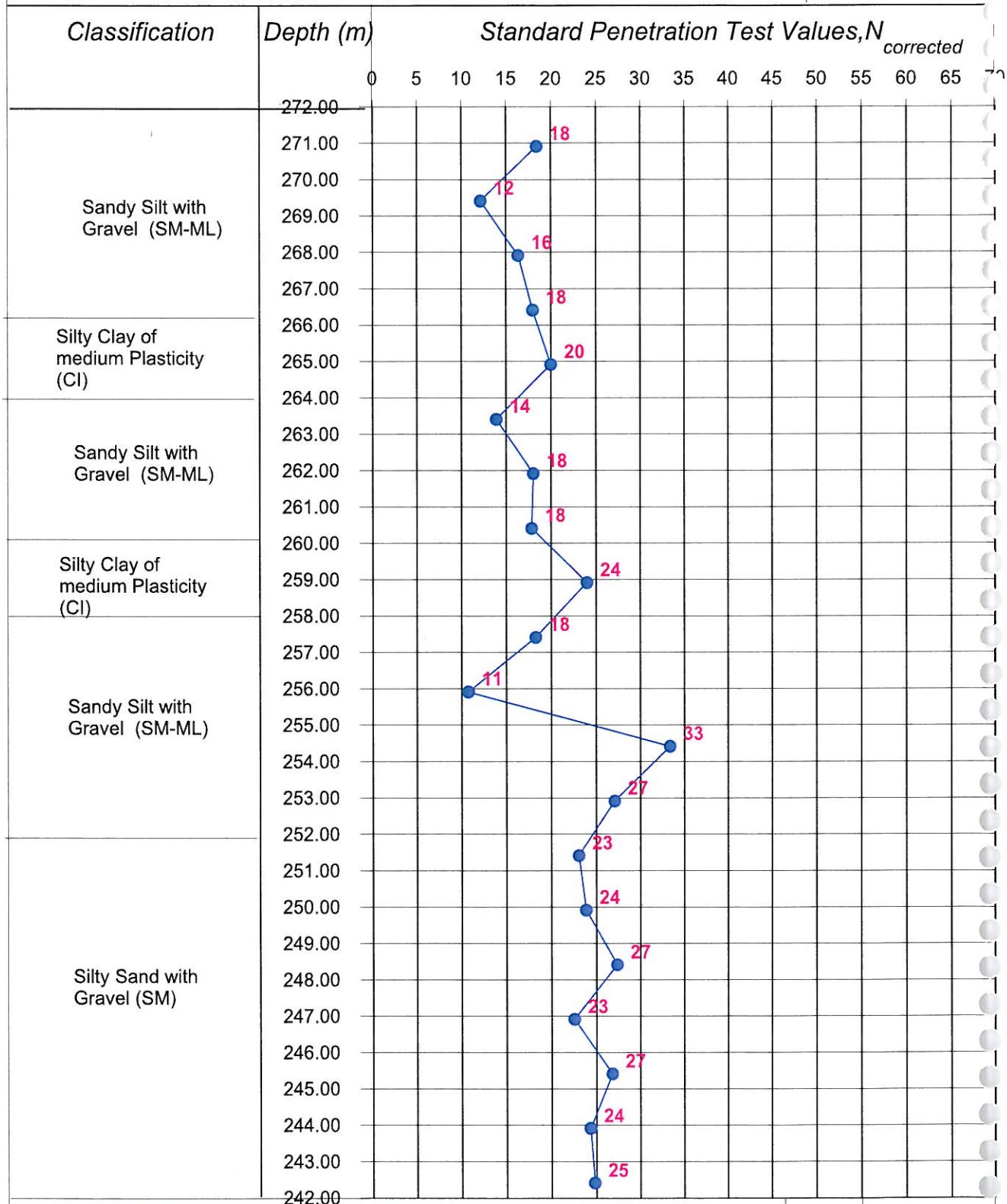
SOIL ENGINEERING CONSULTANTS | BR 266@227/1-2 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-1 | Fig: SP -BN1

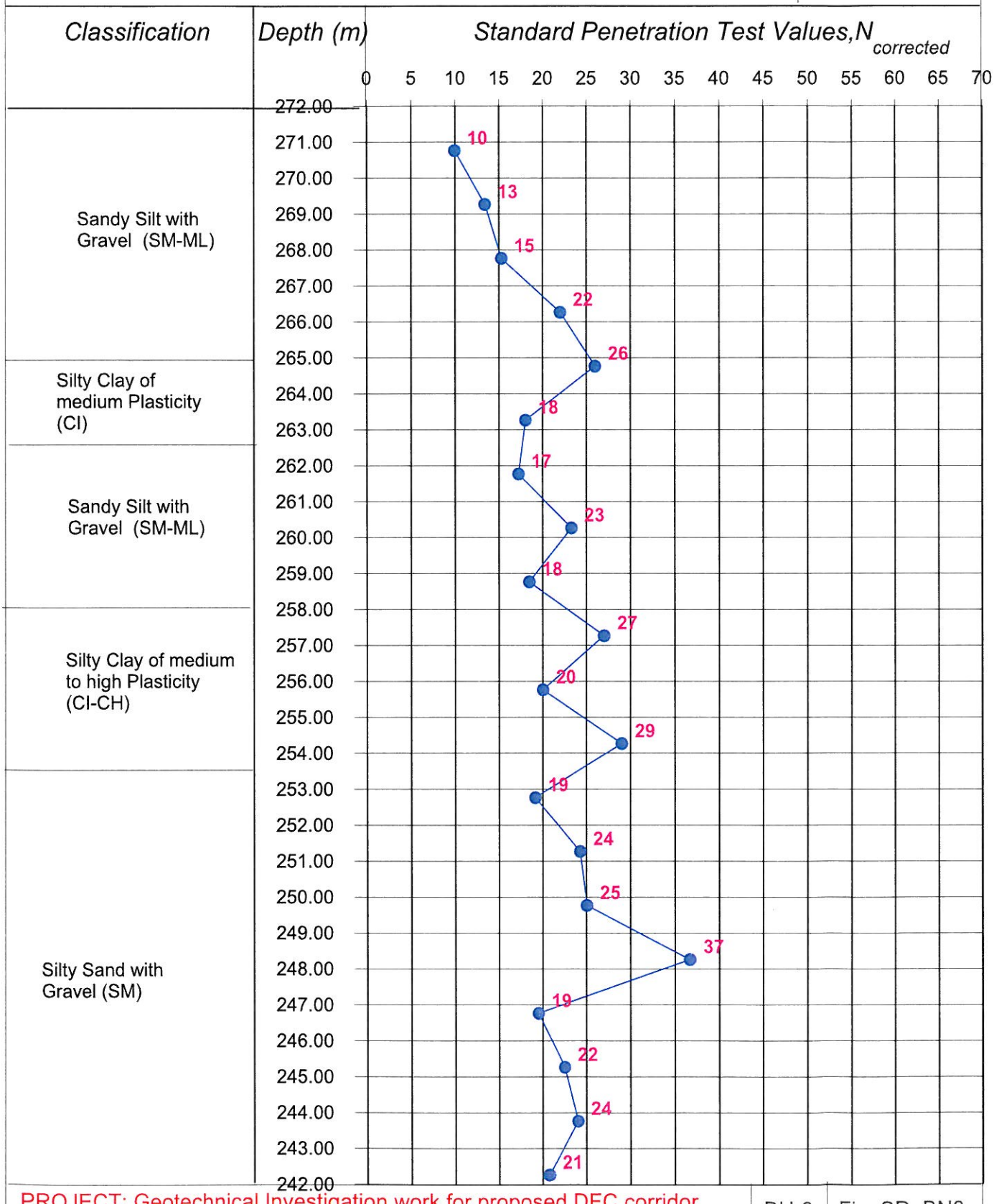
0221

SOIL ENGINEERING CONSULTANTS | BR 266@ 227/1-2 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP -BH

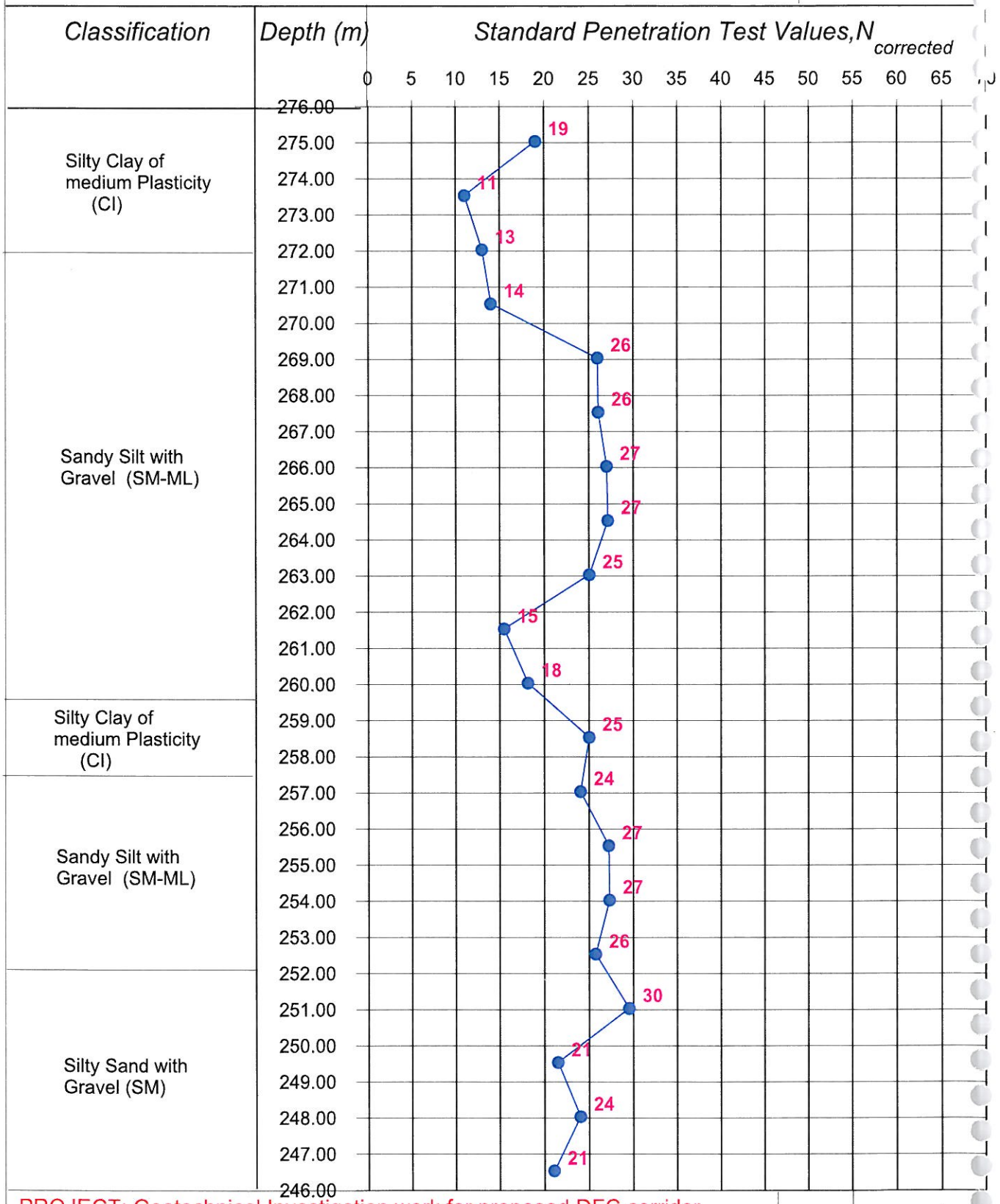
SOIL ENGINEERING CONSULTANTS | BR 266@ 227/1-2 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-3 | Fig: SP -BN3

