附属資料Ⅲ

Ⅲ－1　気象条件

Ⅲ－2　地質調査資料

Ⅲ－3　水質調査資料

附属資料Ⅲ－1　気象条件

1. イスラマバード市の気象条件

(1) 温　　度　（Table－1）

年間平均最高気温　28.0 ℃

年間平均最低気温　14.4 ℃

最高気温　　45.1 ℃（1960 年 6 月10日）

最低気温　　－ 2.8 ℃（1962 年 1 月16日）

(2) 湿　　度　（Table－1）

(3) 雨　　量　（Table－1）

(4) 風向・風速　（Table－1，2）

Table－1　METOROLOGICAL DATA OF ISLAMABAD

月	日最低気温の月平均	日最高気温の月平均	気温 午前8時	〃 午後5時	相対湿度 午前8時	〃 午後5時	降雨量 (月，合計)	風速 午前8時	〃 午後5時
	℃	℃	℃	℃	%	%	mm	m/s	m/s
1	－ 0.1	22.0	4.8	14.4	78	50	42.6	0.49	0.85
2	0.1	24.0	7,3	16.5	79	51	57.2	0.49	1.12
3	0.6	30.0	13.1	21.1	69	46	86.6	0.76	1.39
4	10.0	38.0	19.8	28.1	64	42	105.2	0.89	1.25
5	15.0	40.0	26.9	35.3	43	26	48.8	0.94	1.88
6	16.0	42.0	30.3	37.4	37	21	26.2	1.25	2.06
7	16.0	40.0	28.7	35.1	69	53	332.5	0.98	1.52
8	18.0	37.0	27.0	33.7	79	62	281.7	0.54	0.85
9	15.0	36.0	24.3	33.7	74	53	193.5	0.49	0.85
10	0.7	33.0	17.5	29.4	55	35	12.7	0.45	0.72
11	0.4	29.0	9.1	22.3	60	40	28.4	0.40	0.67
12	1.5	23.0	4.7	16.1	71	49	39.4	0.49	0.58
平　均	7.8	32.8	17.8	26.9	65	44	(平均) 106.3 (合計) 1,275.1	0.68	1.15

※ Pakistan Meteorological Department によるISLAMABADの1981年のデータ及び
ISLAMABAD の BASED ON 5 YEARS RECORD 1981年以前のデータ

Table－2 年間の風向の割合（%） 2)

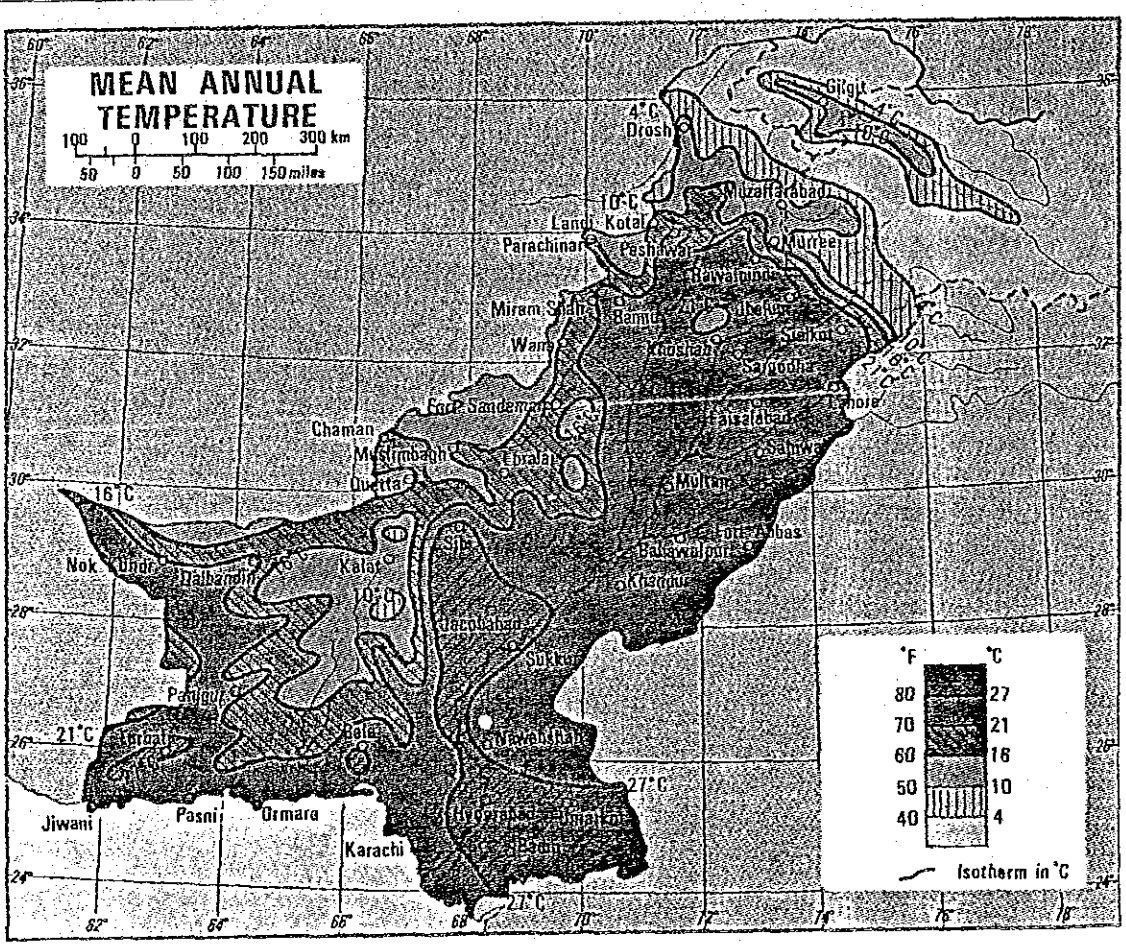
	北	北東	東	南東	南	南西	西	北西	微風
午前8時	2	22	2	6	2	12	2	2	51
午後5時	1	22	2	5	3	19	8	6	34

