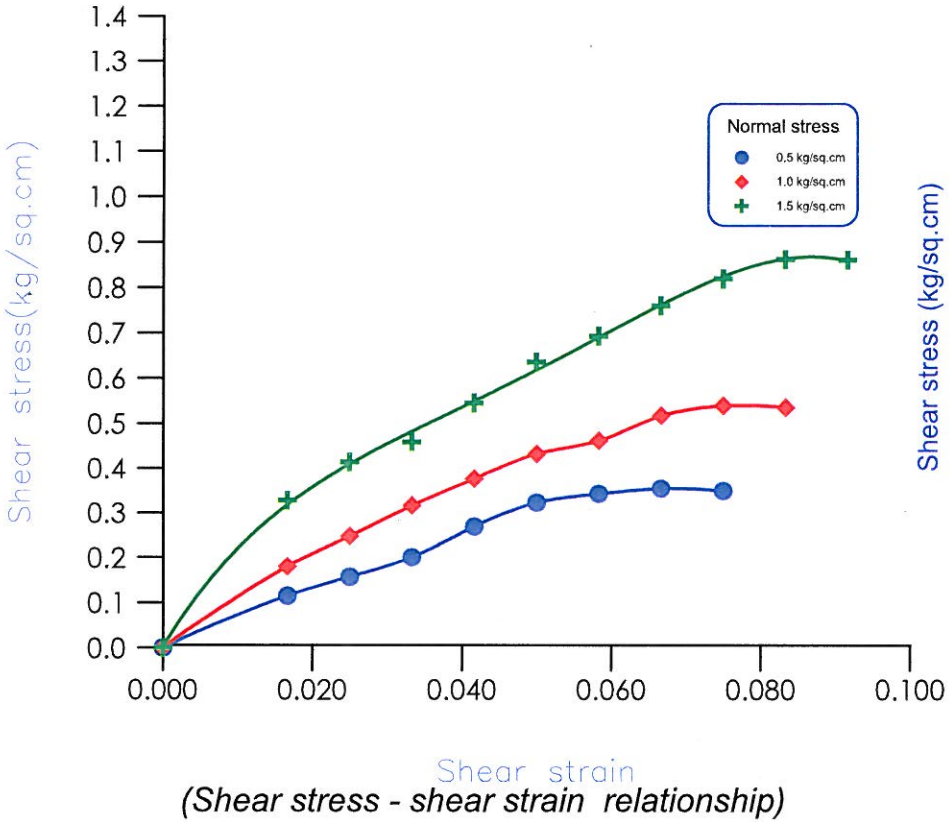
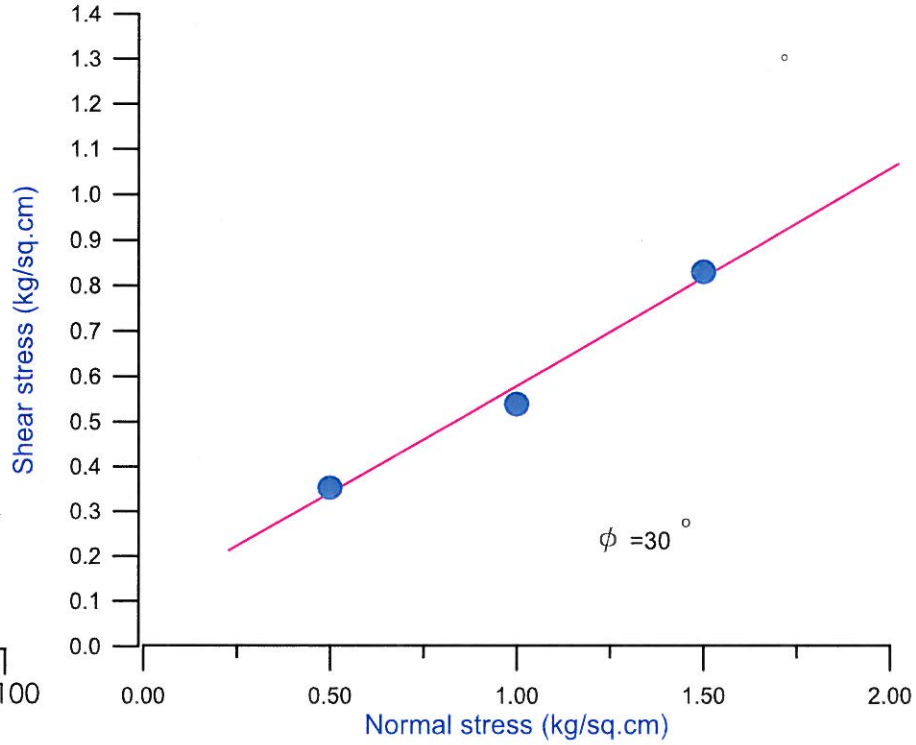
BH-1
Depth-14.50m



(Shear stress - shear strain relationship)

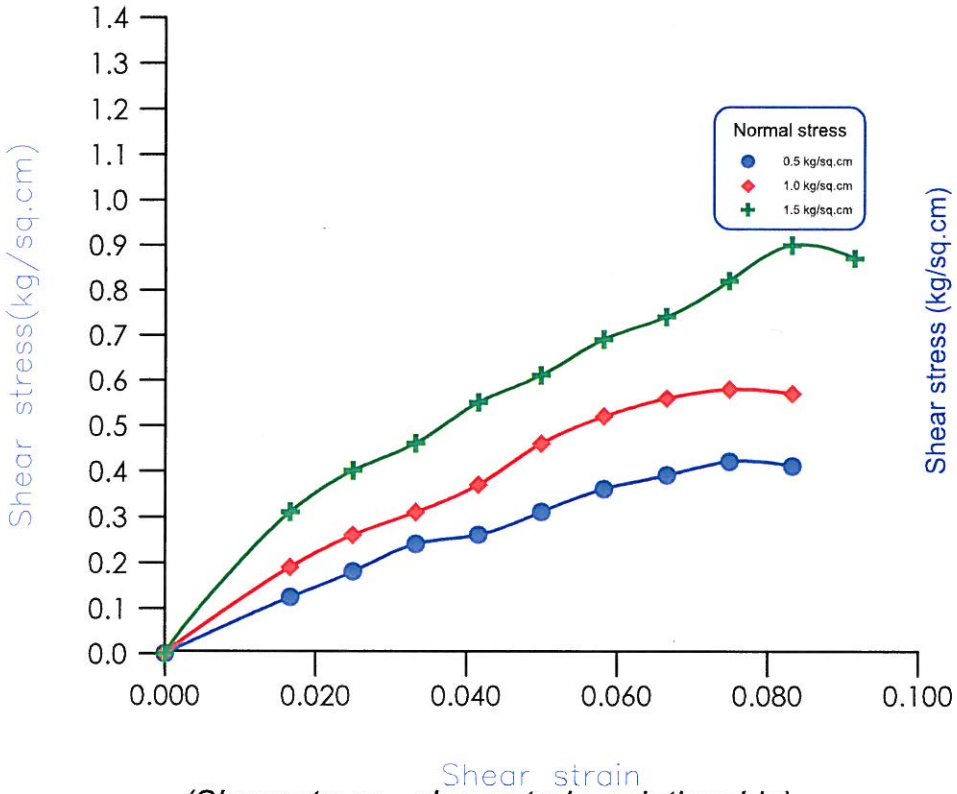


(Shear stress - Normal stress relationship)

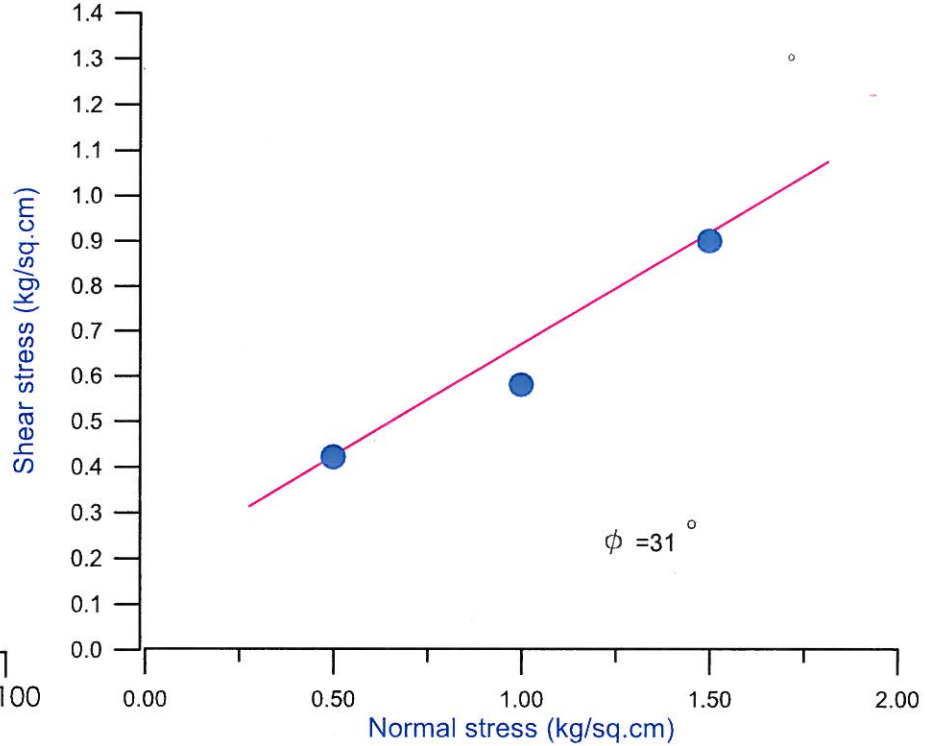
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BZ3

BH-2
Depth-5.50m



(Shear stress - shear strain relationship)

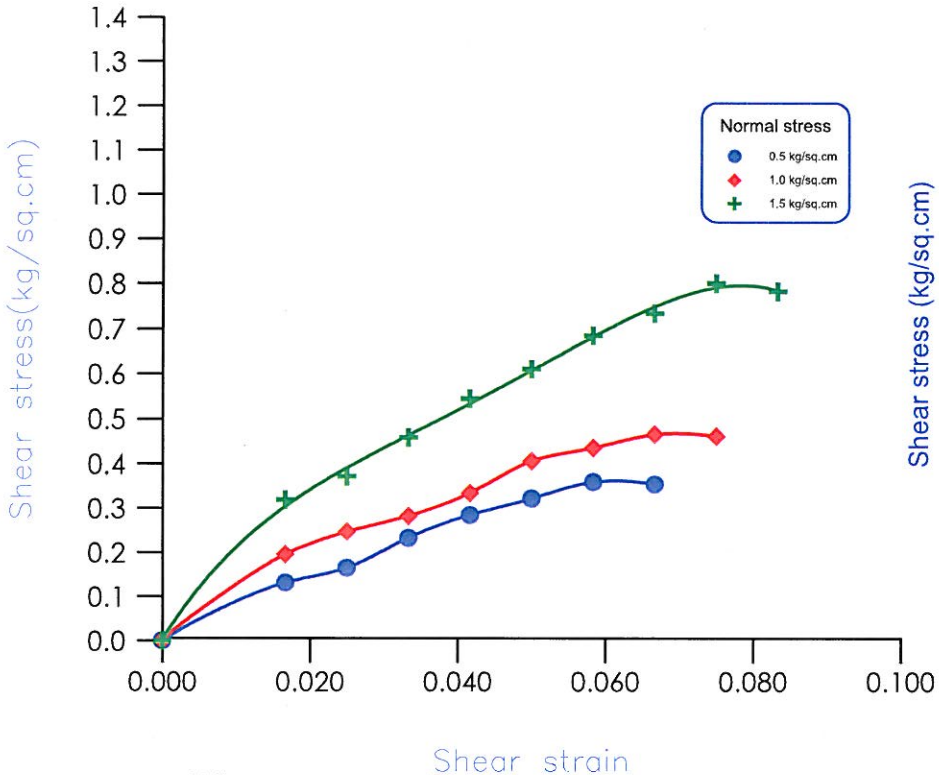


(Shear stress - Normal stress relationship)

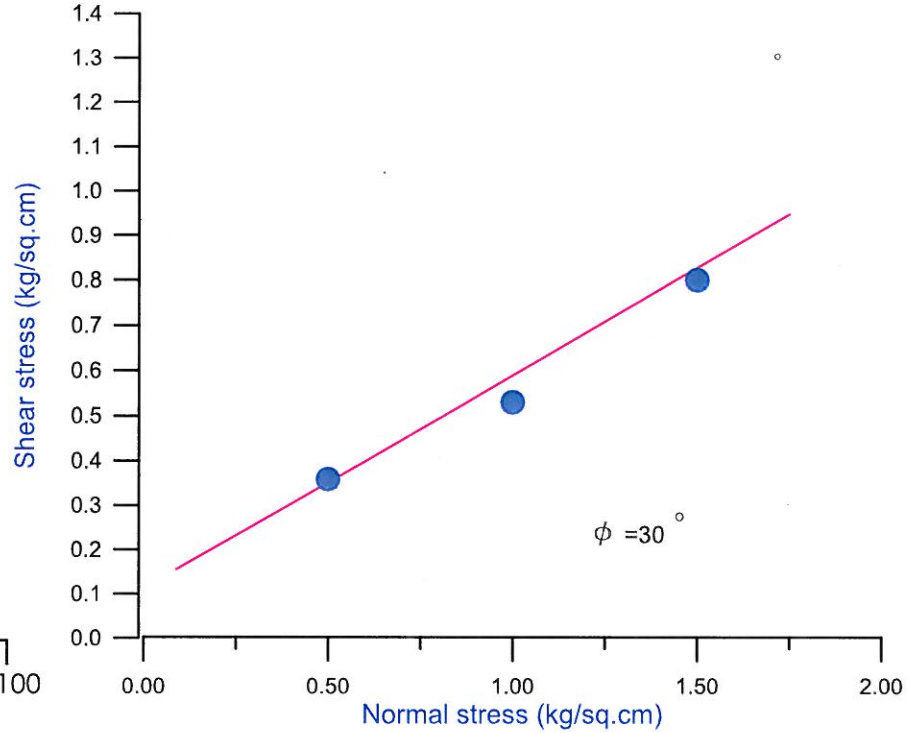
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BZ4

BH-2
Depth-8.50m



(Shear stress - shear strain relationship)

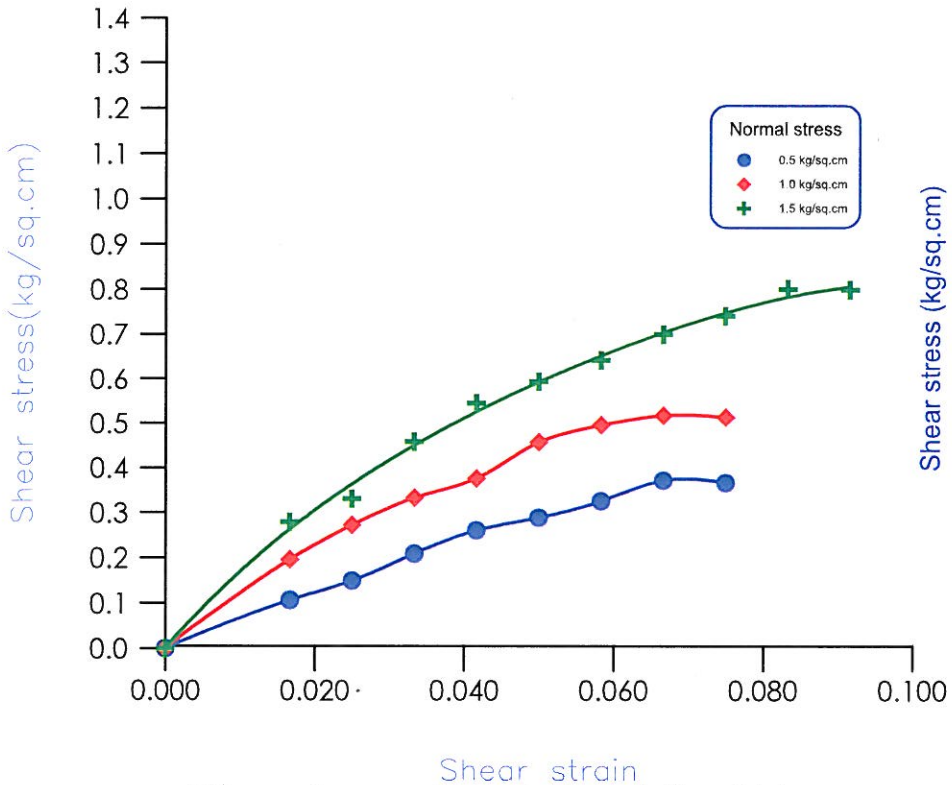


(Shear stress - Normal stress relationship)

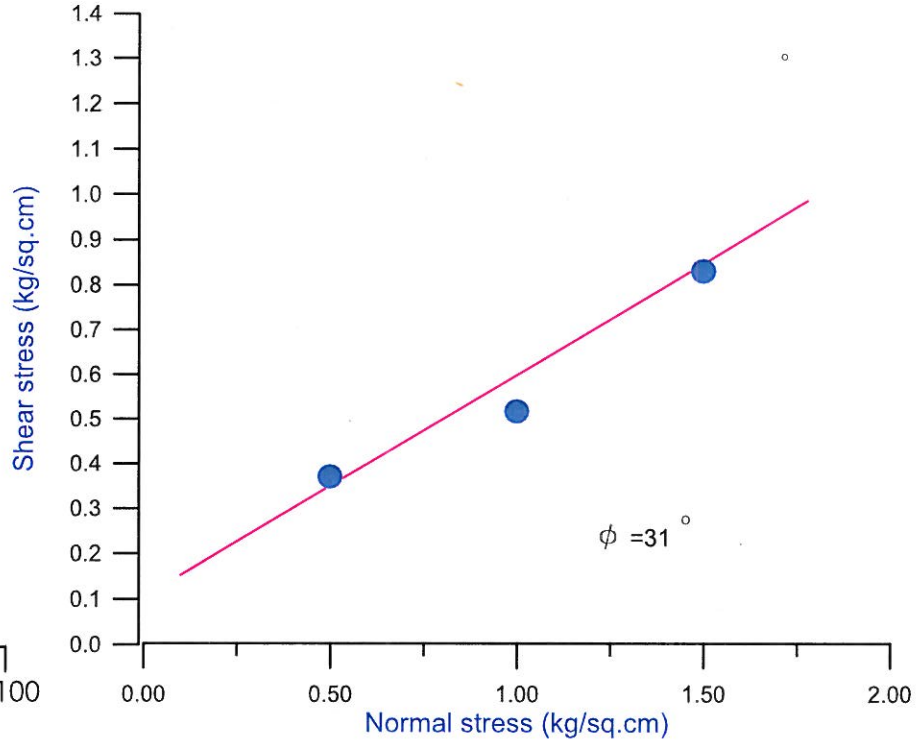
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur FIG- DS-BZ5

0327

BH-2
Depth-14.50m



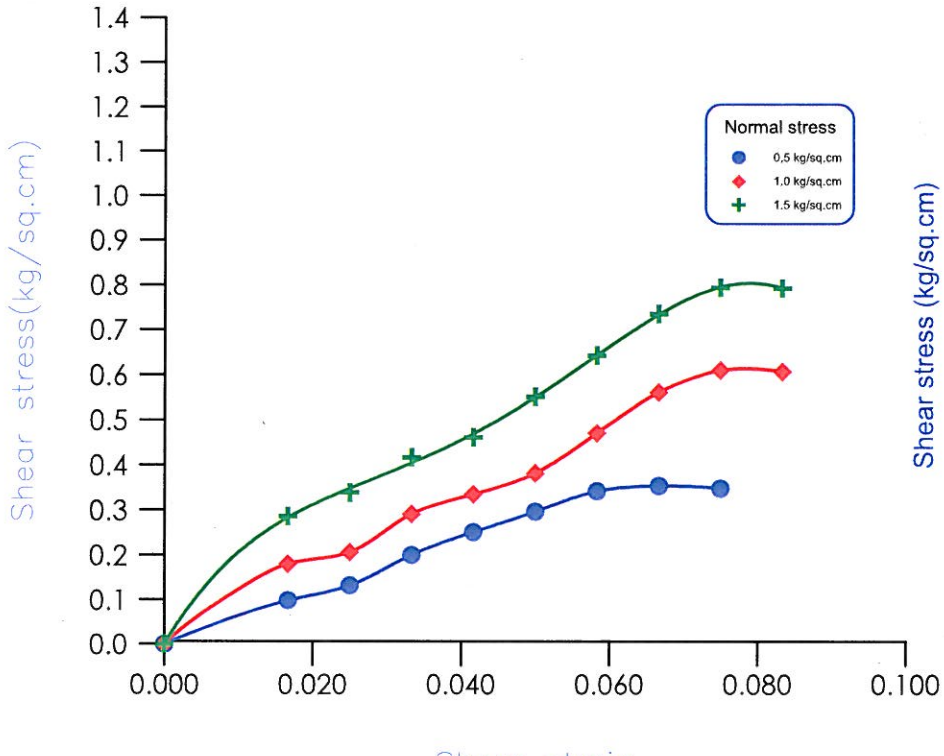
(Shear stress - shear strain relationship)



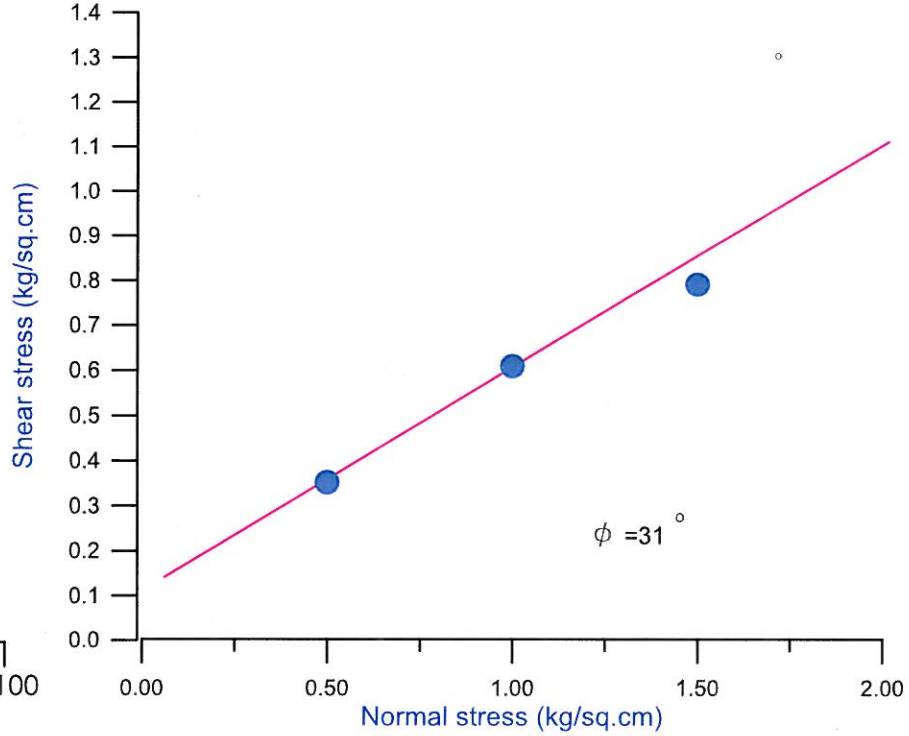
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work along Mathura Road from Badarpur to Faridabad (Goodyear Chowk) for DMRC. FIG- DS-BZ6

BH-3
Depth-2.50m



(Shear stress - shear strain relationship)



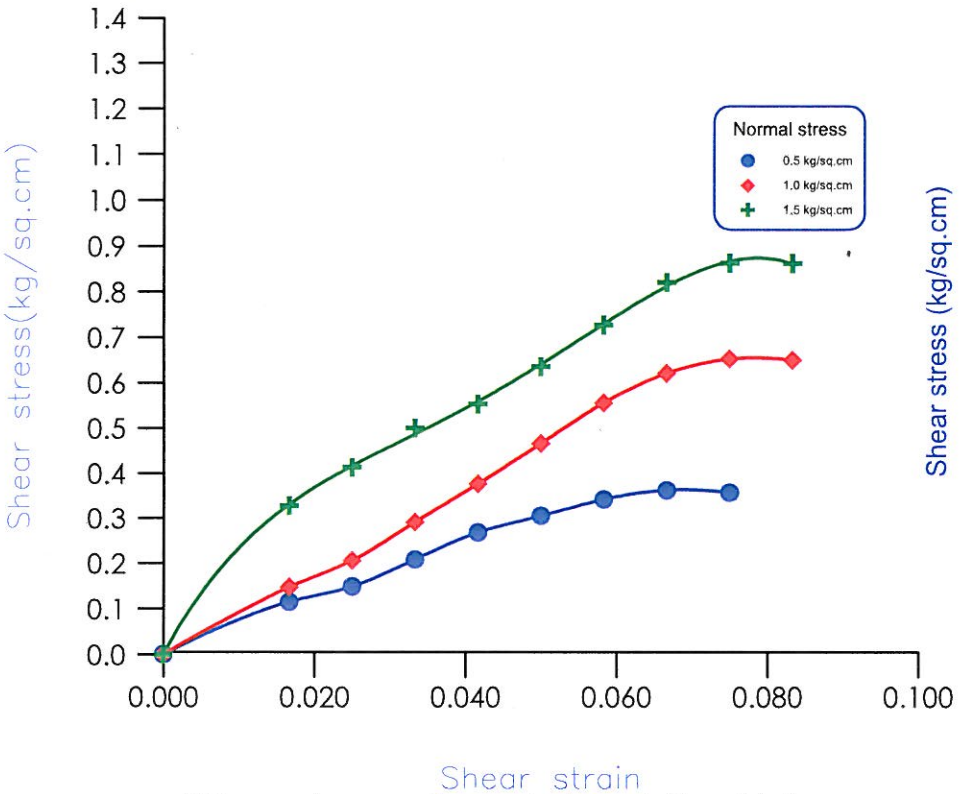
(Shear stress - Normal stress relationship)

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

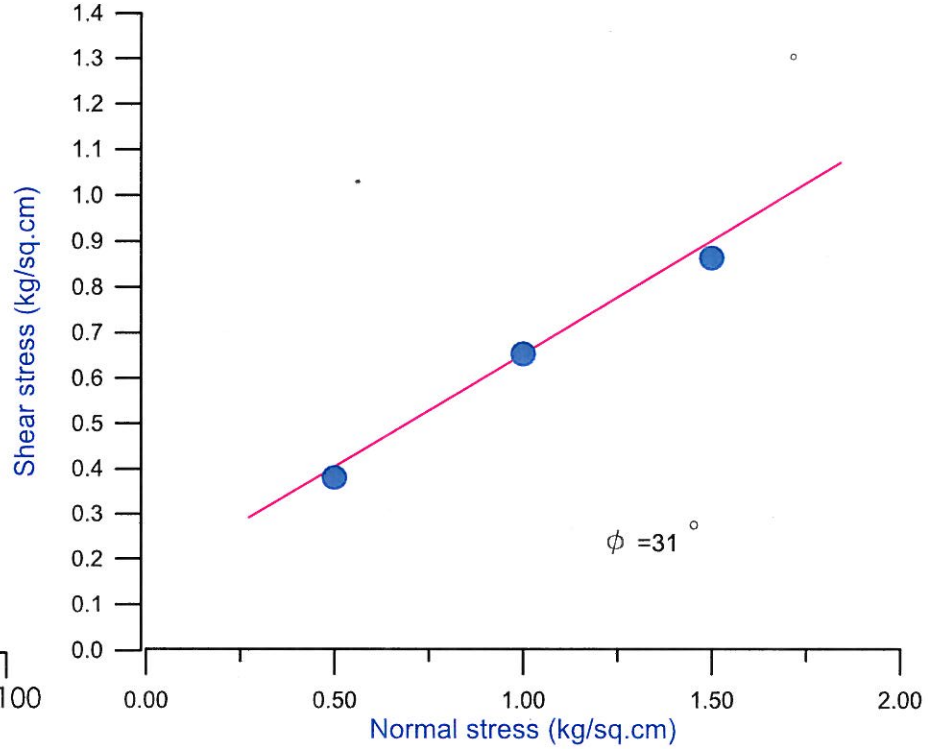
FIG- DS-BZ7

0329

BH-3
Depth-5.50m



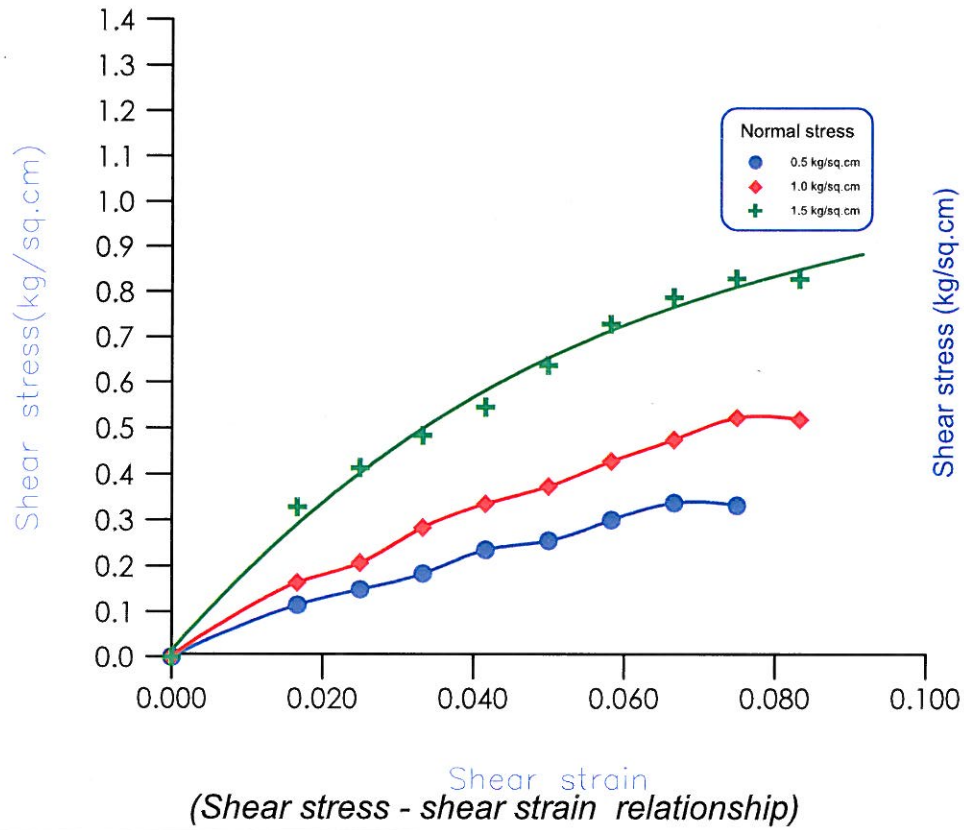
(Shear stress - shear strain relationship)



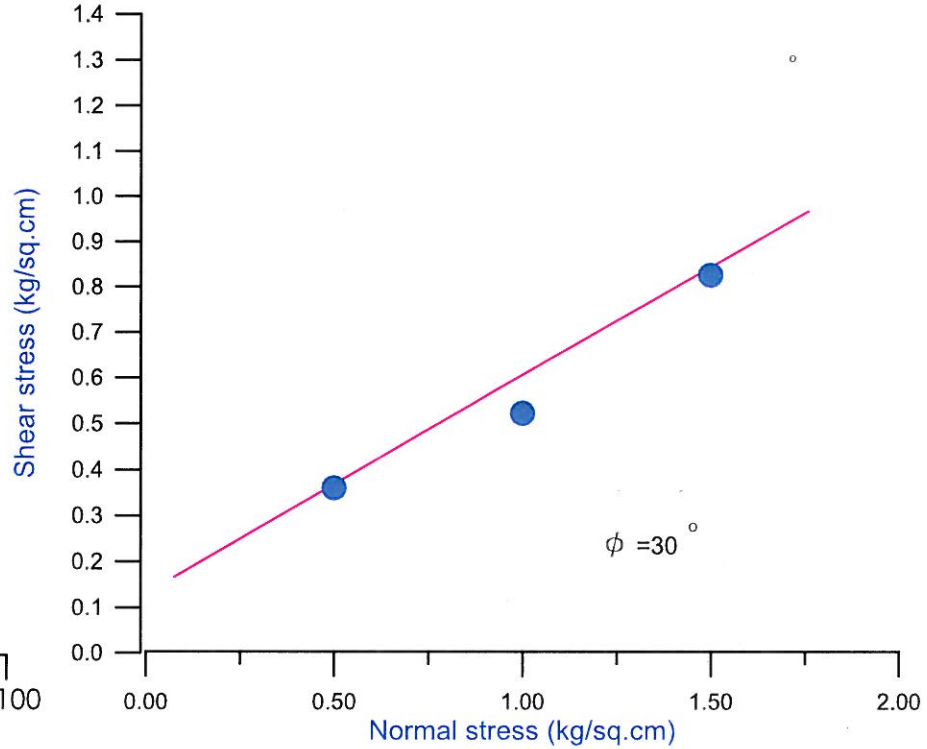
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur FIG- DS-BZ8

BH-3
Depth-8.50m



(Shear stress - shear strain relationship)



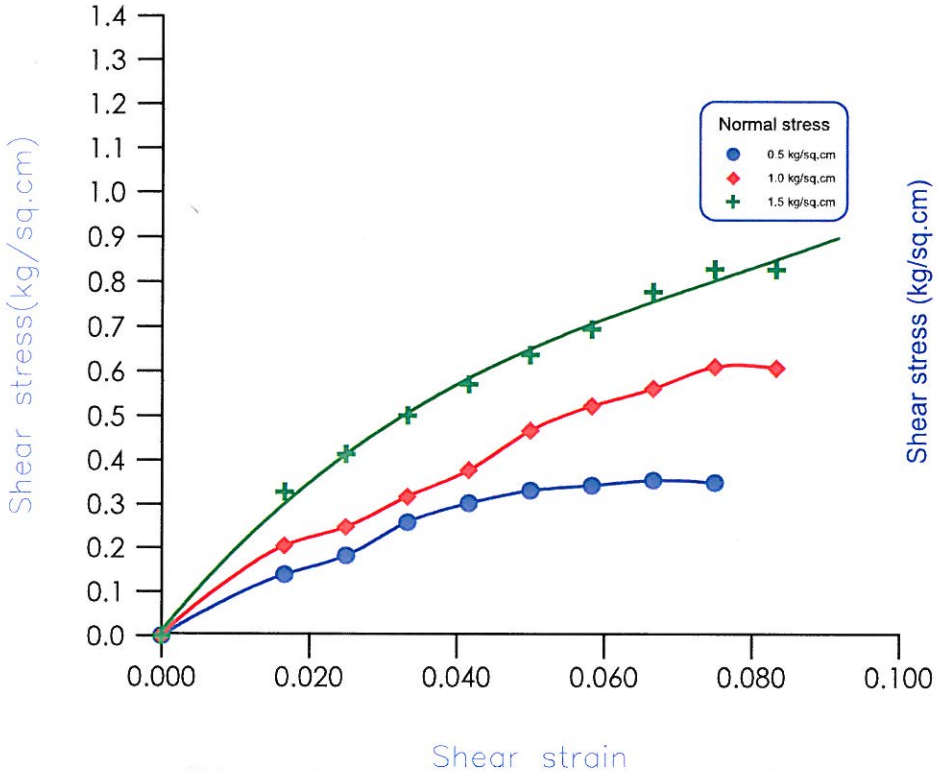
(Shear stress - Normal stress relationship)

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

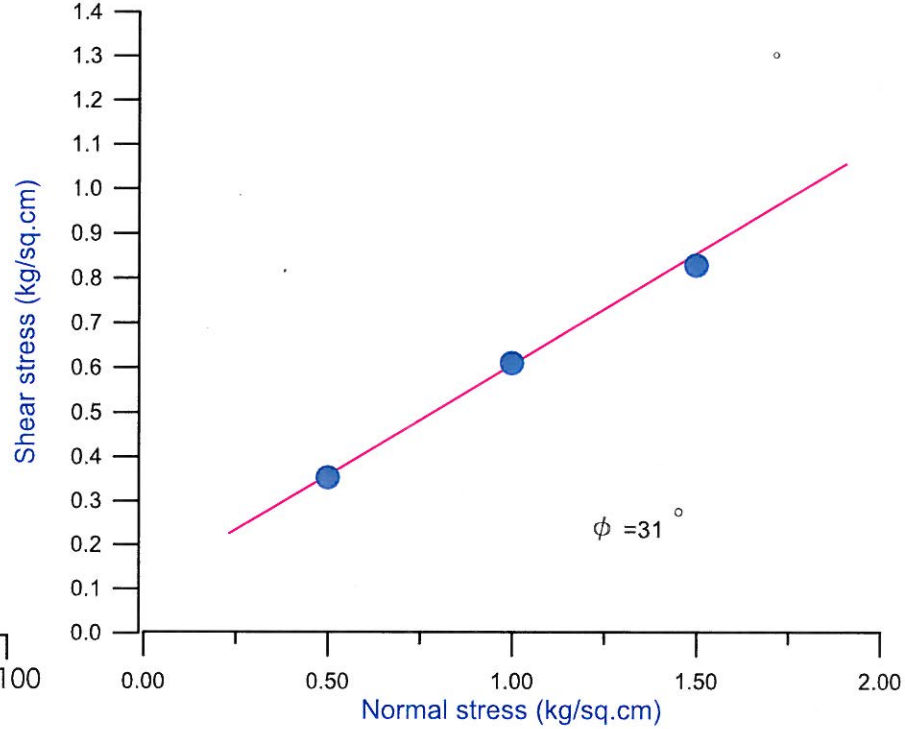
FIG- DS-BZ9

0331

BH-4
Depth-5.50m



(Shear stress - shear strain relationship)



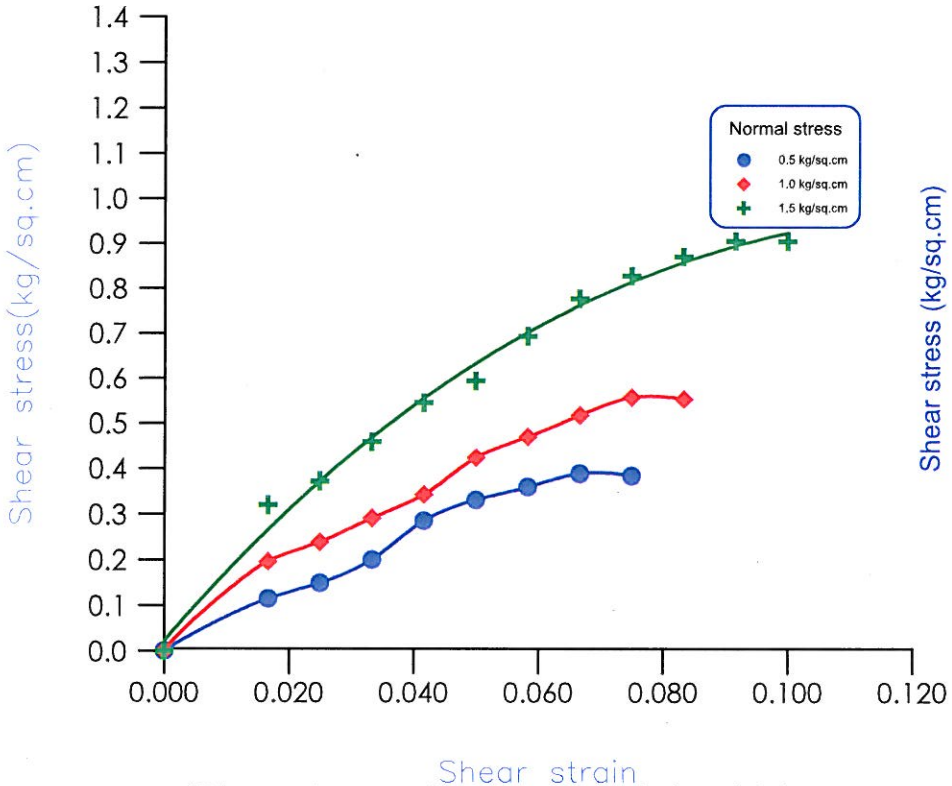
(Shear stress - Normal stress relationship)

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

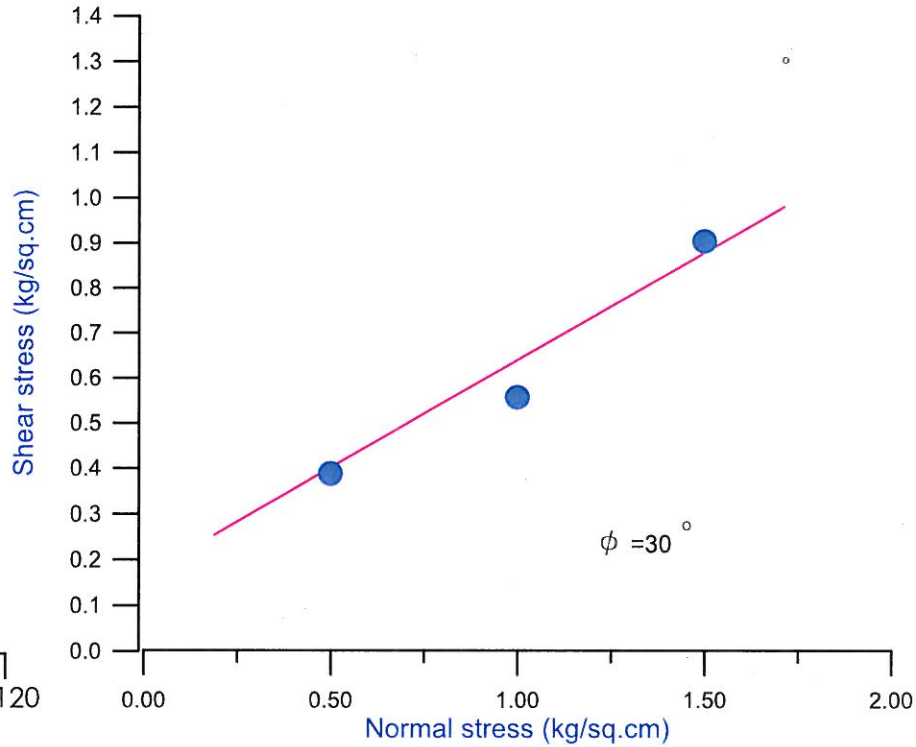
FIG- DS-BZ10

0332

BH-4
Depth-8.50m



(Shear stress - shear strain relationship)

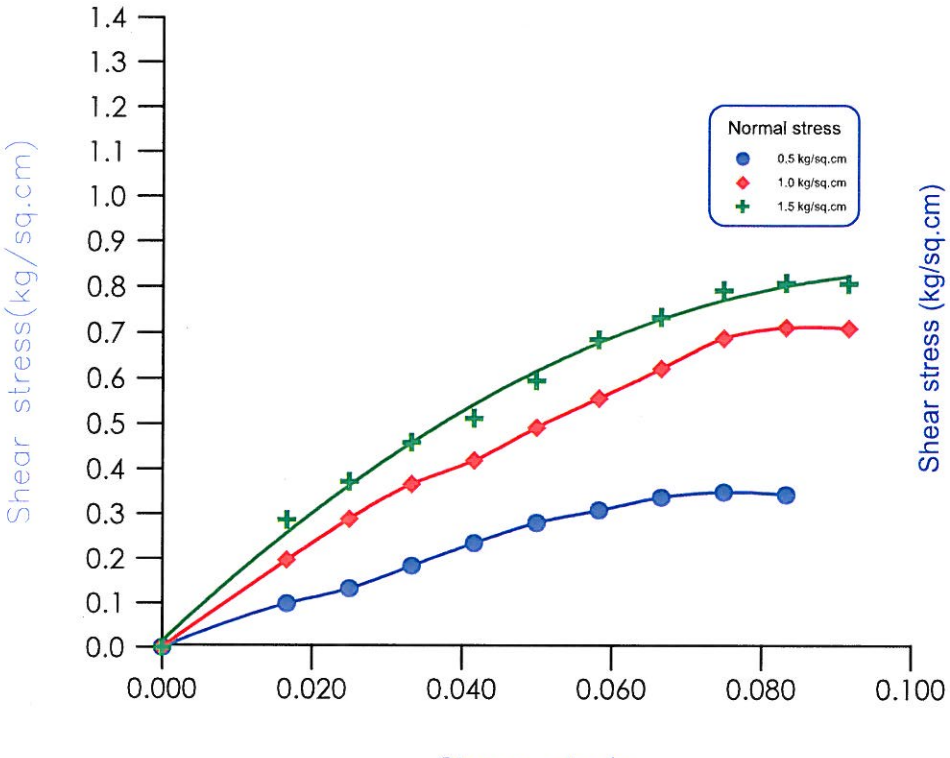


(Shear stress - Normal stress relationship)