0223

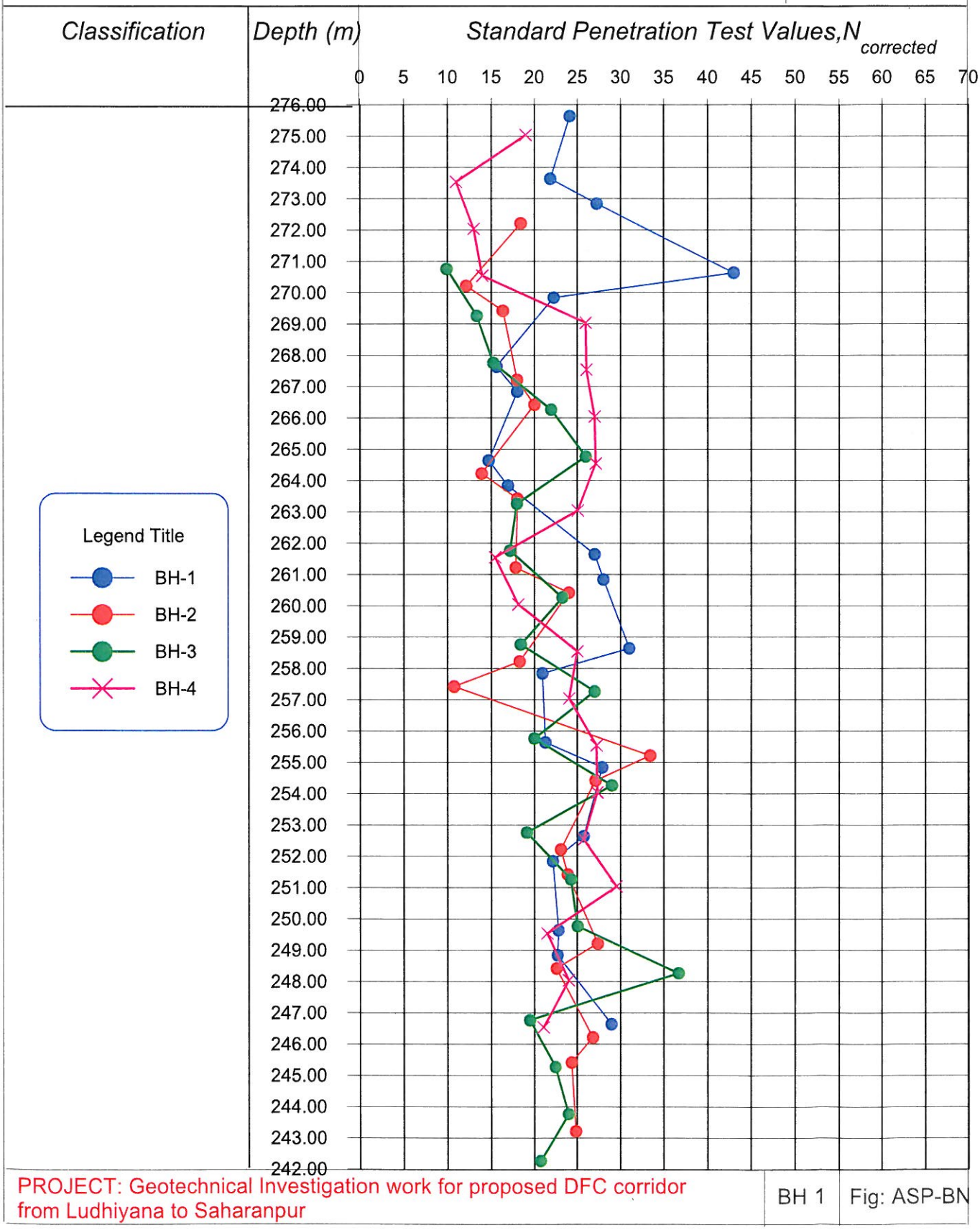
SOIL ENGINEERING CONSULTANTS | BR266 @ 227/1-2 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-4 | Fig: SP -BN4

0224

SOIL ENGINEERING CONSULTANTS | BR-266@227/1-2 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH 1 | Fig: ASP-BN

0225

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 267 RL:274.211

Location; 227/23/25
BH No.: 1
Depth : 30.45M
Depth of Water table : 26.00

Date of start : 09/05/2008

Date of finish : 10/05/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
274.211																	
273.711	0.50	DS	Sandy Silt with Gravel (SM-ML)	37	1	8	91				Non	Plastic					
272.411	1.80	SPT			5	6	89				Non	Plastic					
271.711	2.50	UDS						1.78	1.56	14.45				DST	0.15	29	
270.911	3.30	SPT		15	0	17	83				Non	Plastic					
269.411	4.80	SPT	Silty clay with Medium Plasticity (CI)	20	4	7	89				Non	Plastic					
268.711	5.50	UDS						1.82	1.58	15.23	42	21	2.67	DST	0.18	30	
267.911	6.30	SPT		23	0	8	92				Non	Plastic					
266.411	7.80	SPT	Sandy Siltwith Gravel (SM-ML)	23	0	18	82				Non	Plastic					
265.711	8.50	UDS						1.82	1.57	15.94				DST	0.18	30	
264.911	9.30	SPT		25							Non	Plastic					
263.411	10.80	SPT		18	1	6	93				Non	Plastic					
262.711	11.50	UDS						1.8	1.55	16.38				DST	0.1	30	
261.911	12.30	SPT		18							Non	Plastic					
260.411	13.80	SPT		30	0	32	68				Non	Plastic					
259.711	14.50	USD						1.83	1.56	16.88				DST	0.1	30	
258.911	15.30	SPT		22	0	32	68				Non	Plastic					
257.411	16.80	SPT		28	0	4	96				Non	Plastic					
256.711	17.50	USD						1.86	1.59	17.23			2.68	DST	0.15	31	
255.911	18.30	SPT	Silty clay of Medium Plasticity (CI)	29	0	3	97				46	24					
254.411	19.80	SPT		33	0	4	96				44	24					
253.711	20.50	USD						1.88	1.59	18.11				DST	0.1	30	
252.911	21.30	SPT	Silty Sand (SM)	46	0	55	45				Non	Plastic					
251.411	22.80	SPT		45	0	74	26				Non	Plastic					
250.711	23.50	USD						1.86	1.54	20.43				DST	0.1	31	
249.911	24.30	SPT	Sandy Silt (SM-ML)	30	5	7	88				Non	Plastic					
248.411	25.80	SPT		38	0	2	98				Non	Plastic					
247.711	26.50	USD															
246.911	27.30	SPT		21	0	4	96				Non	Plastic					
245.411	28.80	SPT		25	0	3	97				Non	Plastic					
243.911	30.30	SPT		27	1	12	87				Non	Plastic					

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 267 RL: 276.704

Location; 227/23/25
BH No.: 2
Depth : 30.00M
Depth of Water table : 26.10m

Date of start : 11/05/2008
Date of finish : 12/05/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	Density (gm/cc) r(dry)	W/C W(%)	Limits (%) L.L	Limits (%) P . L	Sp.Gr	Shear Parameters Type of test	Shear Parameters C(kg/sq.cm)	Shear Parameters phi(degrees)	Cc
276.704																	
274.904	1.80	SPT		18	9	15	76				Non	Plastic					
274.204	2.50	UDS						1.79	1.56	14.86				DST	0.15	30	
273.404	3.30	SPT		39	1	15	84				Non	Plastic					
271.904	4.80	SPT	Sandy Silt with Gravel (SM-ML)	39	6	7	87				Non	Plastic					
271.204	5.50	UDS						1.86	1.60	16.23				DST	0.15	31	
270.404	6.30	SPT		30	2	10	88				35	21					
268.904	7.80	SPT		33	0	8	92				Non	Plastic					
268.204	8.50	UDS						1.86	1.58	17.60				DST	0.1	31	
267.404	9.30	SPT		31	0	8	92				Non	Plastic					
265.904	10.80	SPT		40	0	12	88				Non	Plastic					
265.204	11.50	UDS	Silty clay of Medium plasticity (CI)					1.83	1.54	18.91			2.7	UU	1.04	4	
264.404	12.30	SPT		19	0	2	98				48	26					
262.904	13.80	SPT		31	1	10	89				Non	Plastic					
261.404	15.30	SPT		27	0	41	59				Non	Plastic					
259.904	16.80	SPT		38	0	12	88				Non	Plastic					
259.204	17.50	USD						1.84	1.55	18.83			2.67	DST	0.1	30	
258.404	18.30	SPT		24	0	3	97				Non	Plastic					
256.904	19.80	SPT		29	1	7	92				Non	Plastic					
256.204	20.50	USD						1.84	1.54	19.14				DST	0.1	31	
255.404	21.30	SPT	Sandy Silt with Gravel (SM-ML)	45	0	24	76				Non	Plastic					
253.904	22.80	SPT		43	1	19	80				Non	Plastic					
252.404	24.30	SPT		43	1	43	56				Non	Plastic					
250.904	25.80	SPT		30	1	3	96				Non	Plastic					
249.404	27.30	SPT		24	7	13	80				Non	Plastic					
247.904	28.80	SPT		22	2	6	92				Non	Plastic					
246.404	30.30	SPT		25	2	13	85				Non	Plastic					

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

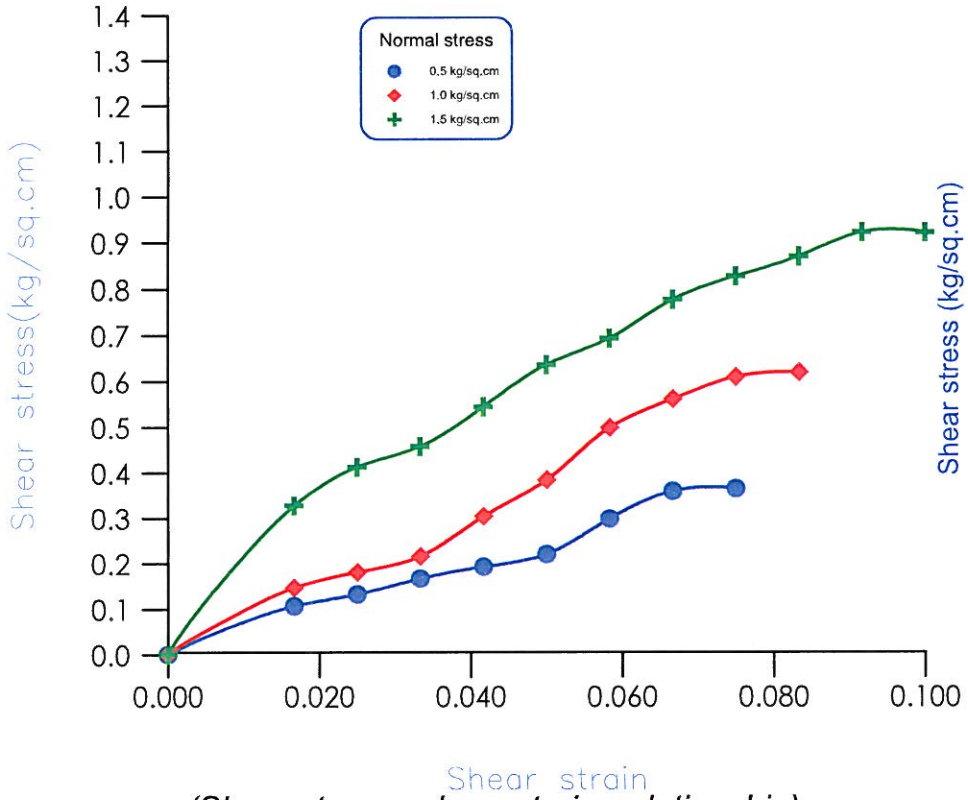
Project No. 1813 Bridge : 267 RL: 276.214