※ Pakistan Meteorological Department によるISLAMABADのBASED ON 5 YEARS RECORD 1981年以前のデータ

2. その他の地域の気象条件

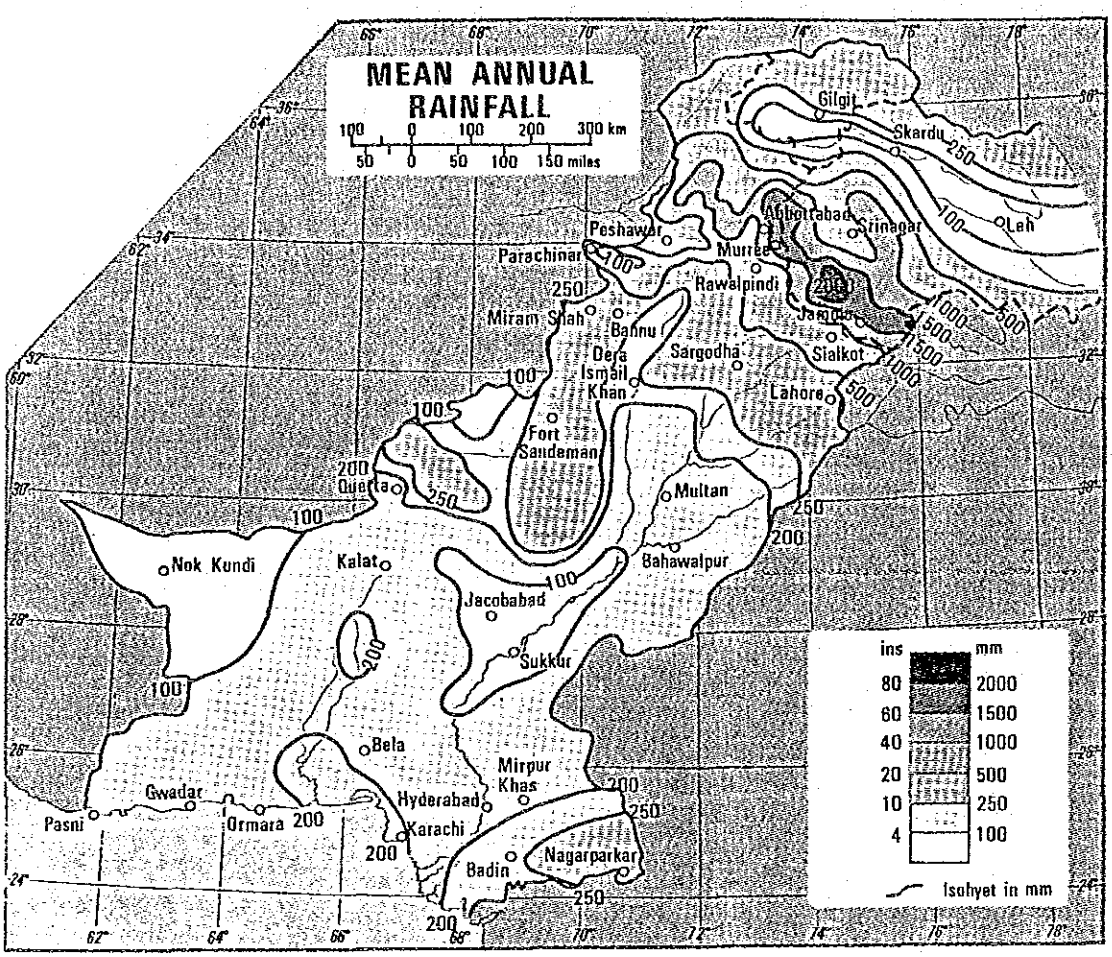
(1) 温　　度（℃）

地　名	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	年	統計期間
Peshawar	10.7	13.2	17.4	22.9	29.1	33.1	32.6	30.9	28.9	23.7	17.5	12.5	22.7	1931 — 1960
Lahore	12.2	15.3	20.5	26.6	31.8	33.9	32.1	31.2	29.9	25.4	18.8	13.8	24.3	1931 — 1960
Jacobabad	14.7	18.3	23.9	29.9	34.9	36.8	35.2	33.6	32.2	28.1	22.0	16.6	27.2	1931 — 1960
Pasni	18.6	20.0	23.3	26.7	29.5	30.5	29.7	28.4	27.5	26.6	23.5	20.3	25.4	1931 — 1960
Karachi	18.9	21.2	24.3	26.9	29.2	30.4	29.3	28.2	27.6	27.1	24.9	21.3	25.8	1931 — 1960



(2) 降雨量 (mm)

	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	年	統計期間
Peshawar	39	41	65	42	40	7	39	41	14	10	10	15	363	1931 — 1960
Lahore	31	23	24	16	12	38	122	123	80	9	3	11	492	1931 — 1960
Jacobabad	8	8	7	2	4	6	37	22	1	0	1	3	99	1931 — 1960
Pasni	43	32	8	6	2	6	12	3	1	0	2	12	127	1931 — 1960
Karachi	7	11	6	2	0	7	96	50	15	2	2	6	204	1931 — 1960



附属資料Ⅲ－２　地質調査資料

(REPORT ON SUB-SOIL INVESTIGATIONS FOR ISLAMABAD HOSPITAL COMPLEX から抜粋)

FOUNDATION ENGINEERING LIMITED

CONTRACTORS FOR SPECIAL FOUNDATIONS & HYDRAULIC WORKS

FOUNDATION HOUSE,
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AUGUST 6,1979.

REPORT ON SUBSOIL INVESTIGATION FOR ISLAMABAD HOSPITAL COMPLEX.

1. INTRODUCTION:

The Ministry of Health, Government of Pakistan, has planned construction of a teaching hospital in Islamabad, known as Islamabad Hospital Complex. M/s. Engineering Consultants are rendering consultancy services for this project.

For designing various structures of the complex, the consultants prepared a program of soil investigations at the proposed site of the Islamabad Hospital complex. The purpose of the investigations was to explore the subsoil conditions and to determine engineering properties of various subsoil materials encountered at the site, so that a proper design of foundations may be done.

