INDEPENDENT FOOTINGS IN LAYERED SOIL

Enter the type of soil,1 for clay,2 for sand,3 for c-phi soil,4 for for layered soil
4
Depth of water table (Dw)(m).....=1.60
Total number of layers.....……....=3

Sl. No.	Type of Soil	Thickness of Layer (m)
1	2	4.0
2	1	3.0
3	3	3.0

Total number of boreholes in the site =2

BH. No.	X-cor. (m)	Y-cor. (m)
1	8.0	4.0
2	7.0	14.0

Enter the soil data from BH No.....…….1
Interval at which data is entered(m)…= 1.0
Number of depths with missing dat....= 0
Layer No.....……. 1

Depth (m)	N-value (field)	N-corr.	Unit wt. (kN/m3)
0.00	5	10.00	18.0
1.00	16	25.33	17.0
2.00	20	27.61	19.0
3.00	30	38.76	20.0
4.00	19	23.50	17.0

Layer No.....…… 2
Choose Item 1 or 2 for soil property
1.Unconfined compressive strength, 2.SPT N-value
1
1.Cc is given, 2.determined from WL, 3.determined from e0
3

Depth (m)	qu (kN/m2)	Cc	e0	Unit wt. (kN/m3)
4.00	70.0	0.16	0.8	18.0
5.00	50.1	0.28	1.2	15.0
6.00	180.2	0.16	0.8	17.5
7.00	230.0	0.10	0.6	18.0

Layer No.....…….. 3
1.Cc is given, 2.determined from WL, 3.determined from e0
3

Depth (m)	c (kN/m2)	Phi (deg)	Cc	e0	Es (kN/m2)	Unit wt. (kN/m3)
7.00	26.0	15	0.08	0.8	3500	17.0
8.00	10.0	10	0.30	1.2	3000	15.6
9.00	40.1	17	0.20	1.1	5000	16.6
10.00	80.0	23	0.08	0.8	7000	19.0

Enter the soil data from BH No…..... 2
Interval at which data is entered(m).....= 1.0
Number of depths with missing data.....= 0
Layer No.....…… 1

Depth (m)	N-value (field)	N-corr.	Unit wt. (kN/m3)
0.00	7	14.00	17.0
1.00	20	23.09	18.0

2.00 30 30.90 17.0

3.00 20 19.55 18.0

4.00 28 26.26 19.0

Layer No.....…… 2
Choose Item 1 or 2 for soil property
1.Unconfined compressive strength, 2.SPT N-value
1
1.Cc is given, 2.determined from WL, 3.determined from e0
3

Depth (m) qu (kN/m2) Cc e0 Unit wt. (kN/m3)

4.00 40.5 0.09 0.9 15.7

5.00 60.1 0.28 1.2 16.0

6.00 186.2 0.16 0.8 17.0

7.00 220.0 0.10 0.6 18.0

Layer No.....…… 3
1.Cc is given, 2.determined from WL, 3.determined from e0
2

Depth (m) c (kN/m2) Phi (deg) WL (%) Cc e0 Es (kN/m2) Unit wt. (kN/m3)

7.00 14.0 15 30 0.18 1.20 4500 15.6

8.00 60.4 20 25 0.14 1.10 6000 17.4

9.00 80.0 18 20 0.09 0.80 7000 19.4

10.00 70.3 15 16 0.05 0.90 5600 18.0

No. of footings to be designed:
4

Ftg. No.	X-cor. (m)	Y-cor. (m)	Load (kN)	B/L ratio	Df (m)
1	5.0	5.0	300	1.0	1.5
2	10.0	5.0	400	0.6	1.8
3	5.0	10.0	350	1.0	2.0
4	10.0	10.0	370	0.8	1.7

PRIMARY DESIGN OF INDEPENDENT FOOTINGS:

Permissible settlement for spread footing(Sp)(mm)....= 75
Steps of iteration for spread footings(mm).....……= 50

Ftg. No.	Nearest BH	Bi (m)	B (m)	L (m)	D (m)	NLI (assumed) (kN/m2)	SBP (kN/m2)	S (mm)	No.of Iter.	Gov. Para.
1	1	0.60	0.75	0.75	0.16	535	557	65	3	BC
2	1	0.55	0.65	1.10	0.14	560	628	68	2	S
3	2	0.60	0.90	0.90	0.16	433	572	71	6	S
4	2	0.60	0.75	0.95	0.16	521	578	70	3	BC

REDESIGN FOR DIFFERENTIAL SETTLEMENT:

Permissible diff. settlement for footings(dSp).....= C x 0.0015

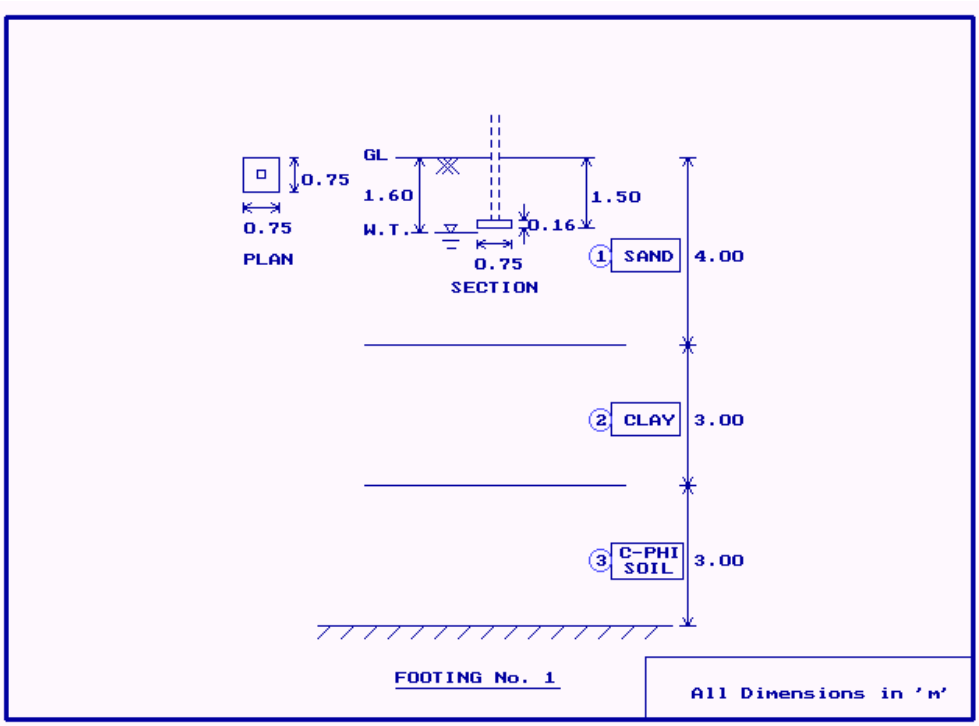
Sl. No.	Ftg. pair	Dist. C(m)	dSp (mm)	Orig. dS(mm)	Final dS(mm)	No. of Iter.
1	1-2	5.00	8	2	2	0
2	1-3	5.00	8	6	6	0
3	1-4	7.07	11	5	5	0
4	2-3	7.07	11	3	3	0
5	2-4	5.00	8	2	2	0
6	3-4	5.00	8	1	1	0

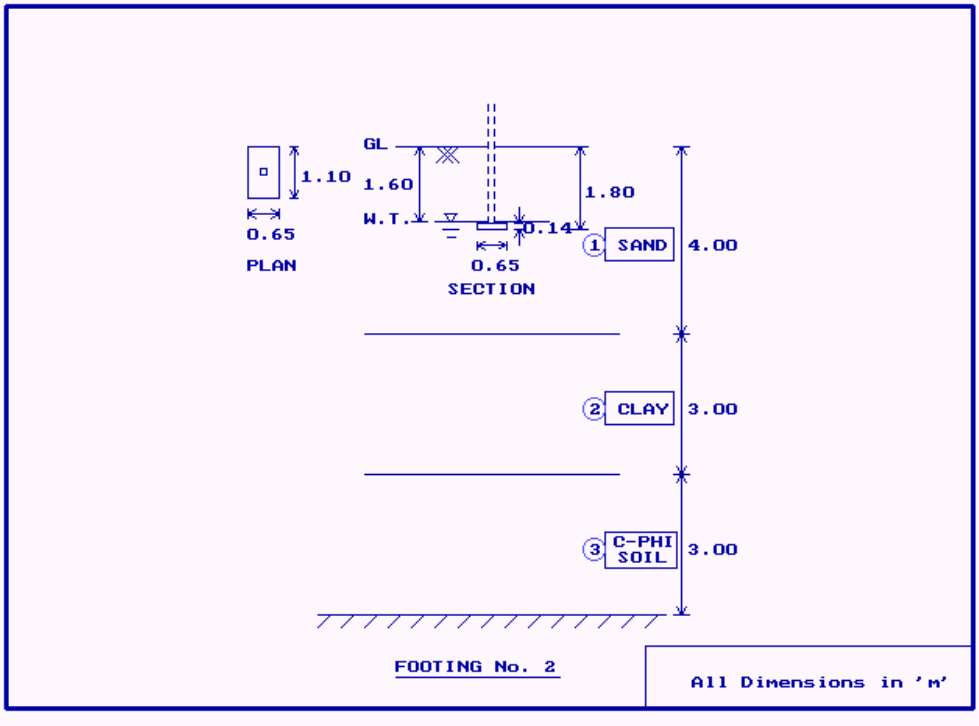
FINAL DESIGN OF INDEPENDENT FOOTINGS:

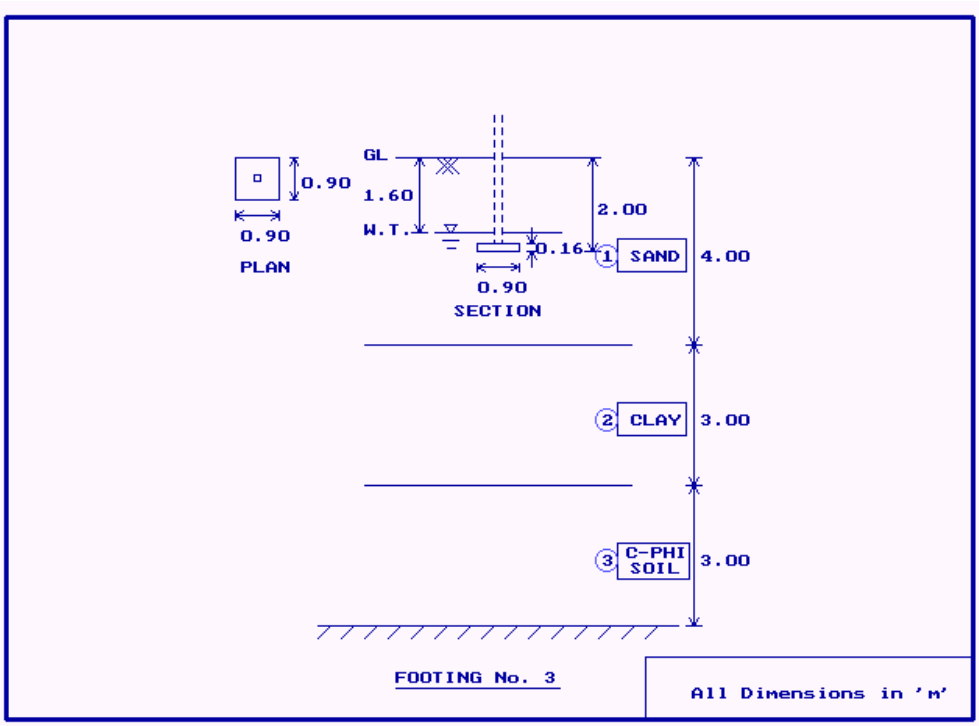
Ftg. No.	B (m)	L (m)	Df (m)	NLI (kN/m2)	SBP (kN/m2)	S (mm)
1	0.75	0.75	1.5	535	557	65
2	0.65	1.10	1.8	560	628	68
3	0.90	0.90	2.0	433	572	71
4	0.75	0.95	1.7	521	578	70

Sum area of footings(after revision)(m2).= 2.80
Plan area (m2).....= 25.00
Ratio(Sum area/Plan area).....= 11 %

-Exit-

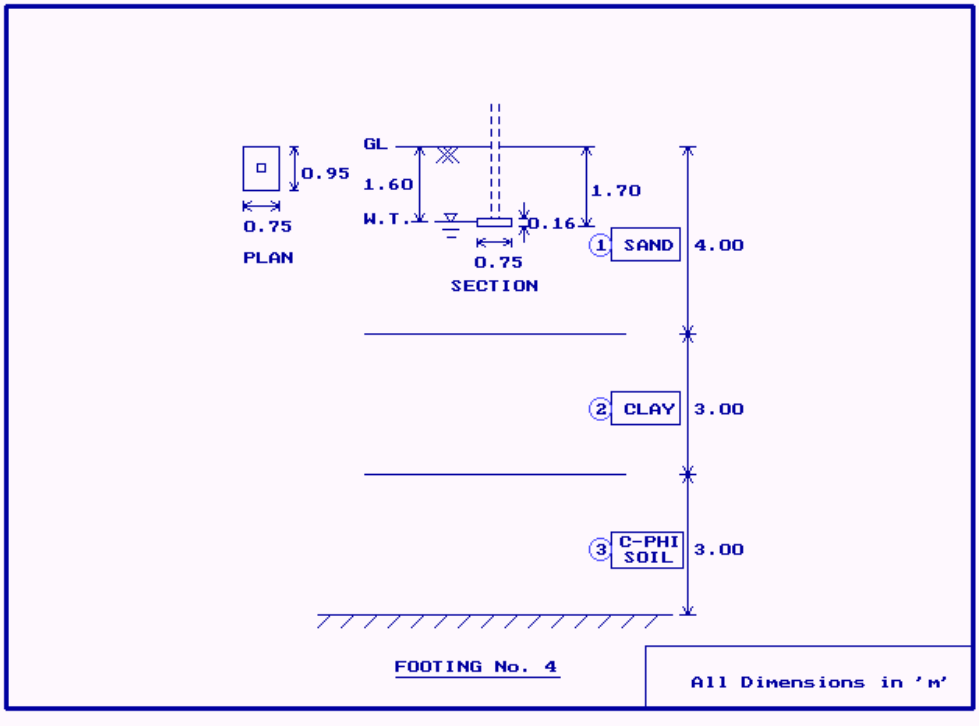

0.75
0.75
PLAN
GL
1.60
W.T.
0.16
1.50
0.75
SECTION
1 SAND
4.00
2 CLAY
3.00
3 C-PHI SOIL
3.00
FOOTING No. 1
All Dimensions in 'm'


1.10
0.65
PLAN
GL
1.60
W.T.
0.14
1.80
0.65
SECTION
1 SAND
4.00
2 CLAY
3.00
3 C-PHI SOIL
3.00
FOOTING No. 2
All Dimensions in 'm'



FOOTING No. 3

All Dimensions in 'm'



FOOTING No. 4

All Dimensions in 'm'