Location; 227/23/25
BH No.: 3
Depth : 30.45M
Depth of Water table : 26.20m

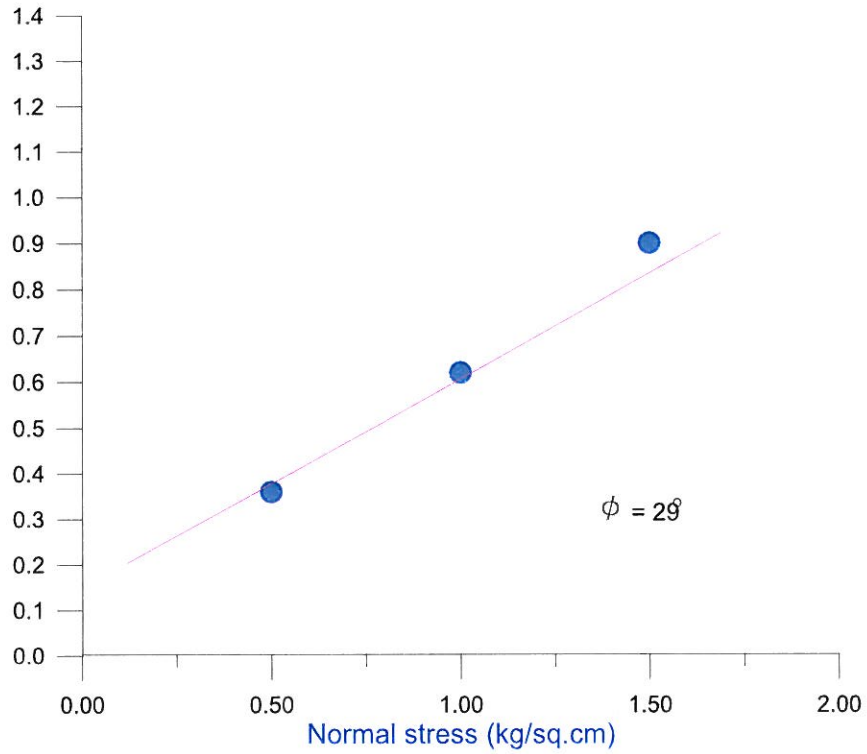
Date of start : 12/05/2008
Date of finish : 13/05/2008

Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	Density (gm/cc) r(dry)	W/C W(%)	Limits (%) L.L	Limits (%) P . L	Sp.Gr	Shear Parameters Type of test	Shear Parameters C(kg/sq.cm)	Shear Parameters phi(degrees)	Cc
276.214																	
274.414	1.80	SPT	Sandy Silt (SM-ML)	40	2	4	94				Non	Plastic					
273.714	2.50	UDS						1.92	1.75	9.16			2.67	DST	0.16	31	
272.914	3.30	SPT		31	2	10	88				Non	Plastic					
271.414	4.80	SPT	Silty clay of Medium Plasticity (CI)	26	1	7	92				54	27					
269.914	6.30	SPT		31	2	6	92				48	26					
268.414	7.80	SPT		35	0	44	56				Non	Plastic					
267.714	8.50	UDS						1.92	1.64	16.70				DST	0.15	31	
266.914	9.30	SPT	Sandy Silt (SM-ML)	33	0	46	54				Non	Plastic					
265.414	10.80	SPT		34	0	36	64				Non	Plastic					
264.714	11.50	UDS						1.86	1.59	16.70				DST	0.15	30	
263.914	12.30	SPT		26	0	4	96				Non	Plastic					
262.414	13.80	SPT		25	2	6	92				44	24	2.68	UU	1.21	4	0.069
261.714	14.50	USD						1.84	1.57	16.86	47	26					
260.914	15.30	SPT		48	0	52	48										
259.414	16.80	SPT	Silty clay of Medium to High Plasticity (CI-CH)	31	0	5	95										
258.714	17.50	USD						1.87	1.60	17.23	50	26	2.71	UU	1.33	4	
257.914	18.30	SPT		30	2	18	80				51	29					
256.414	19.80	SPT		28	0	5	95				52	25					
255.714	20.50	USD						1.84	1.55	18.48				UU	1.26	5	0.068
254.914	21.30	SPT		47	0	34	66				Non	Plastic					
253.414	22.80	SPT		41	0	45	55				Non	Plastic					
251.914	24.30	SPT	Sandy Silt (SM-ML)	30	4	13	83				Non	Plastic					
250.414	25.80	SPT		34	6	8	86				Non	Plastic					
248.914	27.30	SPT		24	2	7	91				Non	Plastic					
247.414	28.80	SPT		29	1	2	97				Non	Plastic					
245.914	30.30	SPT		35	5	14	81				Non	Plastic					

BH-1
DEPTH = 2.50 m.



(Shear stress - shear strain relationship)



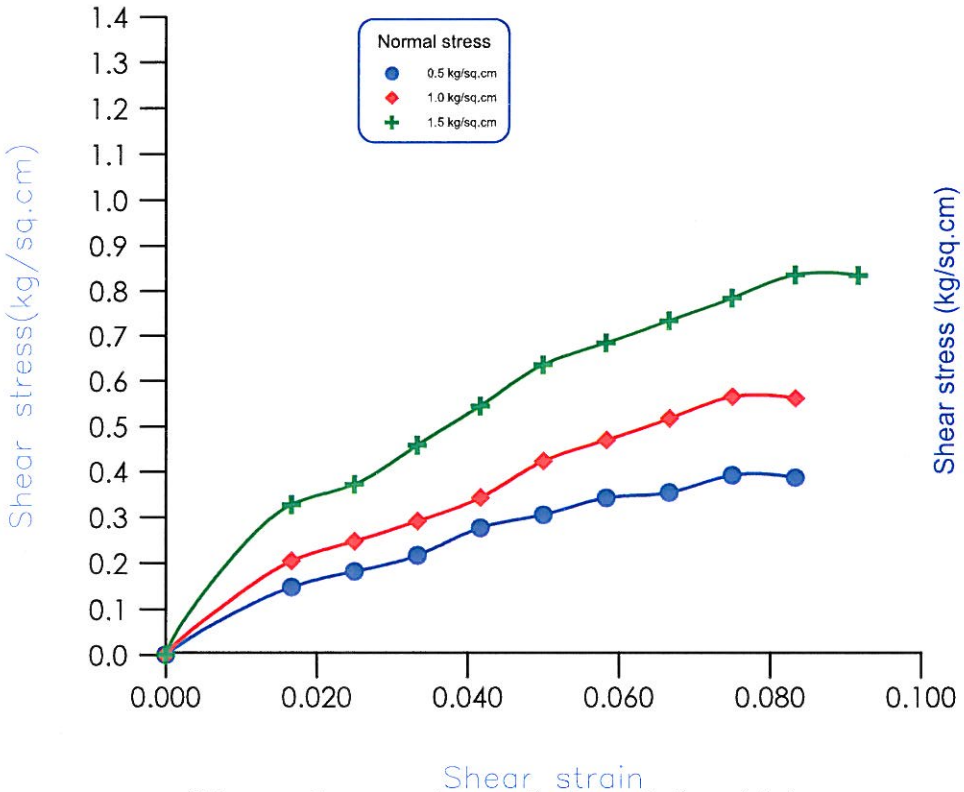
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

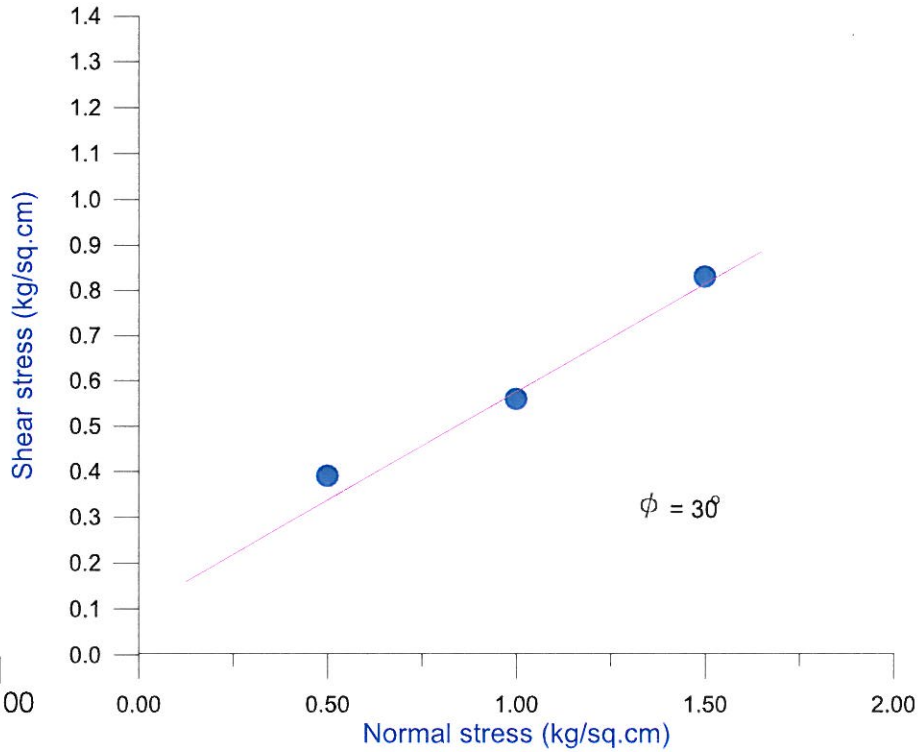
FIG- DS-BO1

6229

BH-1
DEPTH = 5.50 m.



(Shear stress - shear strain relationship)

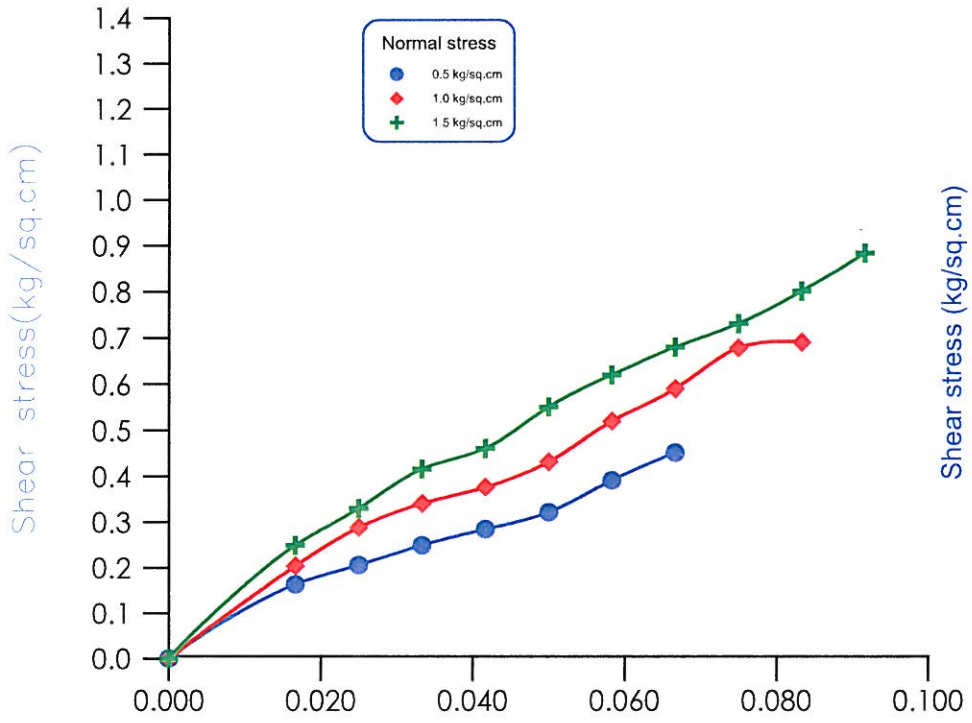


(Shear stress - Normal stress relationship)