It was proposed to carry out these investigations through drilling of bore holes, excavation of test pits, collection of disturbed and undisturbed soil samples and carrying out field and laboratory tests.

M/s. Foundation Engineering were entrusted the job which they got through tendering. The work was awarded to M/s. Foundation Engineering Ltd vide a letter dated March 5,1979, from the Ministry of Health, Government of Pakistan.

This report presents the results of the investigations. Various design aspects related to subsoil conditions have been discussed and an evaluation of engineering properties of various subsoil materials, encountered at the site have been made. Also recommendations for the design parameters and foundation tyons have been given in this report.

Cont'd/ P.2

2. DESCRIPTION OF WORK.

The work comprised of drilling 28 numbers exploratory bore holes, excavation of test pits, taking disturbed and undisturbed soil samples, carrying out penetration tests, testing of soil samples in the laboratory and preparation of report.

3. SUB-SOIL STRATIGRAPHY.

The subsoil stratigraphy of the site was determined through drilling of 28 nos. bore holes at locations as shown on drawing. Generally the bore holes were drilled to a depth of 25 ft. however, 5 bore holes were drilled to a depth of 50 ft. Disturbed soil samples were collected from different elevations of the bore hole for identification of the subsoil materials. Also standard penetration tests were performed at regular intervals and undisturbed samples were collected from various horizons. The record of materials description, the tests, and sampling has been presented in form of bore logs included in this report.

The study of these logs reveals that basically there exist two type of materials. One is the silty clay/clayey silt (CL-ML) with medium to coarse sand and gravels and the other is silty clay/clayey salt(CL-ML) having no coarse grined materials in its texture. It was also observed during drilling of bore holes that the grain size of coarse material as well as its percentage varied greatly.