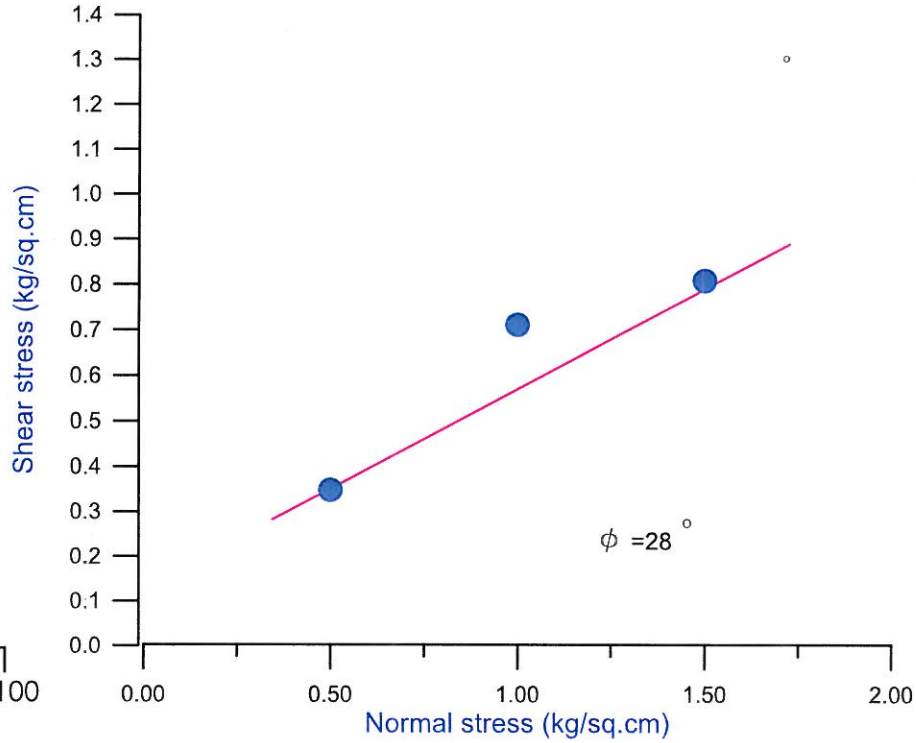
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-BZ11

BH-5
Depth-2.50m



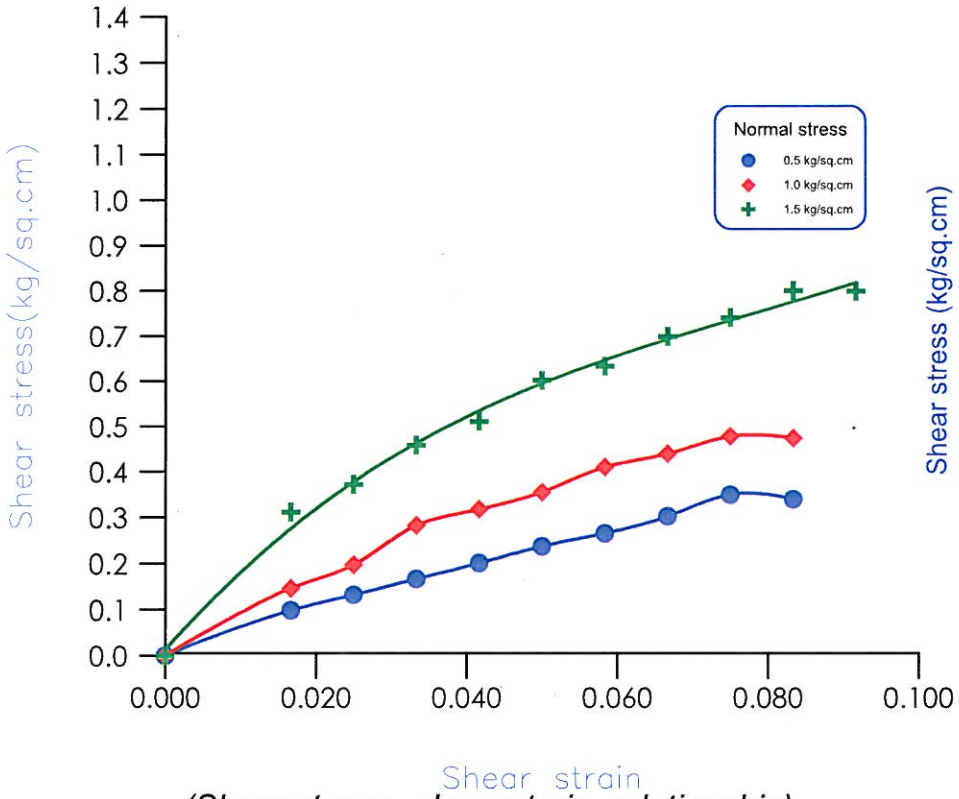
(Shear stress - shear strain relationship)



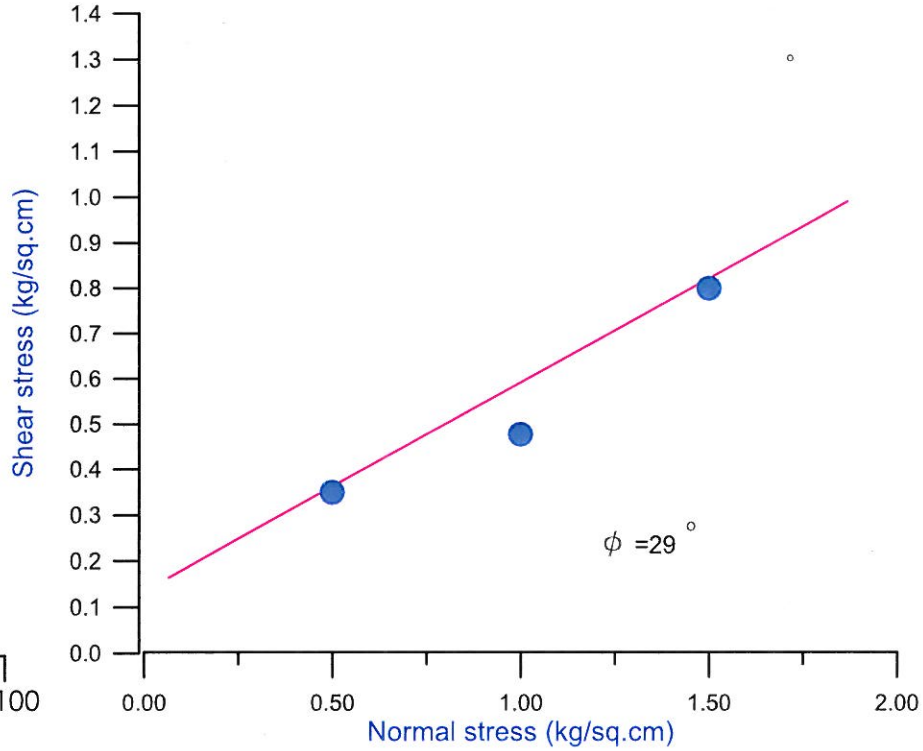
(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur FIG- DS-BZ12

BH-5
Depth-8.50m



(Shear stress - shear strain relationship)



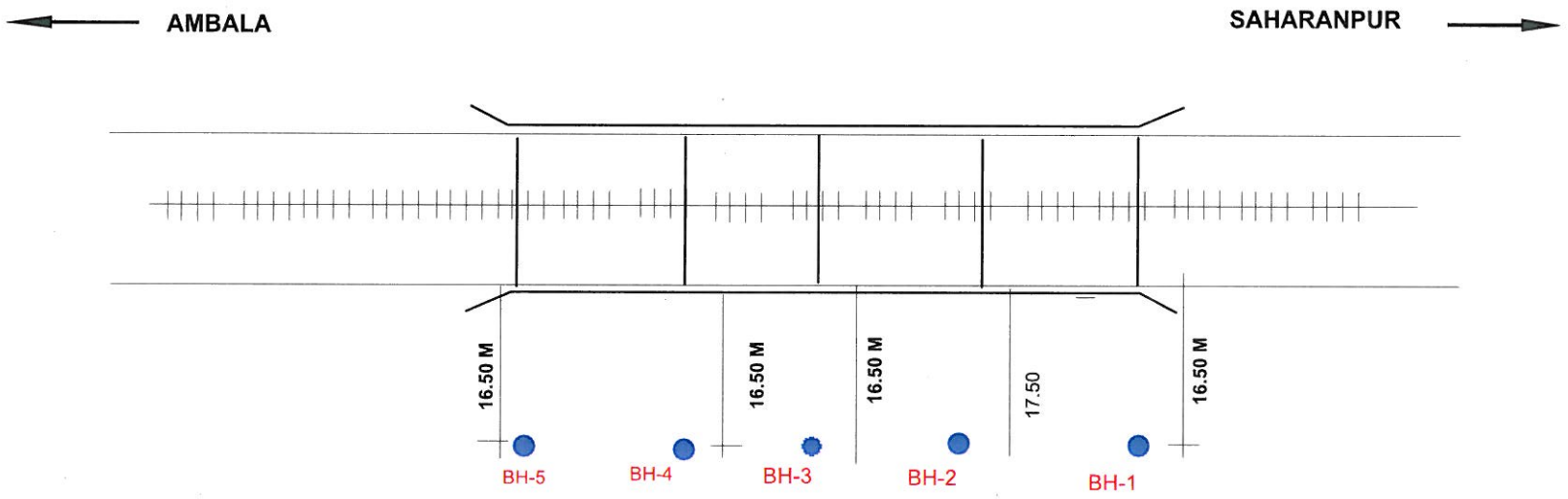
(Shear stress - Normal stress relationship)

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

FIG- DS-BZ13

SOIL ENGINEERING CONSULTANTS

Job No: 1813

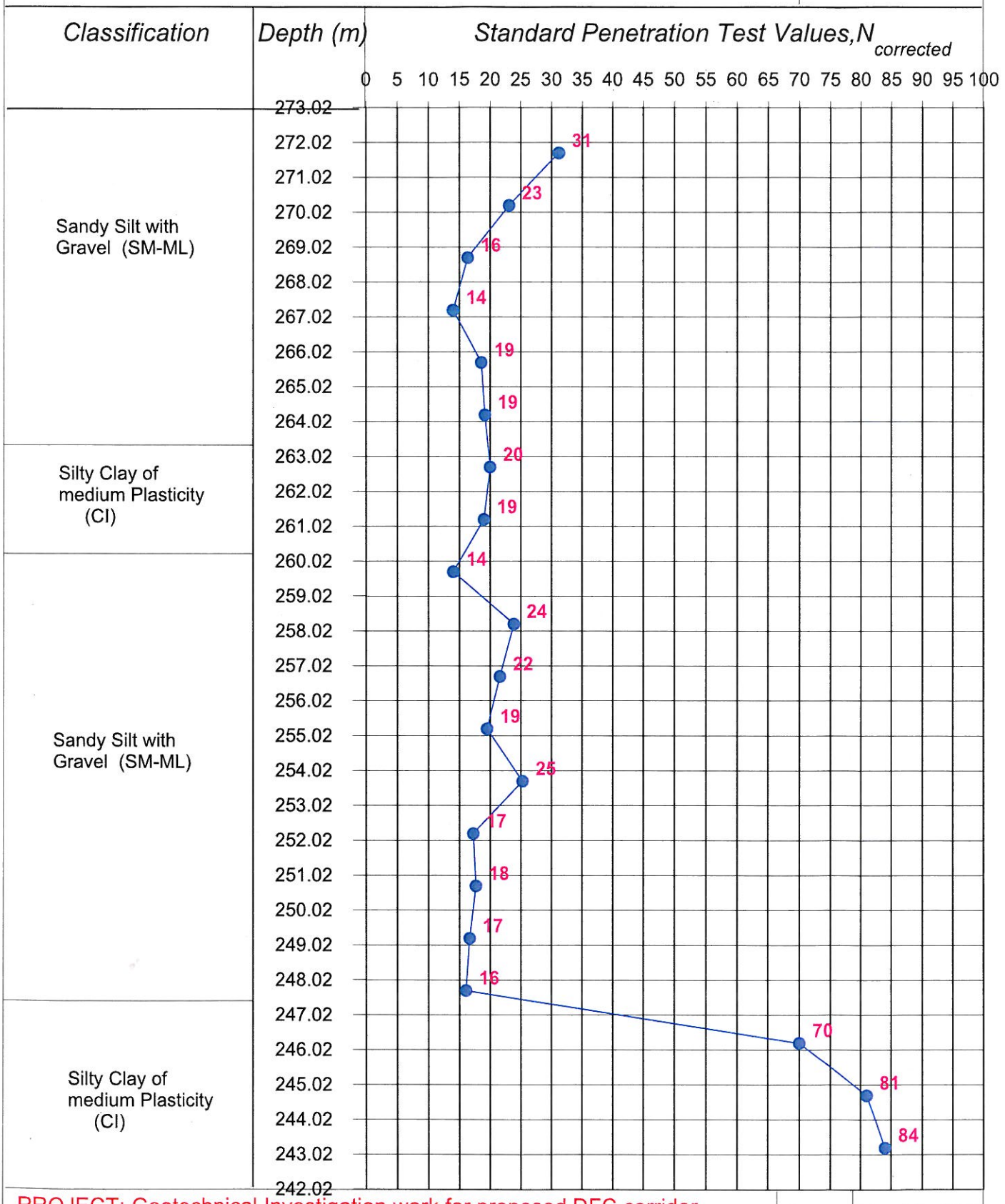


BRIDGE 276/235/28-32

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

Fig: Plan-BZ

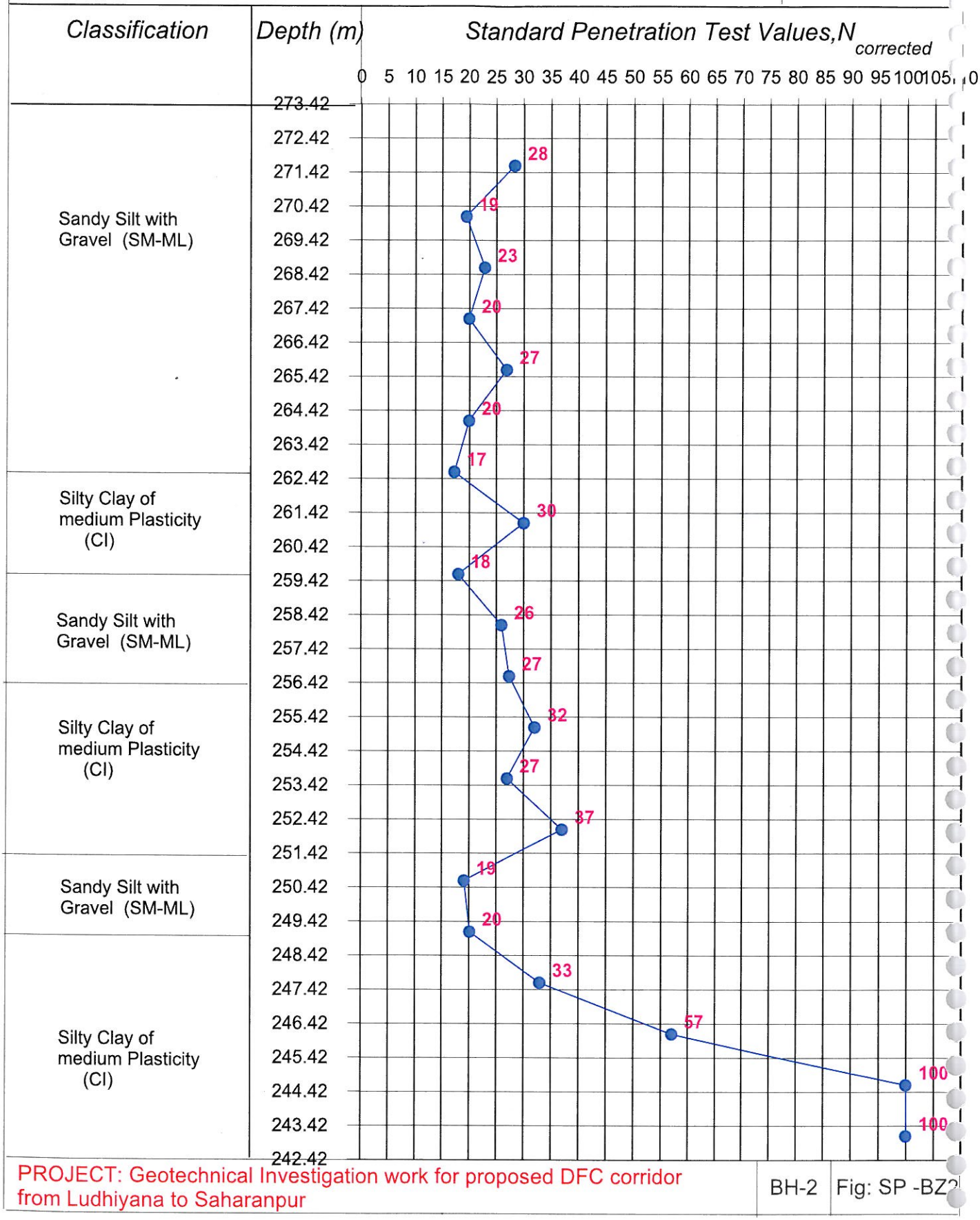
SOIL ENGINEERING CONSULTANTS | BR 276@ 235/28-32 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-1 | Fig: SP -BZ1

0337

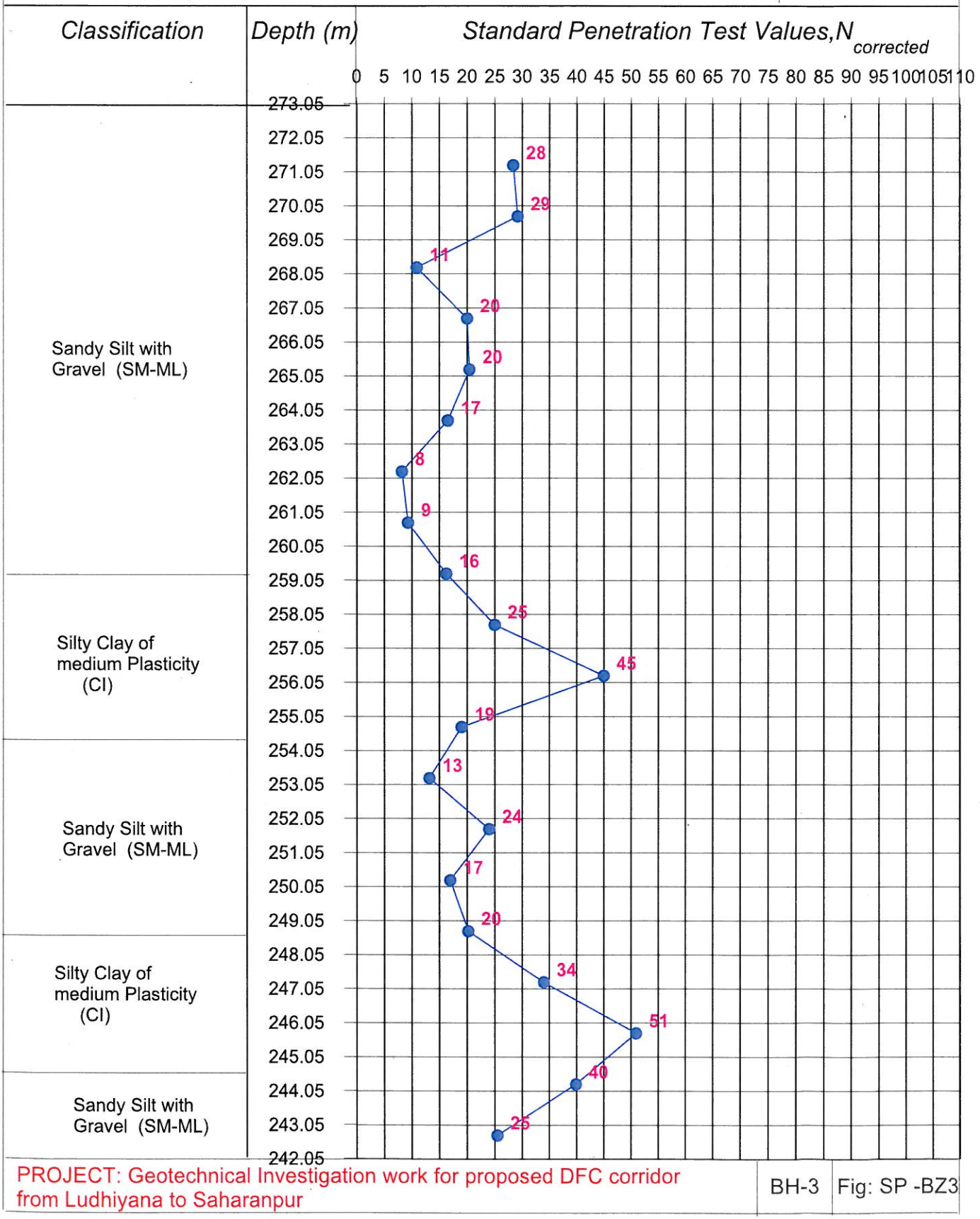
SOIL ENGINEERING CONSULTANTS | BR 276@ 235/28-32 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP -BZ2

0338

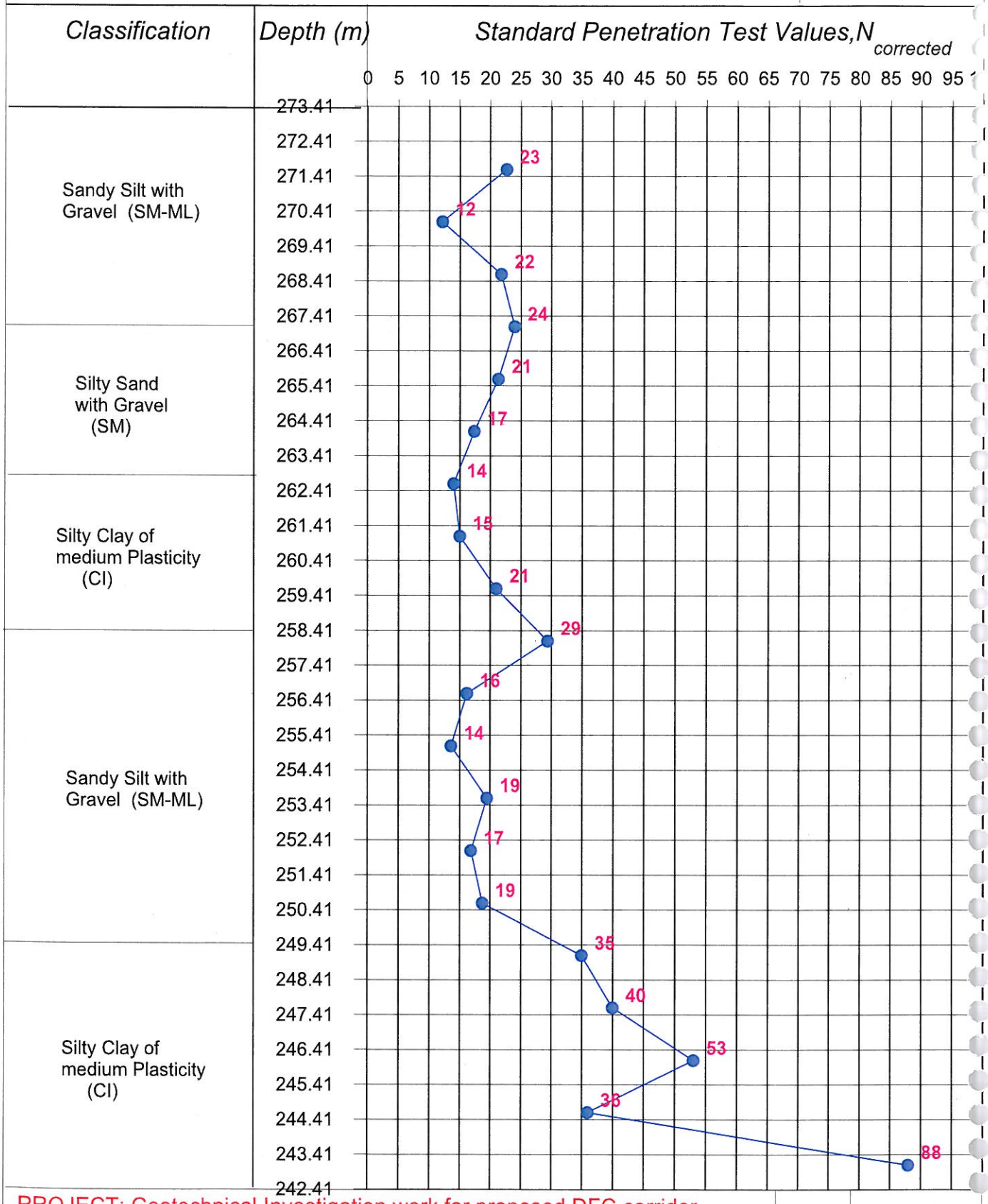
SOIL ENGINEERING CONSULTANTS | BR 276@ 235/28-32 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-3 | Fig: SP -BZ3

0339

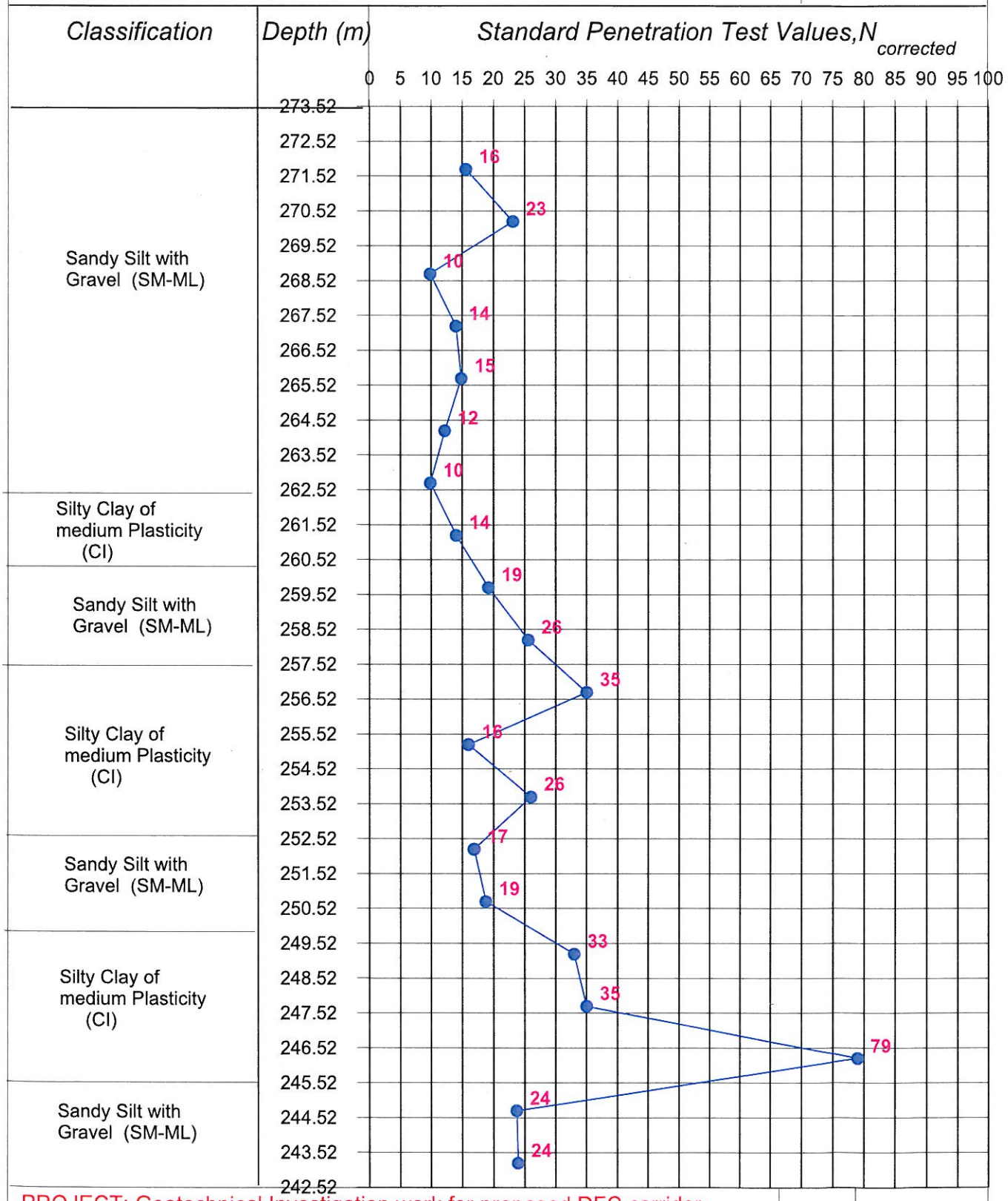
SOIL ENGINEERING CONSULTANTS | BR 276@ 235/28-32 | Project No: 1813



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

0340

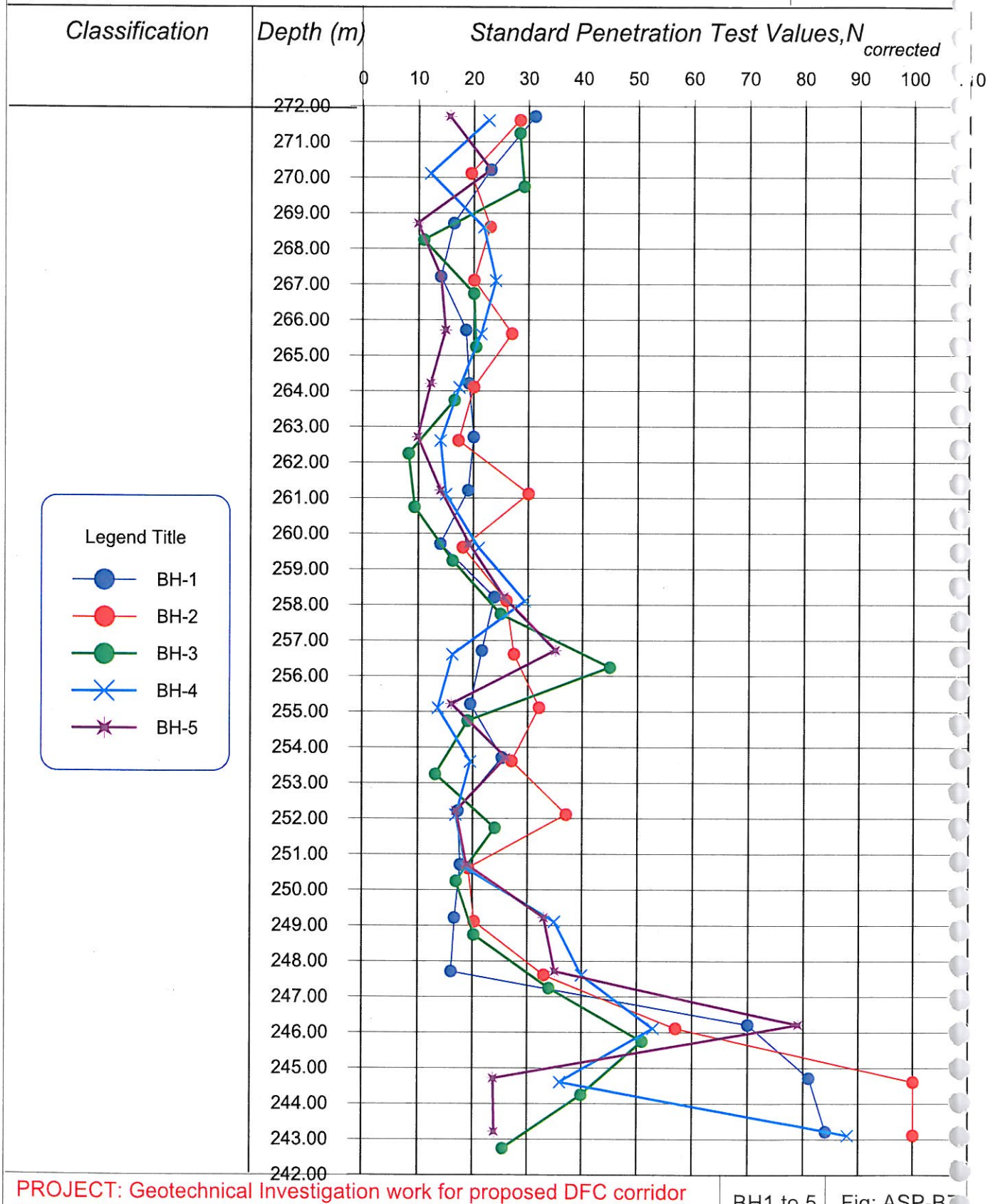
SOIL ENGINEERING CONSULTANTS | BR 276@ 235/28-32 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-5 | Fig: SP -BZ5

0341

SOIL ENGINEERING CONSULTANTS | BR; 276@ 235/28-32 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH1 to 5 | Fig: ASP-B2

0342

BORE LOG

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

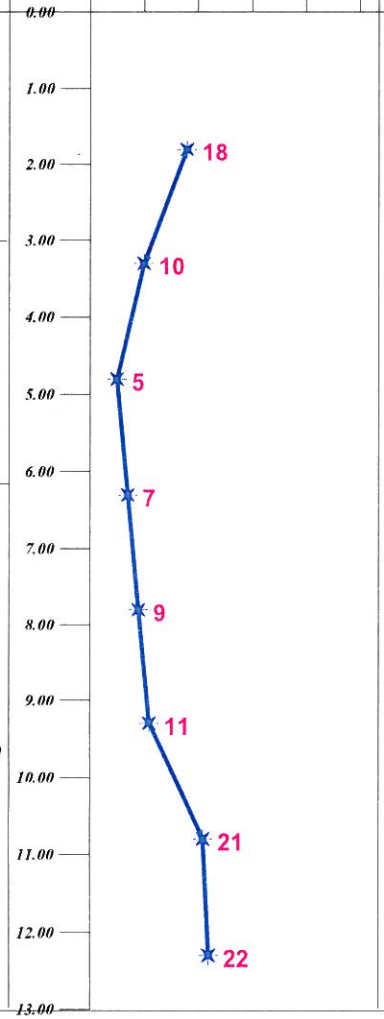
Project No. 1813 Bridge : 279 RL: 272.650

Location; 238/15-17
BH No.: 1
Depth : 12.00m
Depth of Water table : 3.05 m

Date of start :03/06/2008

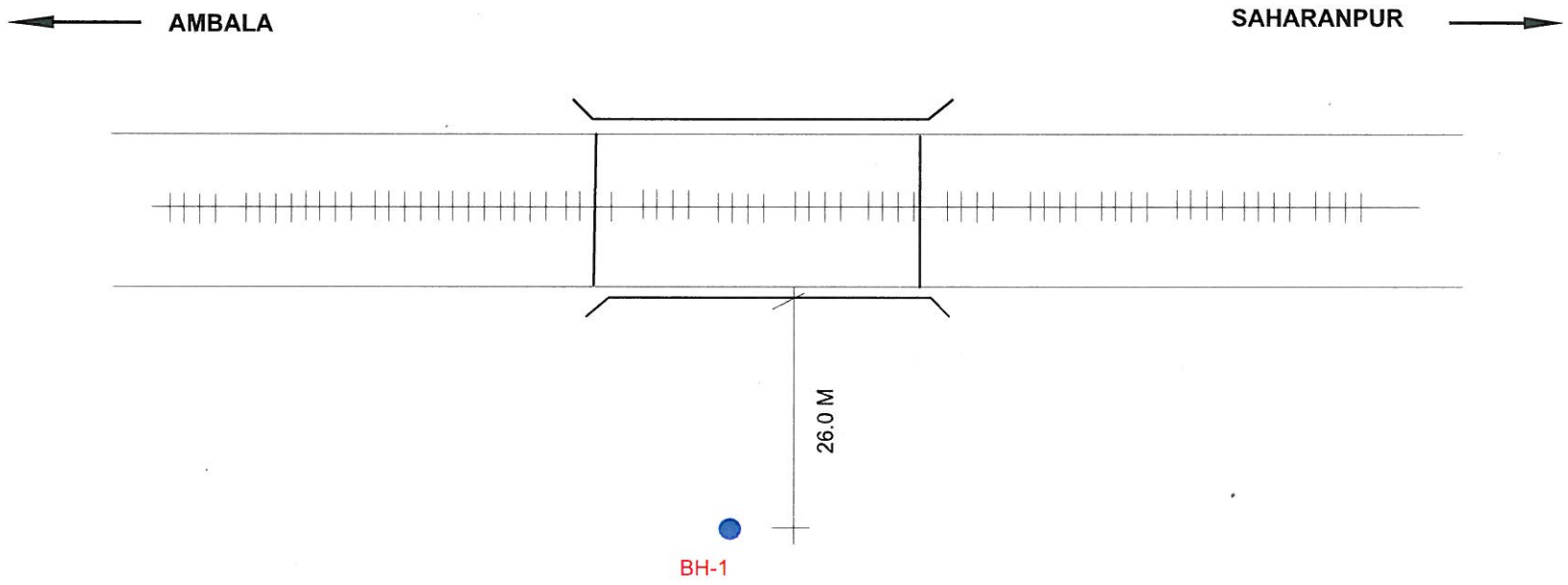
Date of finish : 03/06/2008

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)	
272.650																
270.850	1.80	SPT	Silty Clay of Low Plasticity (CL)	4	16	80				29	19					
270.150	2.50	UDS					1.76	1.51	16.85			2.69	UU	0.56	3	0.078
269.350	3.30	SPT		3	57	40				Non	Plastic					
267.850	4.80	SPT	Sandy Silt with Gravel (SM-ML)	4	63	33				Non	Plastic					
267.150	5.50	UDS					1.69	1.37	23.50			2.65	DST		29	
266.350	6.30	SPT		0	3	97				36	20					
264.850	7.80	SPT		2	6	92				35	20					
264.150	8.50	UDS					1.76	1.45	21.45				UU	0.49		0.071
263.350	9.30	SPT	Silty Clay of low to medium Plasticity (CL-CI)	0	4	96				33	19					
261.850	10.80	SPT		0	2	98				37	20					
260.350	12.30	SPT		1	3	96				39	19					



SOIL ENGINEERING CONSULTANTS

Job No: 1813

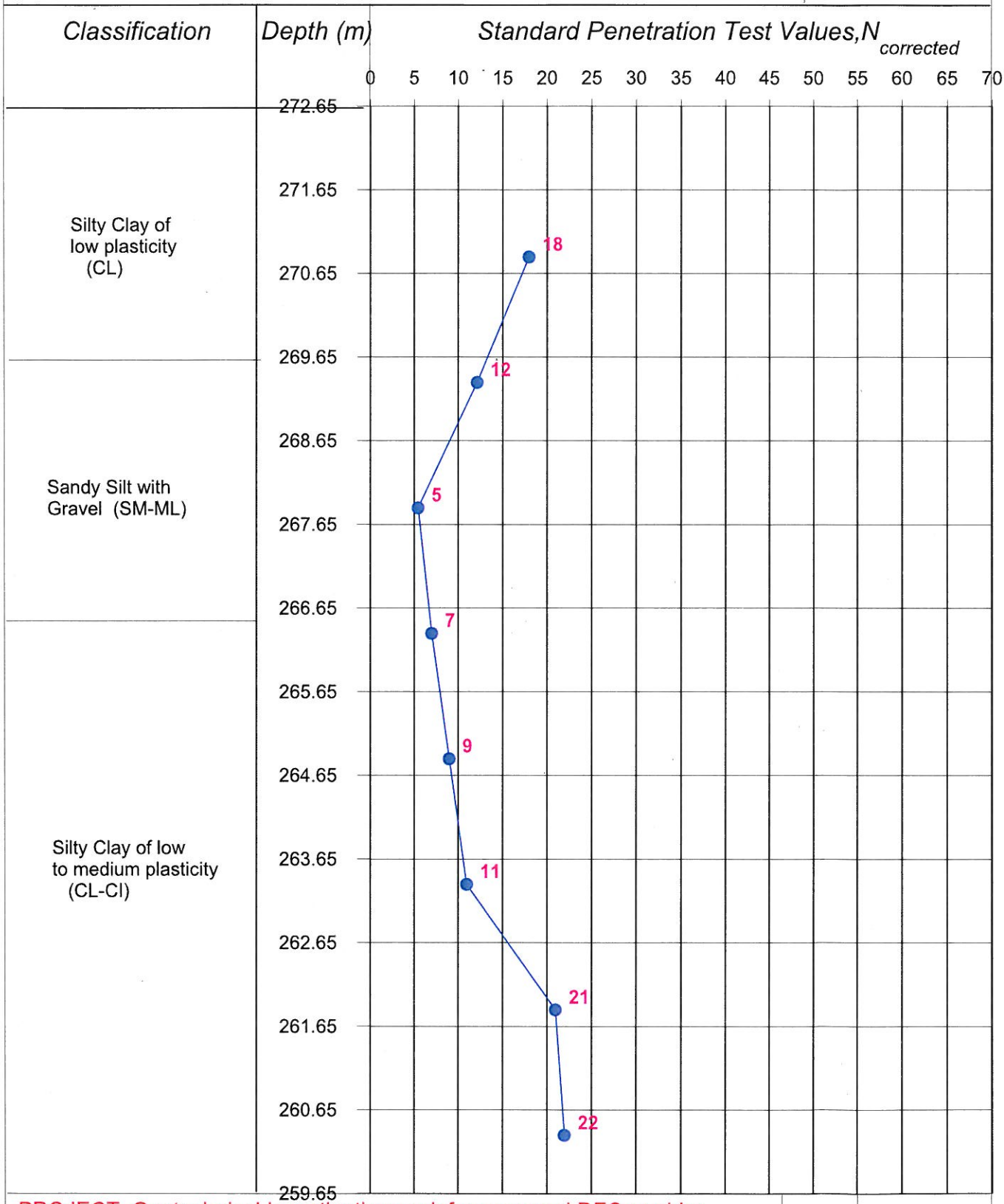


BR 279@ 238/15-17

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

Fig: Plan-CD

SOIL ENGINEERING CONSULTANTS BR 279@ 238/15-17 Project No: 1813



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

BH-1 Fig: SP- CD

0345

BORE LOG

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

Project No. 1813 Bridge : 280 RL: 271.815

Location:238/25-27
BH No.: 1
Depth : 30.00m
Depth of Water table :2.95 M

Date of start : 29/05/2008
Date of finish : 31/05/2008

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
271.815																	
270.015	1.80	SPT	Sandy Silt with Gravel (SM-ML)	10	0	21	79				Non	Plastic					
269.315	2.50	UDS						1.59	1.29	14.80			2.66	DST	0.18	21	
268.515	3.30	SPT		5	1	5	94				Non	Plastic					
267.015	4.80	SPT	Silty Sand with Gravel (SM)	4	1	62	37				Non	Plastic					
265.515	6.30	SPT		4	0	68	32				Non	Plastic					
264.015	7.80	SPT	Silty Clay of medium to high Plasticity (CI-CH)	7	0	2	98				Non	Plastic					
263.315	8.50	UDS						1.62	1.53	24.81				UU	0.48		0.079
262.515	9.30	SPT		11	0	1	99				41	22					
261.015	10.80	SPT		14	0	1	99				43	22					
259.515	12.30	SPT		19	0	2	98										
258.015	13.80	SPT		23	0	1	99				46	24					
256.515	15.30	SPT		27	1	1	98										
255.015	16.80	SPT		24	0	2	98				52	25					
253.515	18.30	SPT	Sandy Silt with Gravel (SM-ML)	27	0	2	98				Non	Plastic					
252.015	19.80	SPT		42	0	42	58				Non	Plastic					
250.515	21.30	SPT	Silty Sand with Gravel (SM)	40	1	56	43				Non	Plastic					
249.015	22.80	SPT		38	0	55	45				Non	Plastic					
247.515	24.30	SPT		31	0	80	20				Non	Plastic					
246.015	25.80	SPT	Silty Clay of medium Plasticity (CI)	32	0	2	98				38	20					
244.515	27.30	SPT		29	0	1	99				37	20					
243.015	28.80	SPT	Sandy Silt with Gravel (SM-ML)	24	2	3	95										
241.515	30.30	SPT		31	0	3	97				Non	Plastic					