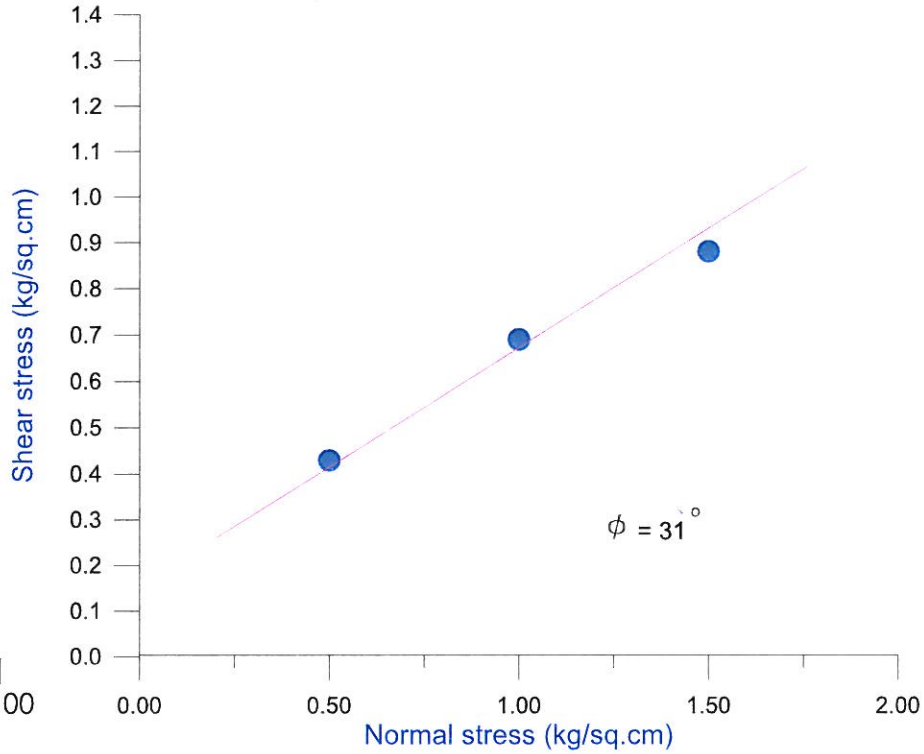
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BO2

BH-1
DEPTH = 17.50 m.

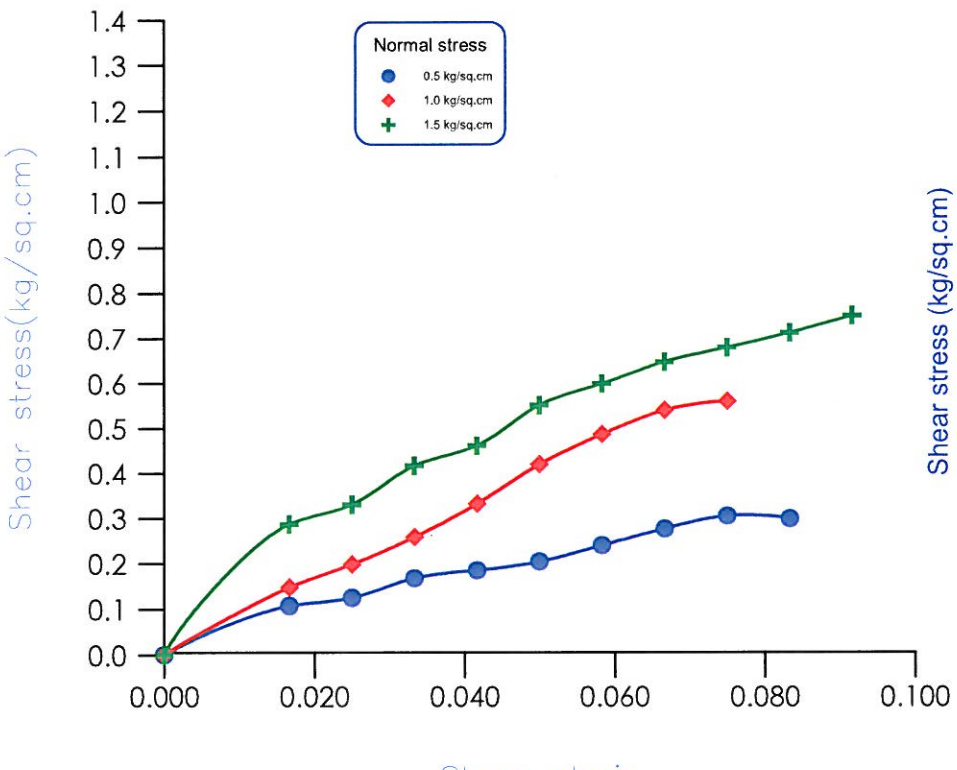


(Shear stress - shear strain relationship)

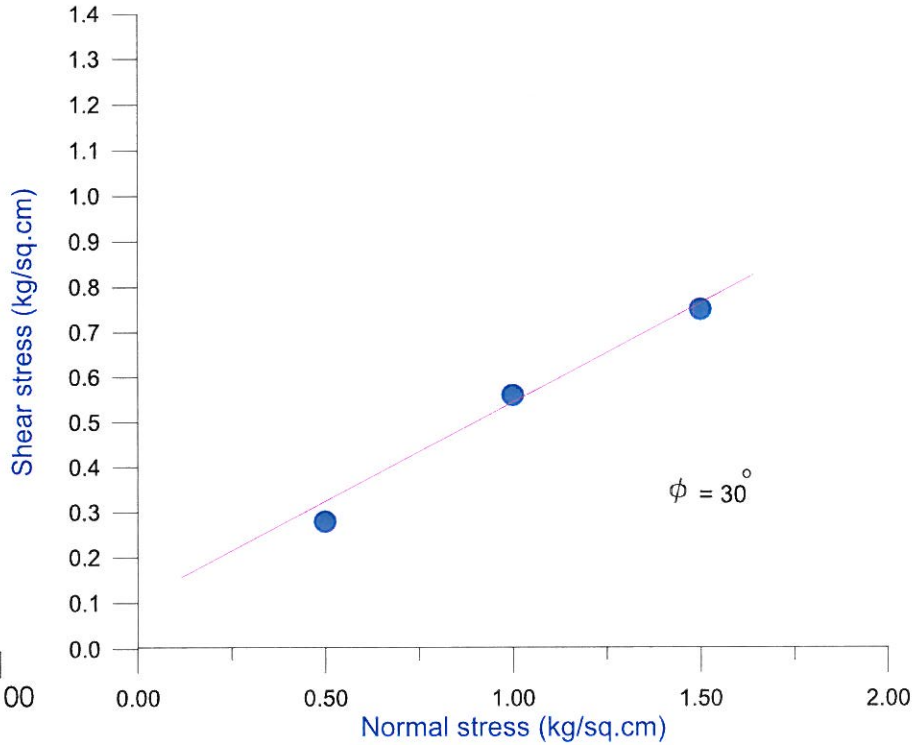


(Shear stress - Normal stress relationship)

BH-2
DEPTH = 2.50 m.



(Shear stress - shear strain relationship)

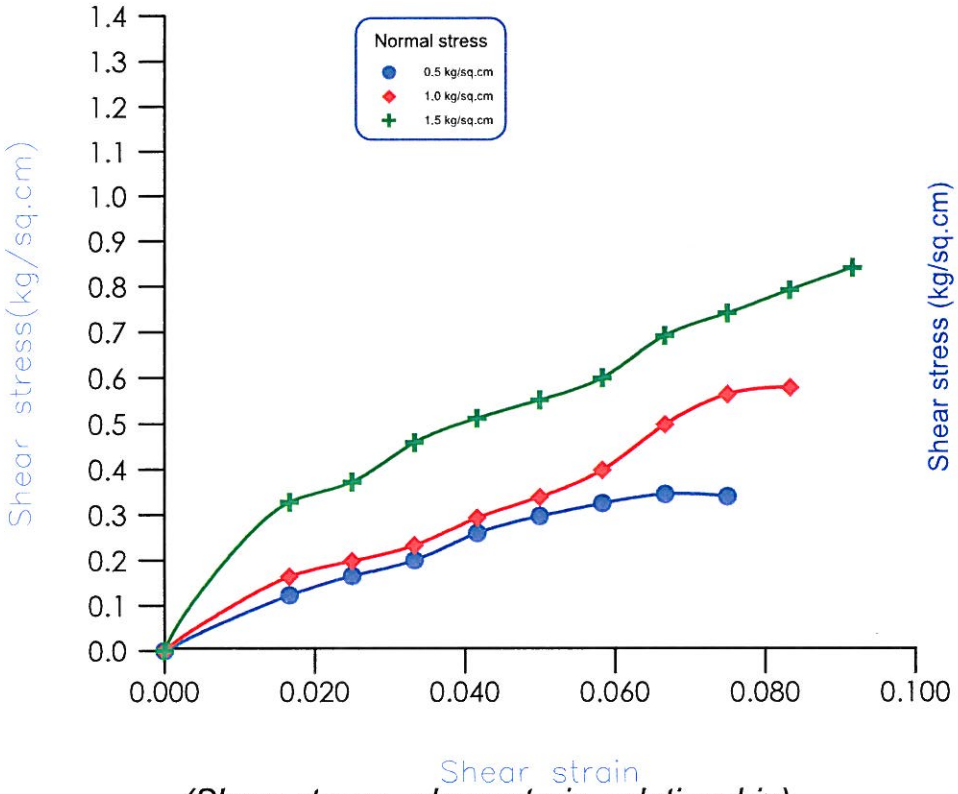


(Shear stress - Normal stress relationship)

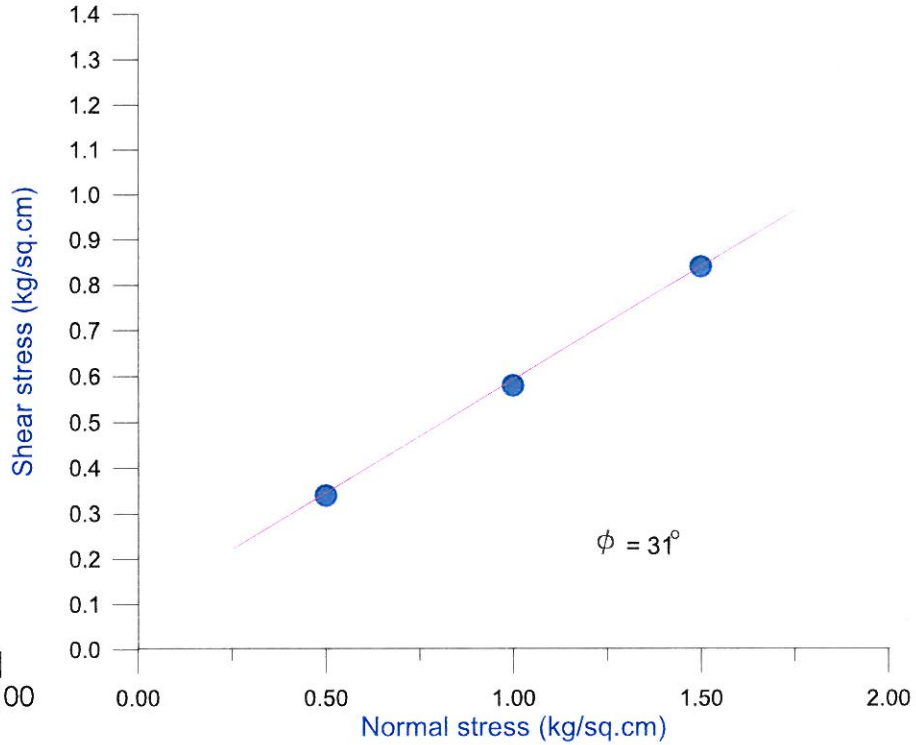
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BO4

BH-2
DEPTH = 8.50 m.