The gravely silty clay/clayey silt was found to start almost at the existing surface level which continued to depth varying between 9 and 25 feet. Underneath this was a layer of silty clay/clayey silt extending upto 25 ft in all bore holes. However, in the bore holes drilled to 50 ft., it was found that the subsoil material again changes. It was found that at about 32 to 37 ft the silty clay/ clayey silt retrieved from the bore holes contained gravels and pebbles and also boulders at places.

The analysis of stratigraphy indicates that the formation of layers at the site has been caused by mainly transported material which alternately settled and erroded at the site in different periods.

4. ENGINEERING PROPERTIES OF SUBSOIL.

The engineering properties of various subsoil materials at the site were determined through field and laboratory testings. In the field were carried out the standard penetration tests during drilling of bore holes. While various tests to evaluate physical as well strength parameters were conducted in the laboratory. The results of standard penetration tests are presented in the bore logs while the laboratory results are also appended to this report.

4.1 STANDARD PENETRATION TESTS:

The analysis of Standard Penetration Tests(SPT) record has been made in Table-1. The SPT blows provide very useful information about the bearing capacity of the subsoil. The proper interpretation of this test combined with experience in similar materials provides indicative strength parameters. The SPT is actually a test of resistance of soil to penetration of a standard spoon when driven with a standard energy.

From Table-1, it is observed that SPT blows vary from location to location as well as vary with depth. An average has been worked out for every 5 ft of elevation starting from EL 1815' to EL 1770'. While averaging, the very high blows have been excluded and it has been considered that such high values are due to presence of gravels. From this table it is observed that average 'N' value from EL 1815 to EL 1795' is 32 blows and from EL 1795' to EL 1775' it is, 24 blows. It is observed that beyond EL 1775' the 'N' blows are 35 (in bore hole No.1,only)

It is clear from above representation that the SPT blows are high in the upper strata, then these decrease in next strata and again increase in the lowest investigated strata. Such variation in SPT blows is due to different materials, although physically there appear to be in the same state of compactness/consolidation.

4.2 FIELD DENSITY TESTS.

Ten numbers field density tests were carried out at the locations shown. These tests were intended to find out insitu density as well as insitu moisture content of subsoil near the surface. Table-2 summarises these results. From this table it is observed that the insitu wet density ranges from 1.35gm/cc to 1.58 gm/cc with the average of 1.49, the insitu natural moisture content ranges from 3.7% to 8.5% with average value of 4.6%. The average of insitu dry density worked out from the values is 1.42 gm/cc.

P/4....

4.3 LABORATORY TESTS.

Several laboratory tests were carried out to evaluate the engineering properties of the subsoil materials. These tests included the tests to determine physical characterstics such as gradation, Atterberg limits etc and also to determine strength and consolidation characteristics of subsoil materials. Also tests were carried out to determine the severeness of the sulphates in the soil. The summary of laboratory test results have been presented in Table-3. The following parameters are deduced from the laboratory tests:

a) Natural moisture content, w_n =4 to 20%

b) Total Unit wt (i) near surface, γ_t = 1.5 gm/cc
(ii)3' to 46' γ_t = 1.98 to 2.03 gm/cc.

c) Dry unit wt. (i) near surface, γ_d = 1.43 gm/cc(av)
(ii)3' to 46' , γ_d = 1.72 gm/cc(av)

d) Unconfined Compressive strength, q_u = 1.21 to 2.45 kg/cm^2
Average q_u = 1.96 kg/cm^2

e) Compression Index C_c = 0.06 to 0.09
Average C_c = 0.08

f) Initial void ratio, e_o =0. 58 (av)

g) Sulphate contents, SO_4 = 0.01 to 0.03 %

h) p^H = 8.0 (av)

i) Compaction Test:
Maximum dry density = 1.86 gm/cc (av)
Optimum moisture content = 9.7% (av)

j) C.B.R. = 4%

k) Average SPT blows, N = 32 blows upto 6m depth
Average SPT blows, N = 24 blows from 6m and below

For Design take average SPT blows for shallow footing, N=30 blows.

5. GROUND WATER TABLE:

It was established that the ground water table at the site exists at an average level of EL.1776'(the depth varied from 28' to 37' in different bore holes).

P/5...

6. DESIGN OF FOUNDATIONS:

The selection of foundation types and design of foundations depend on the subsoil conditions and the type of structure (its loads) to be built. In the present case the loads of the building are not known at this stage, therefore, a general evaluation of bearing capacity has been made. For this purpose calculations has been made for various allowable loads on various sizes of footings. To check the safety of structure followings two requirements have been kept in view:

1. Safety against settlement failure.
2. Safety against shear failure.

In shear failure criterion the ultimate shear strength with a factor of safety of 3 has been utilized. The ultimate shear has been calculated both on the basis of unconfined compressive strength as well as on the basis of SPT. Based on unconfined compressive strength the allowable bearing capacity against shear has been computed to be 1.96 kg/cm^2, while based on SPT it has been found to be 3.5 kg/cm^2. However, keeping in view the type of subsoil material, i.e. clayesilt/silty clay with sand and gravels at places, obviously it should be expected that the settlement of foundation will govern the allowable bearing capacity of foundation.