BORE LOG

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

Project No. 1813 Bridge : 280 RL: 271.457

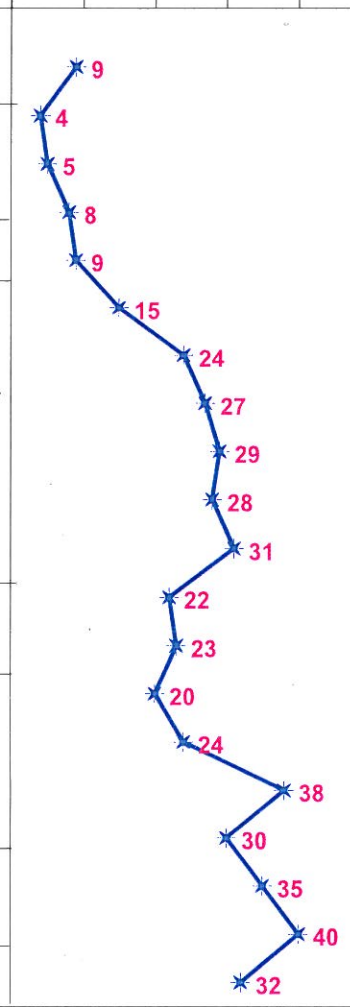
Location:238/25-27
BH No.: 2
Depth : 30.00m
Depth of Water table :2.90 M

Date of start : 01/06/2008

Date of finish : 02/06/2008

Reduced Level	Depth (m)	Type of sample	Soil Classification	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
271.457																
269.657	1.80	SPT	Silty Clay of medium Plasticity (CI)	0	5	95				35	18					
268.957	2.50	UDS					1.66	1.34	24.11				UU	0.21		
268.157	3.30	SPT	Sandy Silt with Gravel (SM-ML)	0	3	97				Non	Plastic					
266.657	4.80	SPT		0	46	54				Non	Plastic					
265.157	6.30	SPT		1	45	54				Non	Plastic					
263.657	7.80	SPT	Silty Sand with Gravel (SM)	0	59	41				Non	Plastic					
262.157	9.30	SPT		4	13	83				32	18					
260.657	10.80	SPT	Silty Clay of medium Plasticity (CI)	0	1	99										
259.157	12.30	SPT		0	2	98				36	21					
257.657	13.80	SPT		0	1	99				39	23					
256.157	15.30	SPT		0	2	98				49	2 4					
254.657	16.80	SPT		0	2	98				Non	Plastic					
253.957	17.50	UDS					1.88	1.55	21.64			2.7	UU	1.32	4	0.064
253.157	18.30	SPT	Sandy Silt with Gravel (SM-ML)	0	48	52				Non	Plastic					
251.657	19.80	SPT		0	42	58				Non	Plastic					
250.157	21.30	SPT	Silty Sand with Gravel (SM)	0	56	44				Non	Plastic					
248.657	22.80	SPT		0	57	43				Non	Plastic					
247.157	24.30	SPT		0	59	41				Non	Plastic					
245.657	25.80	SPT		0	58	42				Non	Plastic					
244.957	26.50	UDS					1.92	1.60	20.11			2.69	UU	1.89		0.056
244.157	27.30	SPT	Silty Clay of medium Plasticity (CI)	0	2	98				39	22					
242.657	28.80	SPT		0	9	91				38	22					
241.157	30.30	SPT	Sandy Silt with Gravel (SM-ML)	0	2	98				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 : 280 RL: 271.694

Location:238/25-27
BH No.: 3
Depth : 30.00m
Depth of Water table : 3.00 M

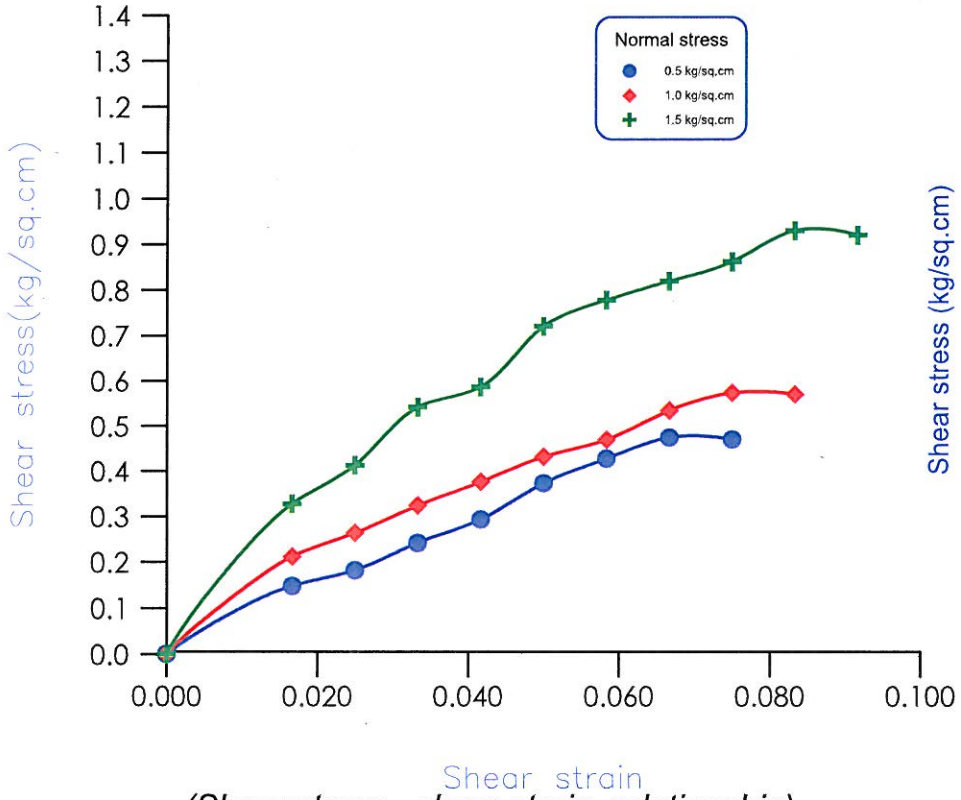
Date of start : 03/06/2008
Date of finish : 04/06/2008

SOIL ENGINEERING CONSULTANTS

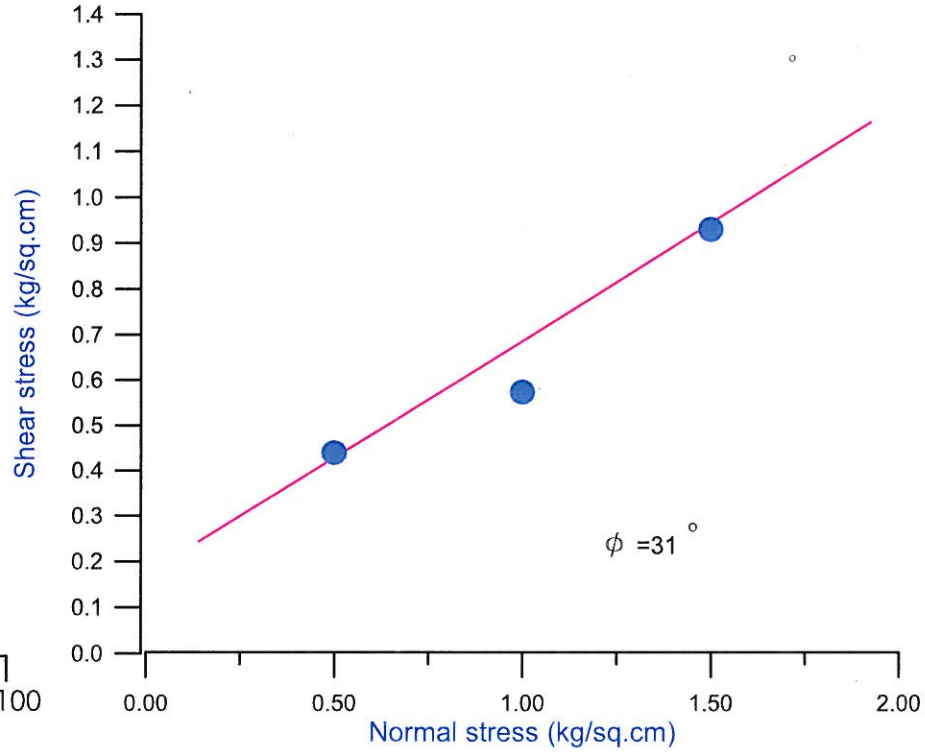
Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
271.694																	
269.894	1.80	SPT	Silty Clay of medium Plasticity (CI)	14	3	8	89				41	22					
269.194	2.50	UDS						1.63	1.32	23.40				UU	0.24		
268.394	3.30	SPT		5	0	38	62				Non	Plastic					
266.894	4.80	SPT	Sandy Silt with Gravel (SM-ML)	7	2	33	65				Non	Plastic					
265.394	6.30	SPT		16	0	43	57				Non	Plastic					
263.894	7.80	SPT		14	0	2	98				Non	Plastic					
263.194	8.50	UDS						1.8	1.49	21.11			2.69	UU	0.86		
262.394	9.30	SPT		13	0	1	99				32	19					
260.894	10.80	SPT		21	0	3	97				32	20					
259.394	12.30	SPT	Silty Clay of low to medium Plasticity (CL-CI)	25	0	1	99				36	21					
257.894	13.80	SPT		26	0	2	98				34	20					
256.394	15.30	SPT		29	0	1	99				34	20					
254.894	16.80	SPT		26	0	33	64				Non	Plastic					
254.194	17.50	UDS						1.86	1.55	19.97			2.65	DST		31	
253.394	18.30	SPT	Sandy Silt with Gravel (SM-ML)	28	0	2	98				Non	Plastic					
251.894	19.80	SPT		33	0	1	99				Non	Plastic					
250.394	21.30	SPT	Silty Sand with Gravel (SM)	48	0	55	45				Non	Plastic					
248.894	22.80	SPT		28	0	69	31				Non	Plastic					
247.394	24.30	SPT	Silty Clay of medium Plasticity (CI)	31	0	2	98				37	21					
245.894	25.80	SPT		32	0	1	99				37	24					
244.394	27.30	SPT		24	0	7	93				36	22					
242.894	28.80	SPT	Sandy Silt with Gravel (SM-ML)	27	0	4	96				Non	Plastic					
241.394	30.30	SPT		33	0	4	96				Non	Plastic					

0326

BH-1
Depth-2.50m



(Shear stress - shear strain relationship)



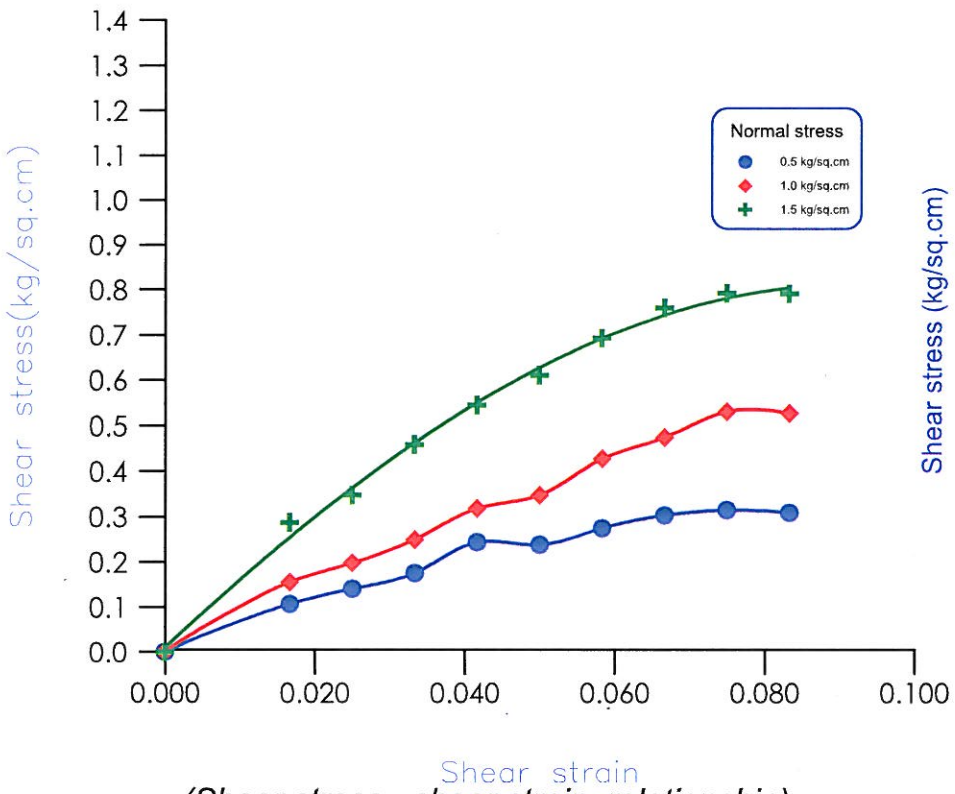
(Shear stress - Normal stress relationship)

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

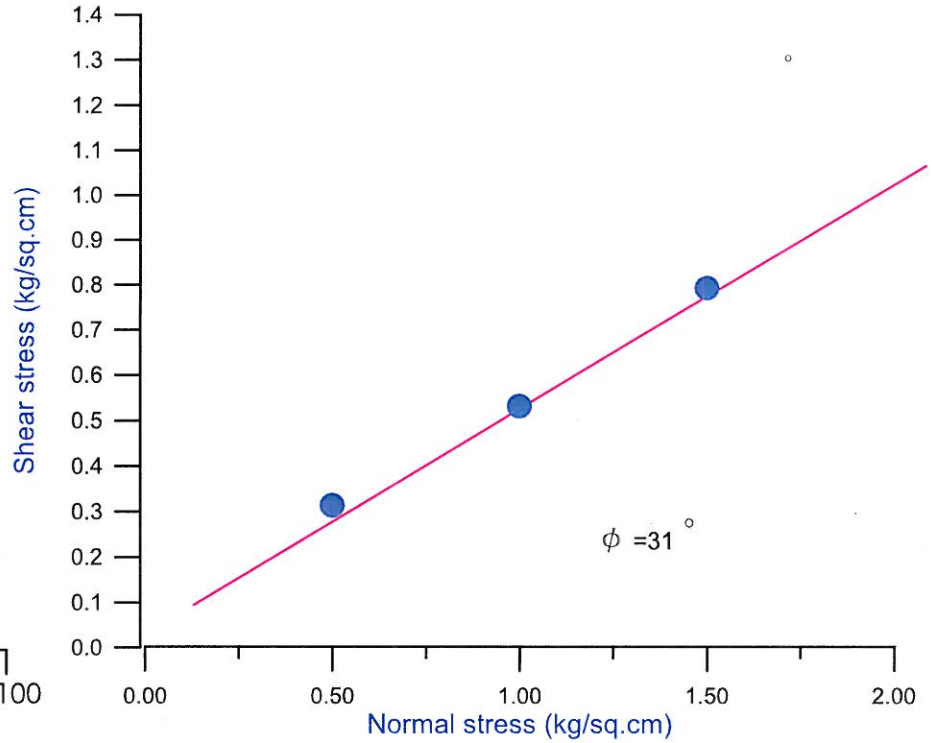
FIG- DS-CE1

0349

BH-2
Depth-17.50m



(Shear stress - shear strain relationship)



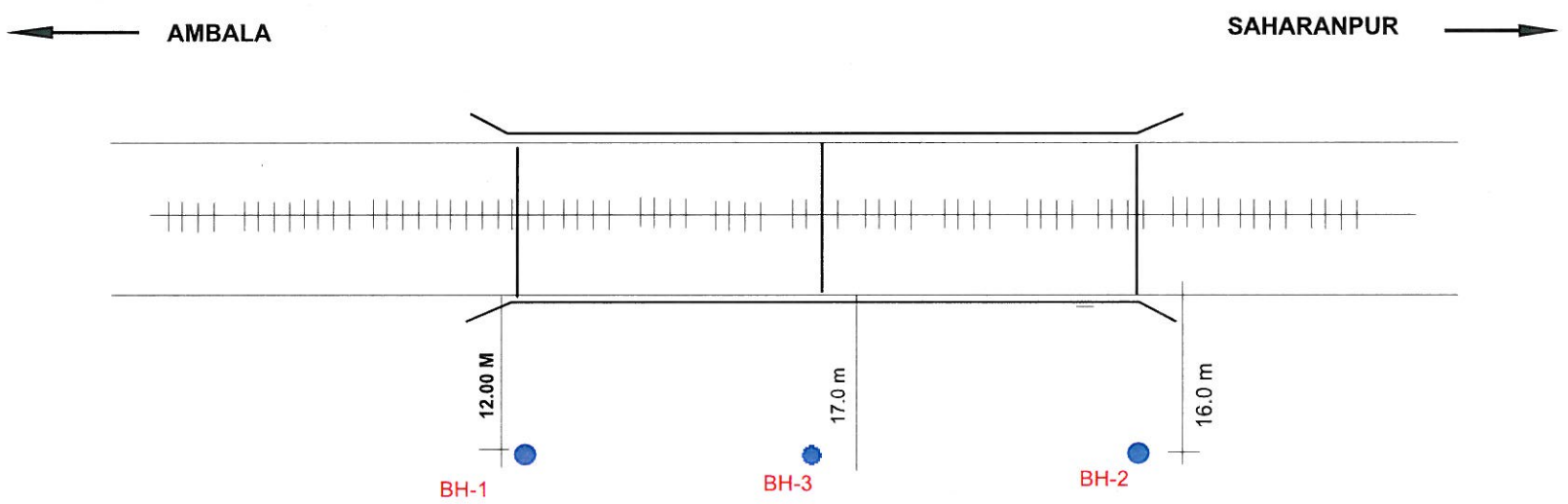
(Shear stress - Normal stress relationship)

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

FIG- DS-CE2

SOIL ENGINEERING CONSULTANTS

Job No: 1813

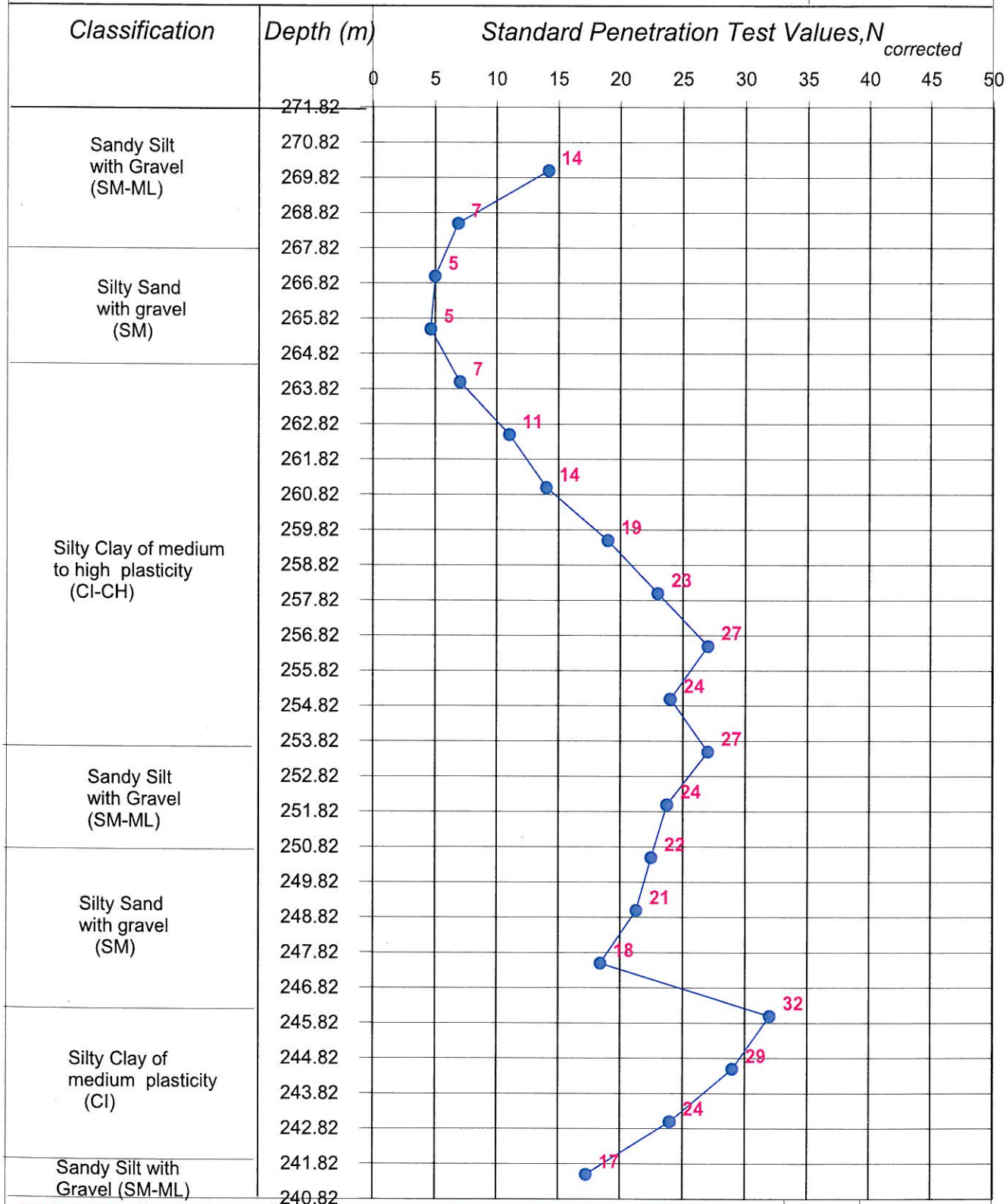


BRIDGE 280@ 238/25-27

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

Fig: Plan-CE

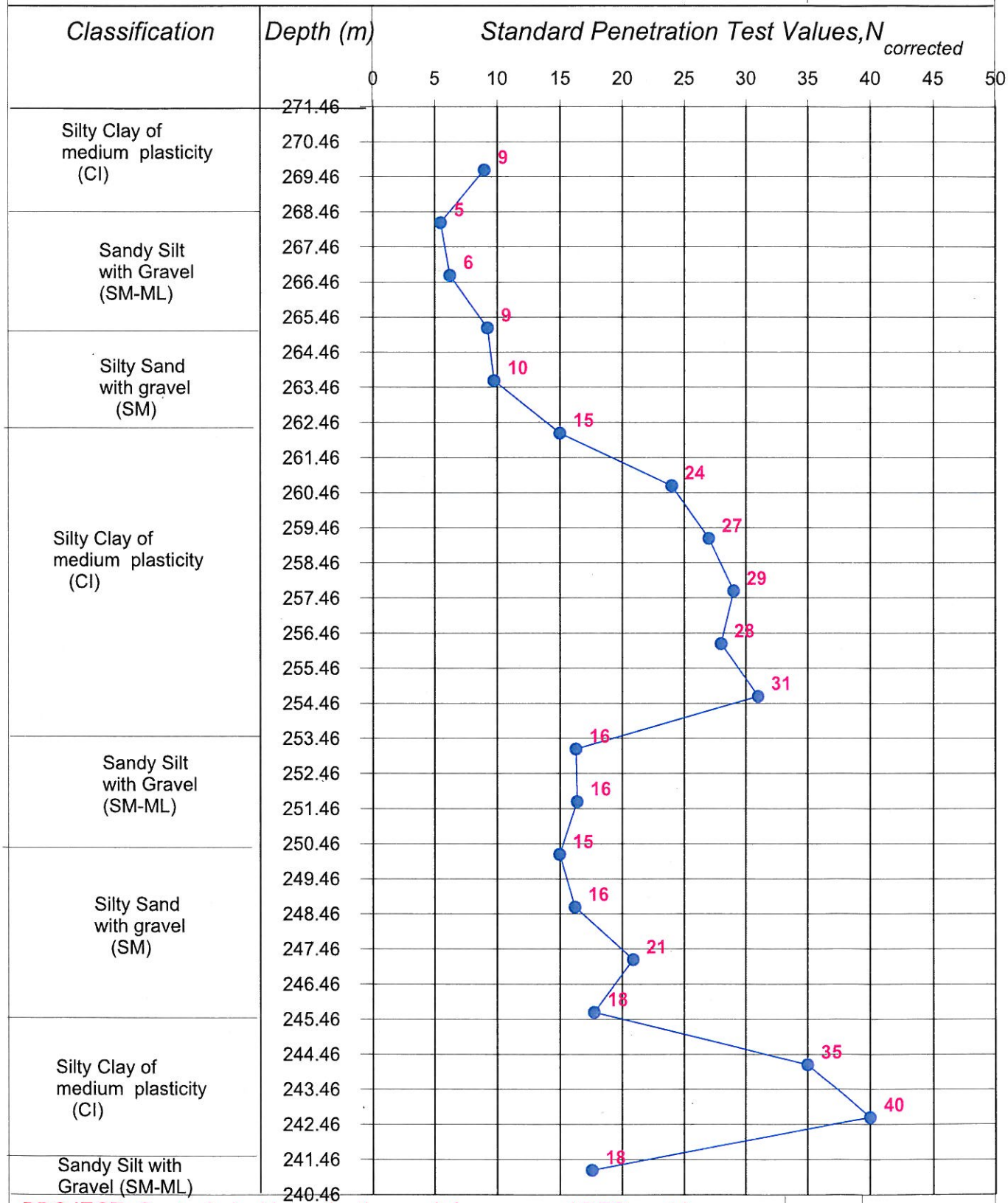
SOIL ENGINEERING CONSULTANTS | BR 280@ 238/25-27 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-1 | Fig: SP- CE1

0352

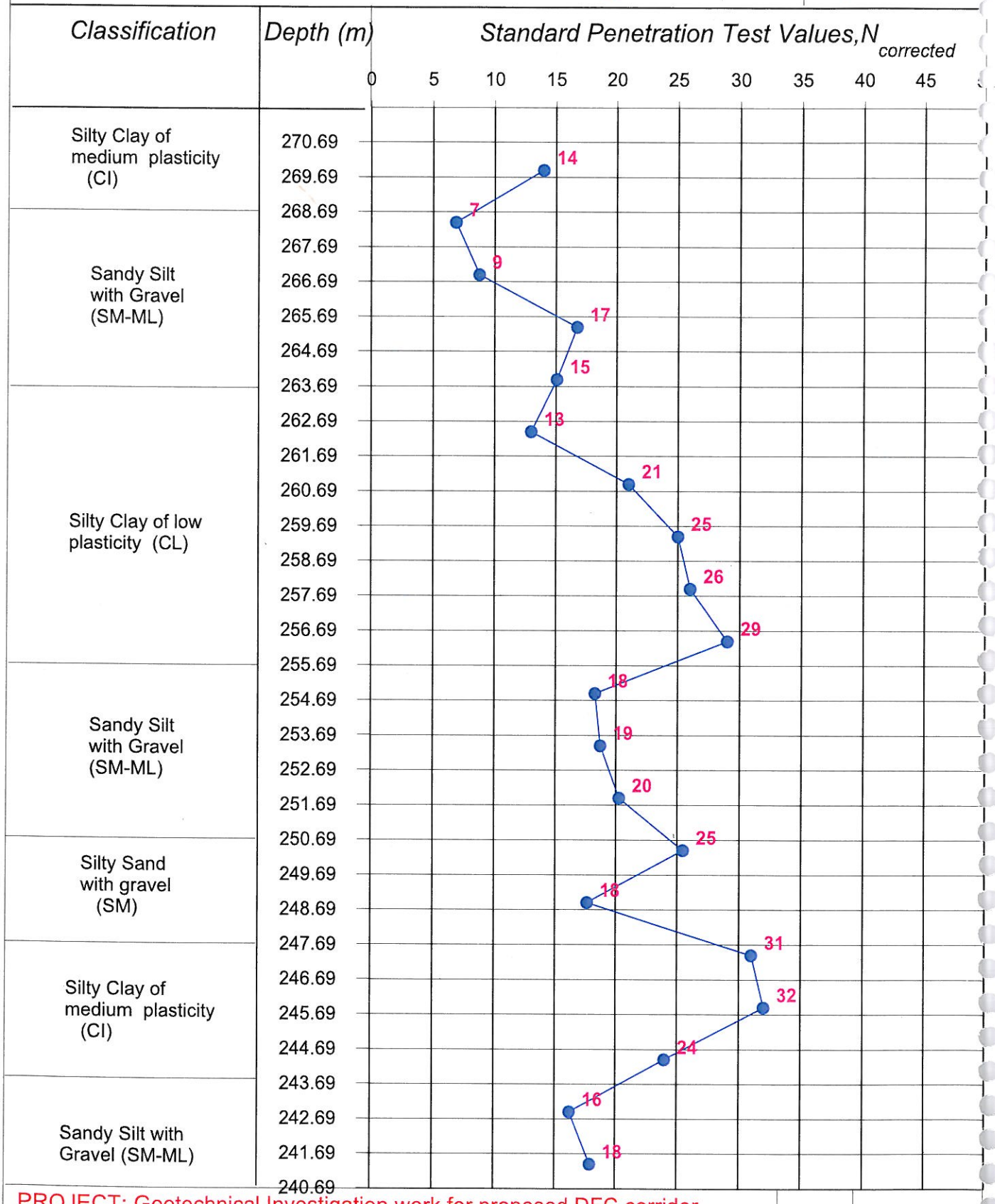
SOIL ENGINEERING CONSULTANTS | BR 280@ 238/25-27 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP- CE2

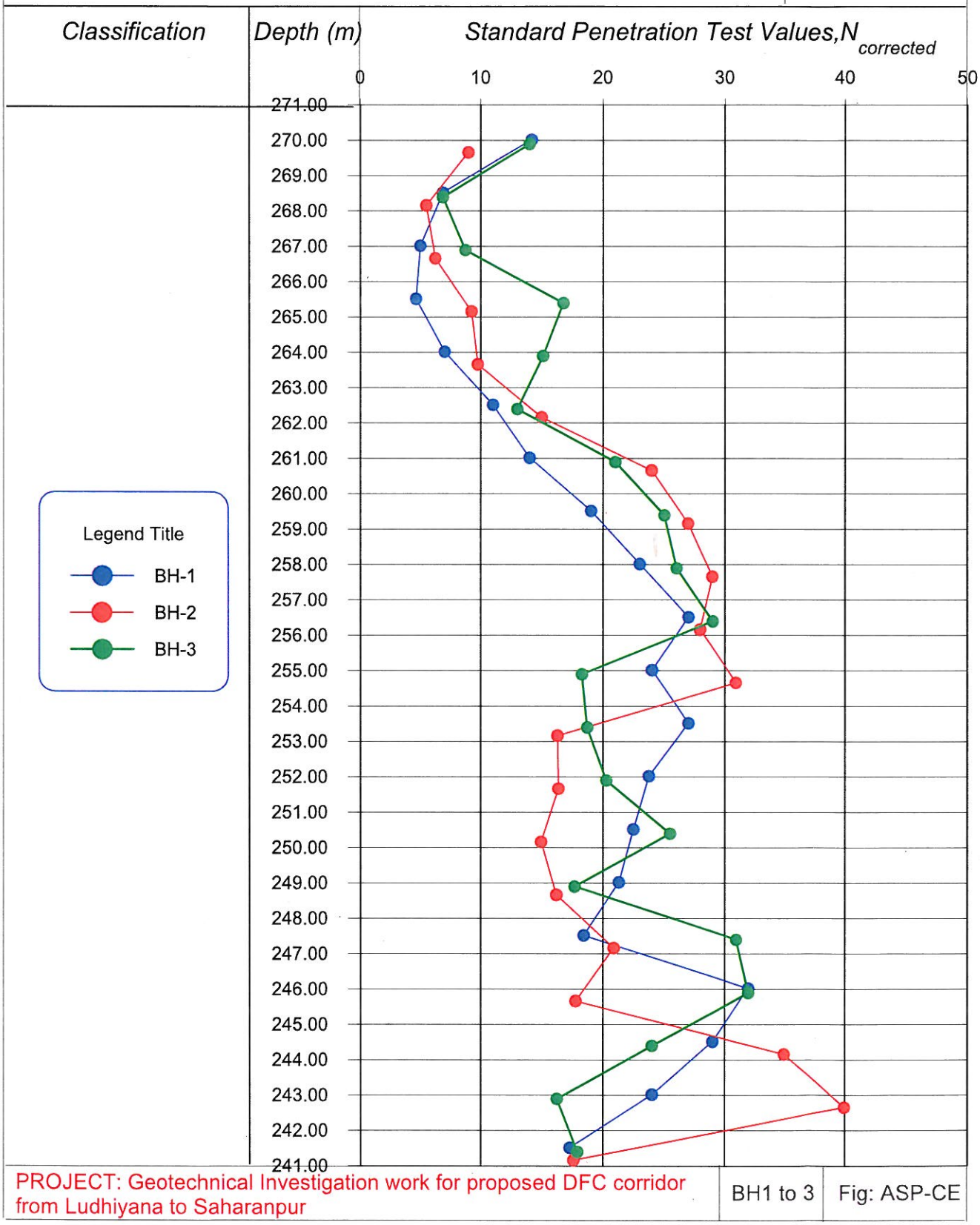
0353

SOIL ENGINEERING CONSULTANTS | BR 280@ 238/25-27 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-3 | Fig: SP- CE3

SOIL ENGINEERING CONSULTANTS | BR; 280@ 238/25-27 | Project No: 1813



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

BORE LOG

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

Project No. 1813 Bridge : 281 RL: 272.026

Location:239/19-21
BH No.: 1
Depth : 30.00m
Depth of Water table : 2.20 m

Date of start : 23/05/2008
Date of finish : 26/05/2008

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
272.026																	
270.226	1.80	SPT	Sandy Silt with Gravel (SM-ML)	24	0	12	88				Non	Plastic					
269.526	2.50	UDS						1.84	1.51	21.89			2.64	DST		31	
268.726	3.30	SPT	Silty Sand with Gravel (SM)	26	0	77	23				Non	Plastic					
267.226	4.80	SPT		29	0	69	31				Non	Plastic					
265.726	6.30	SPT	Silty Clay of medium Plasticity (CI)	14	0	3	97				42	26					
264.226	7.80	SPT		15	0	1	99				38	22					
263.526	8.50	UDS						1.8	1.47	22.10				UU	0.88		
262.726	9.30	SPT		14	0	2	98				37	22					
261.226	10.80	SPT		10	0	8	92				36	21					
259.726	12.30	SPT		12	0	2	98				44	22					
258.226	13.80	SPT		14	0	2	98				38	22					
256.726	15.30	SPT	Sandy Silt with Gravel (SM-ML)	13	0	9	91				Non	Plastic					
255.226	16.80	SPT		14	0	4	96				Non	Plastic					
253.726	18.30	SPT	Silty Clay of medium Plasticity (CI)	24	2	3	95										
252.226	19.80	SPT		28	2	8	90				46	24					
251.526	20.50	UDS						1.91	1.59	20.42				UU	1.86		
250.726	21.30	SPT		37	0	38	62				41	22					
249.226	22.80	SPT		52	2	7	91				36	21					
248.526	23.50	UDS						2.06	1.72	20.11			2.68	UU	1.82		0.068
247.726	24.30	SPT		40	3	10	87										
246.226	25.80	SPT		24	1	11	88				36	21					
245.526	26.50	UDS						1.9	1.59	19.83				UU	1.31		
244.726	27.30	SPT		20	1	15	84										
243.226	28.80	SPT		24	0	8	92				38	24					
241.726	30.30	SPT		27	0	3	97				44	22					

BORE LOG

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

Project No. 1813 Bridge : 281 RL: 271.986

Location:239/19-21
BH No.: 2
Depth : 30.00m
Depth of Water table : 2.10 m

Date of start : 26/05/2008
Date of finish : 29/05/2008

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
271.986																	
270.186	1.80	SPT	Sandy Silt with Gravel (SM-ML)	15	0	8	92				Non	Plastic					
269.486	2.50	UDS						1.86	1.50	24.28			2.64	DST	0.15	31	
268.686	3.30	SPT		13	0	48	52				Non	Plastic					
267.186	4.80	SPT		8	5	22	73				Non	Plastic					
265.686	6.30	SPT		11	1	43	56				Non	Plastic					
264.186	7.80	SPT	Silty Clay of medium Plasticity (CI)	8	0	2	98				41	22					
263.486	8.50	UDS						1.82	1.48	23.12			2.69	UU	0.43		0.08
262.686	9.30	SPT		9	0	2	98				43	22					
261.186	10.80	SPT		8	0	1	99				41	22					
260.486	11.50	UDS						1.8	1.47	22.81				UU	0.46		
259.686	12.30	SPT		11	0	2	98				49	24					
258.186	13.80	SPT		13	0	3	97				53	24					
256.686	15.30	SPT		30	0	18	82				53	23					
255.186	16.80	SPT	Sandy Silt with Gravel (SM-ML)	54	0	20	80				Non	Plastic					
253.686	18.30	SPT		58	0	27	73				Non	Plastic					
252.186	19.80	SPT		76	0	25	75				Non	Plastic					
250.686	21.30	SPT		50	0	3	97				Non	Plastic					
249.186	22.80	SPT		35	1	3	96				Non	Plastic					
247.686	24.30	SPT		32	2	3	95				Non	Plastic					
246.186	25.80	SPT		26	0	12	88				Non	Plastic					
244.686	27.30	SPT		24	0	1	99				Non	Plastic					
243.186	28.80	SPT		28	0	6	94				Non	Plastic					
241.686	30.30	SPT		32	2	2	96				Non	Plastic					

0357

BORE LOG

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

Project No. 1813 Bridge : 281 RL: 271.141

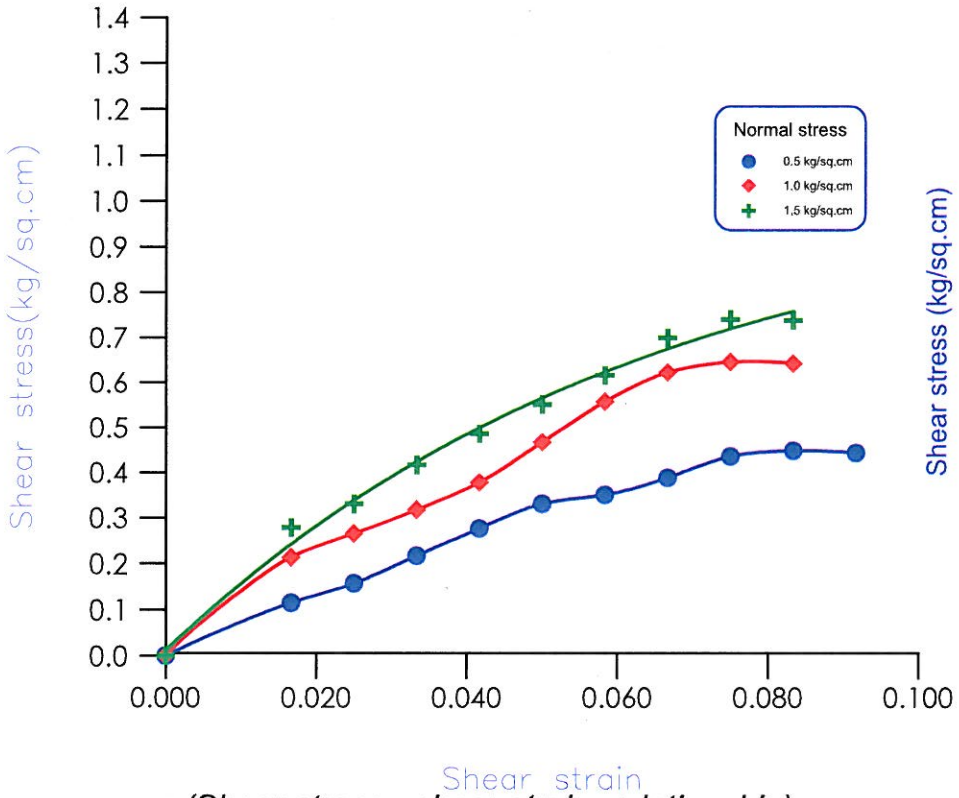
Location:239/19-21
BH No.: 3
Depth : 30.00m
Depth of Water table : 2.10 m

Date of start : 30/05/2008
Date of finish : 01/06/2008

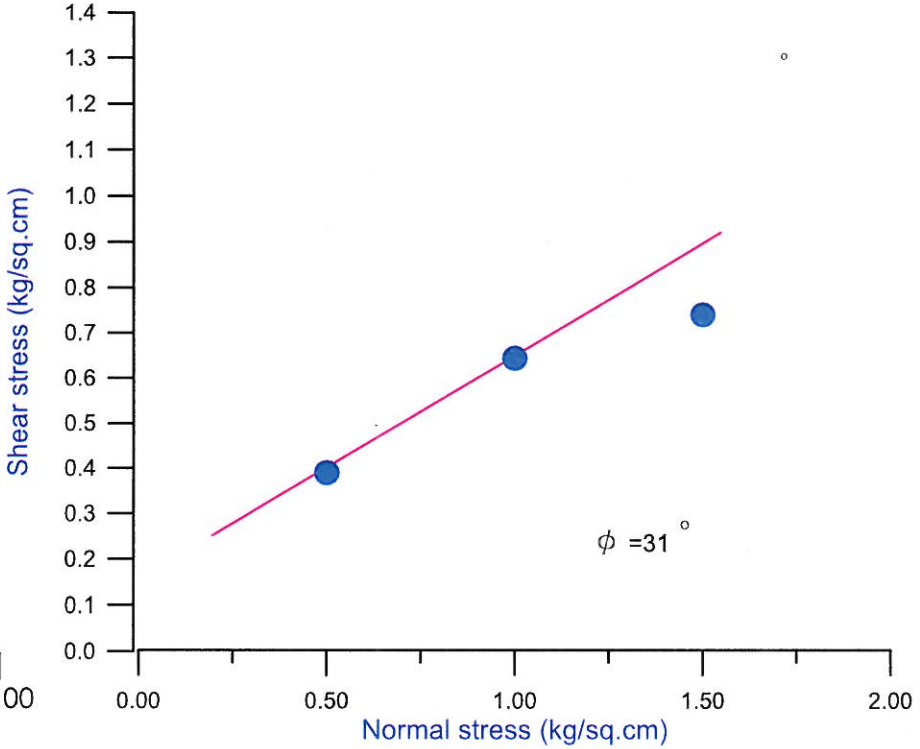
SOIL ENGINEERING CONSULTANTS

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
271.141																	
269.341	1.80	SPT	Sandy Silt with Gravel (SM-ML)	15	0	8	92				Non	Plastic					
268.641	2.50	UDS						1.86	1.49	24.63				DST	0.15	29	
267.841	3.30	SPT			1	41	58				Non	Plastic					
266.341	4.80	SPT		12	0	2	98				Non	Plastic					
264.841	6.30	SPT	Silty Clay of medium Plasticity (CI)	9	0	2	98				33	19					
263.341	7.80	SPT		10	0	4	96										
262.641	8.50	UDS						1.8	1.47	22.70				UU	0.58		0.076
261.841	9.30	SPT		9	0	4	96				32	20					
260.341	10.80	SPT	Sandy Silt with Gravel (SM-ML)	6	0	9	91				Non	Plastic					
259.641	11.50	UDS						1.8	1.48	21.64				DST			
258.841	12.30	SPT		18	0	2	98				Non	Plastic					
257.341	13.80	SPT		21	0	1	99				Non	Plastic					
256.641	14.50	UDS						1.85	1.53	20.82				DST			
255.841	15.30	SPT	Silty Clay of medium Plasticity (CI)	22	0	3	97				38	18					
254.341	16.80	SPT		24	0	1	99				38	20					
252.841	18.30	SPT	Sandy Silt with Gravel (SM-ML)	75	0	33	67				Non	Plastic					
251.341	19.80	SPT		100	0	41	59				Non	Plastic					
249.841	21.30	SPT		100	0	47	53				Non	Plastic					
248.341	22.80	SPT		100	1	76	23				Non	Plastic					
246.841	24.30	SPT	Silty Clay of medium Plasticity (CI)	22	0	2	98				36	18					
245.341	25.80	SPT		19	2	3	95				37	20					
243.841	27.30	SPT		20	1	7	92										
242.341	28.80	SPT		44	0	8	92				38	21					
240.841	30.30	SPT		40	0	3	97				44	21					