(Shear stress - shear strain relationship)



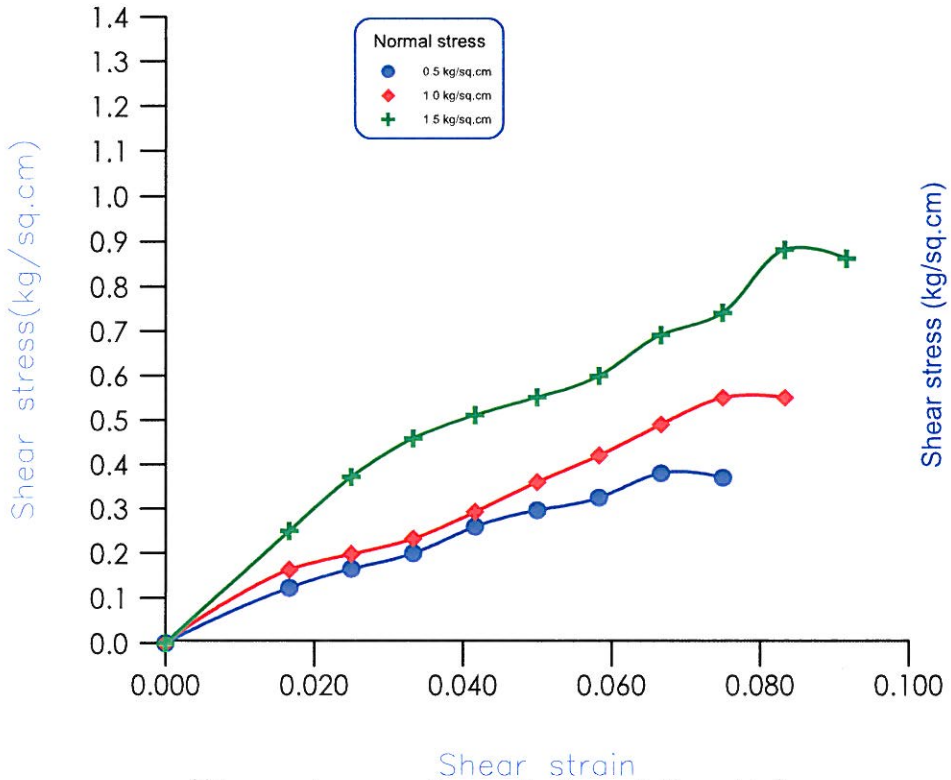
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

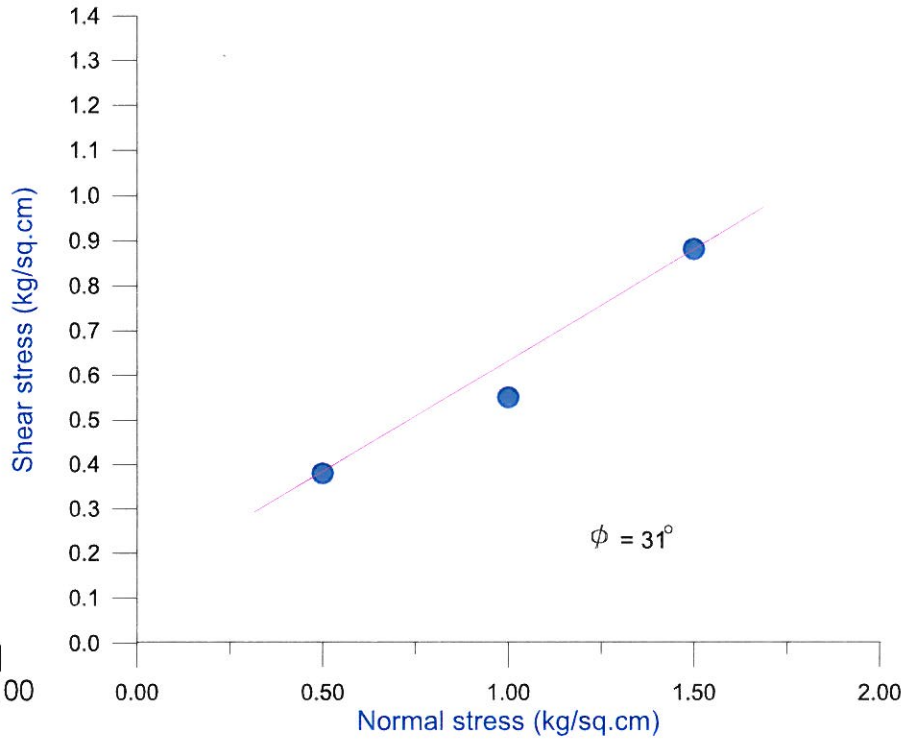
FIG- DS-BO5

0233

BH-3
DEPTH = 8.50 m.



(Shear stress - shear strain relationship)

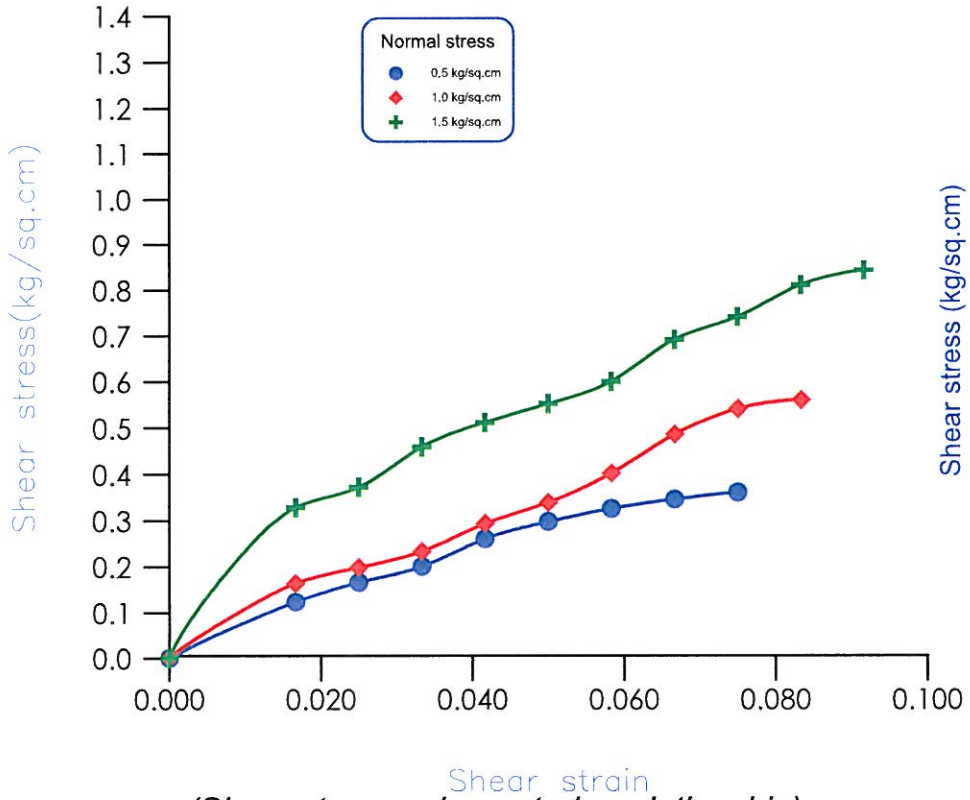


(Shear stress - Normal stress relationship)

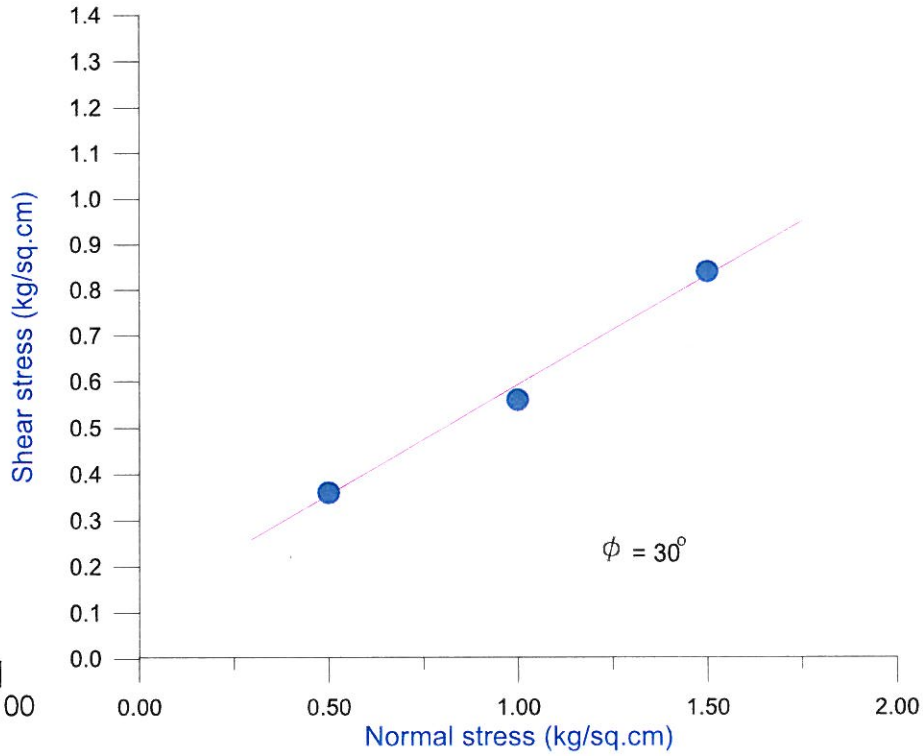
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BO6

BH-3
DEPTH = 11.50 m.



(Shear stress - shear strain relationship)



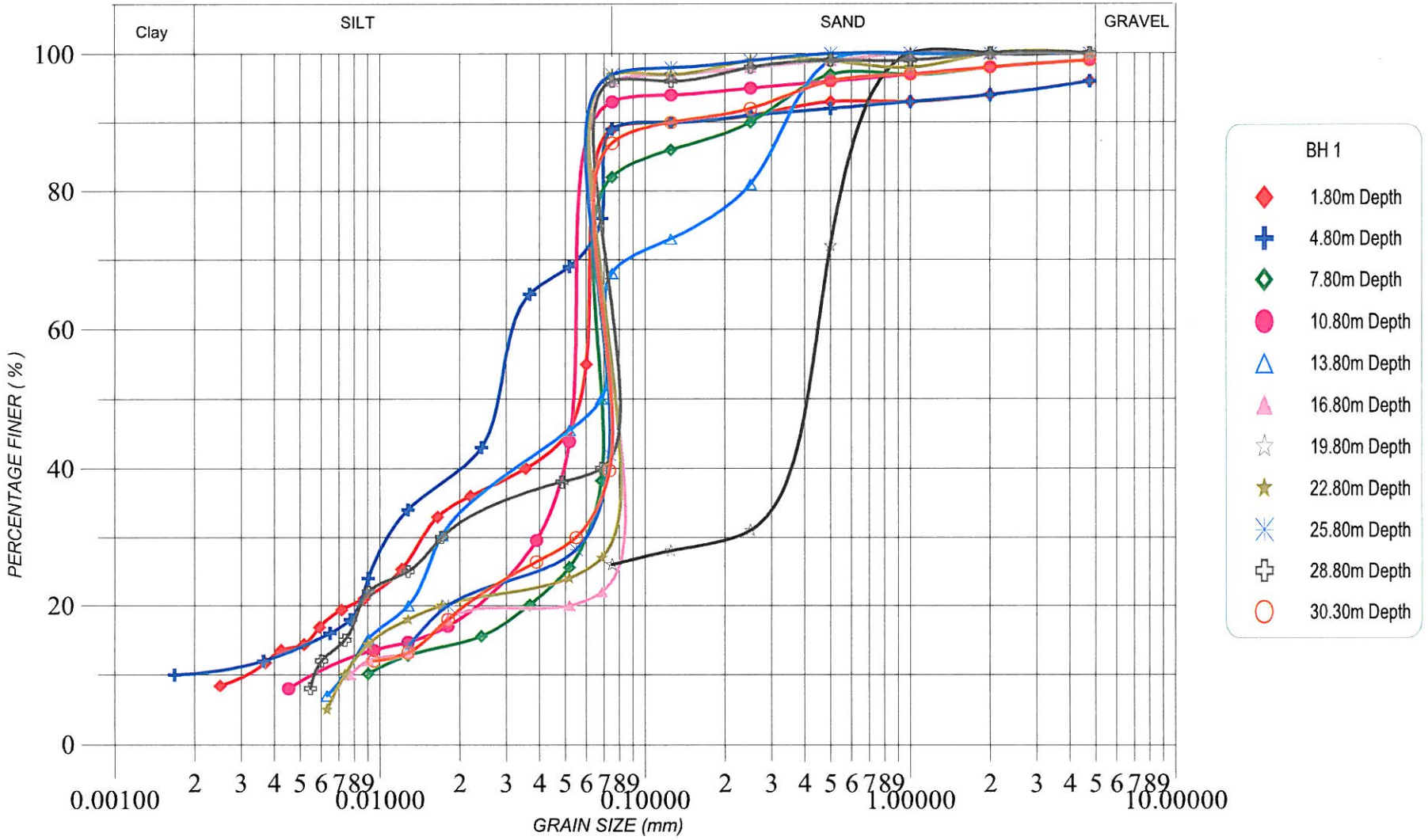
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS -BO7