Calculations have been done for computing allowable bearing capacity on the basis of settlement criterion. For this purpose consolidation test data has been used and computations of settlement for various sizes of footings under various pressures has been carried out. The following is the summary of these computations:

6.1 A) Individual footings placed at 1.5 m depth.

SIZE OF FOOTING m x m	SETTLEMENT IN cm FOR VARIOUS PRESSUREES 2.0 kg/cm^2	1.0 kg/cm^2	0.5 kg/cm^2
1 x 1	3.1	2.3	1.4
2 x 2	5.3	3.6	2.5
3 x 3	7.5	4.1	2.9
4 x 4	9.1	5.5	3.8

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6.2 B) Individual footings placed at 3.0 m depth.

SIZE OF FOOTING m x m	SETTLEMENT IN cm FOR VARIOUS PRESSURES 2.0 kg/cm^2	1.0 kg/cm^2	0.5 kg/cm^2
1 x 1	2.5	1.9	1.0
2 x 2	4.5	3.0	1.8
3 x 3	6.7	4.0	2.1
4 x 4	8.2	5.0	4.6

6.3 C) Raft foundations placed at 1.5 m . depth.

SIZE OF FOOTING m x m	SETTLEMENT IN cm FOR 0.5 kg/cm^2
20 x 20	6.2
30 x 30	6.7
50 x 50	6.9

6.4 D) Raft foundations placed at 3.0 m depth and providing a basement.

SIZE OF FOOTING m x m	SETTLEMENT IN cm FOR NET PRESSURE OF 0.5 kg/cm^2
20 x 20	4.9
30 x 30	5.2
50 x 50	5.5

As the ground water table is at a depth of about 35 ft. the construction of foundations at deeper depths will not pose any construction problem.

From the above summary of pressures and settlement for various sizes of footings placed at different depths a suitable size of footing may be selected for limiting the tolerable settlement.

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Normally for individual footings the criteria of one inch (2.54 cm) total settlement and for raft foundations the criterion of 2 inch (5 cm) total settlement is acceptable. One these criteria and from above summary the followings recommendations are deducted:

7. FOOTING; PLACED AT 1.5 M. DEPTH:

7.1 A 1m x 1m footing may be adopted for allowable load of 1.0 kg/cm^2.

7.2 A 2m x 2m footing may be adopted for allowable load of 0.5 kg/cm^2.

7.3 Any other size may be adjusted for other allowable pressures by interpolating the results in summary.

8. FOOTINGS PLACED AT 3.0 M DEPTH:

8.1 A 1m x 1m footing may be designed for a pressure of 2.0 kg/cm^2.

8.2 A 2m x 2m footing may be adopted for allowable load of 1.0 kg/cm^2 (Although this will result in total settlement of 3 cm which is a little higher than the limit).

8.3 A 3m x 3m footing may be designed for a pressure of 0.5 kg/cm^2.

9. RAFT FOUNDATIONS:

In case raft foundations are required to support heavier loads, the most economical way would be to place raft foundations at a depth of about 3 m and provide a basement. This basement may be used for parking or any other purpose. In this case a raft foundation of size from 20 m to 50 m width may be designed for allowable net pressure of 0.5 kg/cm^2.

10. CONCLUSIONS AND RECOMMENDATIONS:

The results of the subsoil investigations have been analysed and design parameters determined on the basis of field and laboratory tests. The Computations for evaluating bearing capacity of footings have been made. In the following is the summary of the report:

10.1 The topography of the site indicates a level difference from EL.1799.40' at Borehole No.11 to EL.1815.09' at Borehole No.22.

10.2 The Water-table at the site was found to be at a depth varying from 28' to 37' in different bore holes. However, the average elevation comes out to be EL.1776'.

10.3 The Sulphate contents in soil and also p^H

P/8...

tests indicate that the R.C.C. foundations Constructed in this soil shall not be affected by Sulphate attack.

10.4 The allowable bearing pressures may be adopted as recommended in section 6. However, this is pointed out that these recommendations have been based on assumption that the ground water will not rise in future near to the foundation level.

10.5 The Compaction tests show that maximum dry density of 1.86 gm/cc corresponding to optimum moisture content of 9.7% may be achieved in modified AASHTO density test. The CBR value of 4% is recommended for pavement design.