BH-1
Depth-2.50m



(Shear stress - shear strain relationship)



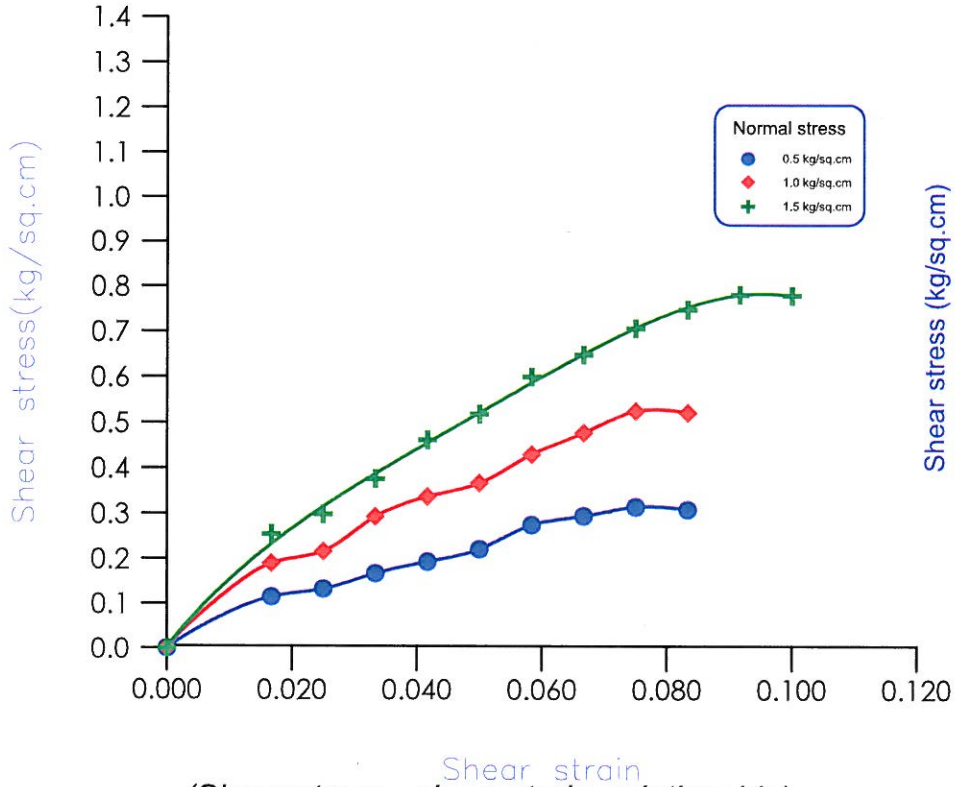
(Shear stress - Normal stress relationship)

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

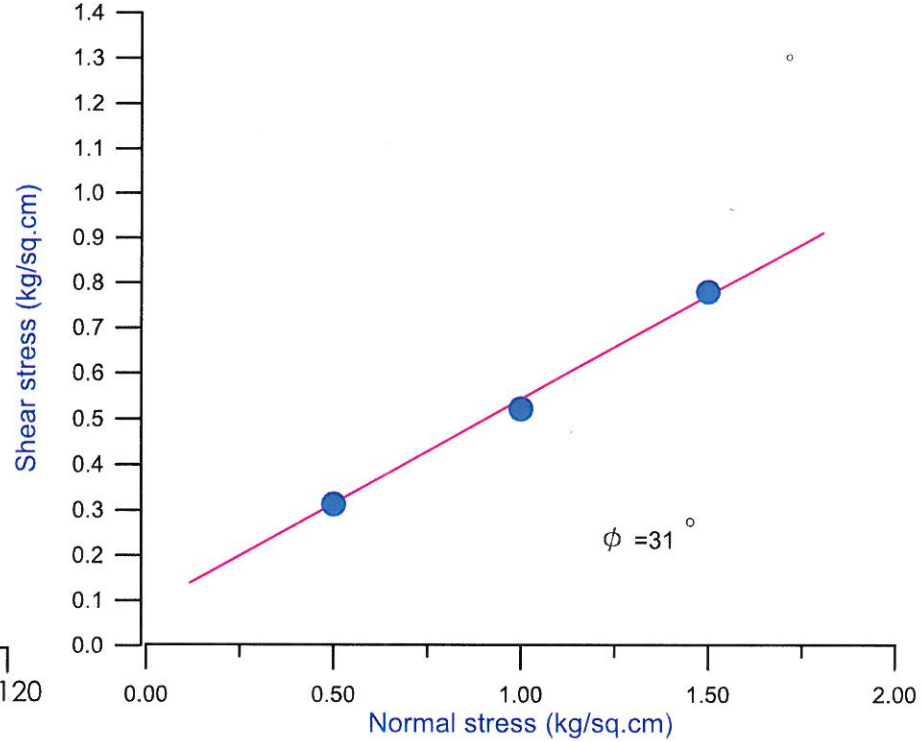
FIG- DS-CF1

0359

BH-2
Depth-2.50m



(Shear stress - shear strain relationship)



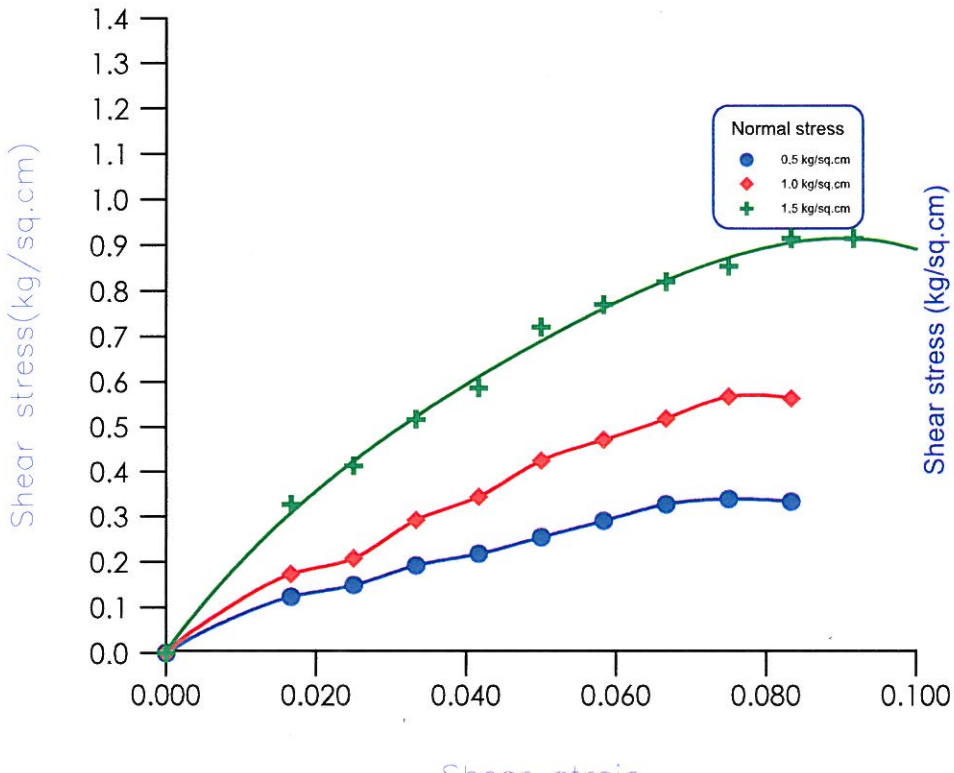
(Shear stress - Normal stress relationship)

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

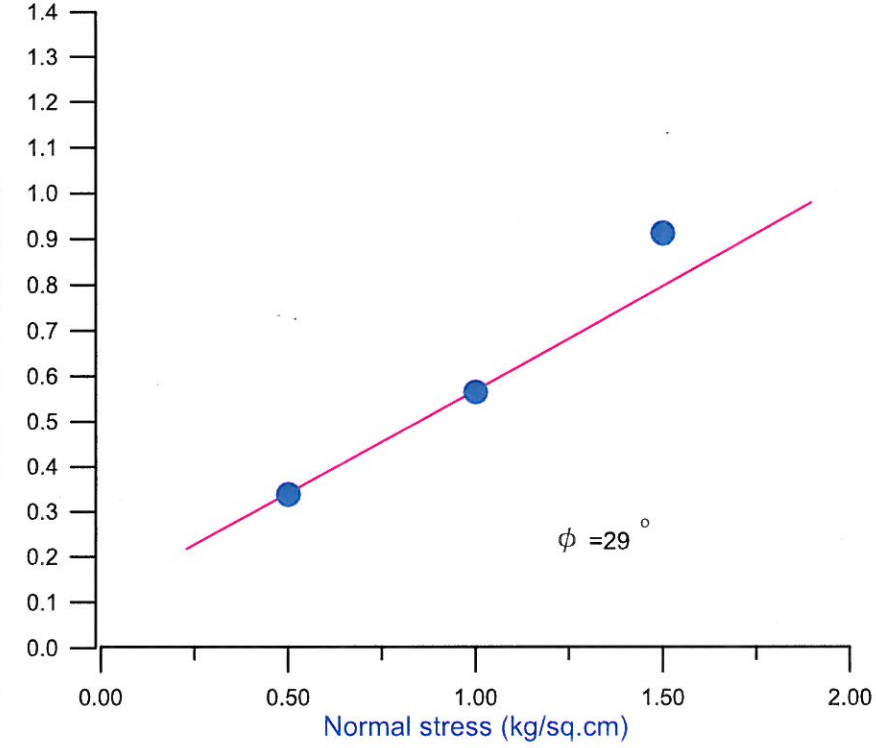
FIG- DS-CF2

0390

BH-3
Depth-2.50m



(Shear stress - shear strain relationship)



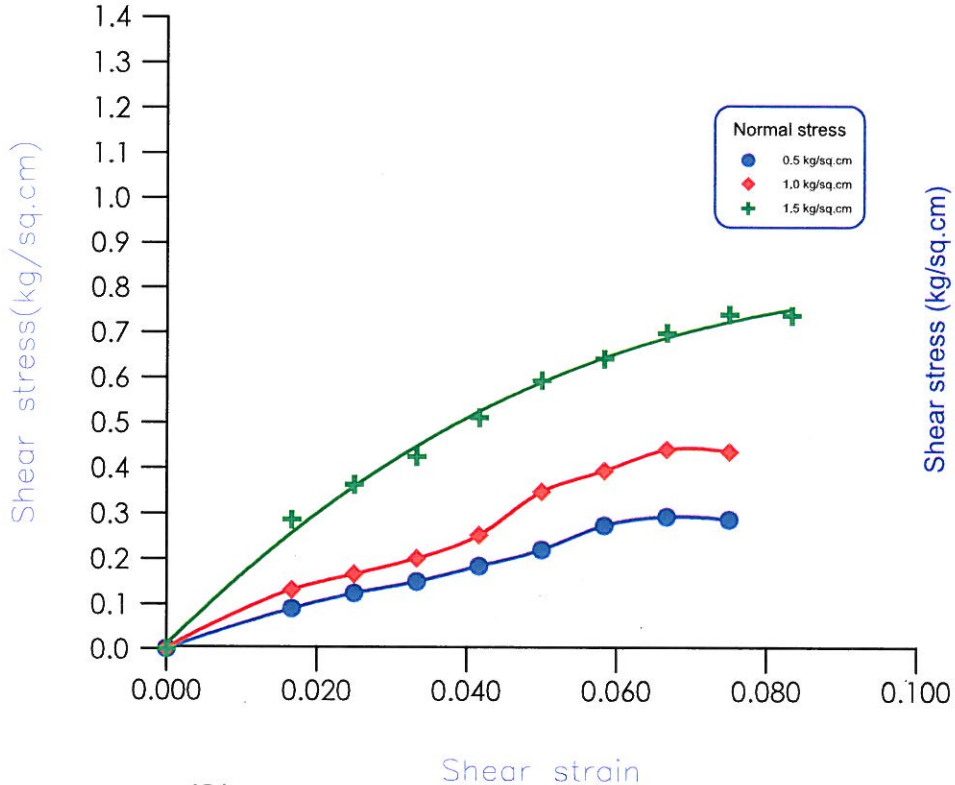
(Shear stress - Normal stress relationship)

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

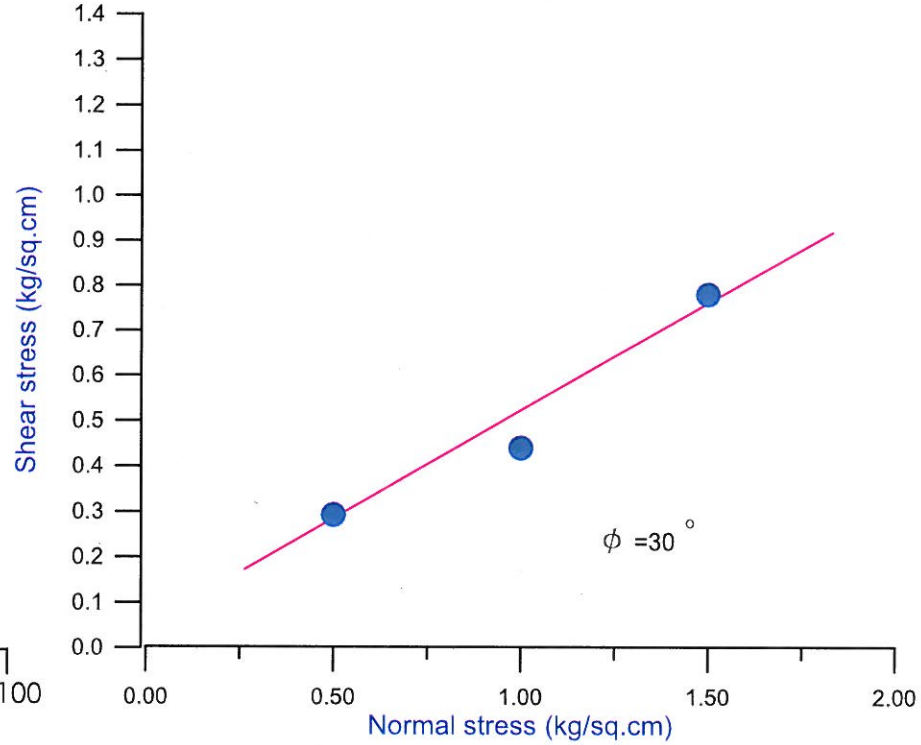
FIG- DS-CF3

0364

BH-3
Depth-11.50m



(Shear stress - shear strain relationship)

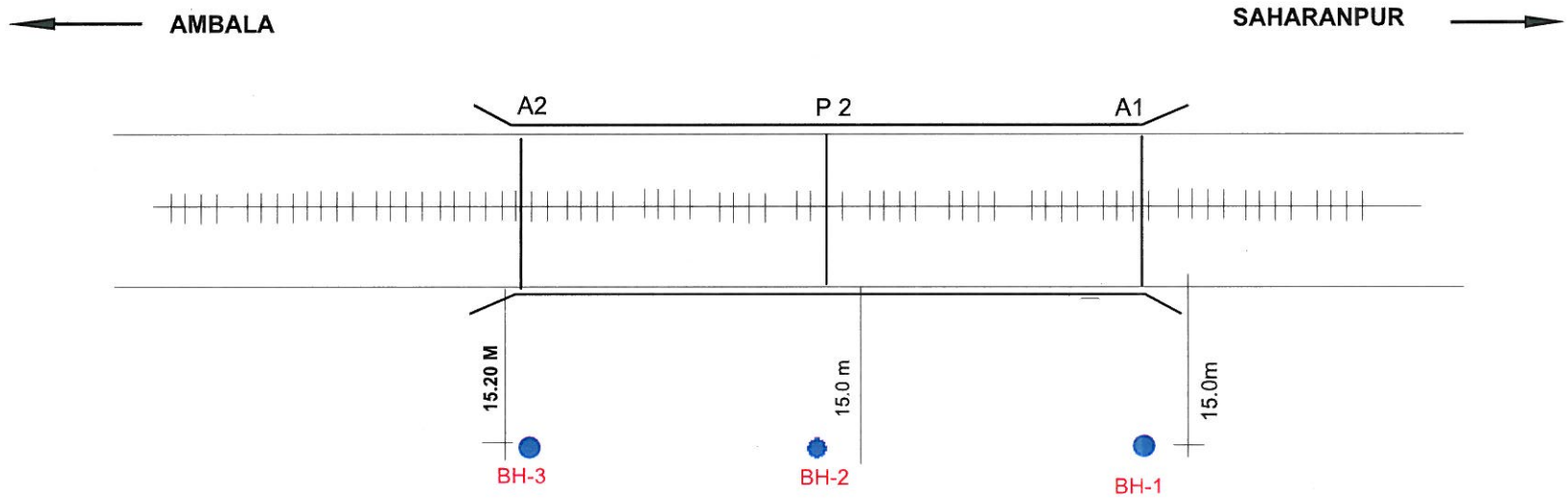


(Shear stress - Normal stress relationship)

PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur FIG- DS-CF4

SOIL ENGINEERING CONSULTANTS

Job No: 1813

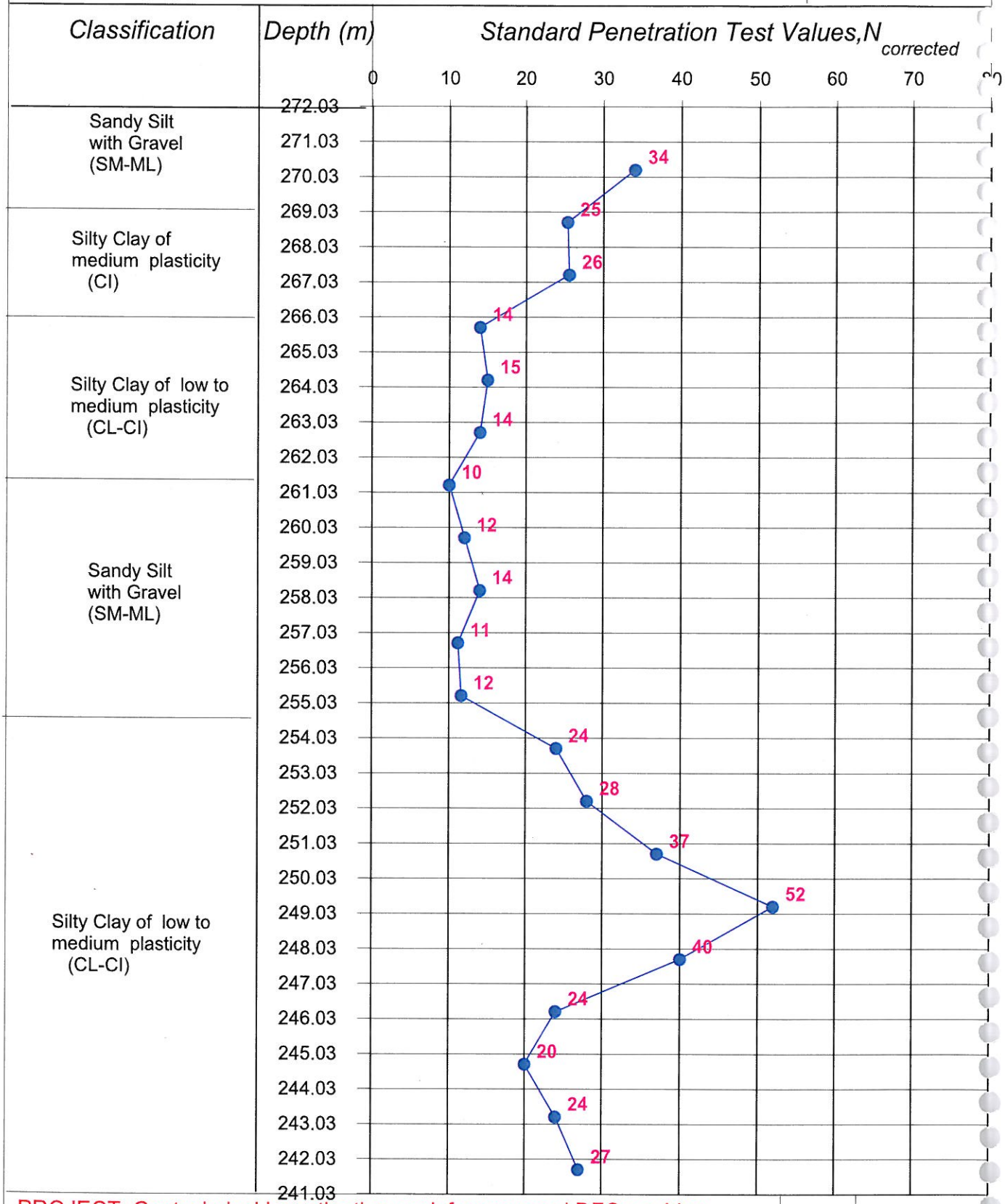


BRIDGE 281@ 239/19-21

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

Fig: Plan-CF

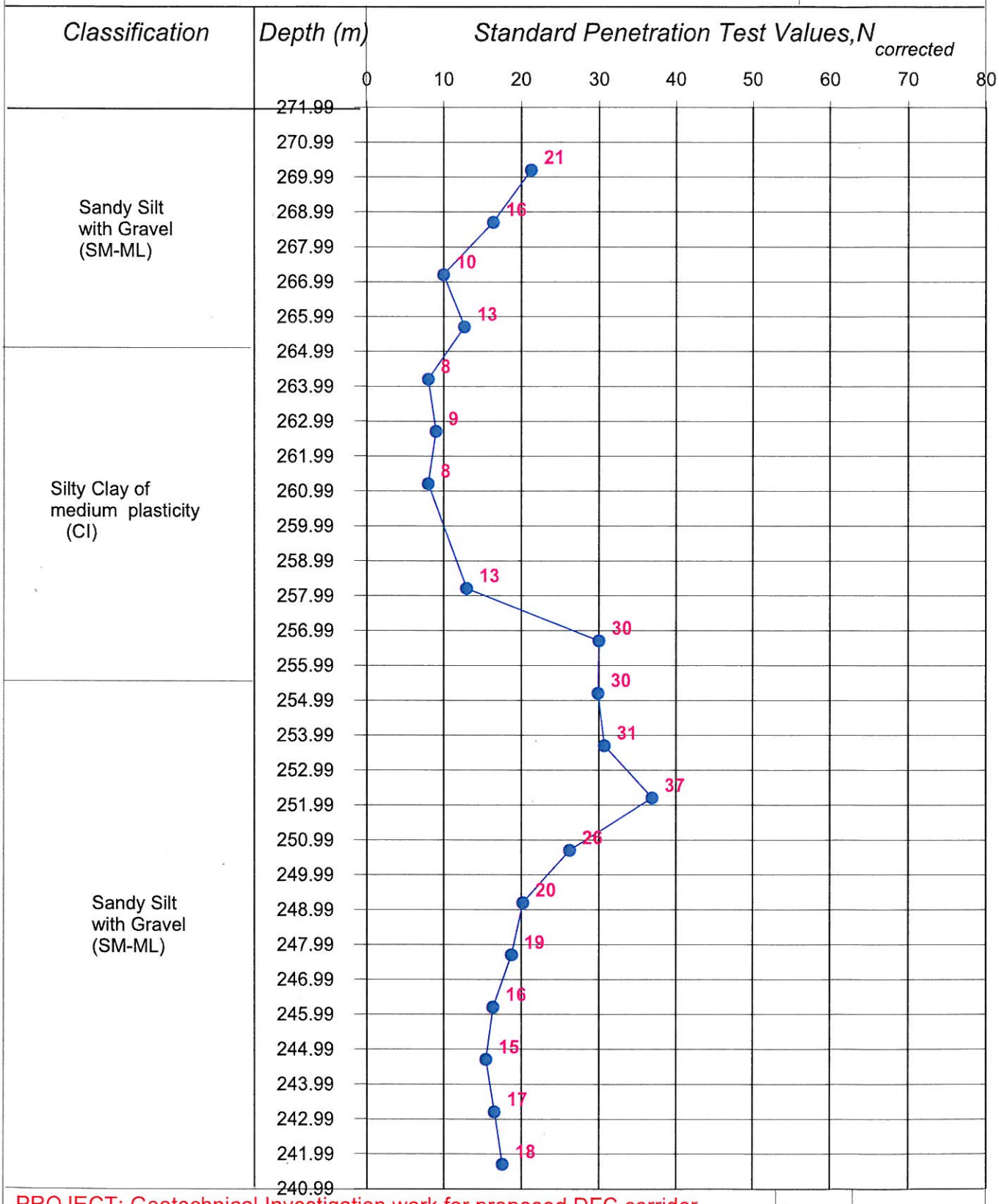
SOIL ENGINEERING CONSULTANTS | BR 281@ 239/19-21 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-1 | Fig: SP-CF1

0364

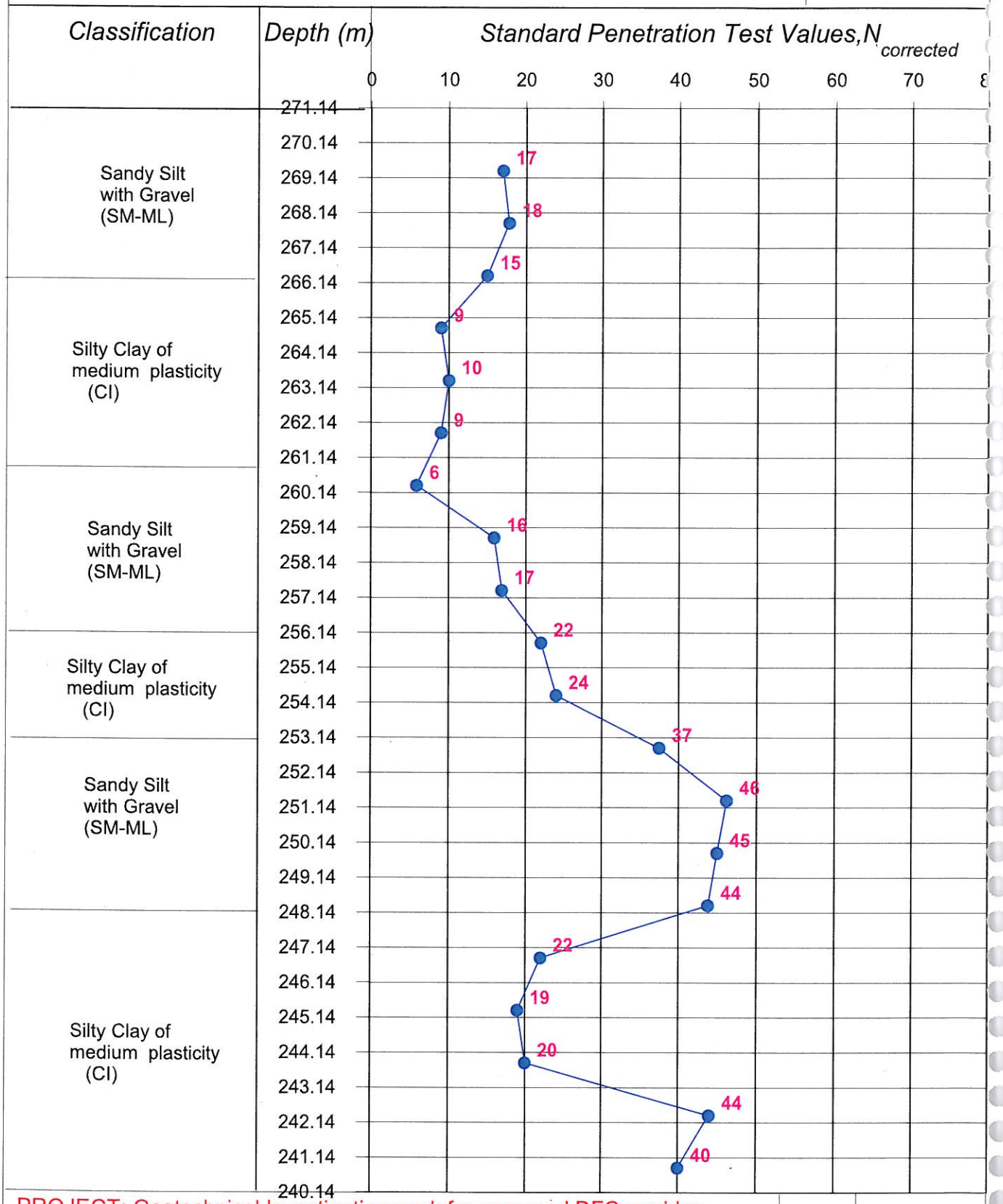
SOIL ENGINEERING CONSULTANTS | BR 281@ 239/19-21 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP- CF2

0365

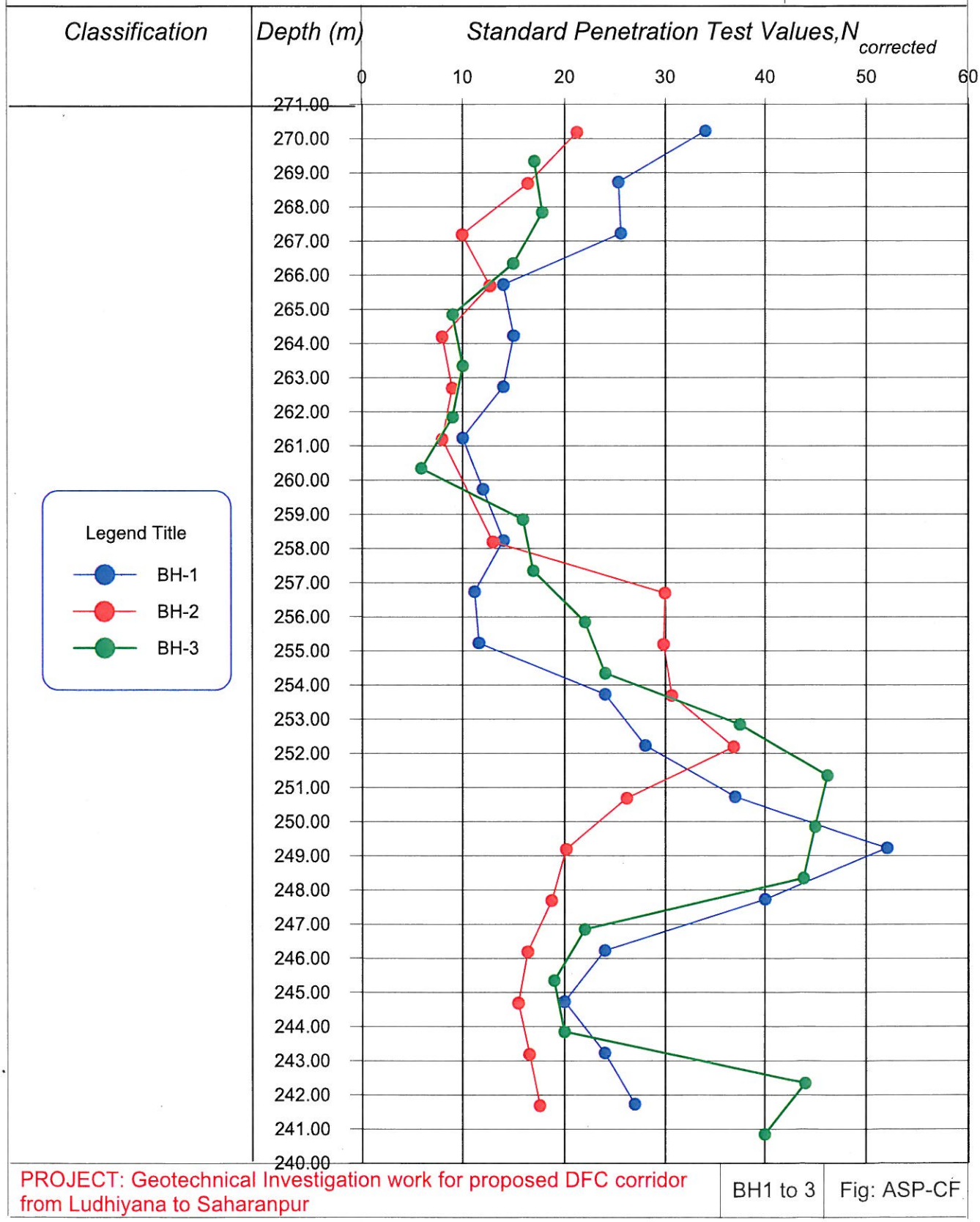
SOIL ENGINEERING CONSULTANTS | BR 281@ 239/19-21 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-3 | Fig: SP- CF3

0366

SOIL ENGINEERING CONSULTANTS | BR; 281@ 239/9-21 | Project No: 1813



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

BORE LOG

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

Project No. 1813 Bridge : 282 RL: 271.013

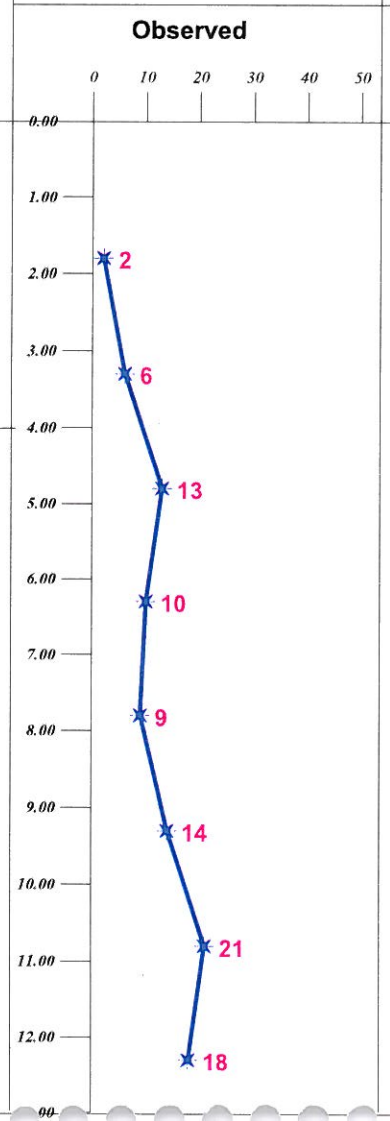
Location; 243/9-11
BH No.: 1
Depth : 12.00m
Depth of Water table : Not Met

Date of start : 30/05/2008
Date of finish : 31/05/2008

SOIL ENGINEERING CONSULTANTS

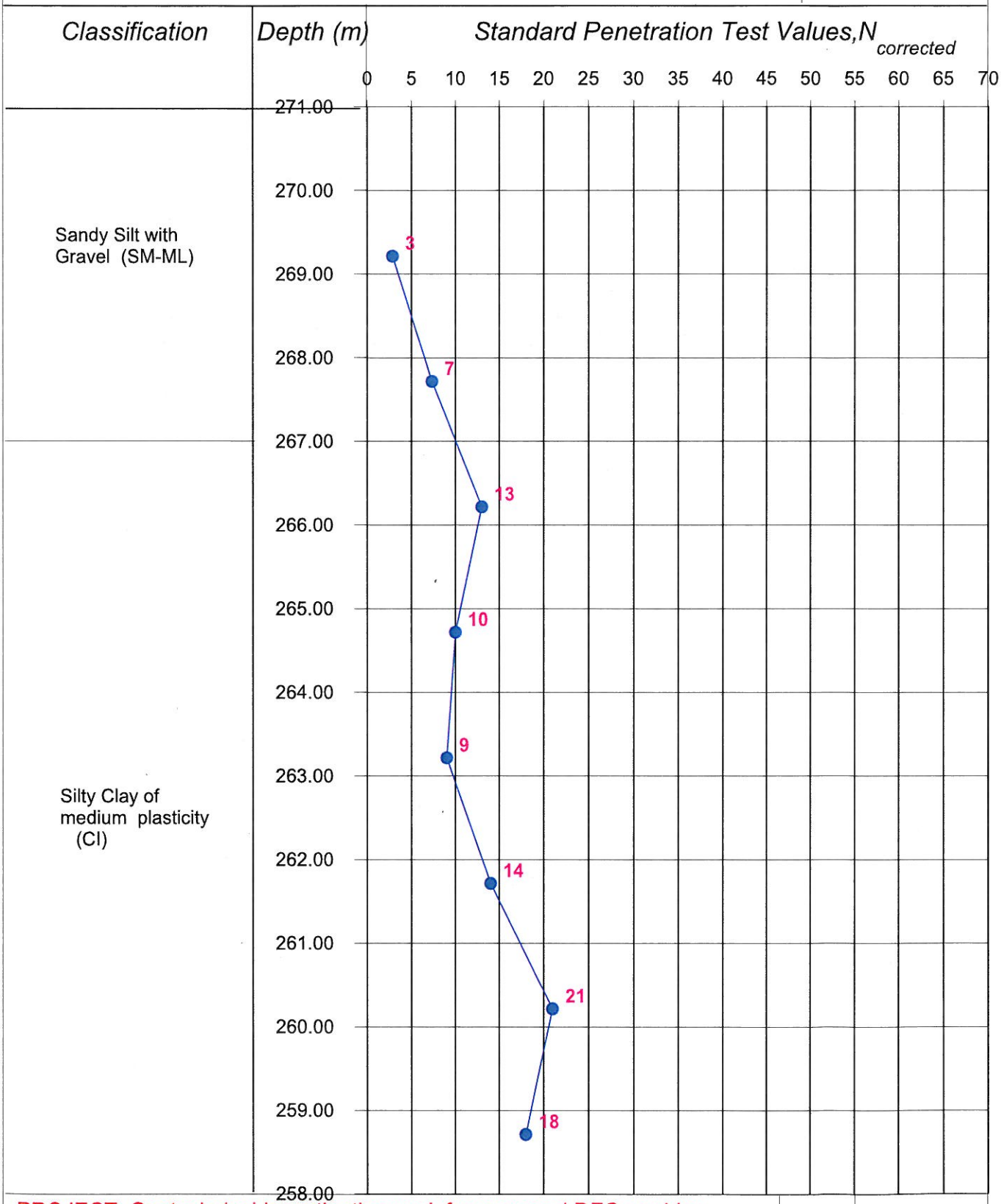
Reduced Level	Depth (m)	Type of sample	Soil Classification	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
271.013																
269.213	1.80	SPT	Sandy Silt with Gravel (SM-ML)	0	23	77				Non	Plastic					
268.513	2.50	UDS					1.71	1.49	15.10			2.68	DST		24	
267.713	3.30	SPT		0	19	81				Non	Plastic					
266.213	4.80	SPT		0	4	96				44	26					
264.713	6.30	SPT		0	5	95				41	25					
263.213	7.80	SPT		0	3	97										
262.513	8.50	UDS					1.76	1.49	17.94			2.69	UU	0.54		0.069
261.713	9.30	SPT	Silty Clay of medium Plasticity (CI)	4	8	88				43	23					
260.213	10.80	SPT		0	2	98										
259.513	11.50	UDS											UU	1.09		0.057
258.713	12.30	SPT		0	2	98				44	26					

S.P.T Plot



0368

SOIL ENGINEERING CONSULTANTS BR 282@ 243/9-11 | Project No: 1813



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

BORE LOG

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

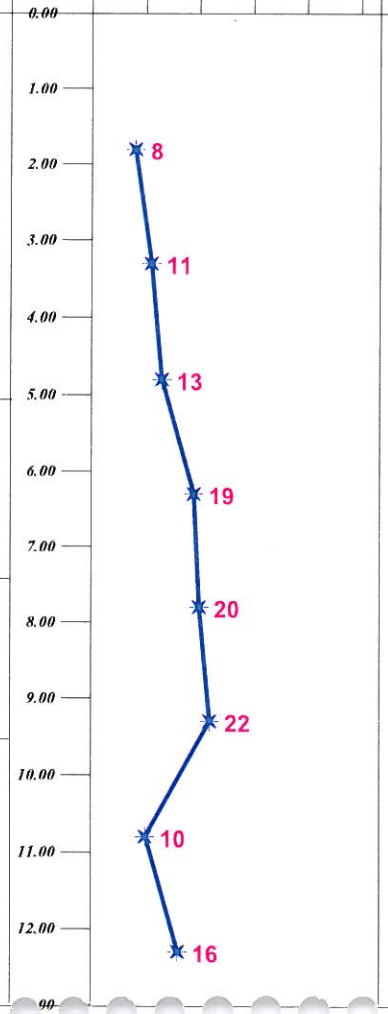
Project No. 1813 Bridge : 284 RL: 272.312

Location; 245/9-11
BH No.: 1
Depth : 12.00m
Depth of Water table : Not Met

Date of start : 02/06/2008
Date of finish : 02/06/2008

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)	
272.312																
270.512	1.80	SPT	Sandy Silt with Gravel (SM-ML)	0	2	98				Non	Plastic					
269.812	2.50	UDS					1.77	1.54	14.89			2.67	DST	0.1	29	
269.012	3.30	SPT		2	7	91				Non	Plastic					
267.512	4.80	SPT		0	2	98				Non	Plastic					
266.012	6.30	SPT	Silty Clay of medium Plasticity (CI)	0	2	98				37	24					
264.512	7.80	SPT	Sandy Silt with Gravel (SM-ML)	0	16	84				Non	Plastic					
263.012	9.30	SPT		0	11	89				Non	Plastic					
261.512	10.80	SPT	Silty Clay of low Plasticity (CL)	0	3	97				33	22					
260.012	12.30	SPT		0	3	97										

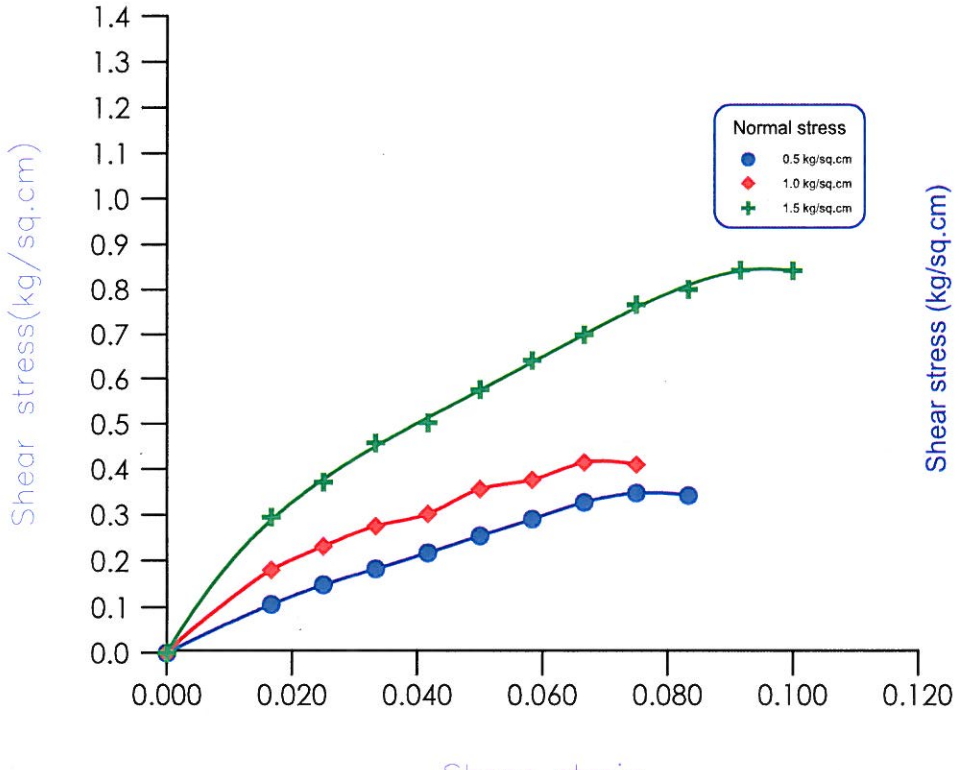


Soil Engineering Consltants

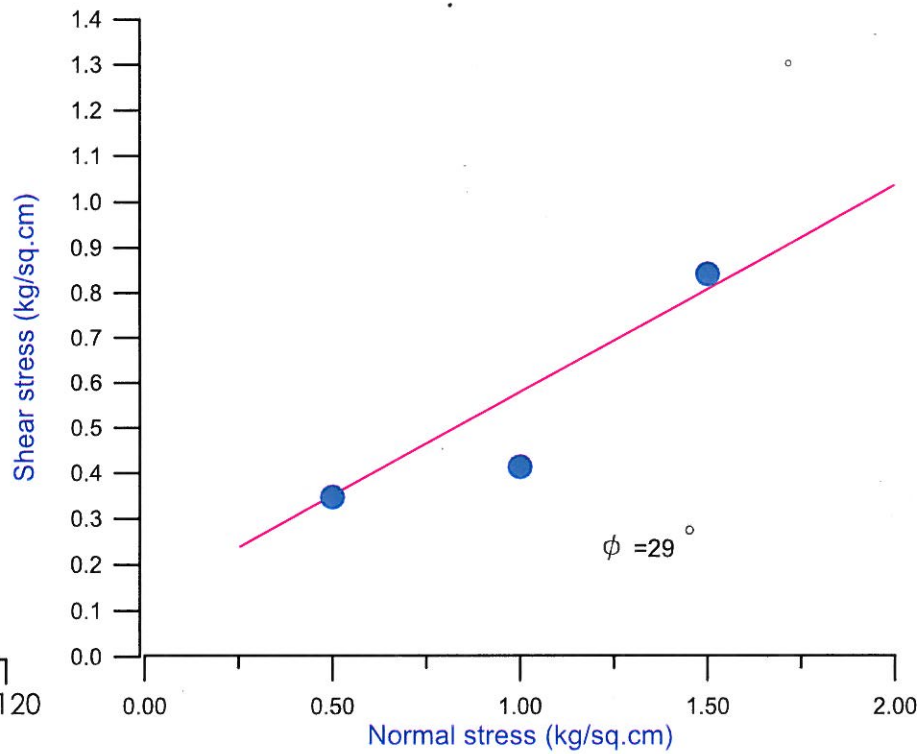
BR: 284@ 245/9-11

Job.1813

BH-01
Depth-2.50m



(Shear stress - shear strain relationship)