0233

GRAIN SIZE DRISTRIBUTION CURVE



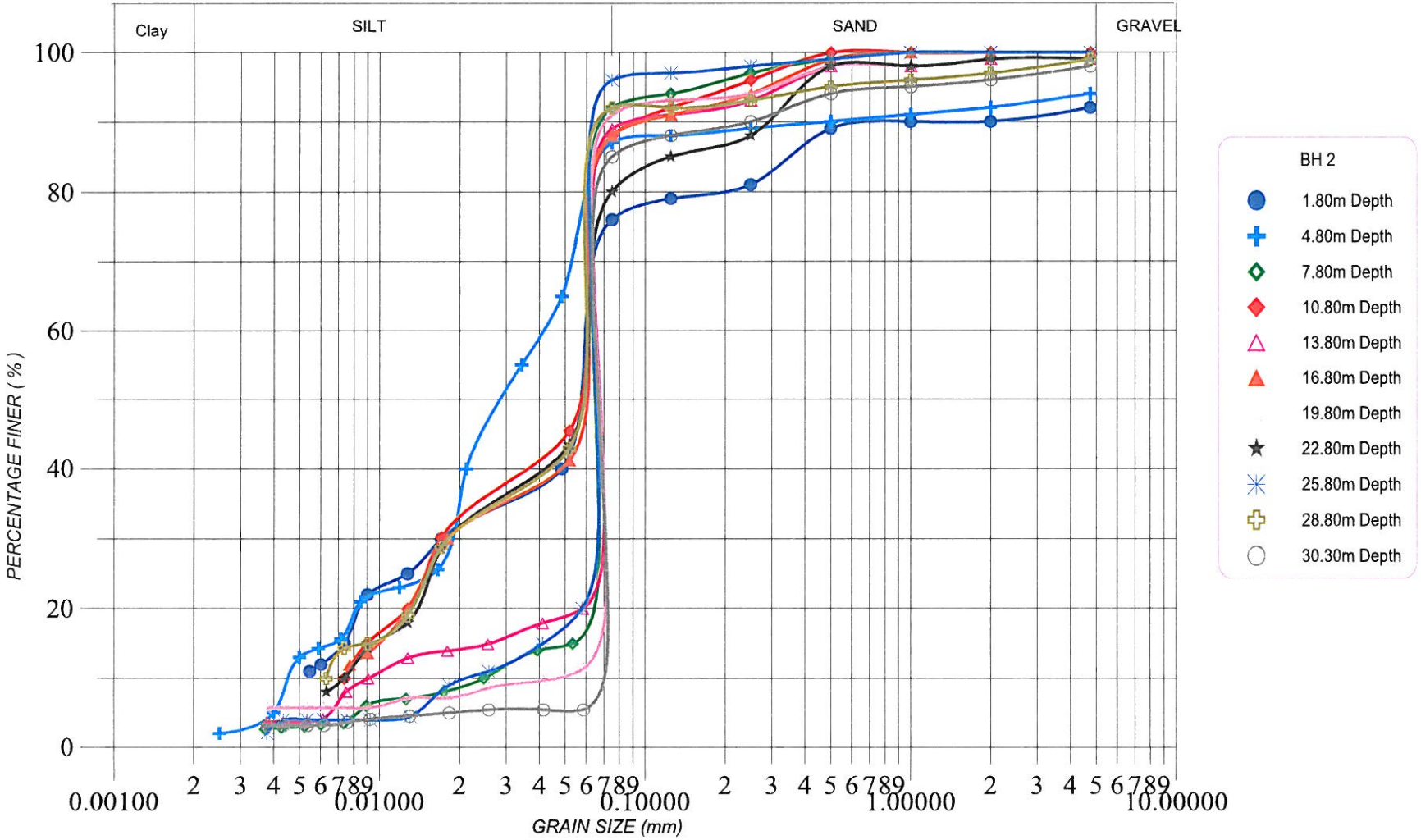
PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BO1

Soil Engineering Consultants

Job:1813

GRAIN SIZE DRISTRIBUTION CURVE

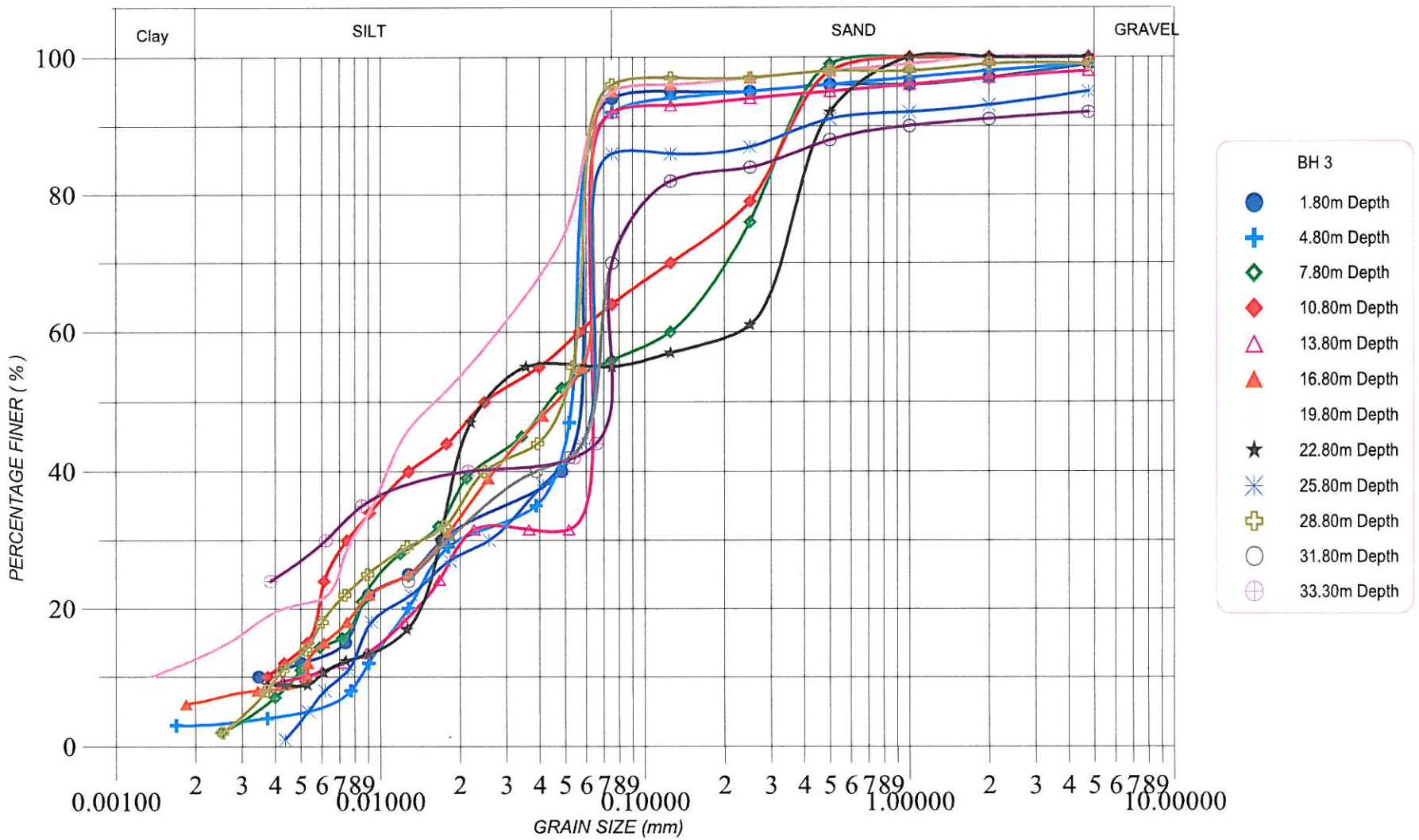


0237

PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BO2

GRAIN SIZE DRISTRIBUTION CURVE

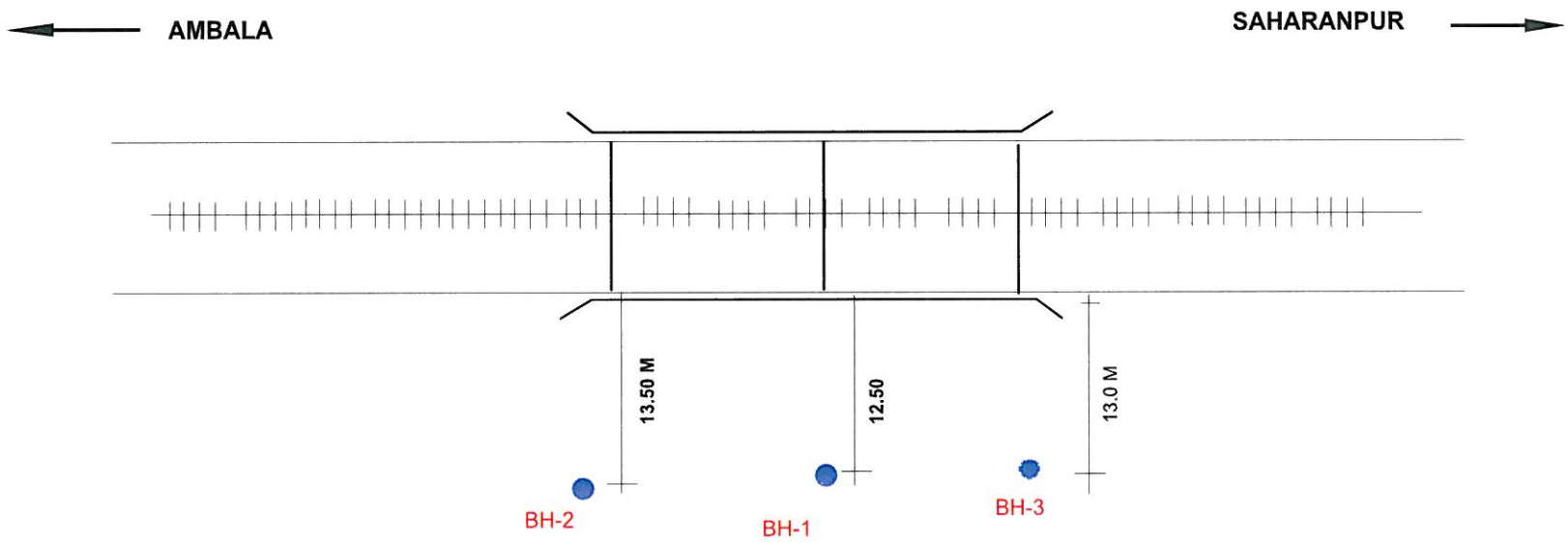


PROJECT: Geotechnical Investigation work for the proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-BO3