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PHS: 430231-430237

CABLE: FOUNDENG
TELEX: 24647 FEL PK

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ISLAMABAD HOSPITAL

SUB-SOIL INVESTIGATIONS

DESIGN OF FOUNDATIONS

The proposed type of structures and the loading conditions have not been provided. However, for analysis purpose it may be considered that most of the structures will be lightly loaded, hospital buildings of two or three storyed. Therefore, only shallow footing have been considered. For analysis purpose individual as well as raft foundations have been provided and bearing capacity for both type of foundations have been calculated.

TO compute the allowable bearing capacity of these foundations, following two criteria have been kept in view:

1. Foundation failure due to shear failure of the subsoil. In this case the limiting value of undrained shear strength of insitu materials has been used with a safety factor of 3.

2. Foundation failure due to settlement of the subsoil. In this case consolidation settlement of various footings have been assessed for different loads. Normaly"one inch" (25 mm) settlement is taken to be the limit of tolerable settlement.

To arrive at the recommended value of allowable bearing capacity, the lower of the above two has been adopted.

DESIGN PARAMETERS.

1. The subsoil mainly consists of hard silty clay/ clayey silt (CL-ML)with medium to coarse sand and gravels. The sand and gravel contents, however, vary at different depths.

Contd P/2....

2. Average SPT blows N = 30. This value of SPT blows correspond to undrained shear strength of about 2.0 Kg/Cm^2.

3. However, on the basis of unconfined compression tests in the laboratory, the undrained shear strength is evaluated to be 0.98 Kg/Cm^2.

4. Based on laboratory tests the following parameters have been established :

   i) Total unit weight = 2.0 gm/cc
   ii) Compression Index C_c = 0.08
   iii) Initial void ratio e_o = 0.58

5. The ground water table at 35 ft.

6. Assume that the effective influence zone of stresses is approximately 1.5 times the footing size. At this depth the stresses transfer-ed to the subsoil are reduced considerably.

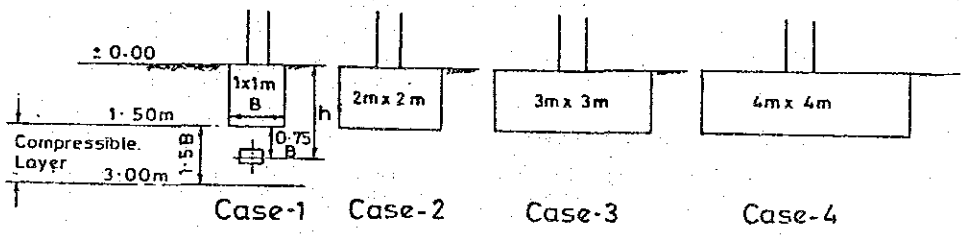
DESIGN FOR SHEAR FAILURE

a) On the basis of SPT blows (N = 30), the allowable capacity against shear failure will be about 4.0 Kg/Cm^2.

b) On the basis of Unconfined compression tests the allowable capacity against shear failure will be about 1.96 Kg/Cm^2.

DESIGN FOR SETTLEMENT FAILURE
SHALLOW FOOTINGS:

A. Consider footings of 1 m x 1m, 2m x 2m, 3m x 3m and 4m x 4m placed at a depth of 1.5 m below Ground level.



At the centre of the compressible layer:

** Insitu pressure, $p_o = \gamma h$
where γ = effective unit weight(Total unit weight in this case)
h = 0.75 x width of footing.

P/3...

** Stresses due to imposed load, $\Delta p = 0.32\ p$
where p = Load per unit area at the foundation lavel.

To compute settlement use following relation :

$$S = \frac{Cc}{1+e_o} \quad H \log \frac{p1 + \Delta p}{Po}$$

Where S = Settlement of foundation under load p

Cc= Compression Index (0.08 av)

e_o =Initial void ratio (0.58 av)

H = Thickness of layer under consolidation compression(1.5 times width of footing).

po= insitu pressure at the centre of the compressible layer.

Δp= increase in stresses at the centre of the compressible layer due to load on foundation.

In Situ Pressures, po

Case 1 $po = \bar{\gamma}h = 0.002 \times (2.25 \times 100) = 0.45\ Kg/Cm^2$ Where =unit weight =2.0 gm/cc =0.002 Kg/cc

Case 2 $p_o = = 0.002 \times (3 \times 100) = 0.60\ Kg/Cm^2$

Case 3 $p_o = 0.002 \times (3.75 \times 100) = 0.75\ Kg/Cm^2$

Case 4 $p_o = 0.002 \times (4.5 \times 100) = 0.9\ Kg/Cm^2$

Increase in stresses at the Centre of compressible layer, Δp.

$$\Delta p = \left(\frac{B}{B+z}\right)^2 p$$

Where

B = width of footing

z = Depth of Centre of Compressible layer below foundation level = 0.75 B.

p = Foundation pressure.

$$\therefore \quad \Delta p = \left(\frac{1}{1.75}\right)^2 p = 0.33\ p$$

P/4...