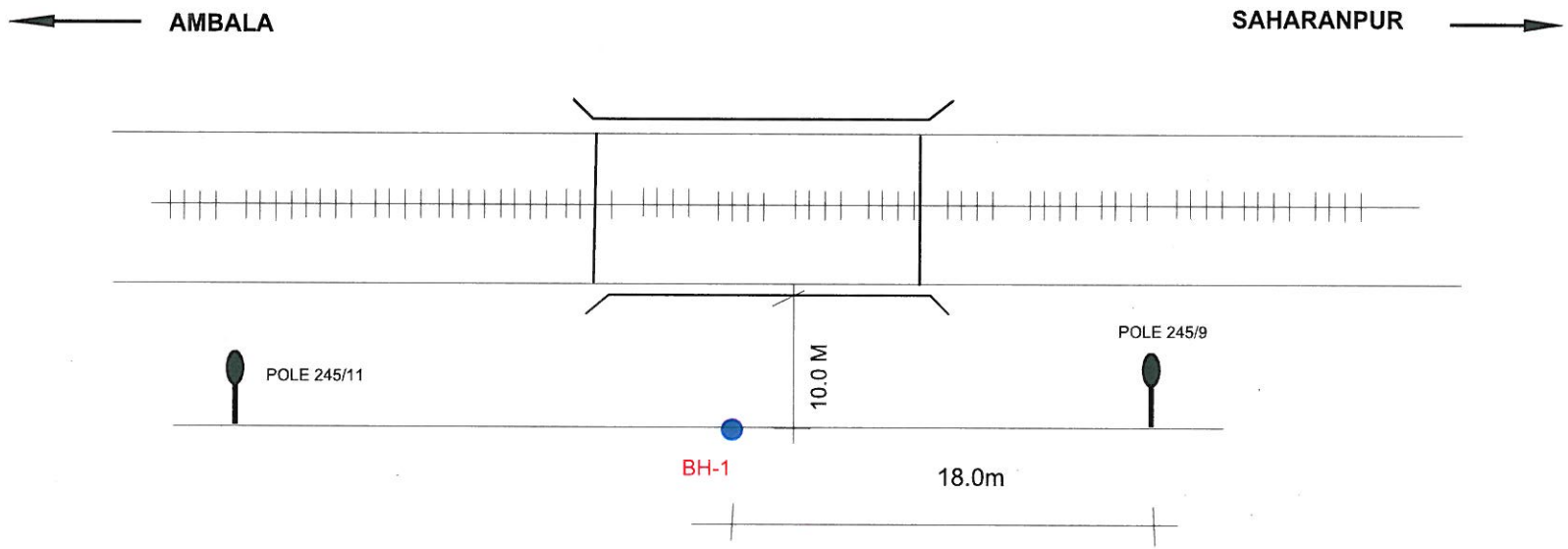
(Shear stress - Normal stress relationship)

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

FIG- DS-CL

SOIL ENGINEERING CONSULTANTS

Job No: 1813

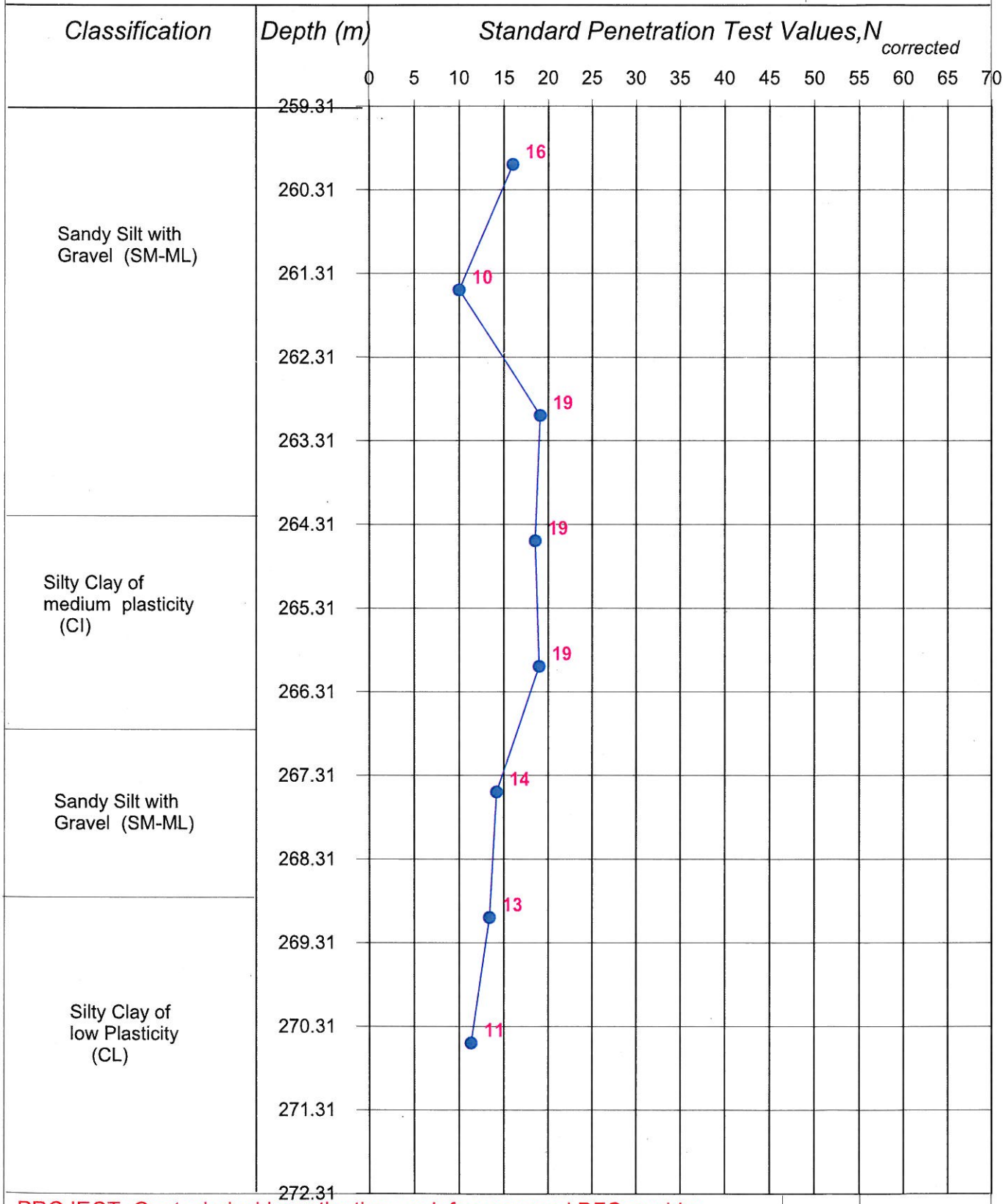


BR 284@ 247/9-11

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

Fig: Plan-CL

SOIL ENGINEERING CONSULTANTS BR 284@ 245/9-11 | Project No: 1813



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

0373

BORE LOG

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

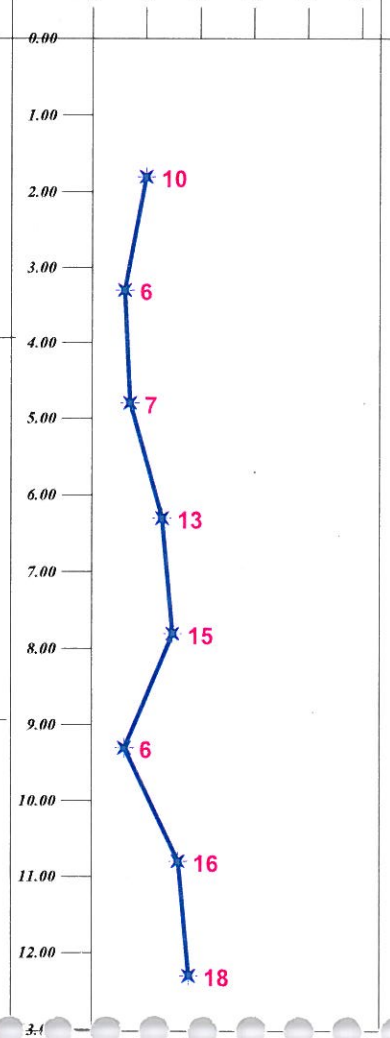
Location; 247/11-13
BH No.: 1
Depth : 12.00m
Depth of Water table : 4.00 m

Date of start : 07/06/2008
Date of finish : 07/06/2008

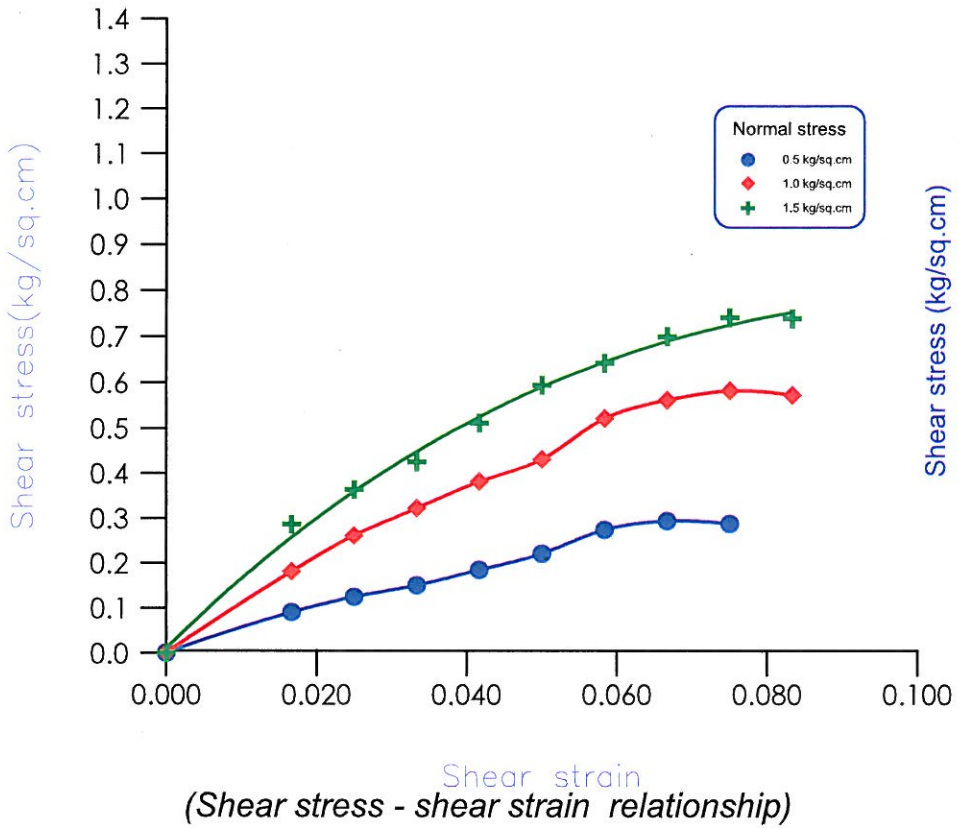
Project No. 1813 Bridge : 285 RL: 271.989

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)	
271.989																
270.189	1.80	SPT	Sandy Silt with Gravel (SM-ML)	0	17	83				Non	Plastic					
269.489	2.50	UDS					1.73	1.48	16.86			2.67	DST	0.15	27	
268.689	3.30	SPT		0	3	97				Non	Plastic					
267.189	4.80	SPT	Silty Clay of Low Plasticity (CL)	0	6	94				35	18					
266.489	5.50	UDS					1.73	1.41	22.41			2.69	UU	0.44		0.083
265.689	6.30	SPT		1	7	92										
264.189	7.80	SPT		0	8	92				36	21					
263.489	8.50	UDS					1.76	1.44	21.89				UU	0.63		0.079
262.689	9.30	SPT		1	9	90				Non	Plastic					
261.189	10.80	SPT	Sandy Silt with Gravel (SM-ML)	2	9	89				Non	Plastic					
259.689	12.30	SPT		1	13	86				Non	Plastic					

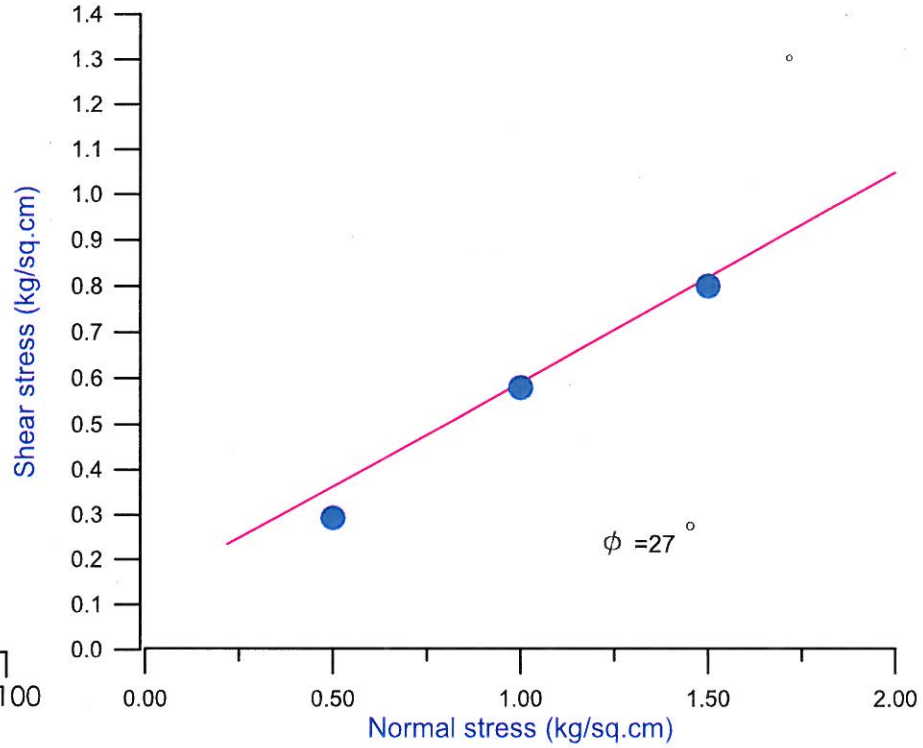
S.P.T Plot — Observed



BH-1
Depth-2.50m



(Shear stress - shear strain relationship)



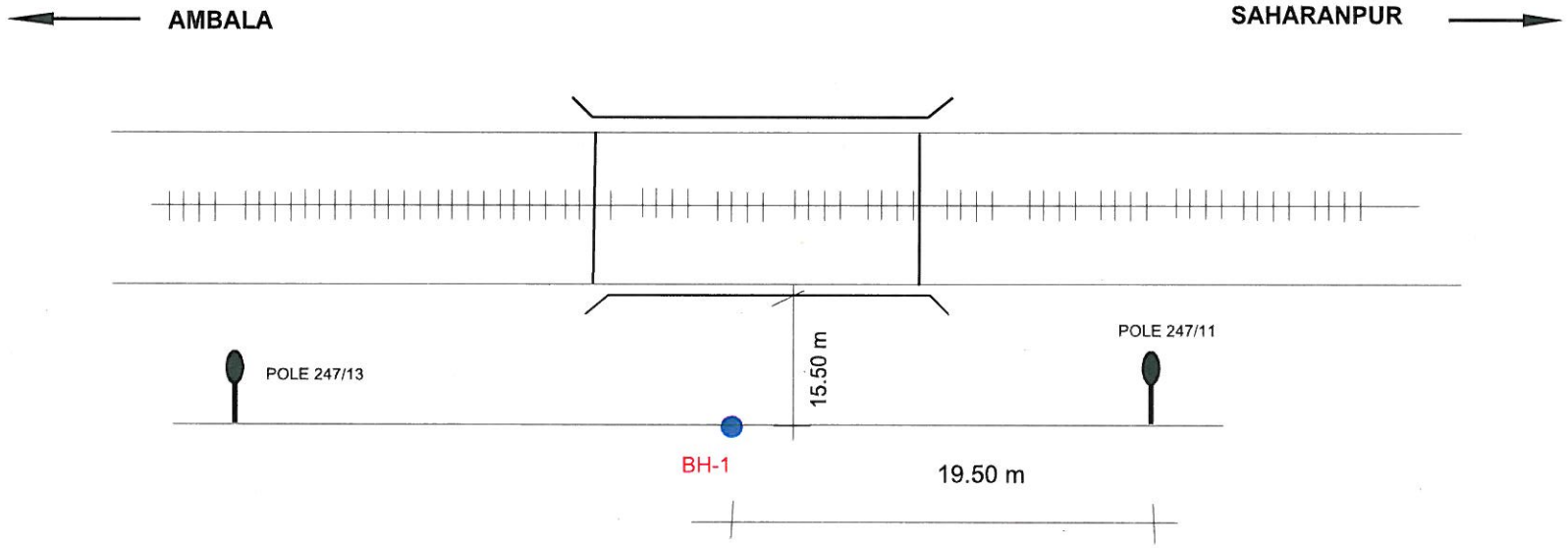
(Shear stress - Normal stress relationship)

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

FIG- DS-CH

SOIL ENGINEERING CONSULTANTS

Job No: 1813

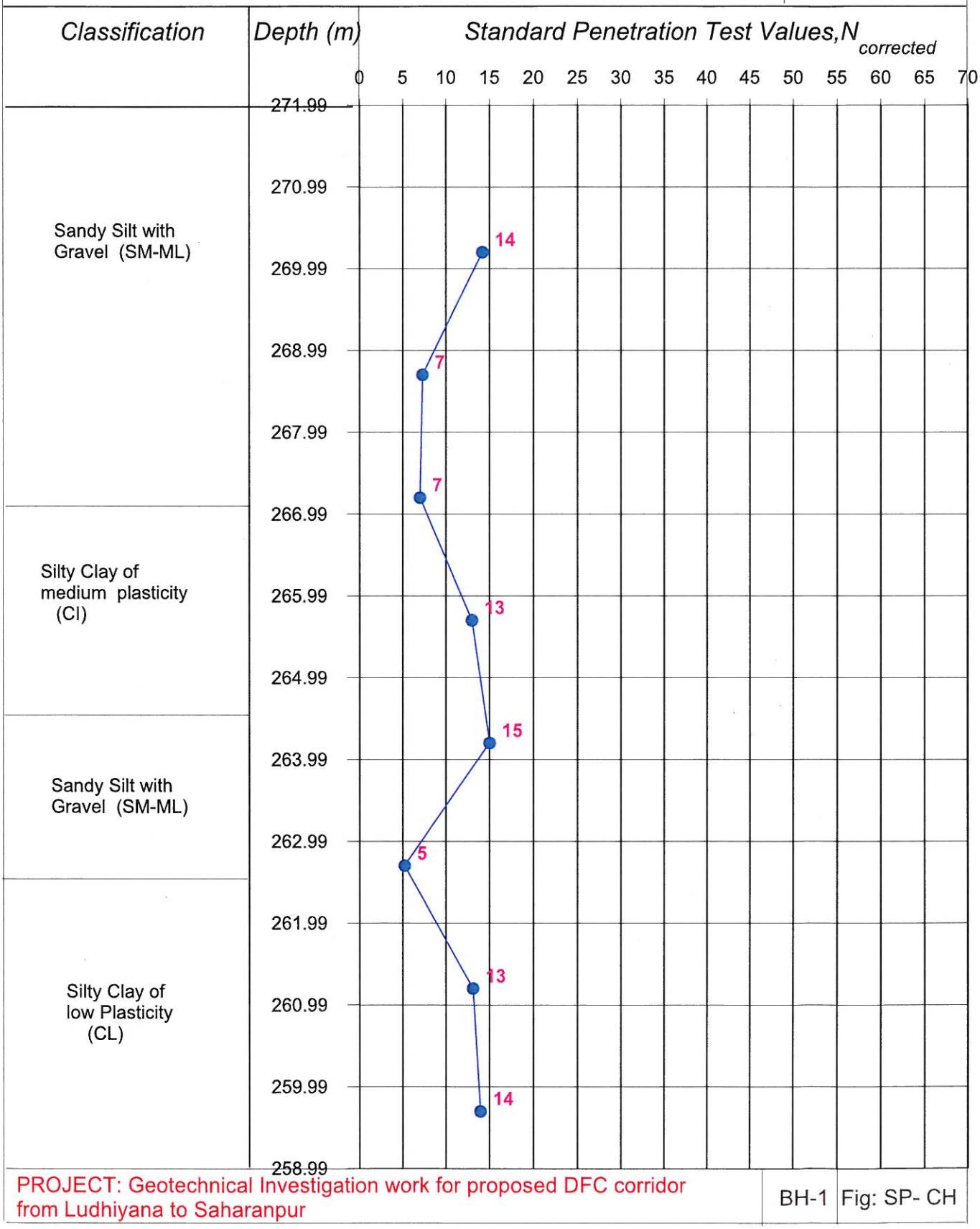


BR 285@ 247/11-13

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

Fig: Plan-CH

SOIL ENGINEERING CONSULTANTS | BR 285 @ 247/11-13 | Project No: 1813



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

0377

BORE LOG

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

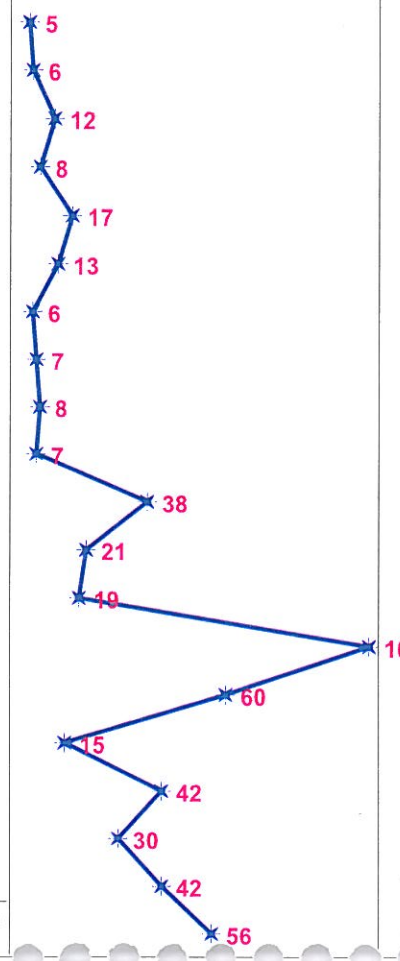
Location:247/19-21
BH No.: 1
Depth : 30.00m
Depth of Water table : 4.00 m

Date of start : 06/06/2008
Date of finish : 07/06/2008

Project No. 1813 Bridge : 286 RL: 271.765

Reduced Level	Depth (m)	Type of sample	Soil Classification	Gravel	Sand	Silt/clay	r(wet)	r(dry)	W(%)	L.L	P . L	Sp.Gr	Type of test	C(kg/sq.cm)	phi(degrees)	Cc
271.765																
269.965	1.80	SPT		0	5	95				Non	Plastic					
269.265	2.50	UDS					1.68	1.45	15.70			2.65	DST	0.15	27	
268.465	3.30	SPT		0	4	96				Non	Plastic					
266.965	4.80	SPT		0	1	99				Non	Plastic					
265.465	6.30	SPT		5	5	90				Non	Plastic					
263.965	7.80	SPT		5	6	89				Non	Plastic					
263.265	8.50	UDS					1.73	1.42	21.89				DST	0.1	30	
262.465	9.30	SPT		0	2	98				Non	Plastic					
260.965	10.80	SPT		0	2	98				Non	Plastic					
259.465	12.30	SPT		0	2	98				Non	Plastic					
257.965	13.80	SPT		0	2	98				Non	Plastic					
256.465	15.30	SPT	Sandy Silt with Gravel (SM-ML)	0	3	97				Non	Plastic					
254.965	16.80	SPT		0	4	96				Non	Plastic					
253.465	18.30	SPT		0	2	98				Non	Plastic					
251.965	19.80	SPT		0	1	99				Non	Plastic					
250.465	21.30	SPT		0	16	84				Non	Plastic					
248.965	22.80	SPT		0	30	70				Non	Plastic					
247.465	24.30	SPT		0	2	98				Non	Plastic					
245.965	25.80	SPT		1	5	94				Non	Plastic					
244.465	27.30	SPT		0	1	99				Non	Plastic					
242.965	28.80	SPT		2	4	94				Non	Plastic					
241.465	30.30	SPT	Silty Clay of medium Plasticity (CI)	0	3	97				37	19					

S.P.T Plot — Observed



0378

BORE LOG

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

Project No. 1813 Bridge : 286 RL: 271.654

Location:247/19-21
BH No.: 2
Depth : 30.00m
Depth of Water table : 4.00 m

Date of start : 07/06/2008
Date of finish : 08/06/2008

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
271.654																	
269.854	1.80	SPT	Silty Clay of medium Plasticity (CI)	7	0	2	98				39	21					
269.154	2.50	UDS						1.83	1.55	17.80			2.68	UU	0.26	3	0.086
268.354	3.30	SPT		5	2	7	91				38	22					
266.854	4.80	SPT		9	2	9	89				36	21					
266.154	5.50	UDS						1.84	1.52	21.10				UU	0.54		0.074
265.354	6.30	SPT		12	0	3	97				36	19					
263.854	7.80	SPT	Sandy Silt with Gravel (SM-ML)	11	2	7	91				Non	Plastic					
263.154	8.50	UDS						1.83	1.51	20.84			2.65	DST	0.15	29	
262.354	9.30	SPT		13	3	6	91				Non	Plastic					
260.854	10.80	SPT		8	0	2	98				Non	Plastic					
259.354	12.30	SPT		12	0	2	98				Non	Plastic					
257.854	13.80	SPT		6	0	4	96				Non	Plastic					
256.354	15.30	SPT		9	0	2	98				Non	Plastic					
254.854	16.80	SPT		8	0	2	98				Non	Plastic					
253.354	18.30	SPT		11	0	2	98				Non	Plastic					
251.854	19.80	SPT	Silty Clay of low to medium Plasticity (CL-CI)	15	0	2	98				42	22					
251.154	20.50	UDS						1.87	1.56	20.11				UU	0.96		0.068
250.354	21.30	SPT		23	0	1	99										
248.854	22.80	SPT		58	0	32	68				42	24					
248.154	23.50	UDS						1.92	1.61	19.47			2.69	UU	1.45		0.052
247.354	24.30	SPT		33	1	7	92				33	17					
245.854	25.80	SPT		36	1	8	91										
244.354	27.30	SPT		32	0	2	98				36	21					
242.854	28.80	SPT		36	0	2	98				37	23					
241.354	30.30	SPT		40	0	2	98				38	22					

0379

BORE LOG

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

Project No. 1813 Bridge : 286 RL: 271.414

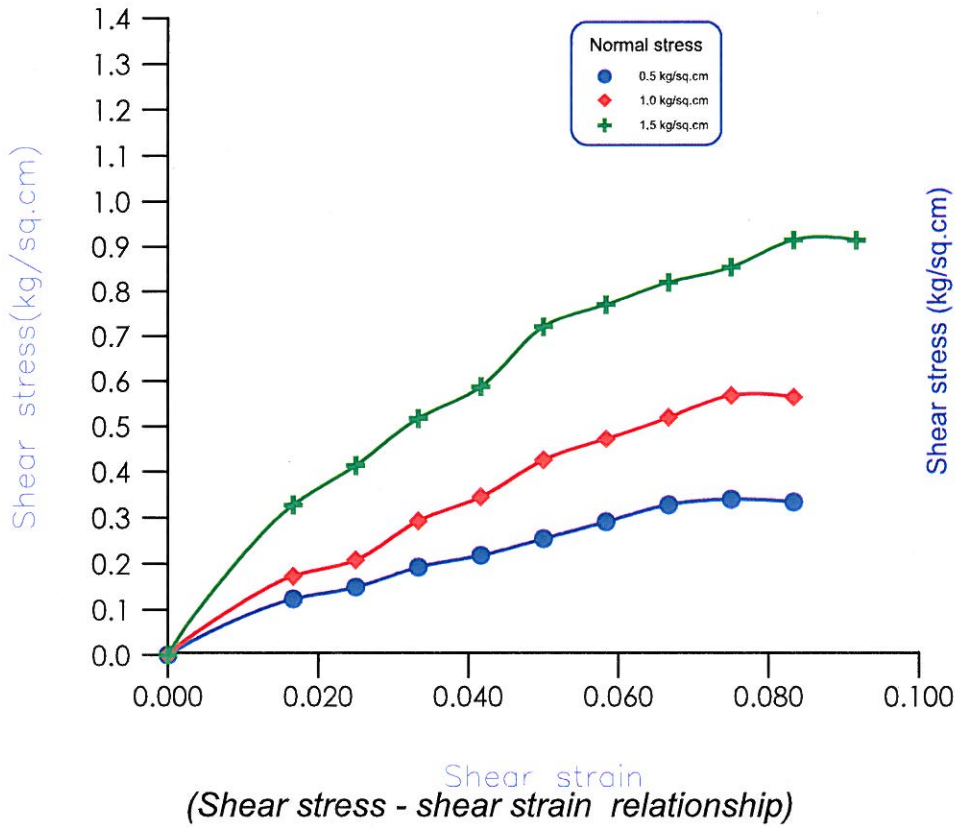
Location:247/19-21
BH No.: 3
Depth : 30.00m
Depth of Water table : 4.00 m

Date of start : 04/06/2008
Date of finish : 05/06/2008

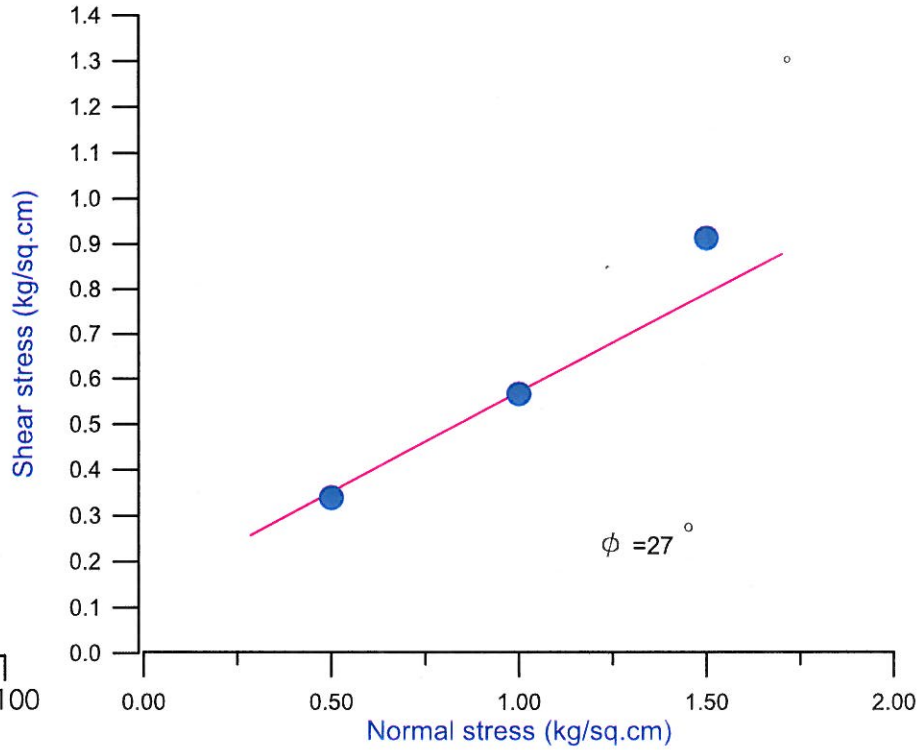
Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	Density (gm/cc) r(dry)	W/C W(%)	Limits (%) L.L	Limits (%) P.L	Sp.Gr	Shear Parameters Type of test	Shear Parameters C(kg/sq.cm)	Shear Parameters phi(degrees)	Cc
271.414																	
269.614	1.80	SPT	Sandy Silt with Gravel (SM-ML)	15	1	9	90				Non	Plastic					
268.914	2.50	UDS						1.66	1.38	20.50				DST	1	29	
268.114	3.30	SPT		10	2	7	91				Non	Plastic					
266.614	4.80	SPT	Silty Clay of low to medium Plasticity (CL-CI)	4	0	2	98				39	22					
265.914	5.50	UDS						1.68	1.43	17.80			2.68	UU	0.76		0.071
265.114	6.30	SPT		9	0	5	95										
263.614	7.80	SPT		16	0	2	98				35	20					
262.114	9.30	SPT		17	0	2	98										
260.614	10.80	SPT	Sandy Silt with Gravel (SM-ML)	11	0	1	99				Non	Plastic					
259.114	12.30	SPT		12	0	2	98				Non	Plastic					
257.614	13.80	SPT		10	1	3	96				Non	Plastic					
256.114	15.30	SPT		12	1	7	92				Non	Plastic					
254.614	16.80	SPT		15	1	3	96				Non	Plastic					
253.114	18.30	SPT		18	0	2	98				Non	Plastic					
251.614	19.80	SPT		20	0	2	98				Non	Plastic					
250.114	21.30	SPT		19	0	2	98				Non	Plastic					
248.614	22.80	SPT		27	0	2	98				Non	Plastic					
247.114	24.30	SPT		16	0	2	98				Non	Plastic					
245.614	25.80	SPT		20	0	1	99				Non	Plastic					
244.114	27.30	SPT		22	0	1	99				Non	Plastic					
242.614	28.80	SPT		26	1	4	95				Non	Plastic					
241.114	30.30	SPT		42	0	3	97				Non	Plastic					

0330

BH-1
Depth-2.50m



(Shear stress - shear strain relationship)



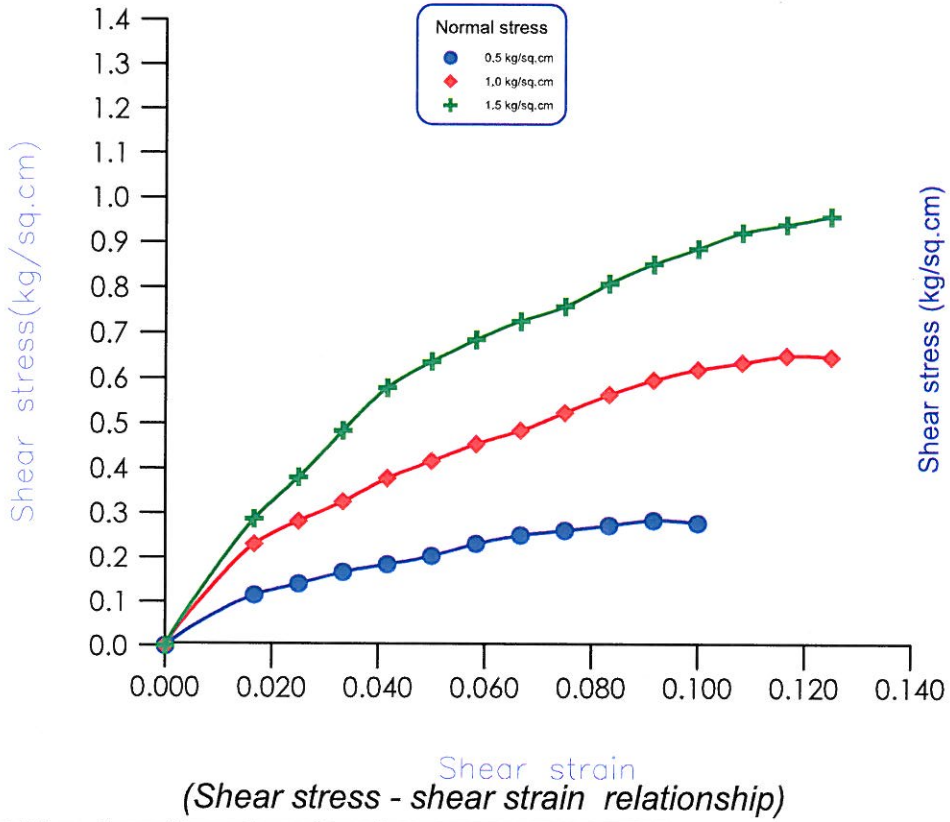
(Shear stress - Normal stress relationship)

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

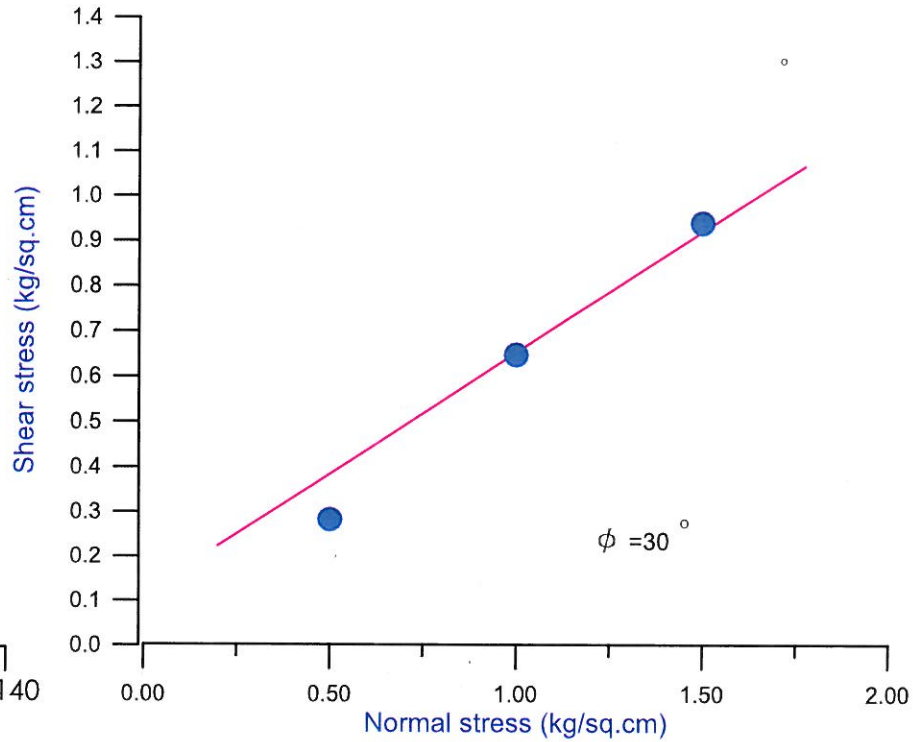
FIG- DS-CO1

0884

BH-2
Depth-8.50m



(Shear stress - shear strain relationship)



(Shear stress - Normal stress relationship)

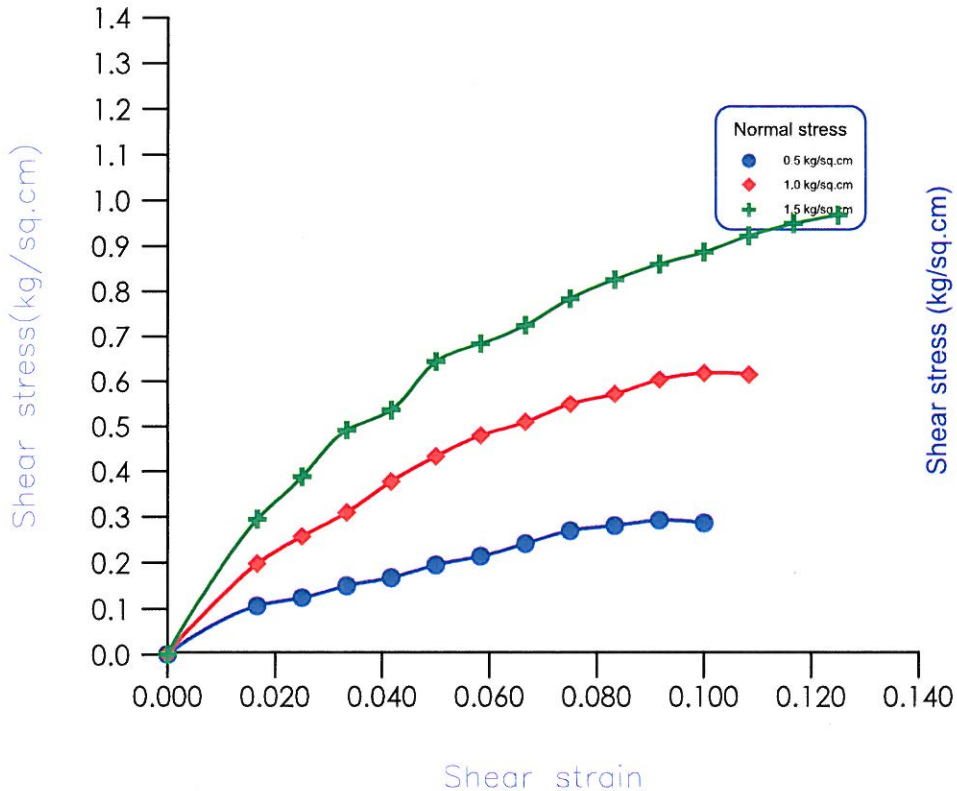
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-CO2

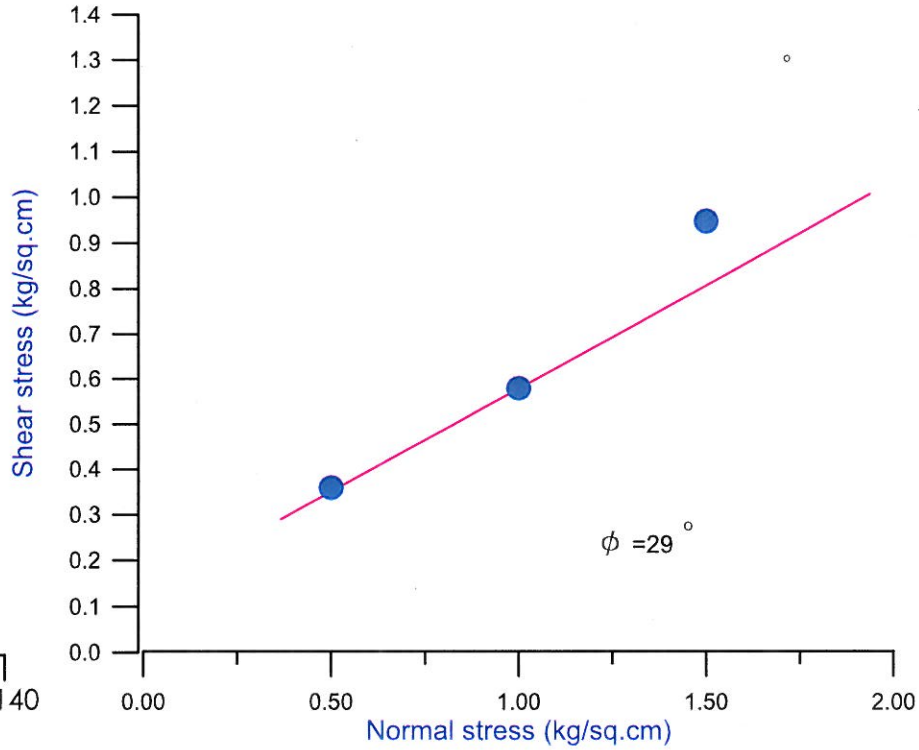
0382

0883

BH-3
Depth-8.50m



(Shear stress - shear strain relationship)