SOIL ENGINEERING CONSULTANTS

Job No: 1813



BRIDGE 267 @ CH 227/23-25

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

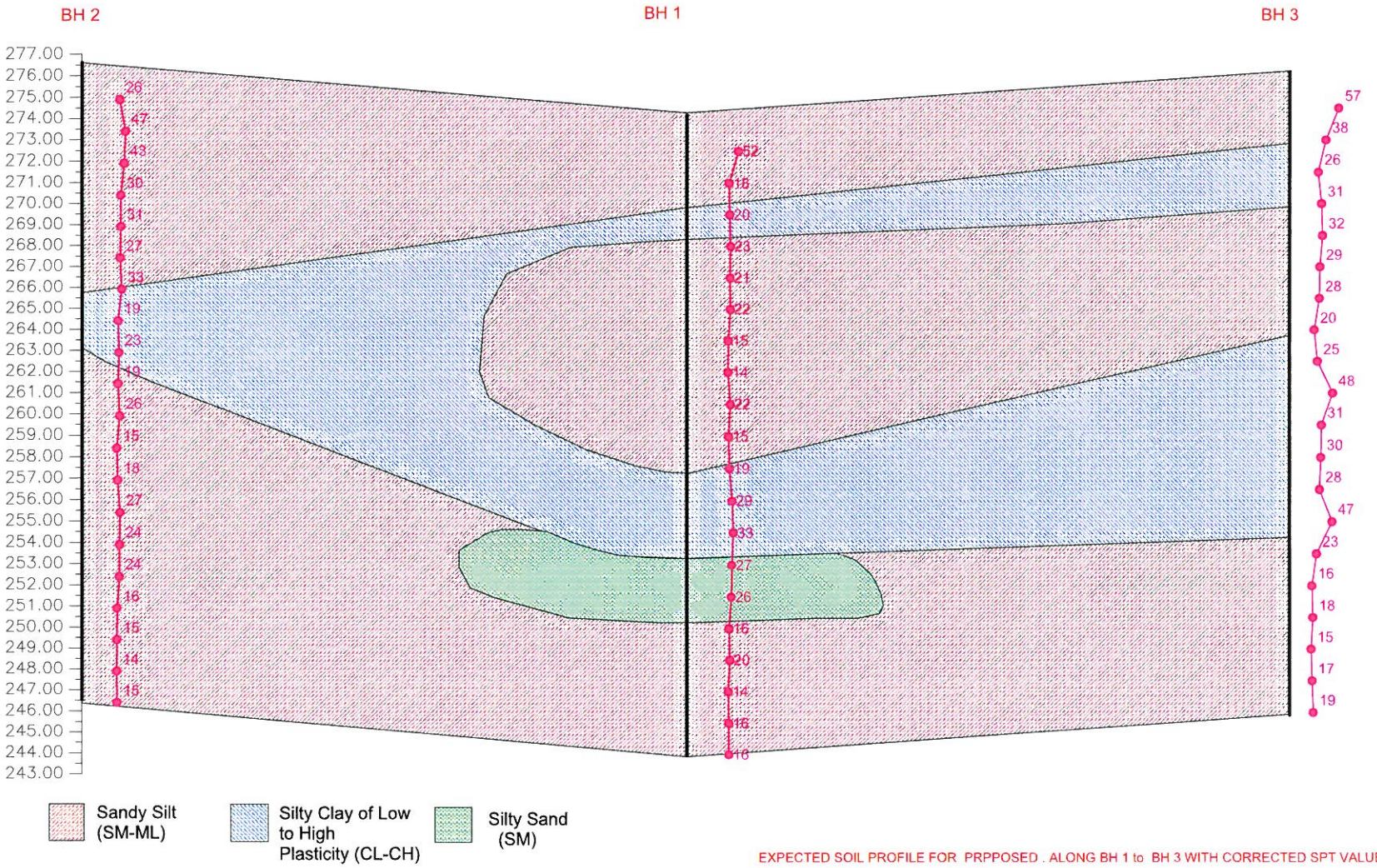
Fig: Plan-BO

0239

Soil Enginering Consultants

BR@ 267 227/23-25

Project No. 1813



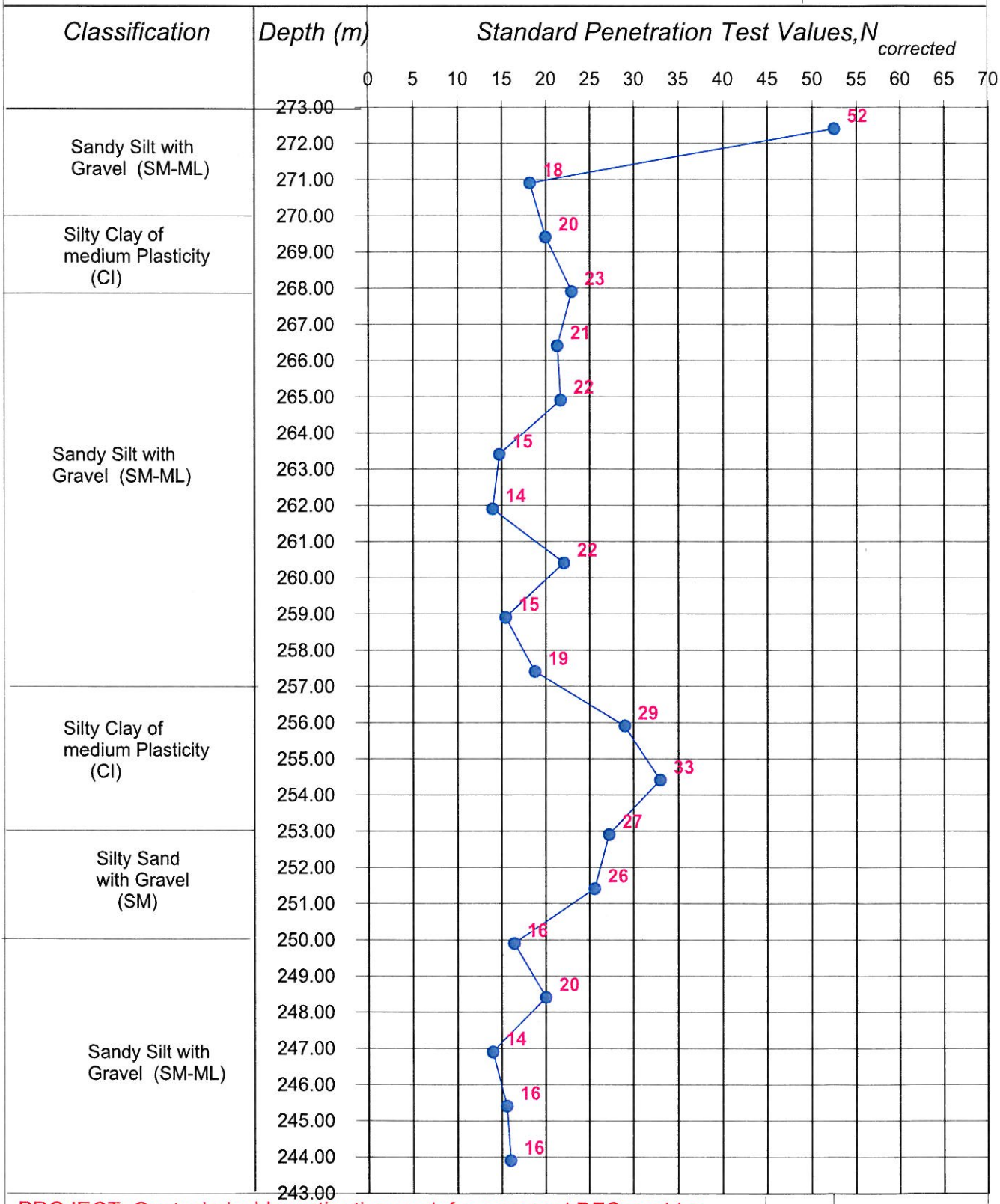
EXPECTED SOIL PROFILE FOR PRPPOSED . ALONG BH 1 to BH 3 WITH CORRECTED SPT VALUES

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Figure : Soilpro BO

0240

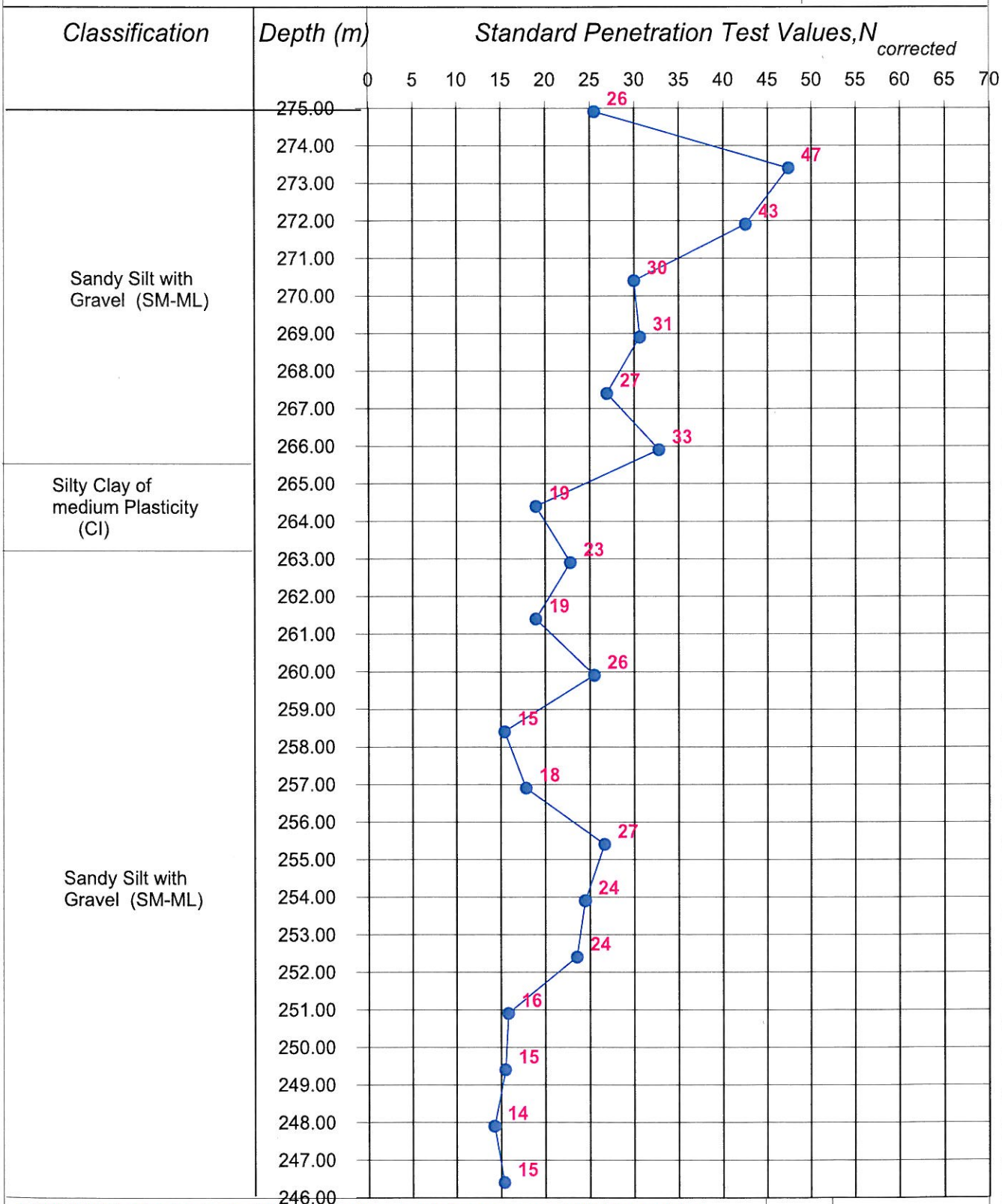
SOIL ENGINEERING CONSULTANTS | BR@ 267 227/23-25 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-1 | Fig: SP--BO1