FOUNDATION PRESSURE P, KG/CM^2	INCREASE IN PRESSURE P , KG/CM^2
2.0	0.66
1.0	0.33
0.5	0.17

SETTLEMENT.

(Footings placed at 1.5 m from Ground level)

A. Allowable pressure, p 2.0 Kg/Cm^2

$\Delta p = 0.66$ Kg/Cm^2

$e_o = 0.58$, $C_c = 0.08$

Case 1

$H = 1.5$m, $p_o = 0.45$ Kg/Cm^2

$$S = \frac{0.08}{1.58}(1.5 \times 100) \log \frac{1.11}{0.45} = 2.97 \text{ Cm.}$$

Case 2

$H = 3$ m, $p_o = 0.6$ kg /Cm

$$S = \frac{0.08}{1.58}(3 \times 100) \log \frac{1.26}{0.6} = 4.89 \text{ Cm}$$

Case 3

$H = 4.5$ m; $p_o = 0.75$ Kg/Cm^2

$$S = \frac{0.08}{1.58}(4.5 \times 100) \log \frac{1.41}{.75} = 6.24 \text{ Cm}$$

Case 4

$H = 6.0$ m, $p_o = 0.9$ Kg/Cm^2

$$S = \frac{0.08}{1.58}(6.0 \times 100) \log \frac{1.56}{0.9} = 7.25 \text{ Cm.}$$

B. Allowable pressure $p = 1.0$ Kg/Cm^2

$\Delta p = 0.33$ Kg/Cm^2

$e_o = 0.58$, $C_c = 0.08$

Case 1

$$S = \frac{0.08}{1.58}(150) \log \frac{0.78}{0.45} = 1.81 \text{ Cm.}$$

P/S....