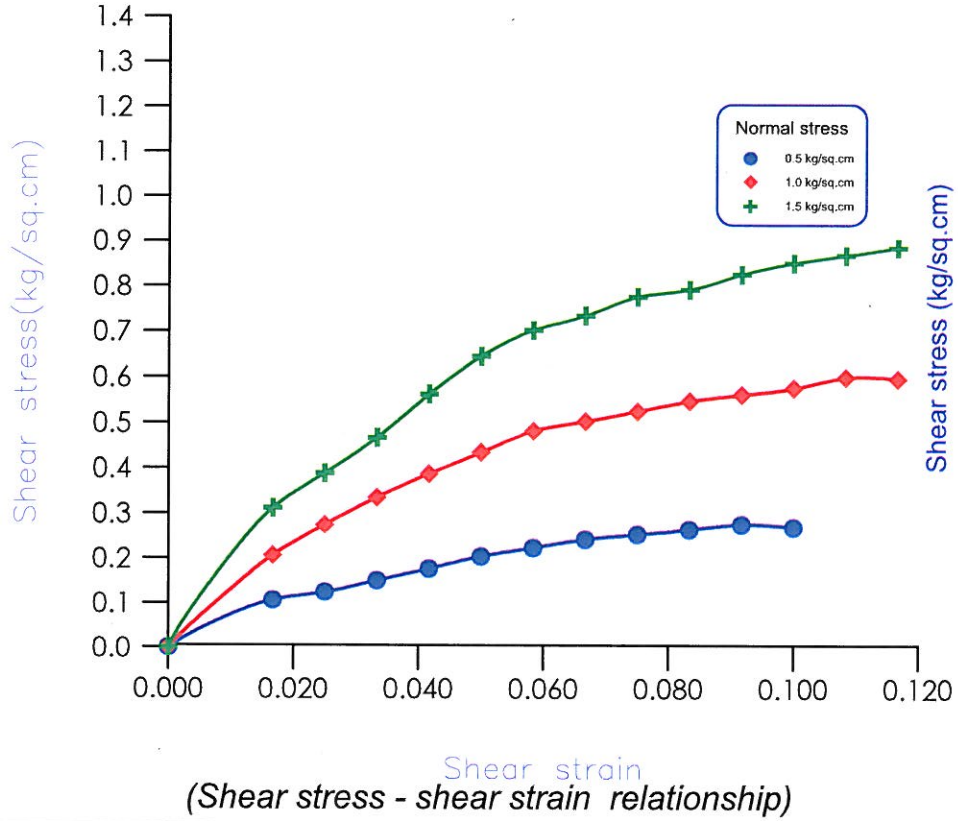


(Shear stress - Normal stress relationship)

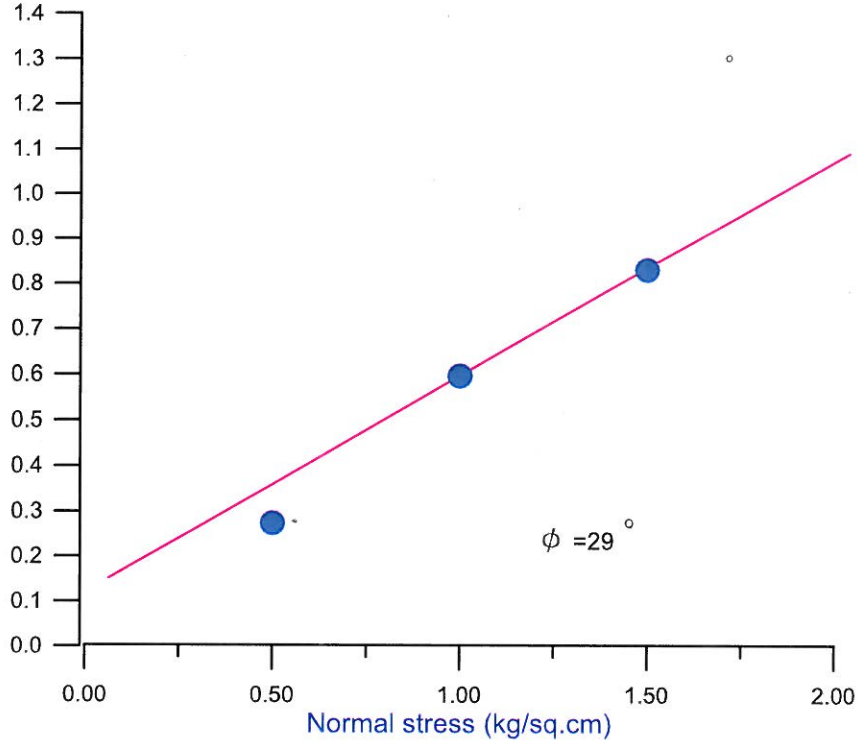
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-CO3

BH-4
Depth-2.50m



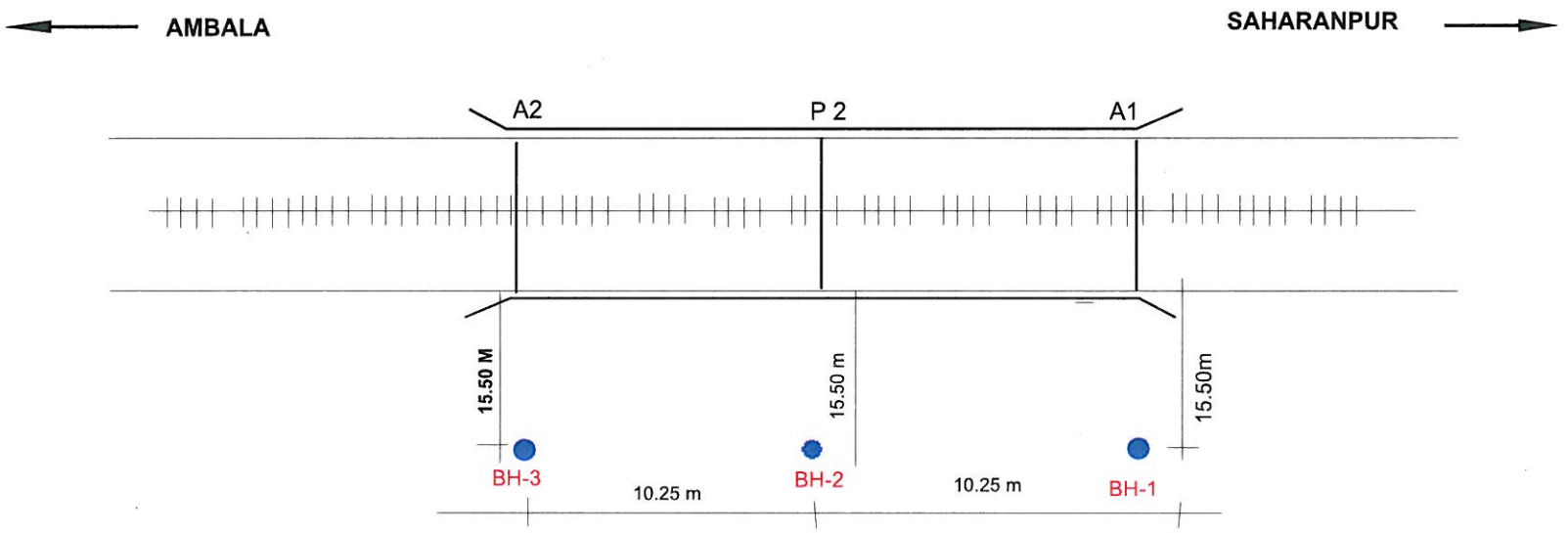
(Shear stress - shear strain relationship)



(Shear stress - Normal stress relationship)

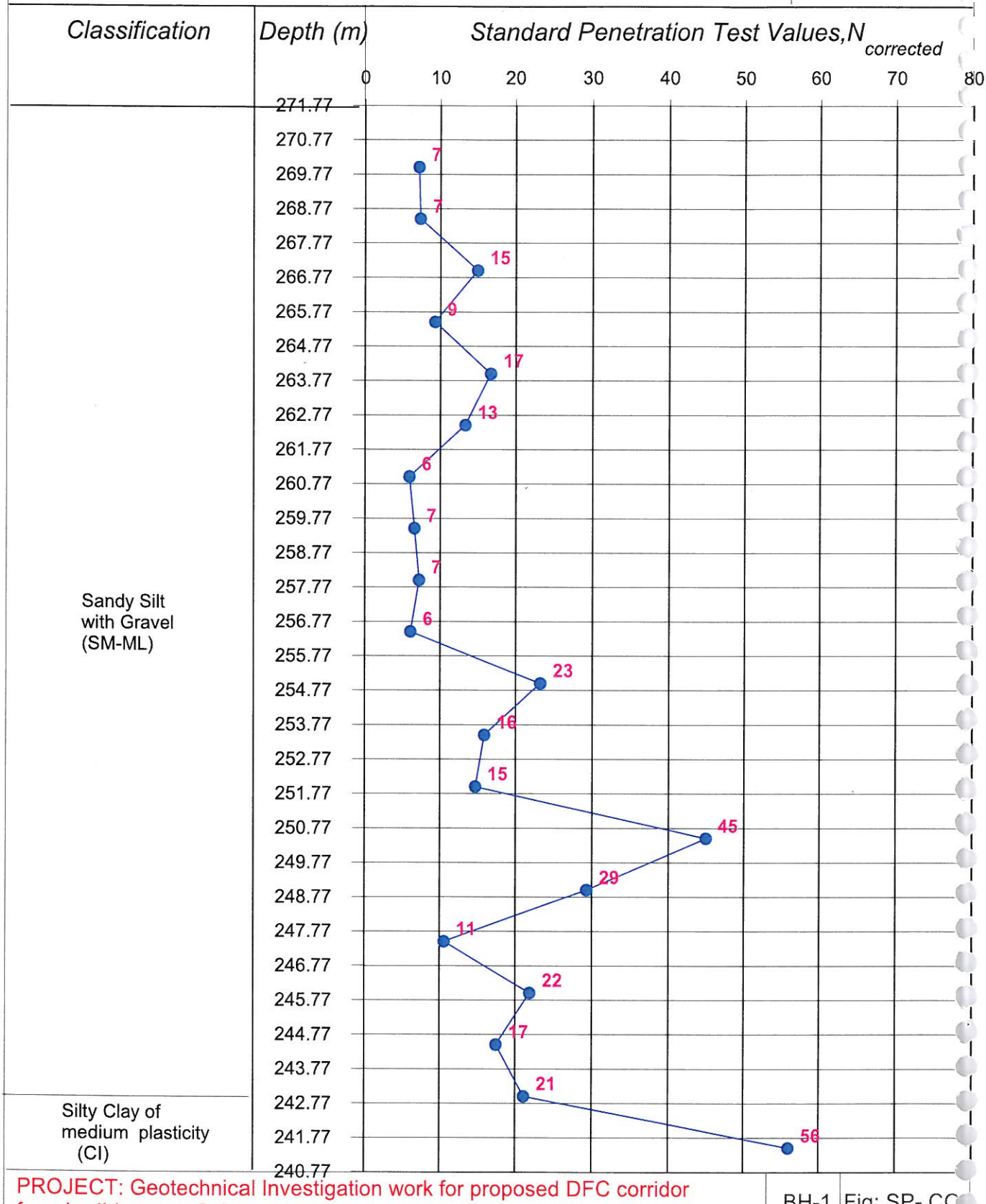
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

FIG- DS-CO4



BRIDGE 286@ 247/19-21

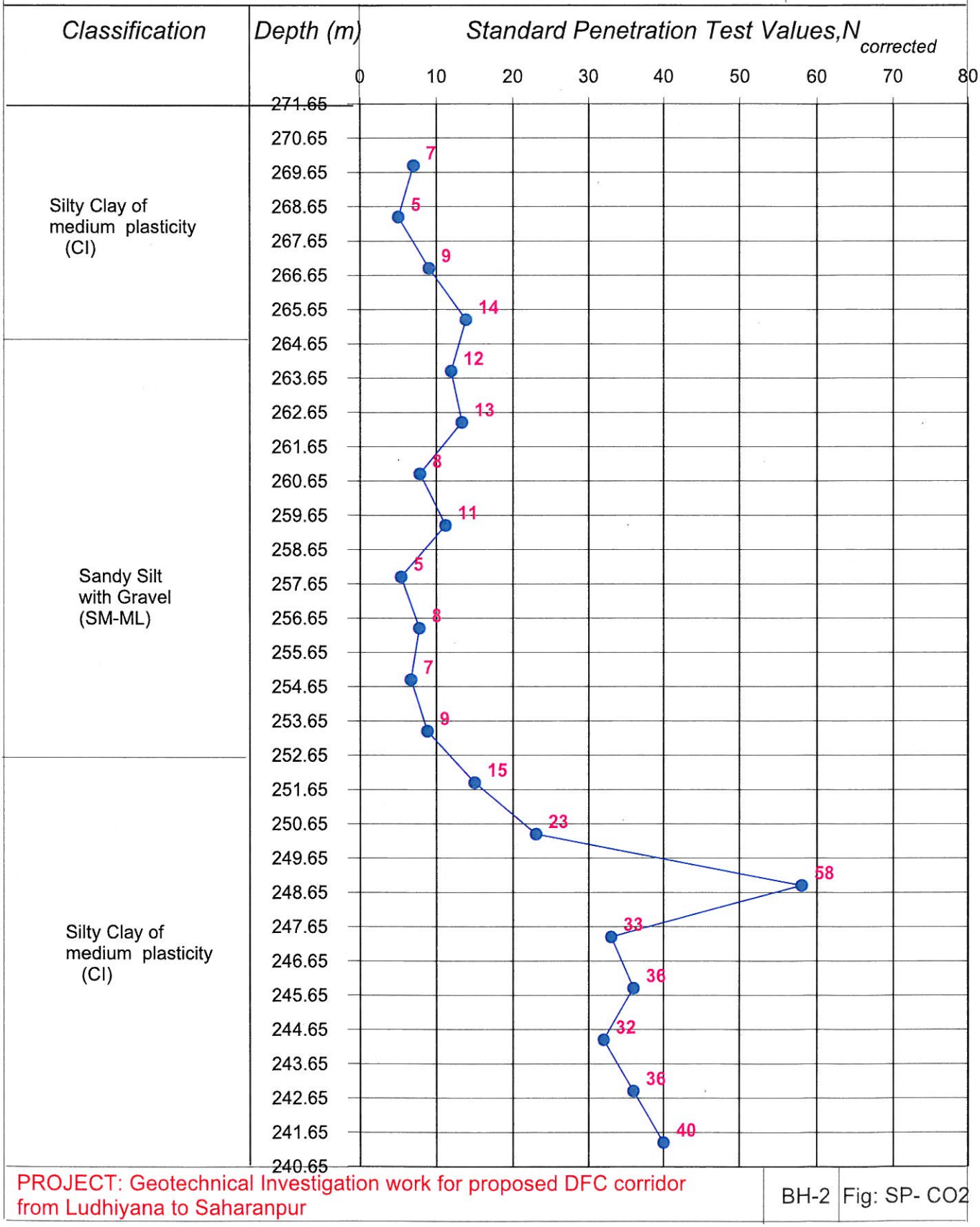
SOIL ENGINEERING CONSULTANTS | BR; 286@ 247/19-21 | Project No: 1813



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

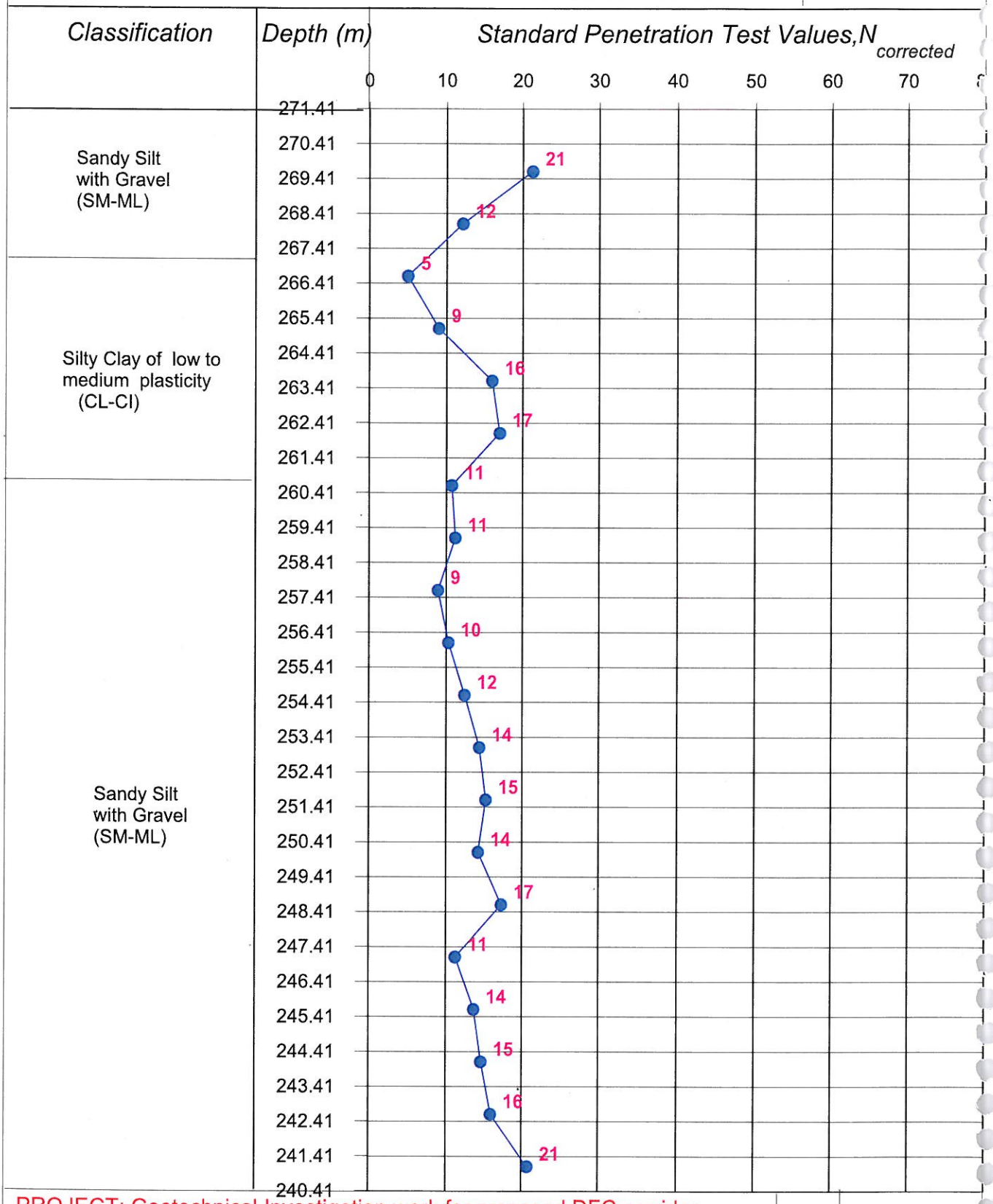
0386

SOIL ENGINEERING CONSULTANTS BR; 286@ 247/19-21 | Project No: 1813



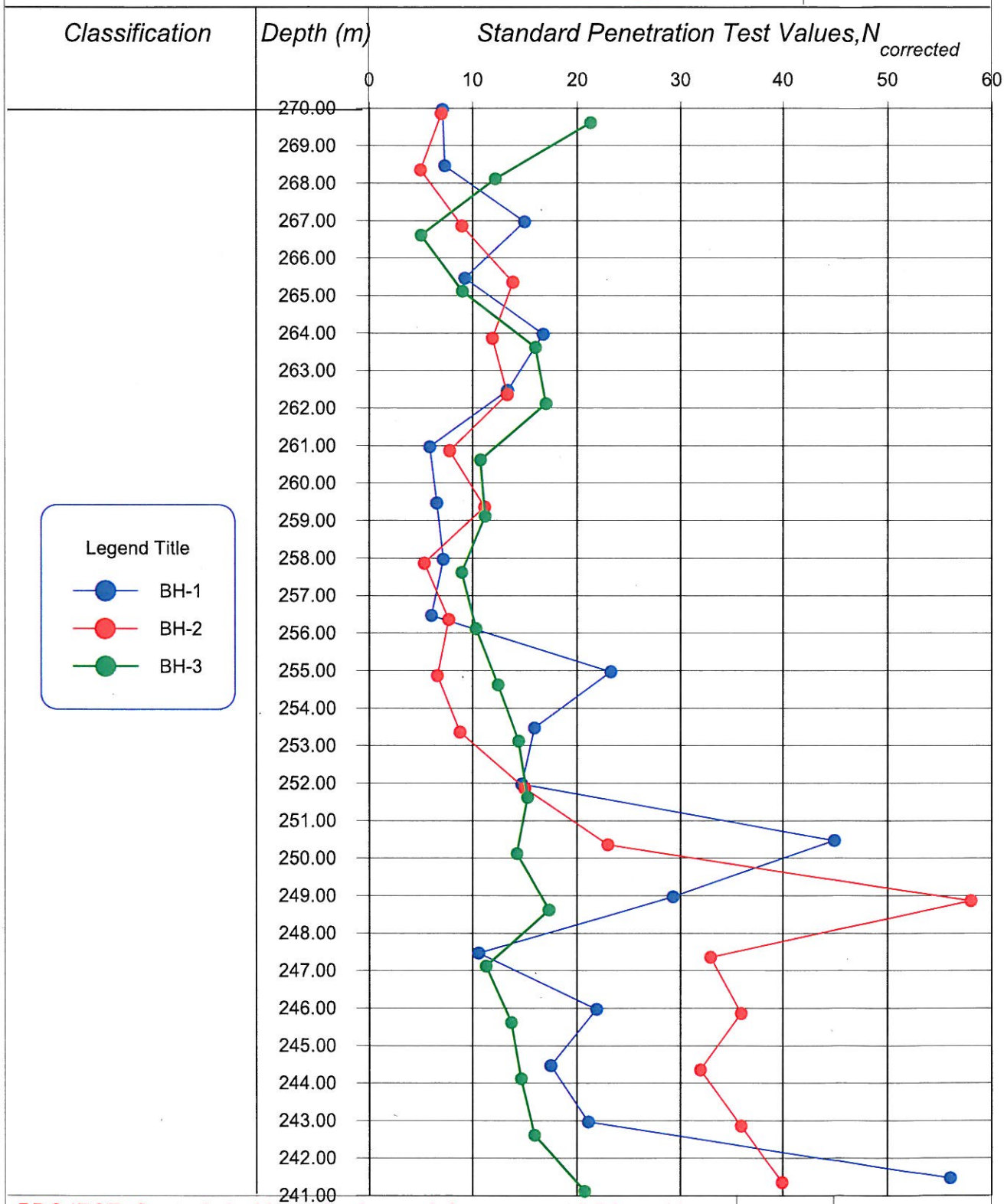
PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-2 | Fig: SP- CO2

SOIL ENGINEERING CONSULTANTS | BR; 286@ 247/19-21 | Project No: 1813



PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur | BH-3 | Fig: SP- CO3

SOIL ENGINEERING CONSULTANTS | BR; 286@ 247/19-21 | Project No: 1813



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

BORE LOG

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

Project No. 1813 Bridge : 287 RL: 271.596

Location; 248/15-17
BH No.: 1
Depth : 12.00m
Depth of Water table : 4.10 m

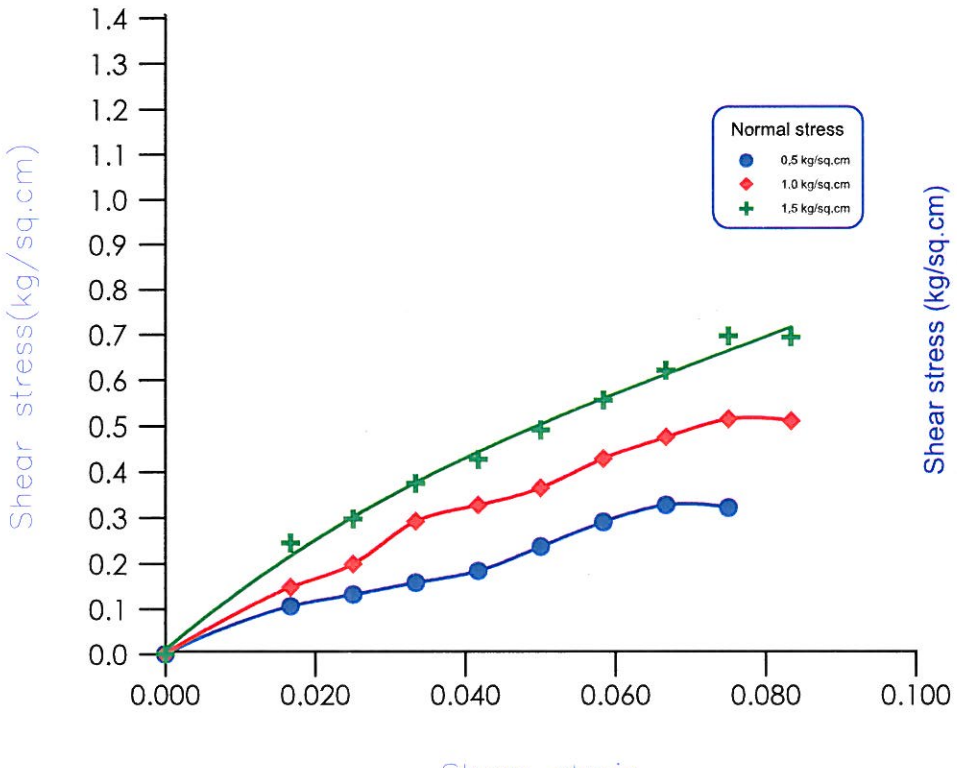
Date of start : 10/06/2008
Date of finish : 10/06/2008

SOIL ENGINEERING CONSULTANTS

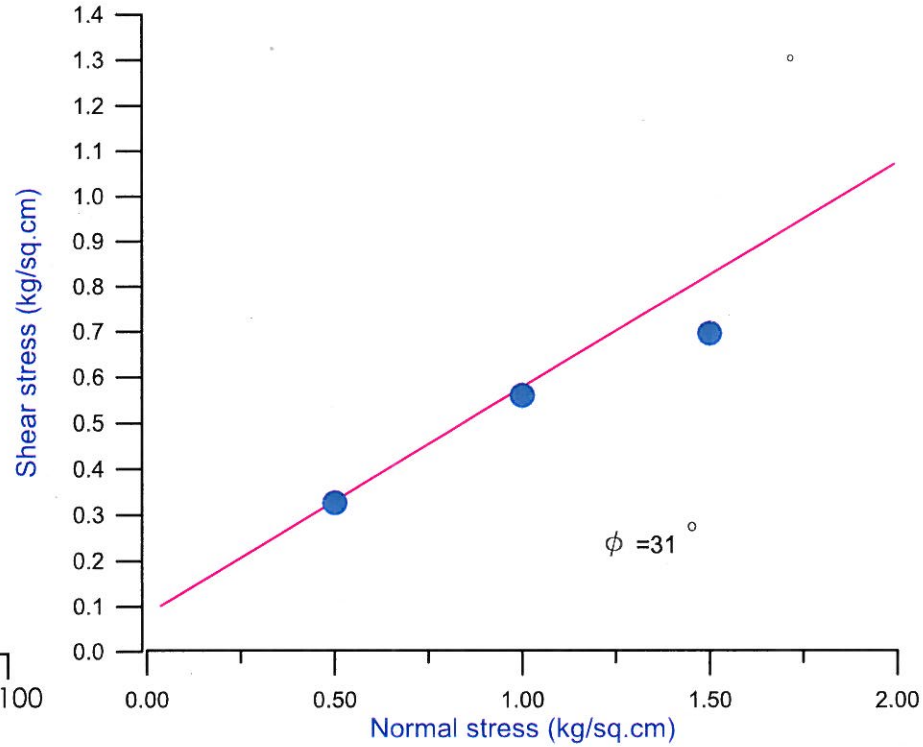
Reduced Level	Depth (m)	Type of sample	Soil Classification	S.P.T Plot (Observed)	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P.L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
271.596																	
269.796	1.80	SPT		11	0	2	98				50	29					
269.096	2.50	UDS						1.8	1.54	16.96			2.7	UU	0.68	4	0.074
268.296	3.30	SPT		15	0	2	98				48	26					
266.796	4.80	SPT		17	0	4	96				48	27					
266.096	5.50	UDS	Silty Clay of medium Plasticity (CI)					1.86	1.52	22.49				UU	0.94		0.067
265.296	6.30	SPT		16	2	9	89				46	25					
263.796	7.80	SPT		16	0	2	98				43	23					
263.096	8.50	UDS						1.86	1.53	21.30			2.69	UU	0.96		0.062
262.296	9.30	SPT		17	3	7	90				45	22					
260.796	10.80	SPT		21	2	6	92				Non Plastic						
260.096	11.50	UDS	Sandy Silt with Gravel (SM-ML)					1.82	1.51	20.48				DST		31	
259.296	12.30	SPT		17	0	3	97				Non Plastic						

0390

BH-1
Depth-11.50m



(Shear stress - shear strain relationship)



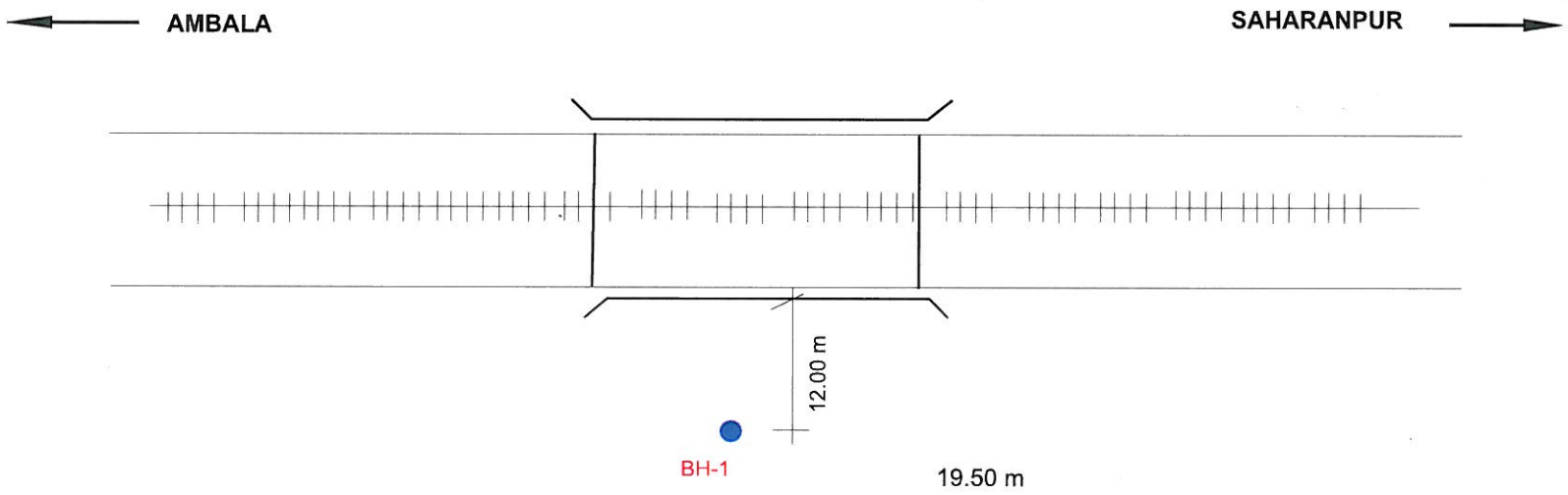
(Shear stress - Normal stress relationship)

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

FIG- DS-CP

SOIL ENGINEERING CONSULTANTS

Job No: 1813

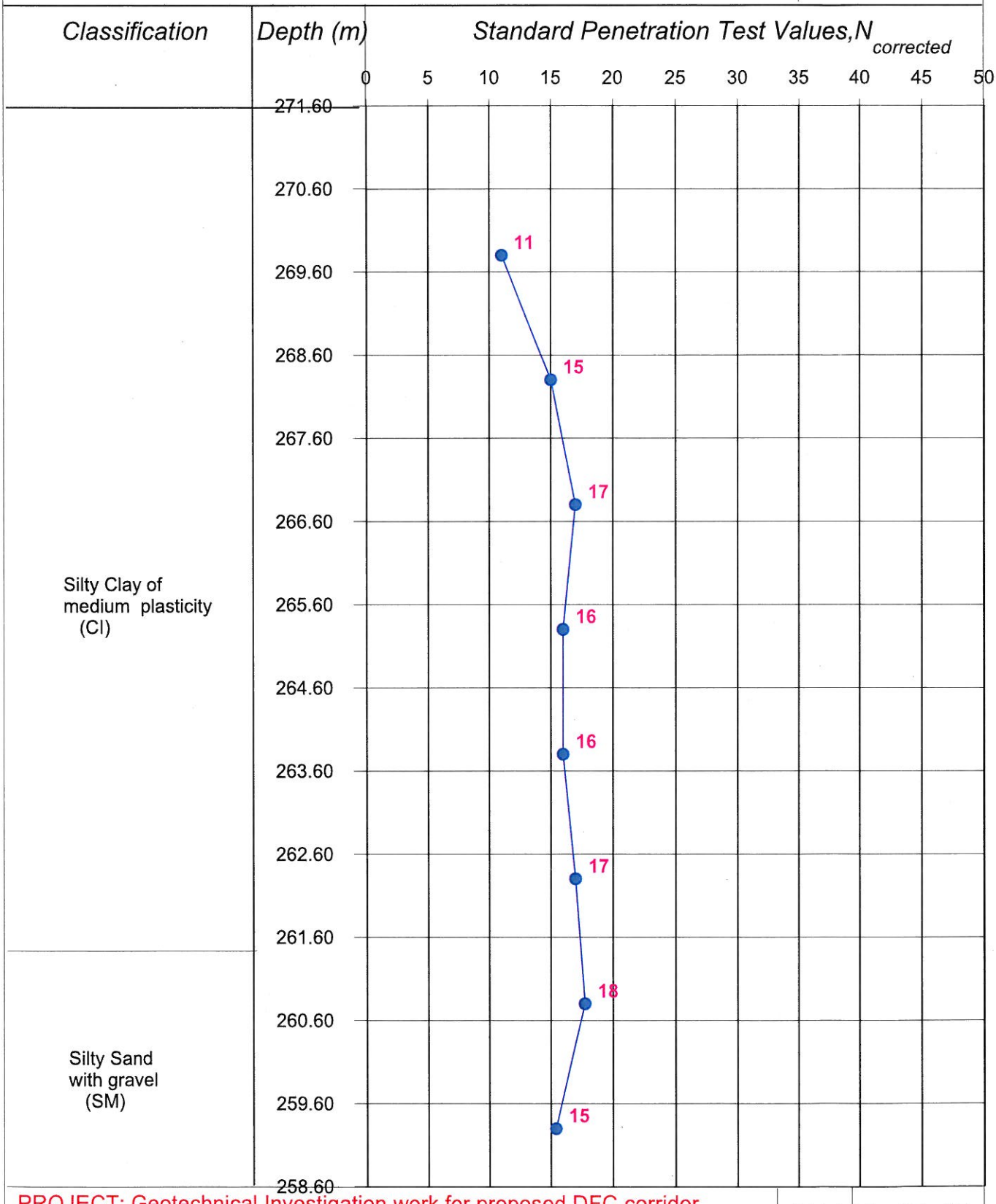


BR 287@ 248/15-17

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

Fig: Plan-CP

SOIL ENGINEERING CONSULTANTS | BR 287 @ 248/15-17 | Project No: 1813



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

0393

BORE LOG

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

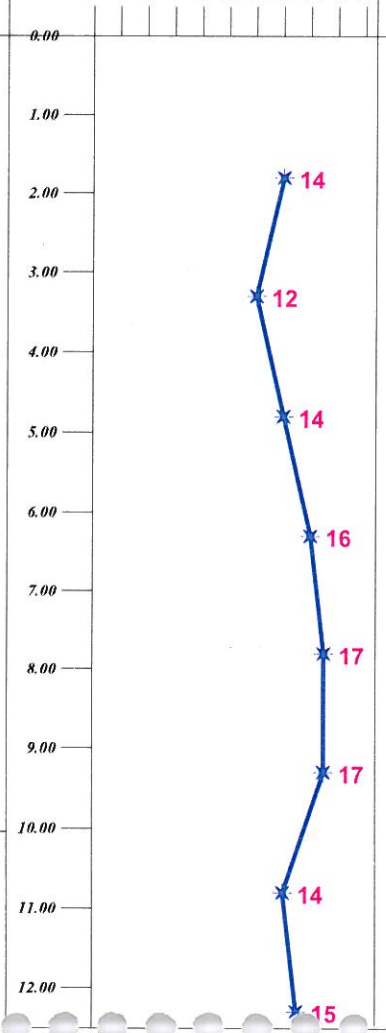
Project No. 1813 Interdistance RL: 272.115

Location; 191/11-13
BH No.: 1
Depth : 12.00
Depth of Water table : 4.00 m

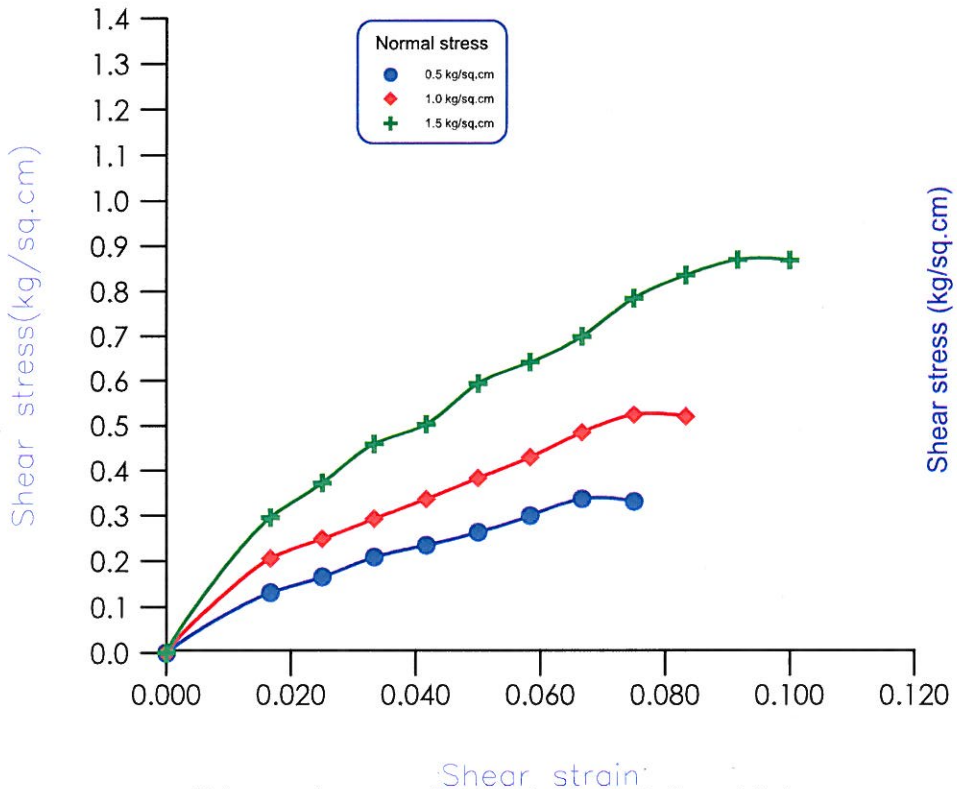
Date of start : 04/07/2008
Date of finish : 04/07/2008

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)	
272.115																
270.315	1.80	SPT		1	83	16				Non	Plastic					
269.615	2.50	UDS					1.76	1.51	16.47			2.66	DST	0.15	29	
268.815	3.30	SPT		0	82	18				Non	Plastic					
267.315	4.80	SPT	Silty Sand with gravel (SM)	2	82	16				Non	Plastic					
265.815	6.30	SPT		5	75	20				Non	Plastic					
264.315	7.80	SPT		4	83	13				Non	Plastic					
262.815	9.30	SPT		1	68	31				Non	Plastic					
261.315	10.80	SPT	Sandy Silt with Gravel (SM-ML)	1	3	96				Non	Plastic					
259.815	12.30	SPT		1	5	94				Non	Plastic					

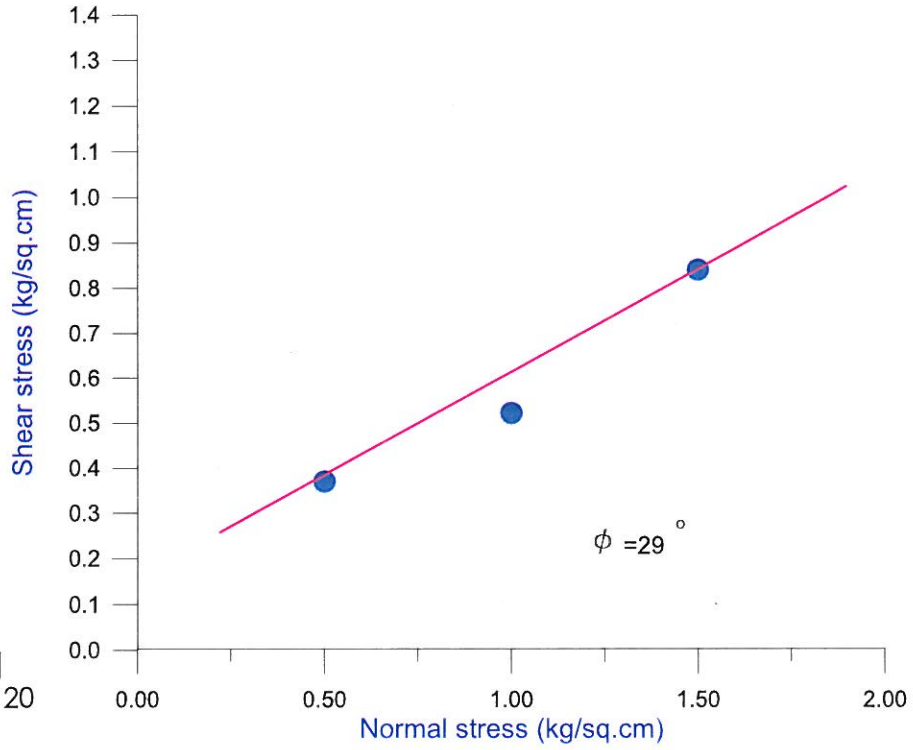
S.P.T Plot — Observed



BH-1
DEPTH = 2.50 m



(Shear stress - shear strain relationship)