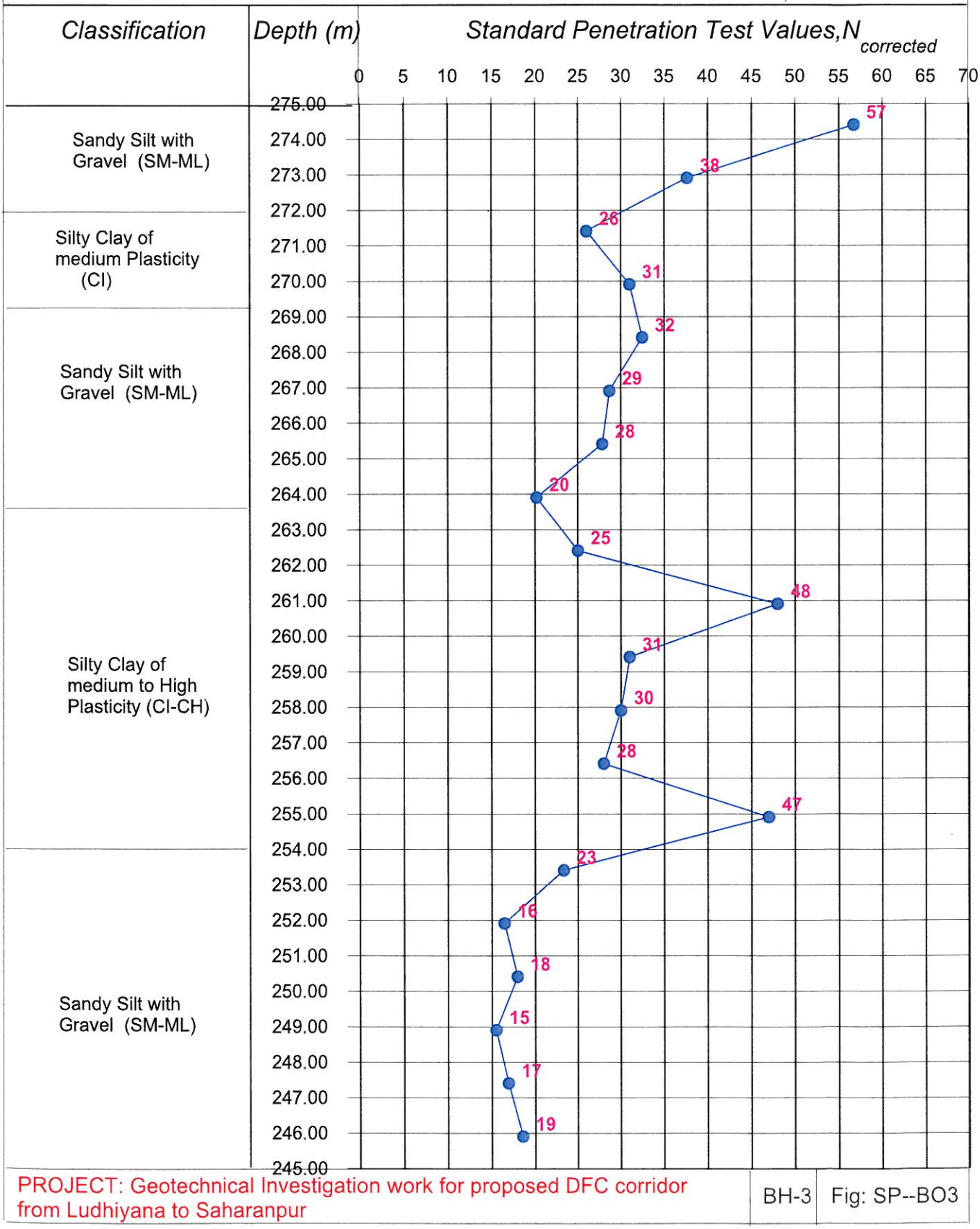
0241

SOIL ENGINEERING CONSULTANTS | BR@ 267 227/23-25 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP--BO2

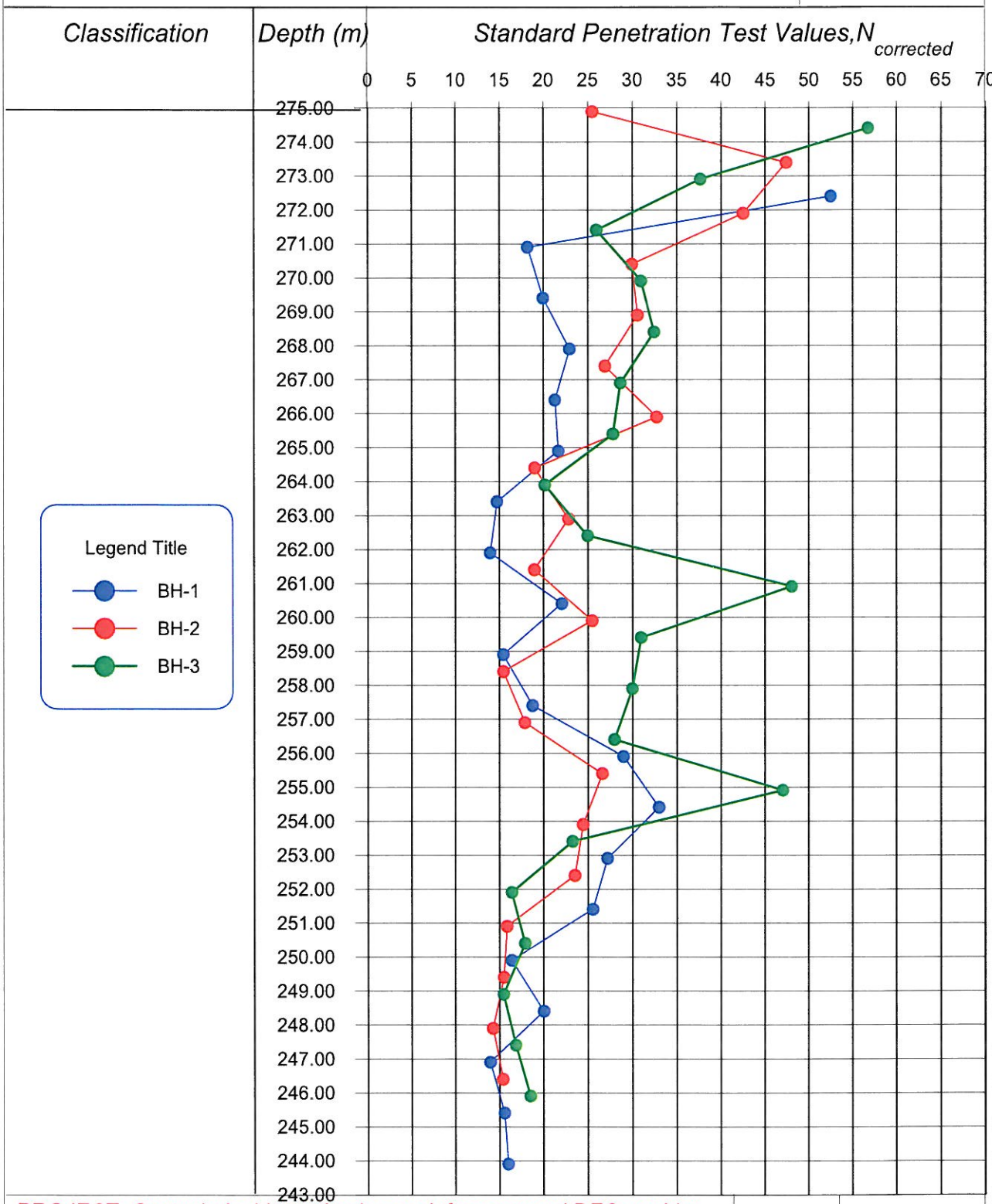
SOIL ENGINEERING CONSULTANTS | BR@ 267 227/23-25 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-3 | Fig: SP--BO3

0243

SOIL ENGINEERING CONSULTANTS | BR@ 267 227/23-25 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH1 to 3 | Fig: ASP-BOI

BORE LOG

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Project No. 1813 Bridge : 268 RL: 277.254

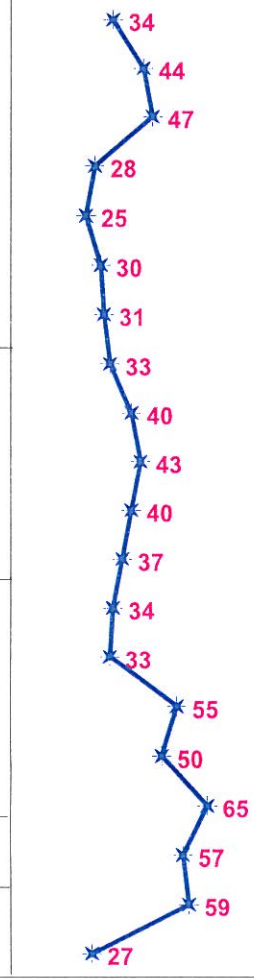
Location; 228-25-27
BH No.: 1
Depth : 30.00M
Depth of Water table : 29.50m

Date of start : 06/05/2008
Date of finish : 08/05/2008

SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	Grain size (%)			Density (gm/cc)		W/C	Limits (%)		Sp.Gr	Shear Parameters			Cc
				Gravel	Sand	Silt/clay	r(wet)	r(dry)	W(%)	L.L	P . L		Type of test	C(kg/sq.cm)	phi(degrees)	
277.254																
275.754	1.50	DS		2	8	90				Non	Plastic					
275.454	1.80	SPT		2	6	92				Non	Plastic					
274.754	2.50	UDS					2.11	1.85	13.70				DST	0.1	32	
273.954	3.30	SPT		3	13	84				Non	Plastic					
272.454	4.80	SPT		0	14	86				Non	Plastic					
271.754	5.50	UDS	Sandy Silt with gravel (SM-ML)				1.81	1.56	14.48				DST	0.1	32	
270.954	6.30	SPT		0	39	61				Non	Plastic					
269.454	7.80	SPT		0	22	78				Non	Plastic					
268.754	8.50	UDS					1.82	1.58	15.11			2.67	DST	0.15	31	
267.954	9.30	SPT		0	39	61				Non	Plastic					
266.454	10.80	SPT		0	31	69				Non	Plastic					
265.754	11.50	UDS					1.86	1.60	16.23			2.69	DST		32	
264.954	12.30	SPT		0	77	23				Non	Plastic					
263.454	13.80	SPT		0	82	18				Non	Plastic					
262.754	14.50	USD					1.89	1.62	16.40				DST	0.1	32	
261.954	15.30	SPT	Silty Sand (SM)	0	61	39				Non	Plastic					
260.454	16.80	SPT		0	81	19				Non	Plastic					
259.754	17.50	USD					1.89	1.62	16.84				DST	0.15	32	
258.954	18.30	SPT		0	56	44				Non	Plastic					
257.454	19.80	SPT		0	29	71				Non	Plastic					
256.754	20.50	USD					1.85	1.58	17.24				DST	0.1	31	
255.954	21.30	SPT	Sandy Silt with gravel (SM-ML)	0	3	97				Non	Plastic					
254.454	22.80	SPT		0	29	71				Non	Plastic					
252.954	24.30	SPT		0	45	55				Non	Plastic					
251.454	25.80	SPT		3	6	91				Non	Plastic					
249.954	27.30	SPT	Silty Sand (SM)	0	59	41				Non	Plastic					
248.454	28.80	SPT	Sandy Silt with gravel (SM-ML)	0	23	77				Non	Plastic					
246.954	30.30	SPT		2	38	60				Non	Plastic					

S.P.T Plot — Observed



0245