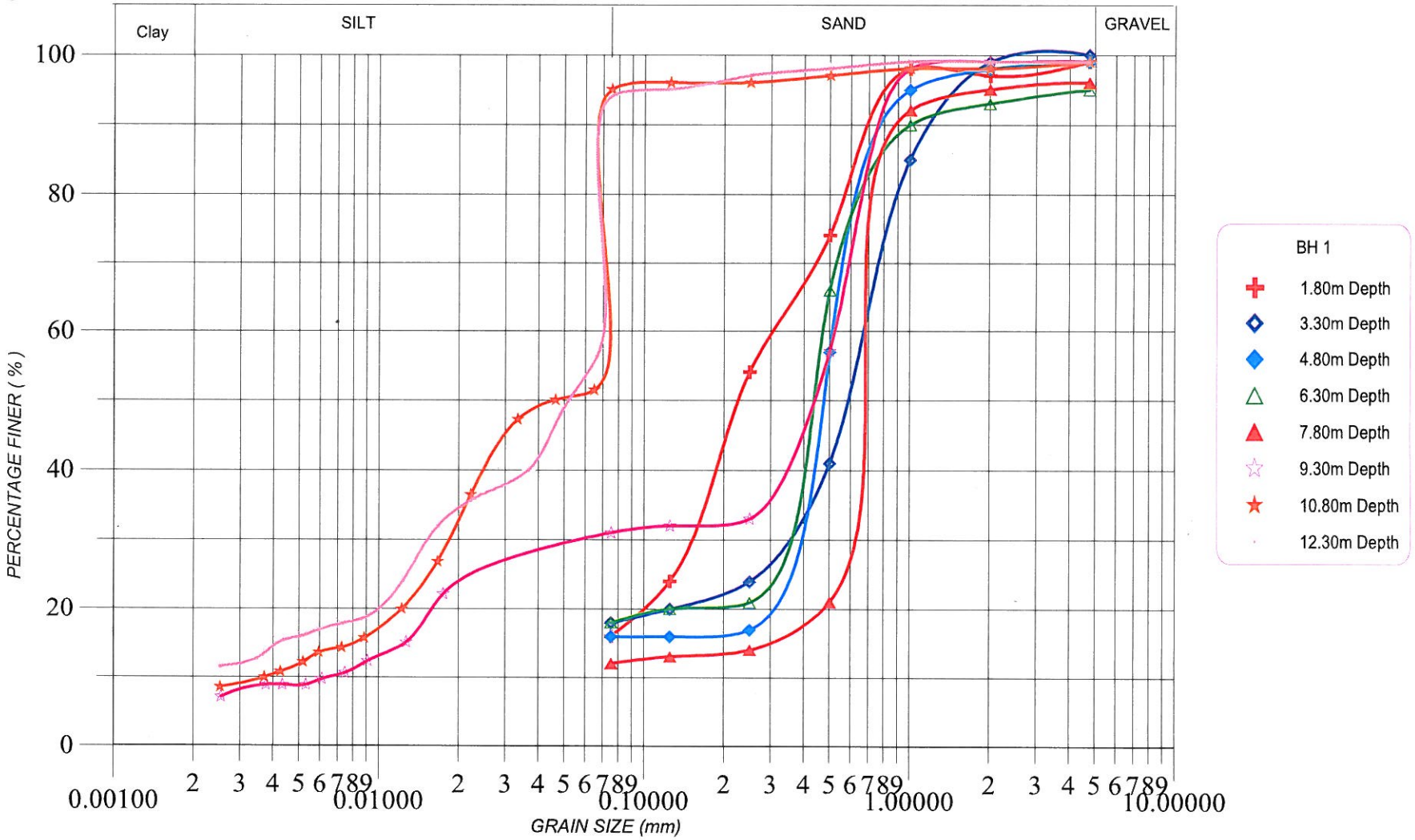


(Shear stress - Normal stress relationship)

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

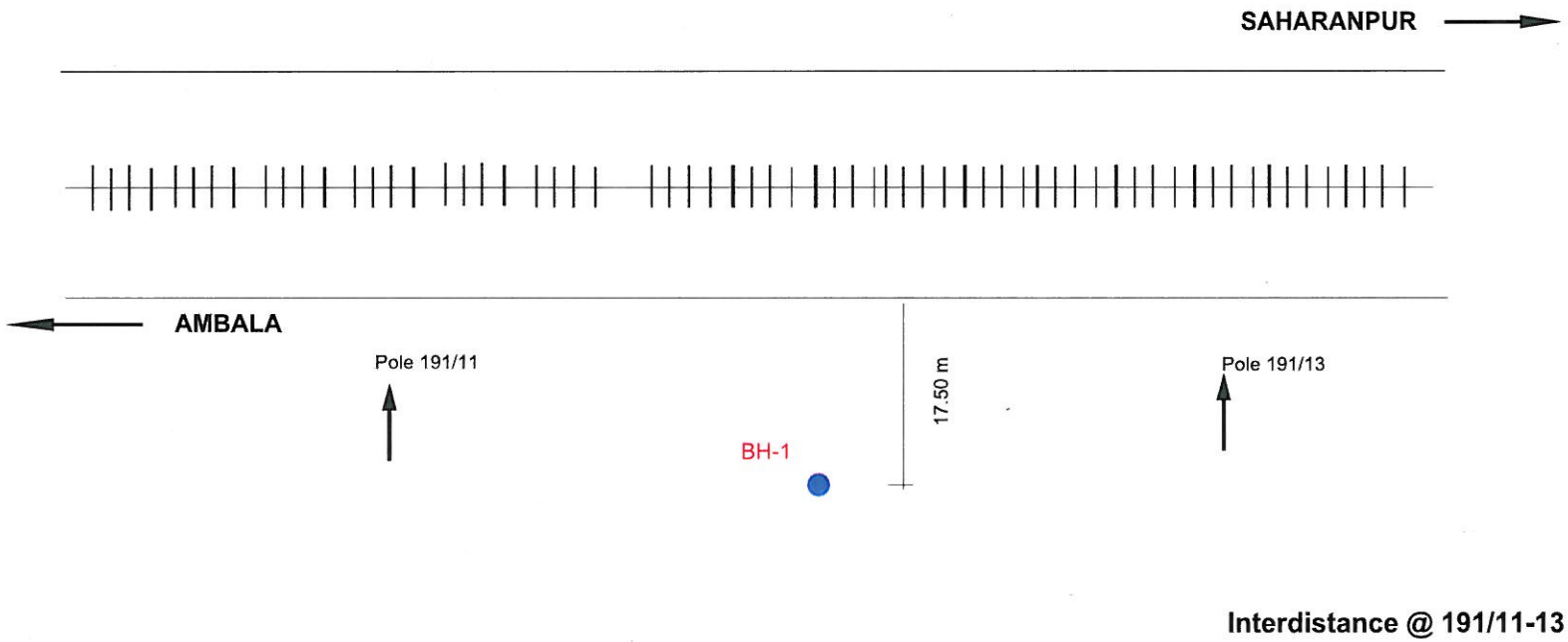
FIG- DS-R1

GRAIN SIZE DRISTRIBUTION CURVE



SOIL ENGINEERING CONSULTANTS

Job No: 1813

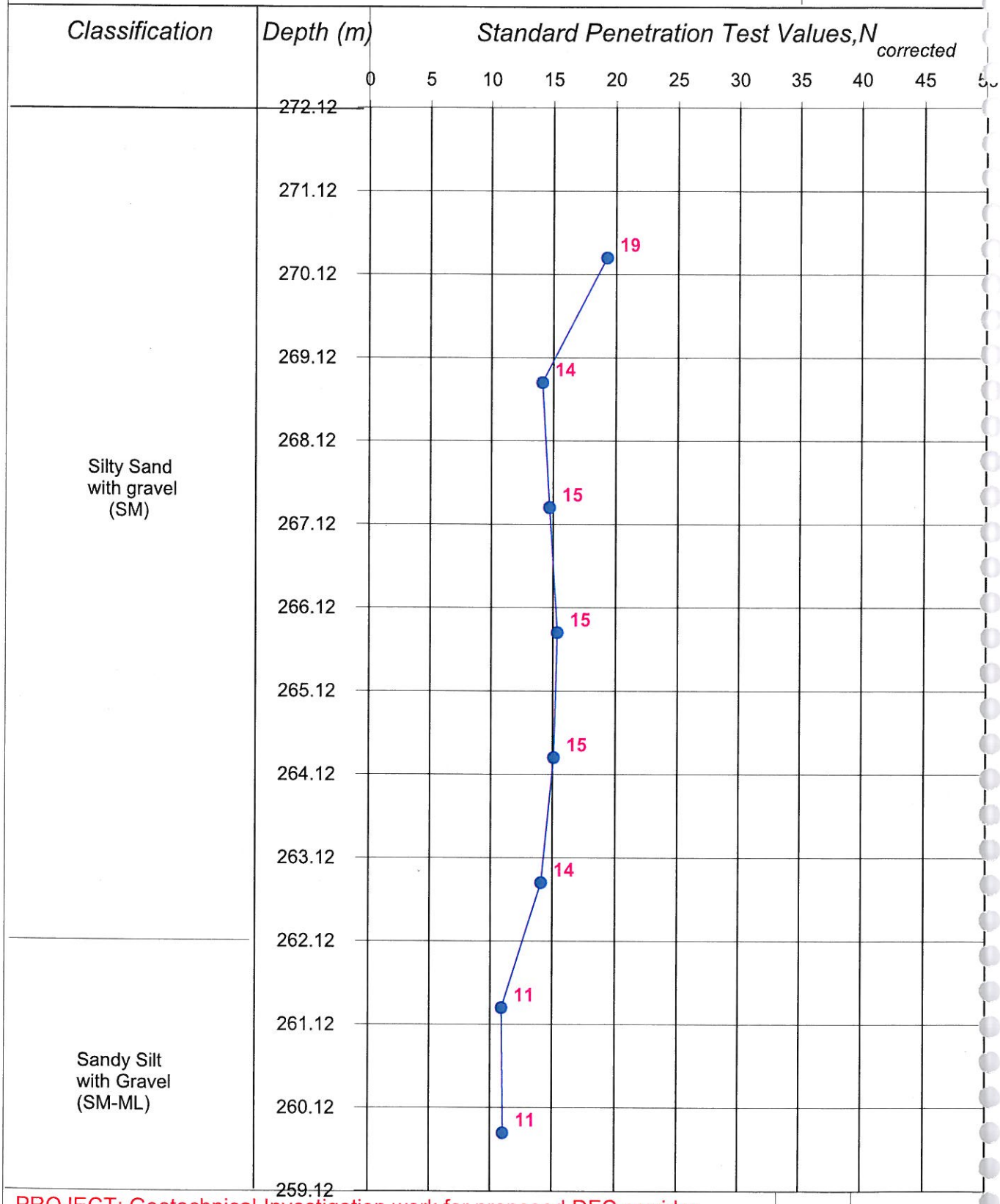


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig: Plan-R

0397

SOIL ENGINEERING CONSULTANTS | Interdistance@ 191/11-13 | Project No: 1813



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

BORE LOG

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

Project No. 1813 Interdistance RL: 273.673

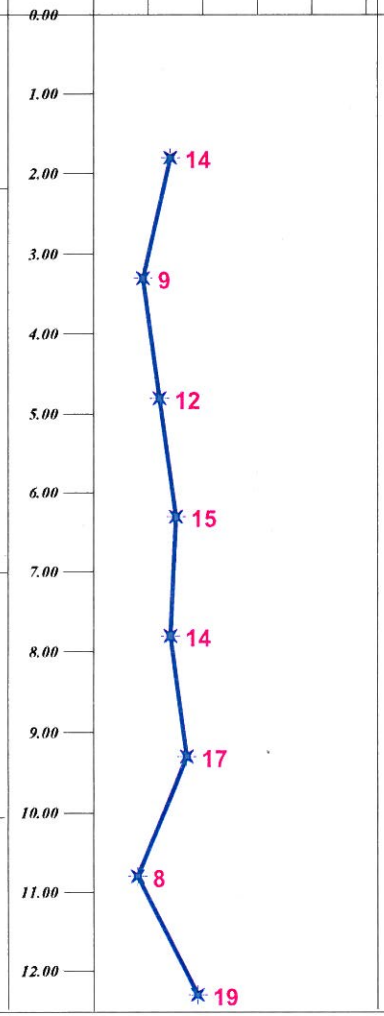
Location; 192/11-13
BH No.: 1
Depth : 12.00
Depth of Water table : 5.00 m

Date of start : 03/07/2008
Date of finish : 03/07/2008

SOIL ENGINEERING CONSULTANTS

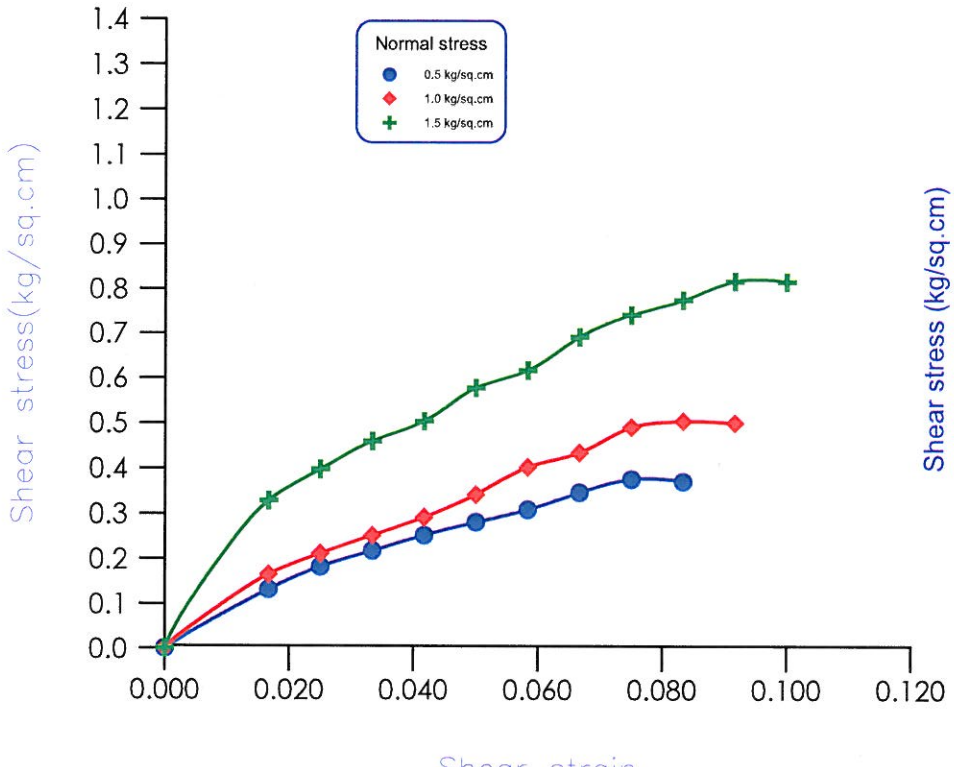
Reduced Level	Depth (m)	Type of sample	Soil Classification	Grain size (%)			Density (gm/cc)		W/C	Limits (%)		Sp.Gr	Shear Parameters			Cc
				Gravel	Sand	Silt/clay	r(wet)	r(dry)	W(%)	L.L	P . L		Type of test	C(kg/sq.cm)	phi(degrees)	
273.673																
			Silty Sand (SM)													
271.873	1.80	SPT		0	78	22				Non	Plastic					
271.173	2.50	UDS					1.75	1.50	16.64				DST	0.1	29	
270.373	3.30	SPT		0	43	57				Non	Plastic					
			Sandy Silt with Gravel (SM-ML)													
268.873	4.80	SPT		1	20	79				Non	Plastic					
267.373	6.30	SPT		0	33	67				Non	Plastic					
			Silty Sand with gravel (SM)													
265.873	7.80	SPT		2	88	10				Non	Plastic					
264.373	9.30	SPT		2	80	18				Non	Plastic					
			Sandy Silt with Gravel (SM-ML)													
262.873	10.80	SPT		0	3	97				Non	Plastic					
261.373	12.30	SPT		0	34	66				Non	Plastic					

S.P.T Plot — Observed

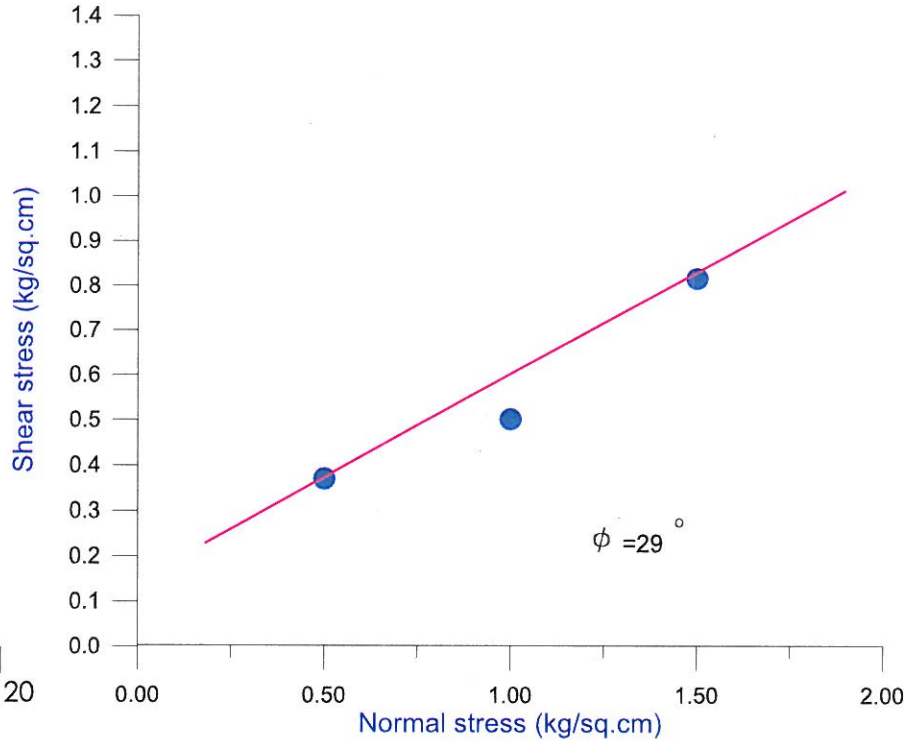


0839

BH-1
DEPTH = 2.50 m



(Shear stress - shear strain relationship)

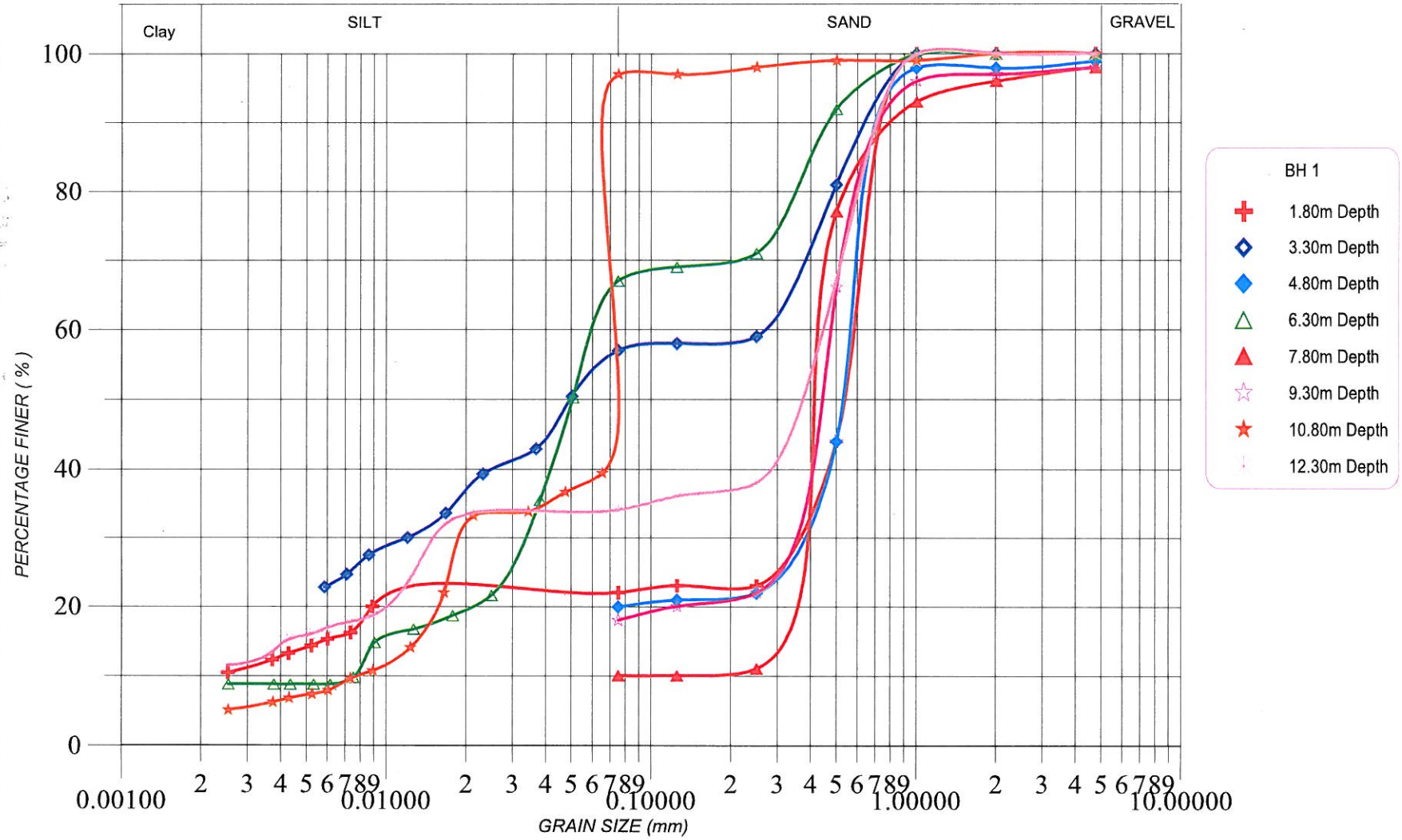


(Shear stress - Normal stress relationship)

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

FIG- DS-S

GRAIN SIZE DRISTRIBUTION CURVE



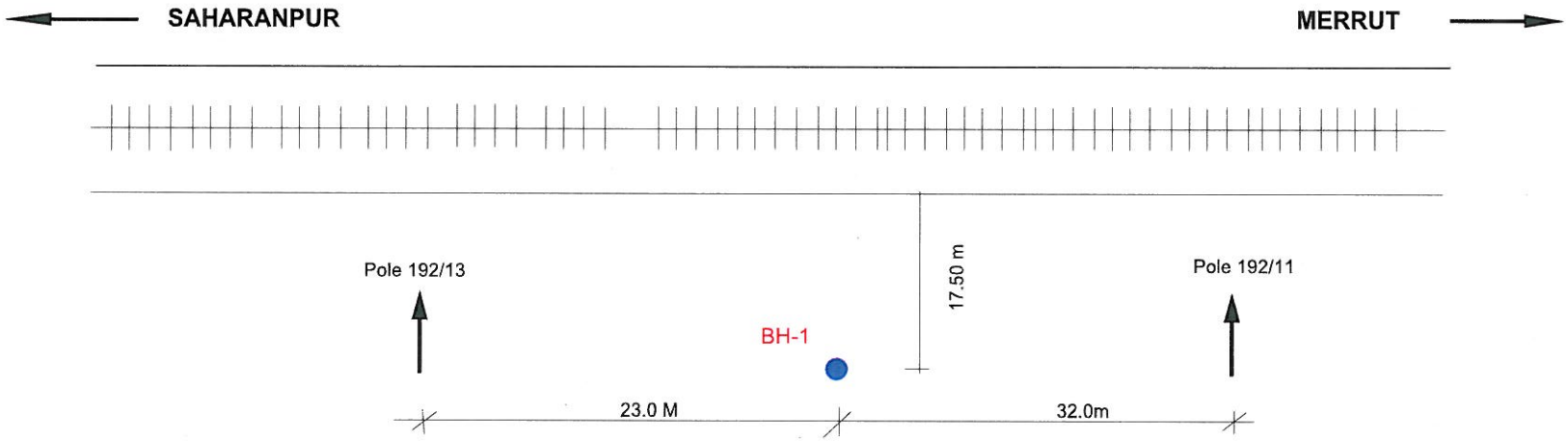
0401

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

Fig : GSD-S

SOIL ENGINEERING CONSULTANTS

Job No: 1813

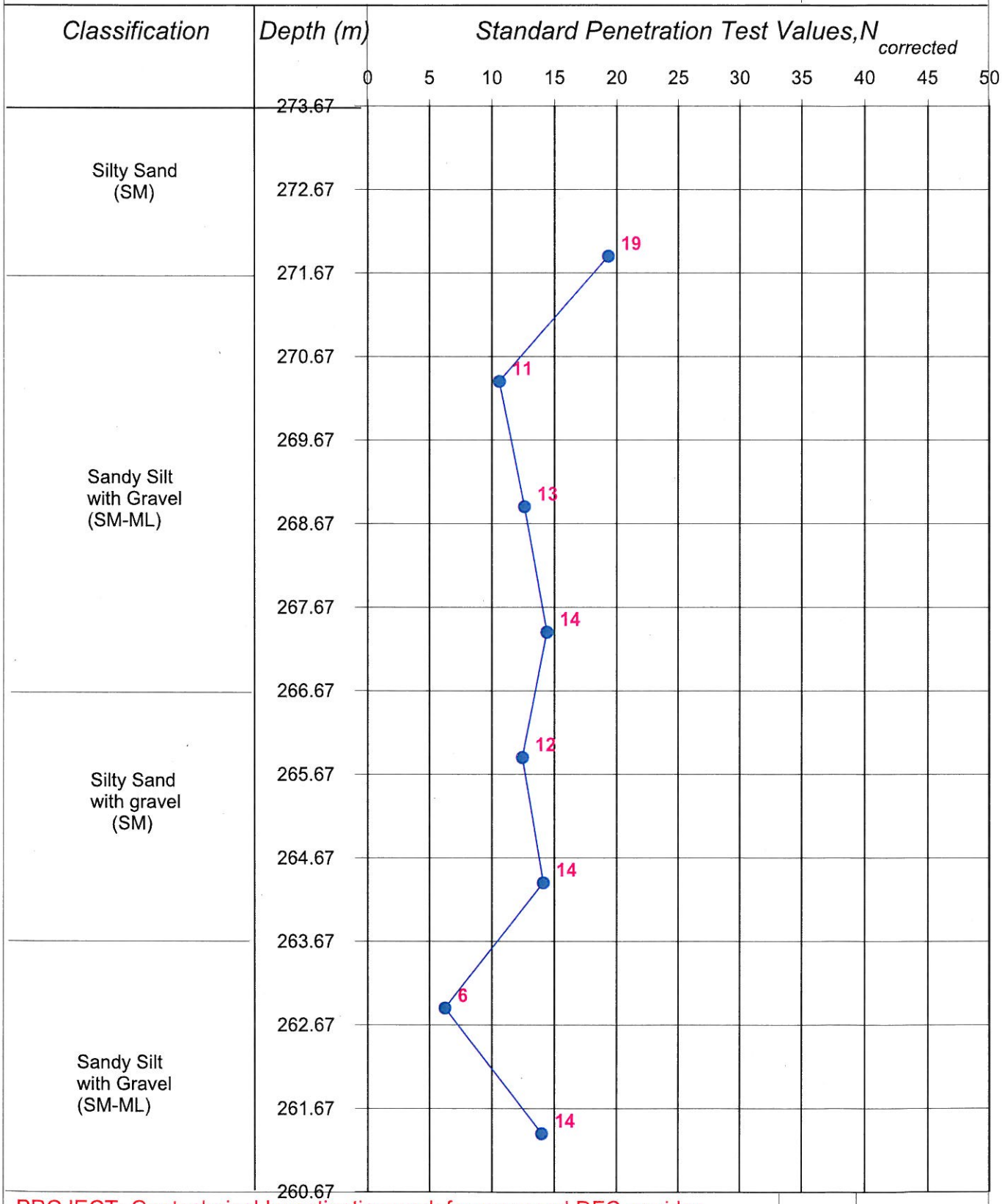


Interdistance @ 192/11-13

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

Fig: Plan-S

SOIL ENGINEERING CONSULTANTS | Interdistance@ 192/11-13 | Project No: 1813



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

BORE LOG

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

Project No. 1813 Interdistance RL: 268.996

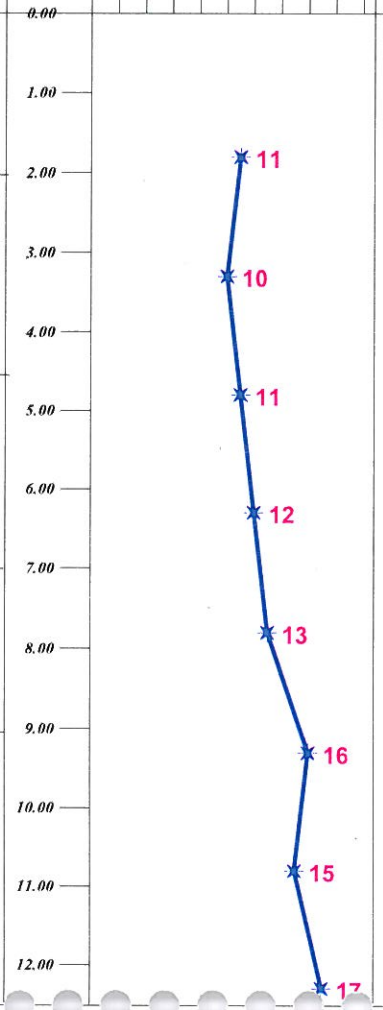
Location; 195/1-3
BH No.: 1
Depth : 12.00
Depth of Water table : 4.50 m

Date of start : 07/07/2008
Date of finish : 07/07/2008

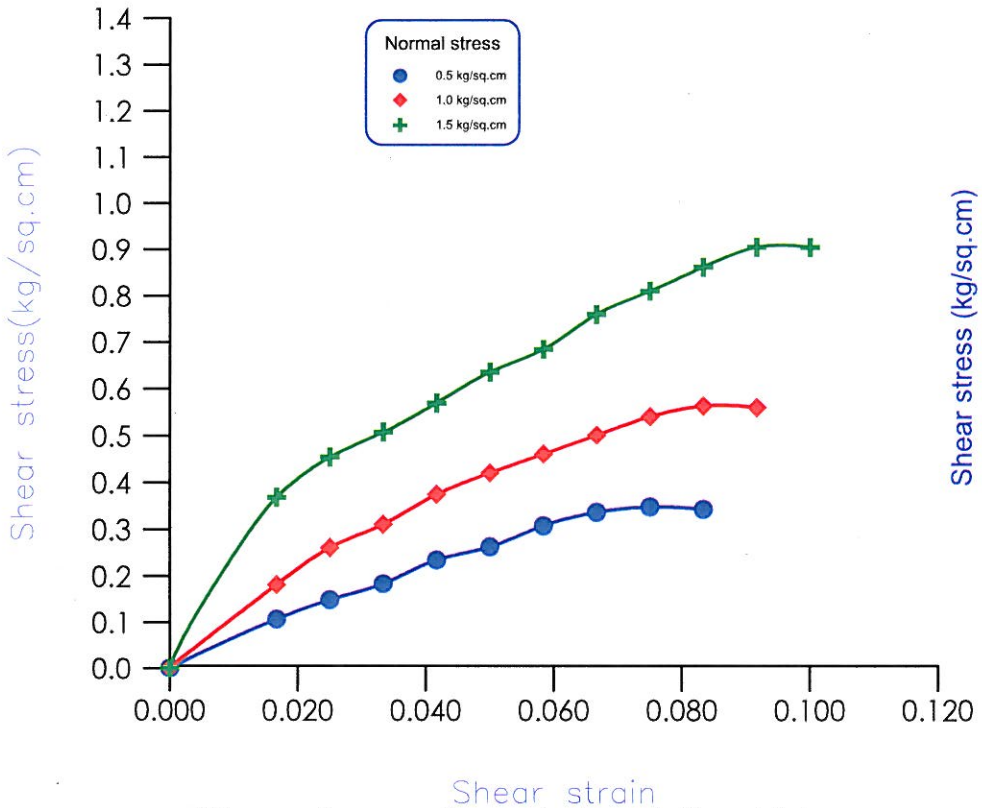
SOIL ENGINEERING CONSULTANTS

Reduced Level	Depth (m)	Type of sample	Soil Classification	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
268.996			Silty Sand with gravel (SM)													
267.196	1.80	SPT		1	85	14				Non	Plastic					
266.496	2.50	UDS	Sandy Silt with Gravel (SM-ML)				1.77	1.58	11.74				DST	0.15	29	
265.696	3.30	SPT		1	24	75				Non	Plastic					
264.196	4.80	SPT	Silty Sand with gravel (SM)	0	74	26				Non	Plastic					
262.696	6.30	SPT		1	74	25				Non	Plastic					
261.196	7.80	SPT	Sandy Silt with Gravel (SM-ML	2	3	95				Non	Plastic					
259.696	9.30	SPT	Silty Sand with gravel (SM)	1	79	20				Non	Plastic					
258.196	10.80	SPT		4	72	24				Non	Plastic					
256.696	12.30	SPT		2	74	24				Non	Plastic					

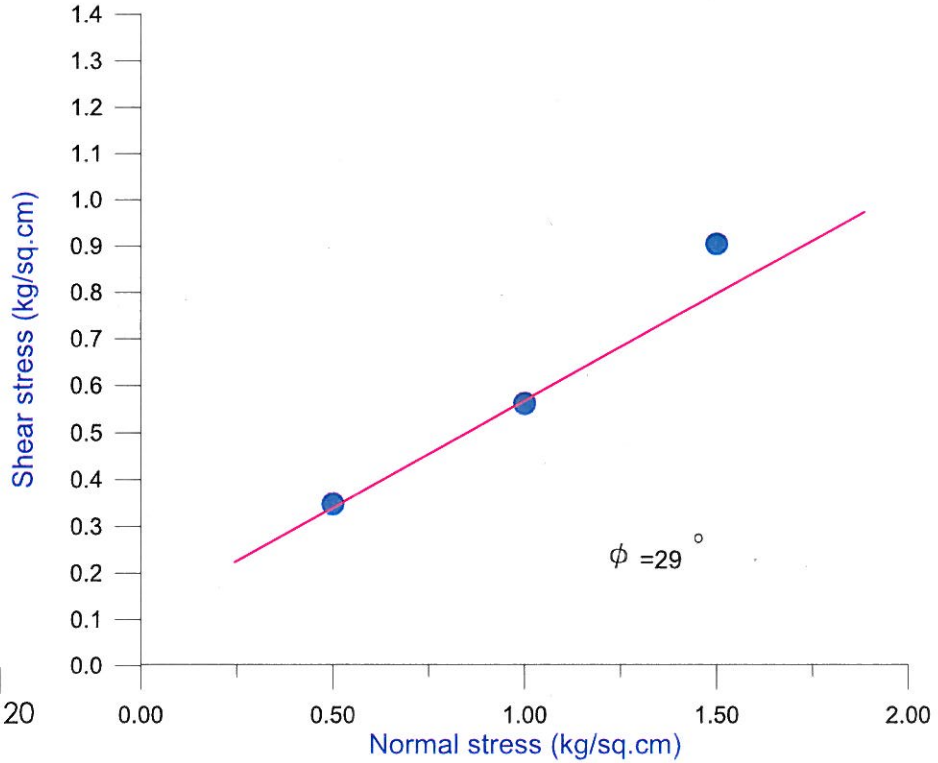
S.P.T Plot — Observed



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

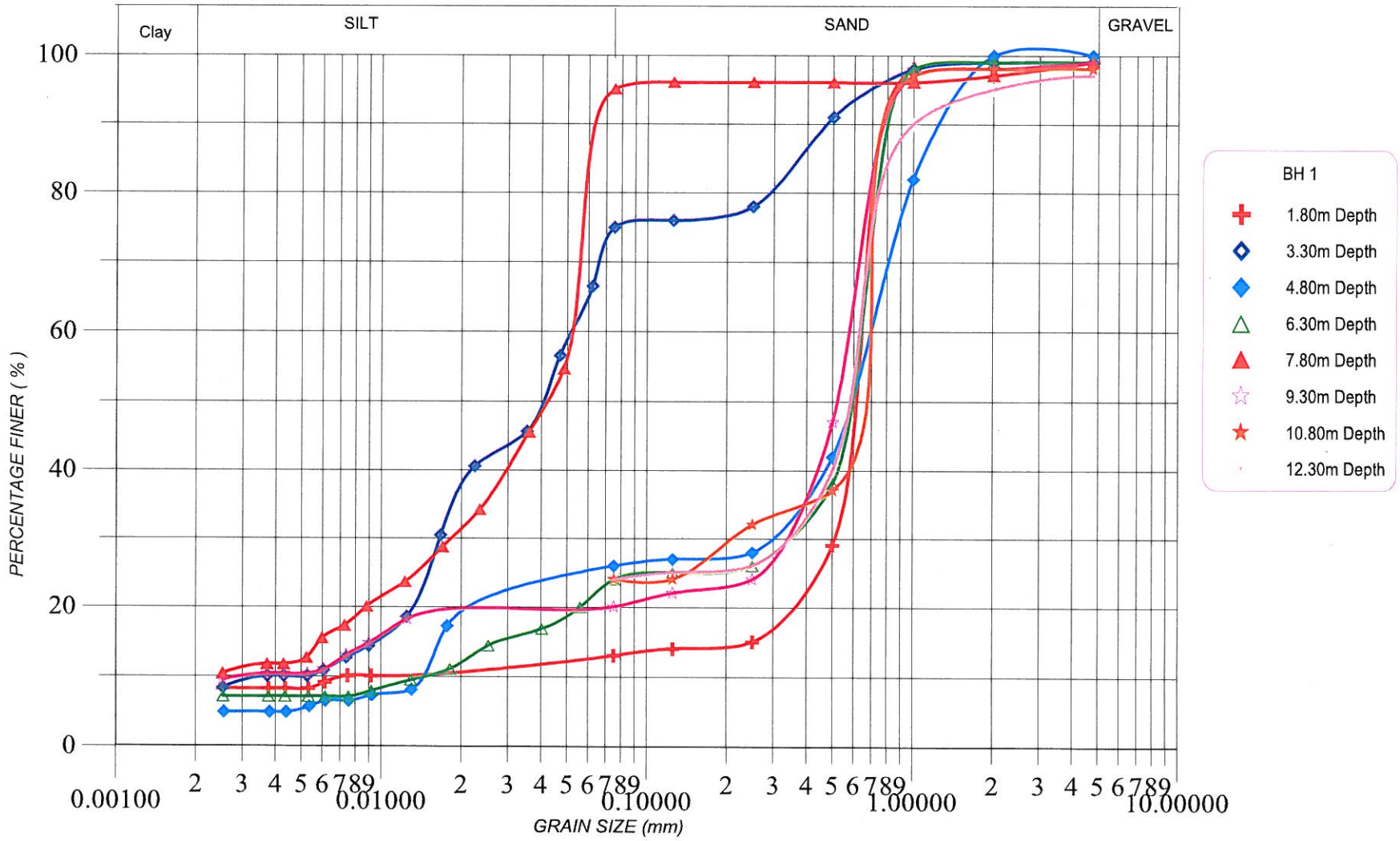
FIG- DS-W

Soil Engineering Consultants

Interdistance 195/1-3

Job:1813

GRAIN SIZE DRISTRIBUTION CURVE

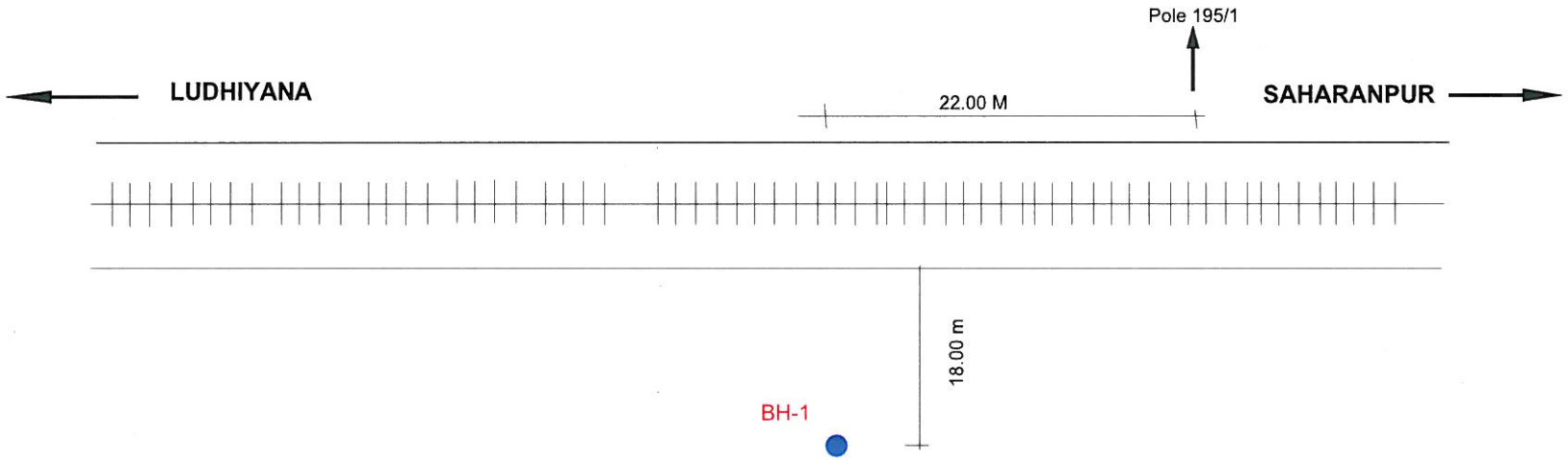


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-W

SOIL ENGINEERING CONSULTANTS

Job No: 1813



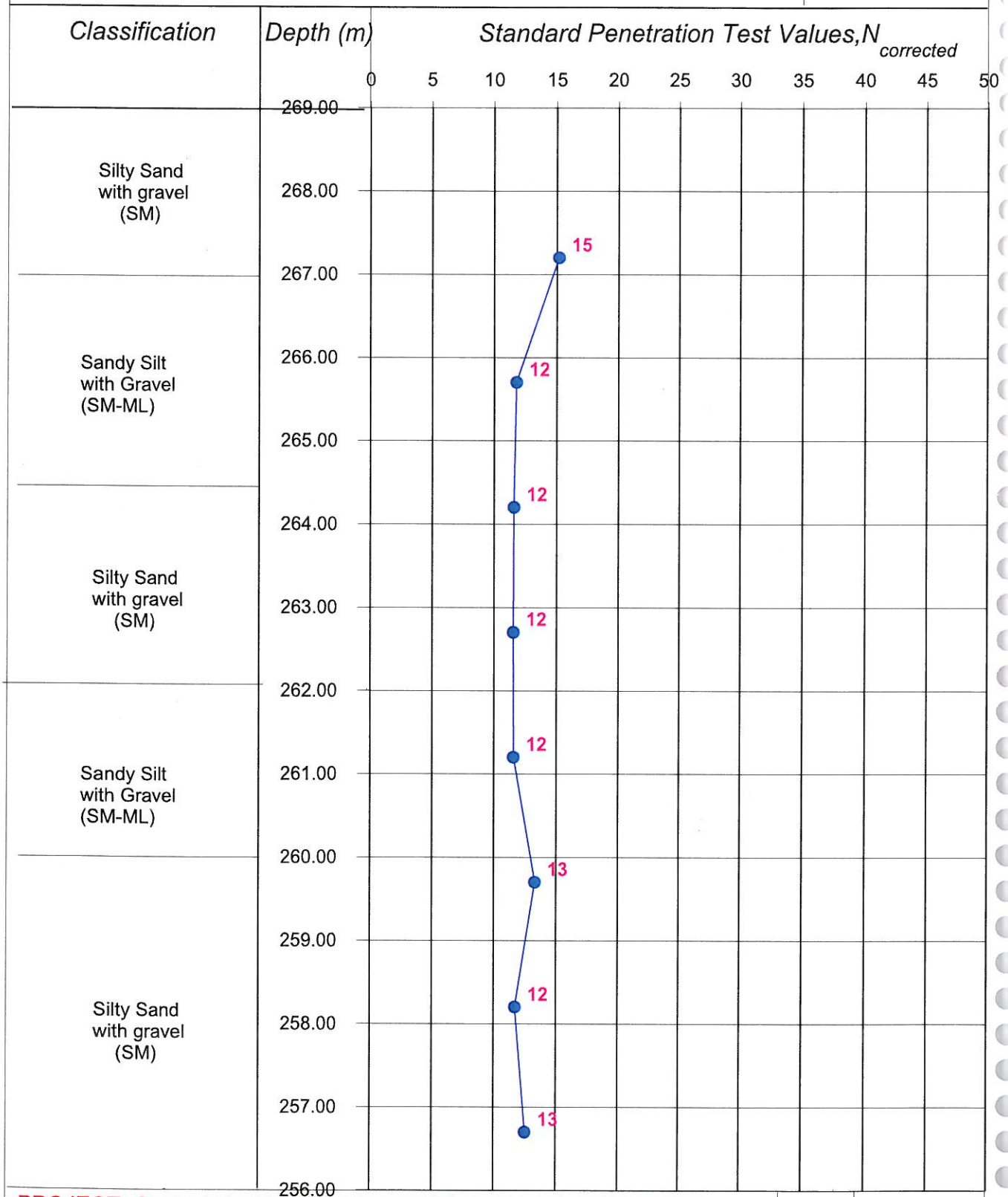
Interdistance @195/1-3

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

Fig: Plan-W

0407

SOIL ENGINEERING CONSULTANTS | Interdistance @ 195/1-3 | Project No: 1813



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

0408

BORE LOG

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

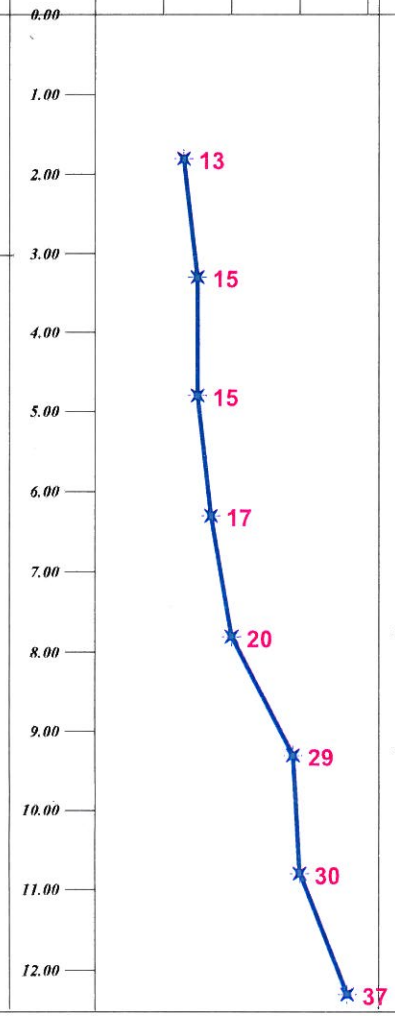
Project No. 1813 Interdistance RL: 268.184

Location; 197/01
BH No.: 1
Depth : 12.00
Depth of Water table : 4.00 m

Date of start : 08/07/2008
Date of finish : 08/07/2008

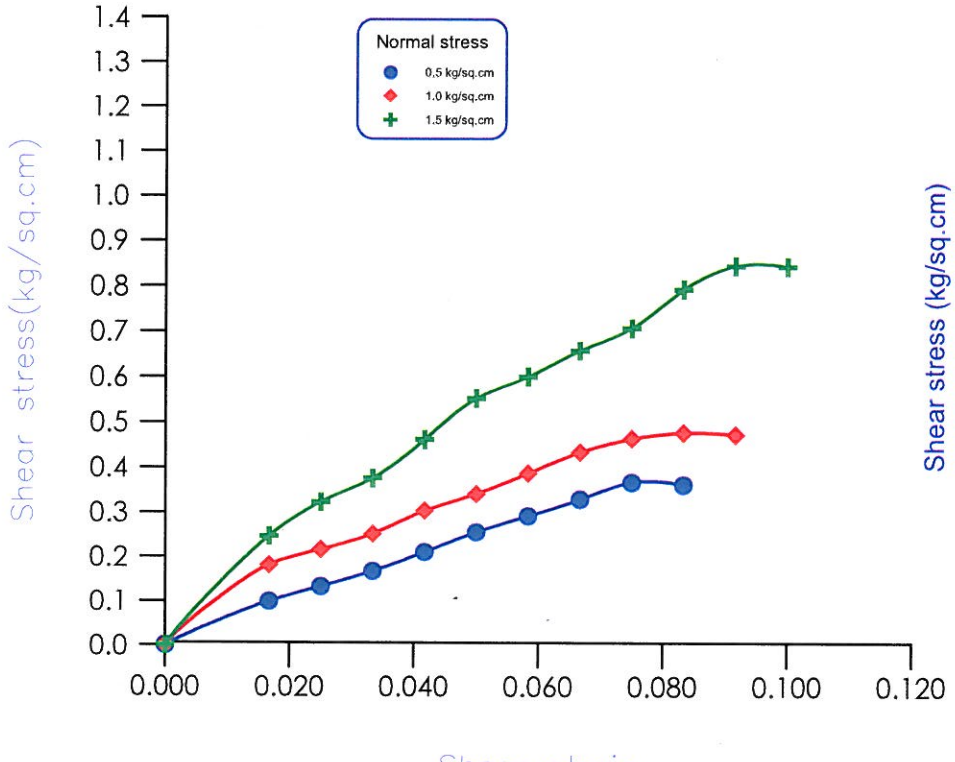
Reduced Level	Depth (m)	Type of sample	Soil Classification	Grain size (%) Gravel	Sand	Silt/clay	Density (gm/cc) r(wet)	r(dry)	W/C W(%)	Limits (%) L.L	P . L	Sp.Gr	Shear Parameters Type of test	C(kg/sq.cm)	phi(degrees)	Cc
268.184																
266.384	1.80	SPT	Sandy Silt with Gravel (SM-ML)	1	39	60				Non	Plastic					
265.684	2.50	UDS					1.82	1.56	16.43				DST	0.1	30	
264.884	3.30	SPT		2	74	24				Non	Plastic					
263.384	4.80	SPT		5	75	20				Non	Plastic					
261.884	6.30	SPT	Silty Sand with gravel (SM)	1	75	24				Non	Plastic					
260.384	7.80	SPT		13	62	25				Non	Plastic					
258.884	9.30	SPT		15	67	18				Non	Plastic					
257.384	10.80	SPT		1	72	27				Non	Plastic					
255.884	12.30	SPT		0	82	18				Non	Plastic					

S.P.T Plot — Observed

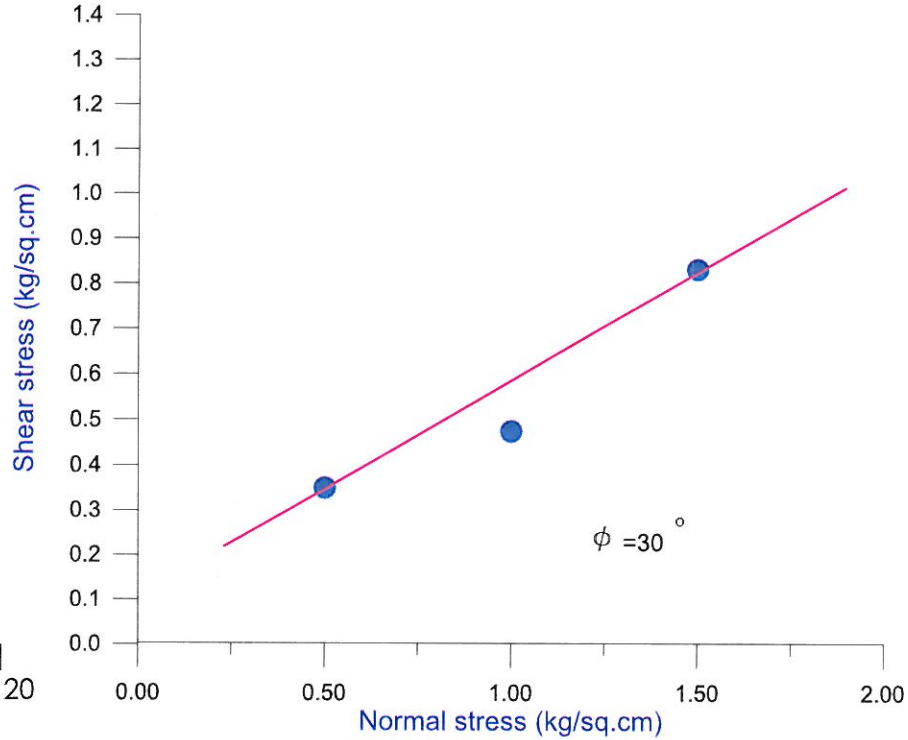


0409

BH-1
DEPTH = 2.50 m



(Shear stress - shear strain relationship)



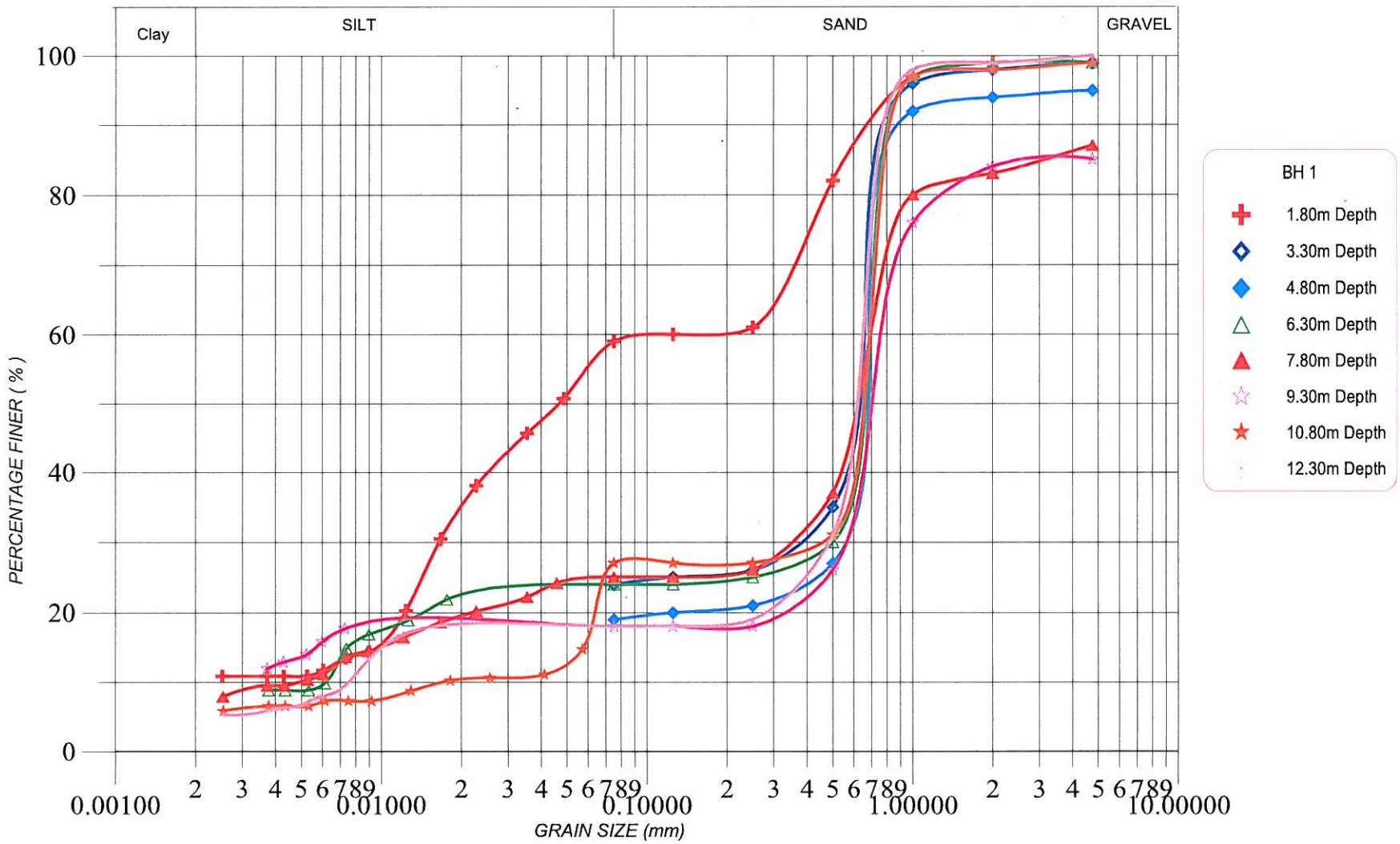
(Shear stress - Normal stress relationship)

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

FIG- DS-Y

Soil Engineering Consultants | Interdistance 197/01 | Job:1813

GRAIN SIZE DRISTRIBUTION CURVE

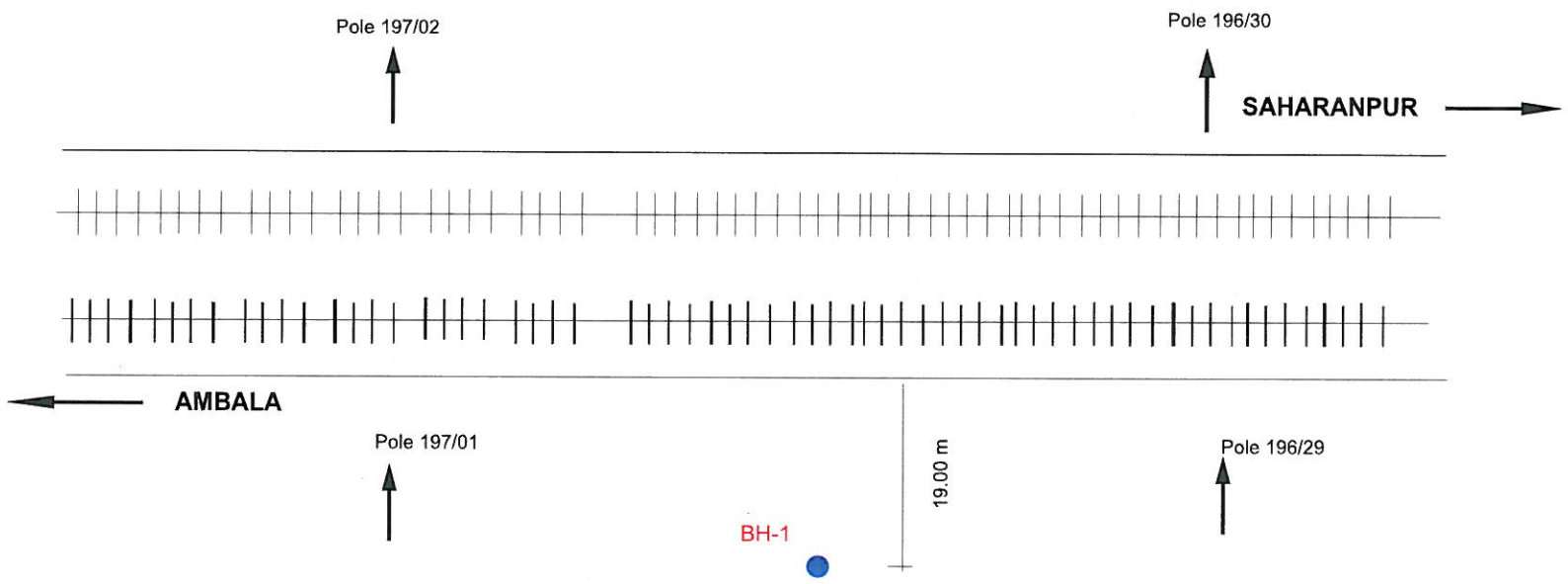


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD- Y

SOIL ENGINEERING CONSULTANTS

Job No: 1813

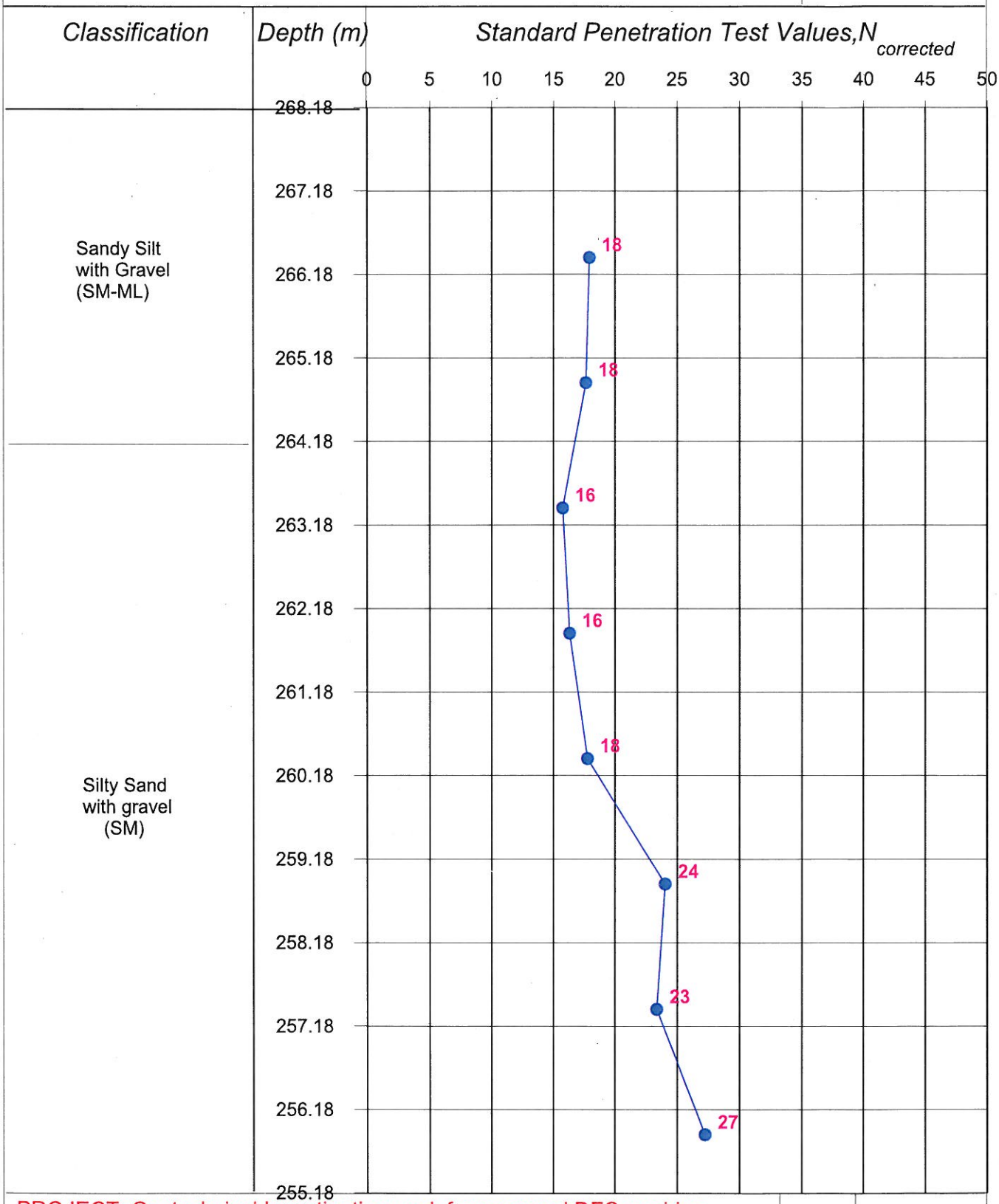


Interdistance @ 197/01

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

Fig: Plan-Y

SOIL ENGINEERING CONSULTANTS | Interdistance @ 197/01 | Project No: 1813



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

0413

BORE LOG

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

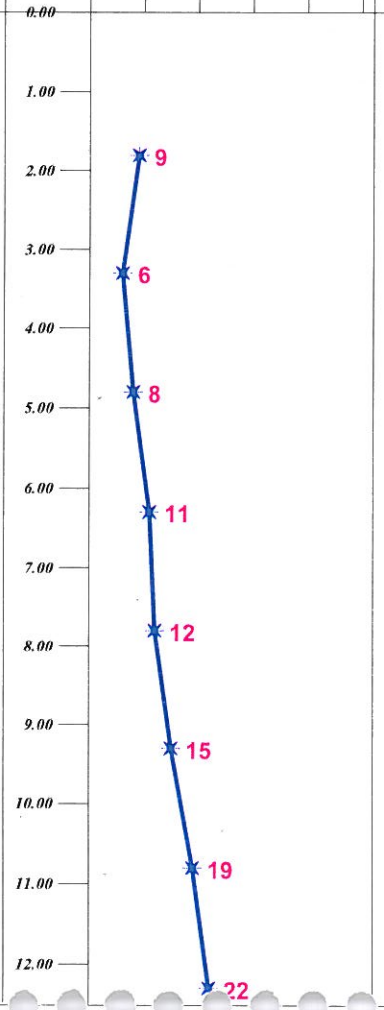
Project No. 1813 Interdistance RL: 267.939

Location; 199/21-23
BH No.: 1
Depth : 12.00
Depth of Water table : 2.60 m

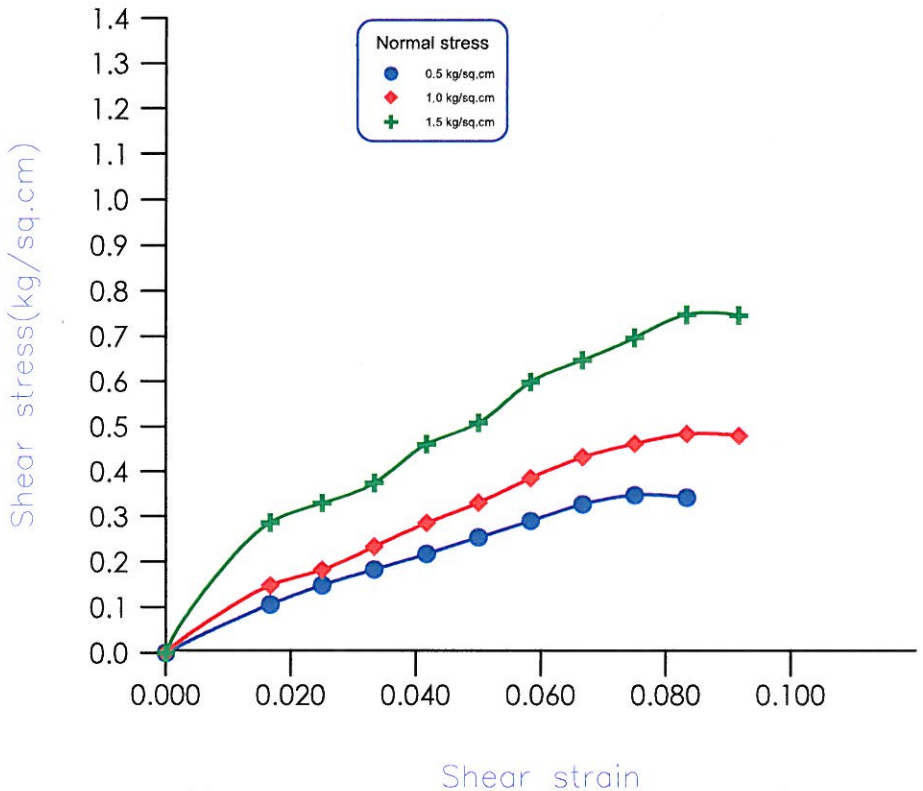
Date of start : 02/07/2008
Date of finish : 03/07/2008

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)	
267.939																
266.139	1.80	SPT		0	86	14					Non Plastic					
265.439	2.50	UDS					1.71	1.37	24.45			2.65	DST		28	
264.639	3.30	SPT		2	75	23					Non Plastic					
263.139	4.80	SPT		1	93	6					Non Plastic					
261.639	6.30	SPT	Silty Sand with gravel (SM)	1	80	19					Non Plastic					
260.139	7.80	SPT		2	79	19					Non Plastic					
258.639	9.30	SPT		1	91	8					Non Plastic					
257.139	10.80	SPT		1	71	28					Non Plastic					
255.639	12.30	SPT		5	81	14					Non Plastic					

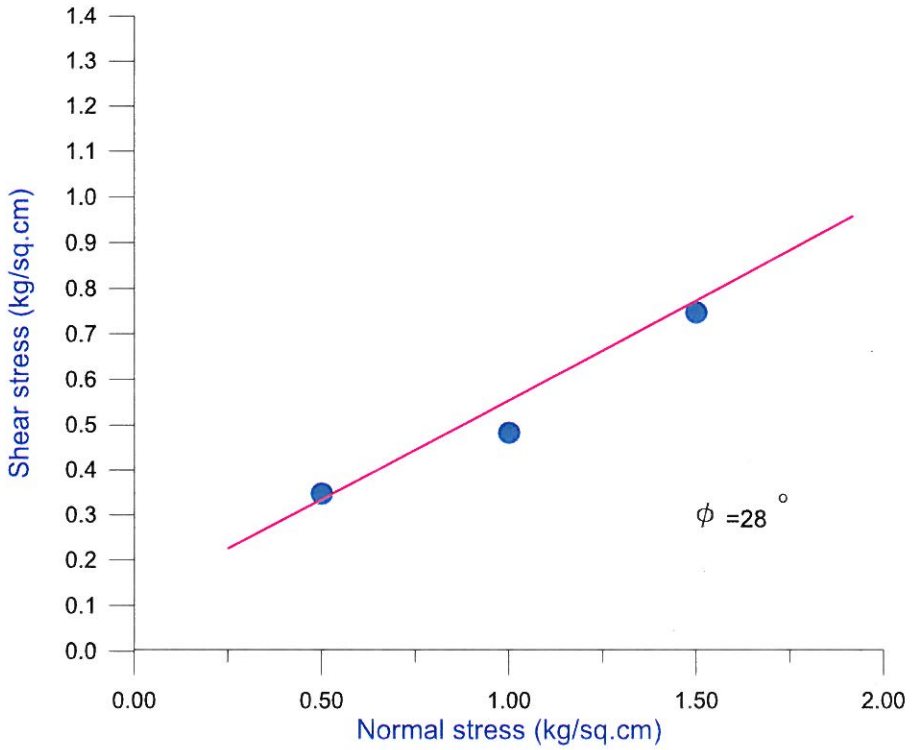
S.P.T Plot



BH-1
DEPTH = 2.50 m



(Shear stress - shear strain relationship)



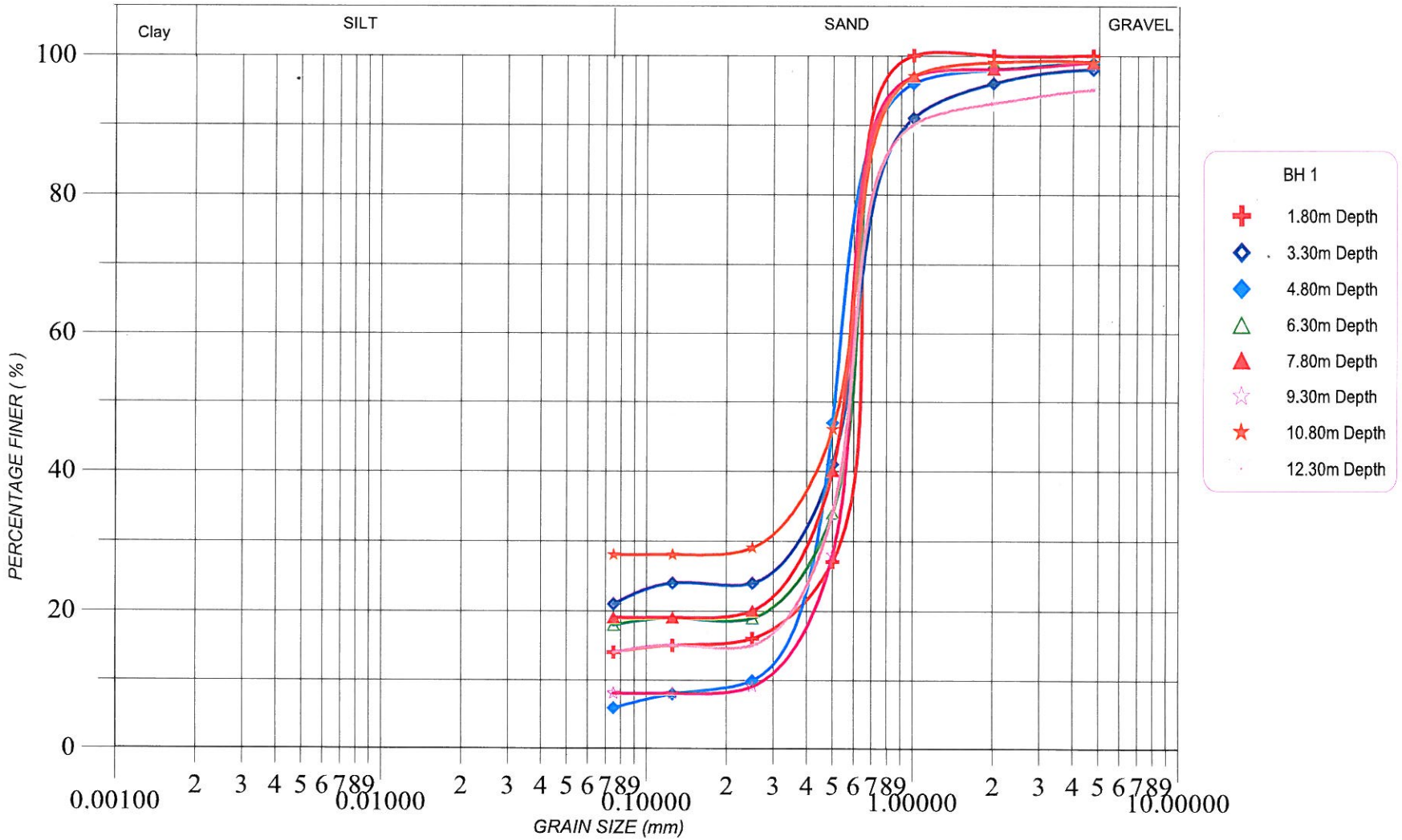
(Shear stress - Normal stress relationship)

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

FIG- DS-AB

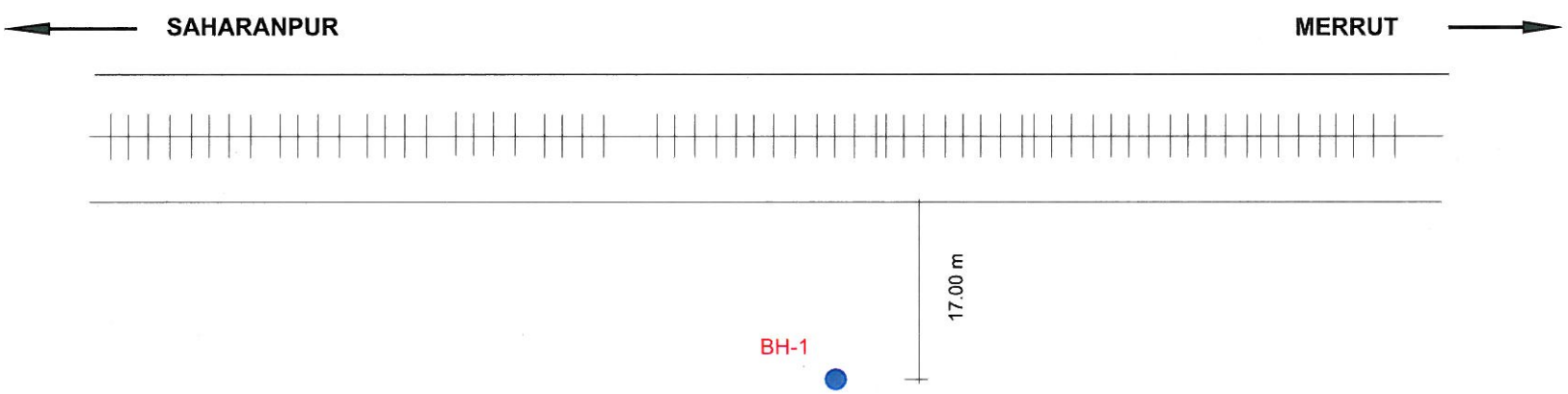
0413

GRAIN SIZE DRISTRIBUTION CURVE



SOIL ENGINEERING CONSULTANTS

Job No: 1813



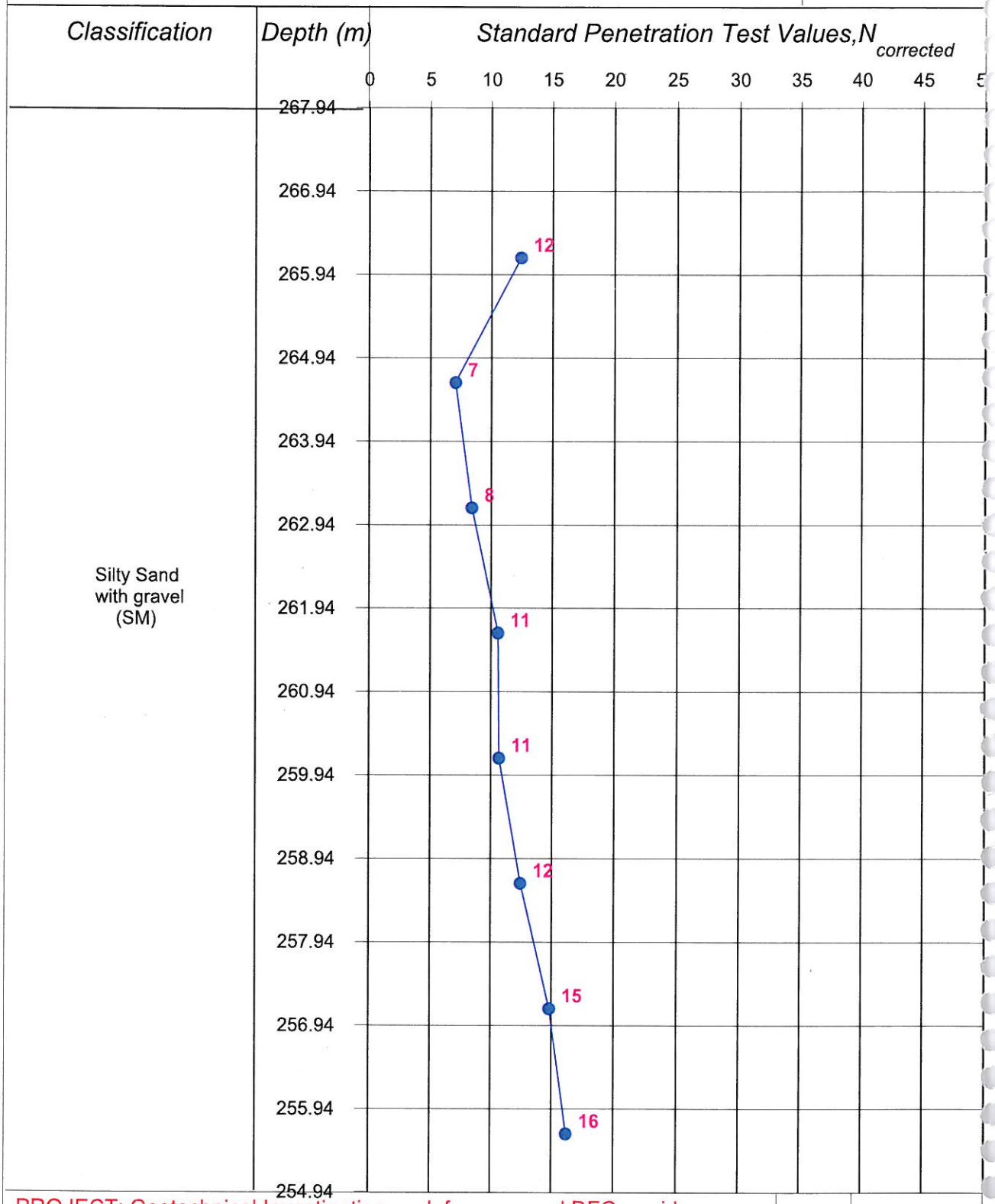
Interdistance @199/21-23

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

Fig: Plan-AB

0417

SOIL ENGINEERING CONSULTANTS | Interdistance @ 199/21-23 | Project No: 1813



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

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BORE LOG

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

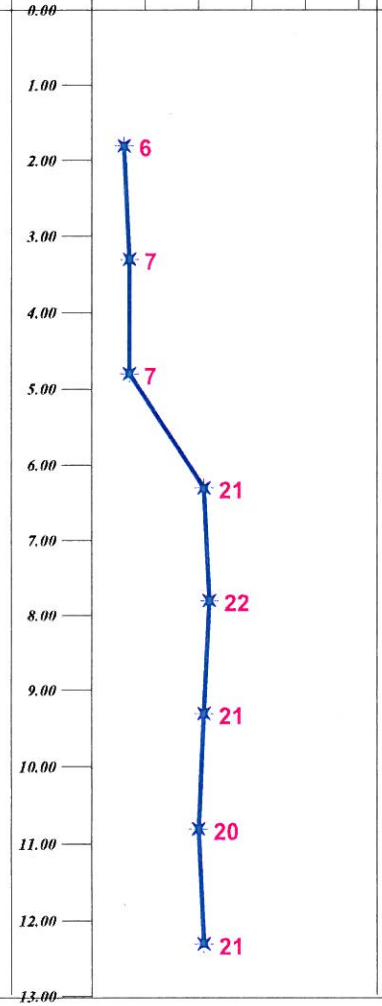
Project No. 1813 Interdistance RL: 265.850

Location:201/1-3
BH No.: 1
Depth : 12.00
Depth of Water table :4.50 M

Date of start : 23/06/2008

Date of finish : 23/06/2008

Reduced Level	Depth (m)	Type of sample	Soil Classification	Gravel	Sand	Silt/clay	r(wet)	r(dry)	W(%)	L.L	P . L	Sp.Gr	Type of test	C(kg/sq.cm)	phi(degrees)	Cc
265.850																
265.350	0.50	DS								Non	Plastic					
264.050	1.80	SPT		0	97	3				Non	Plastic					
263.350	2.50	UDS					1.7	1.45	17.43			2.65	DST	0.1	29	
262.550	3.30	SPT		1	95	4				Non	Plastic					
261.050	4.80	SPT	Silty Sand with Gravel (SM)	1	78	21				Non	Plastic					
259.550	6.30	SPT		10	87	3				Non	Plastic					
258.050	7.80	SPT		22	35	43				Non	Plastic					
256.550	9.30	SPT		5	88	7				Non	Plastic					
255.050	10.80	SPT		16	59	25				Non	Plastic					
253.550	12.30	SPT		7	83	10				Non	Plastic					



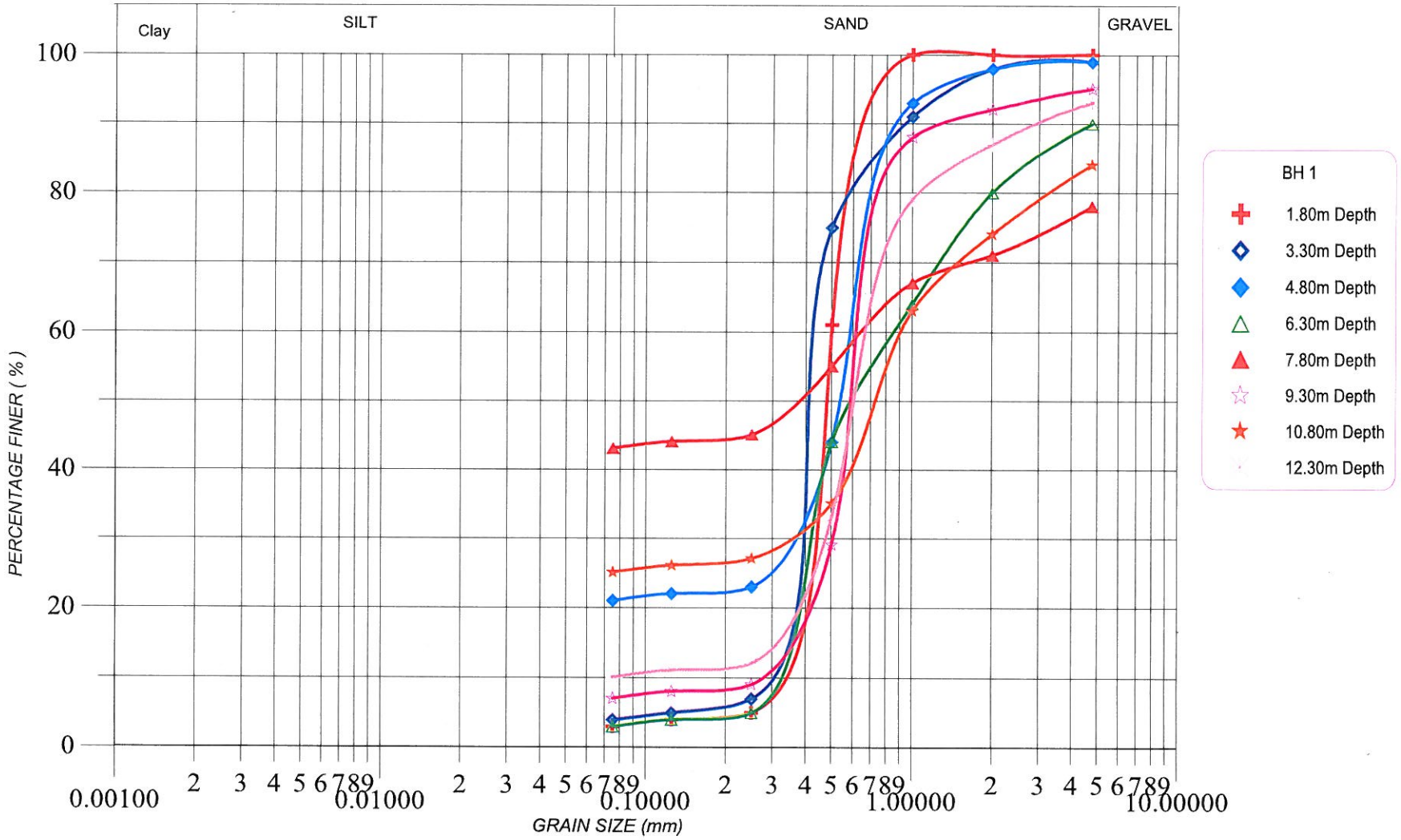
0419

Soil Engineering Consultants

Interdistance@ 201/2-3

Job:1813

GRAIN SIZE DRISTRIBUTION CURVE

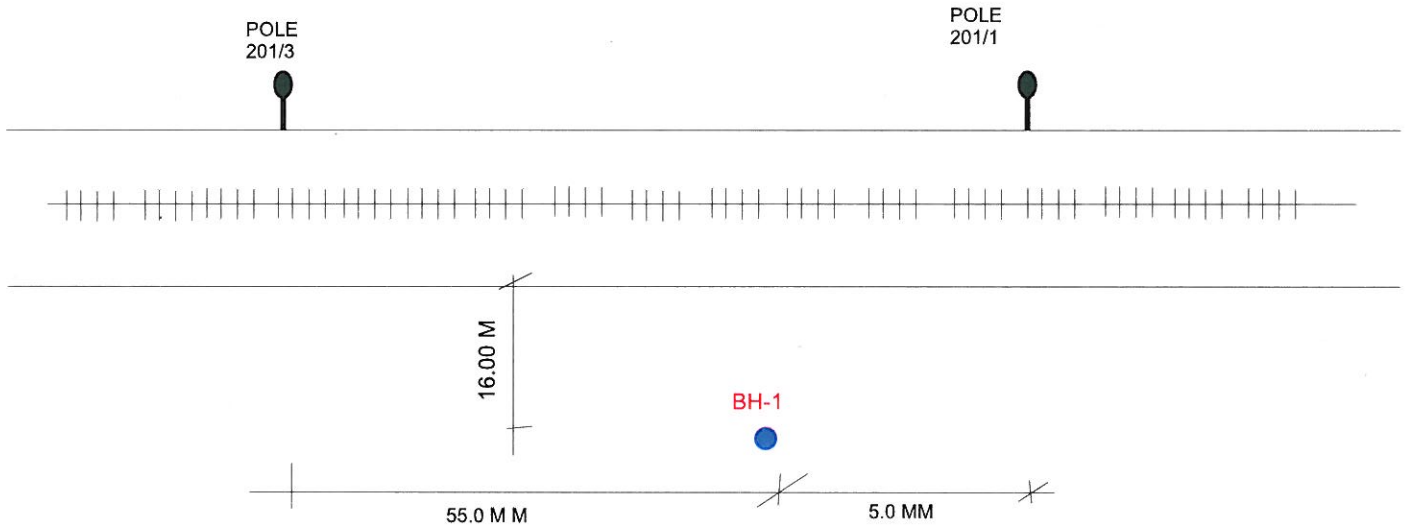


PROJECT: Geotechnical Investigation work for proposed DFC corridor from Ludhiyana to Saharanpur

Fig : GSD-AD

SOIL ENGINEERING CONSULTANTS

Job No: 1813



INTERDISTANCE @ 201/1-3

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

Fig: Plan-AD