Case 2

$$S = \frac{0.08}{1.58}(300)\log\frac{0.93}{0.6} = 2.89\ Cm$$

Case 3

$$S = \frac{0.08}{1.58}(450)\log\frac{1.08}{0.75} = 3.60\ Cm$$

Case 4

$$S = \frac{0.08}{1.58}(600)\log\frac{1.23}{0.9} = 4.12\ Cm$$

b. Allowable pressure $p = 0.5\ Kg/Cm^2$

$\Delta p = 0.17\ Kg/Cm^2$

$e_o = 0.58 \quad Cc = 0.08$

Case 1

$$S = \frac{0.08}{1.58}(150)\log\frac{0.62}{0.45} = 1.05\ Cm$$

Case 2

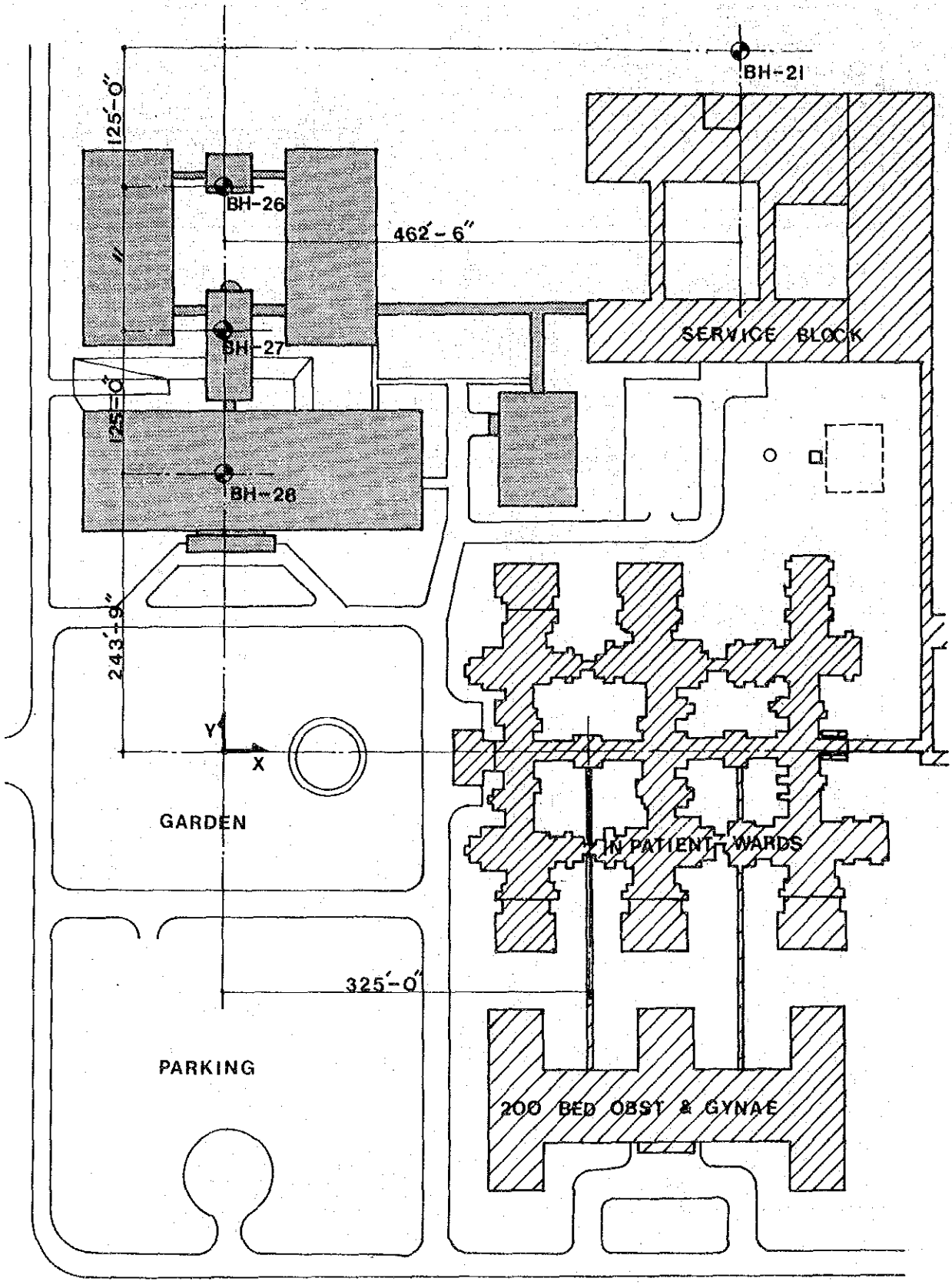
$$S = \frac{0.08}{1.58}(300)\log\frac{0.77}{0.6} = 1.64\ Cm$$

Case 3

$$S = \frac{0.08}{1.58}(450)\log\frac{0.92}{0.75} = 2.02\ Cm.$$

Case 4

$$S = \frac{0.08}{1.58}(600)\log\frac{1.07}{0.9} = 2.28\ Cm.$$


BH-21
125'-0"
BH-26
462'-6"
BH-27
SERVICE BLOCK
125'-0"
BH-28
243'-9"
Y
X
GARDEN
IN PATIENT WARDS
325'-0"
PARKING
200 BED OBST & GYNAE

Client : GOVT. OF PAKISTAN
MINISTRY OF HEALTH

Consultants ENGINEERING CONSULTANTS

Project ISLAMABAD HOSPITAL COMPLEX
SECTOR G-8/3 ISLAMABAD

BORING NO. 26
DATE OF EXECUTION 19-4-1979
PROCESS OF EXECUTION Percussion
GROUND ELEVATION 1810.58
GROUND WATER TABLE STRUCK AT Not Struck

REDUCED ELEVATION IN FEET	DEPTH IN FEET	THICKNESS IN FEET	STRATA ENCOUNTERED	LOG	DIAMETRE	SAMPLES	S.P.T. Blows/Ft.	CORE RECOVERY: Difference	Recovery in Feet	Recovery in %	PERCENT S.P.T. Blows/Ft. (10 30 50 70 90)	SCALE
	1'-6"	1'-6"	A		6" upto 81ft							
	4'-0"	2'-6"	Yellowish-grey hard silty CLAY, gravel present.			3'-0" SPT 6-9 U1	47					
	8'-6"	4'-6"	Greyish-yellow hard silty CLAY with fine gravel.			12'-0" U2 13'-3"	44					
	16'-0"	7'-6"	Light-greyish-brown hard silty CLAY.				32					
	20'-8"	4'-8"	Light-greyish-brown hard silty CLAY with few fine gravel.			24'-9½"	13				6 Blows for 9" only.	
1785.58	24'-10"	4'-2"	Brown stiff silty CLAY.				6					
	125'-0"	0'-2"	B									

LEGEND

A ..... Light-grey silty CLAY with organic materials.

B ..... Gravel & Pebbles with sandy silty clay.

KEY TO SAMPLES

DISTURBED	□	UNDISTURBED.	▩
WATER SAMPLES.	▨	S.P.T. BLOWS/FT.	●
CORE RECOVERY (%)	■	G.W.T.	▽

FOUNDATION ENGINEERING LTD.
CONTRACTORS FOR SPECIAL FOUNDATIONS AND HYDRAULIC WORKS.
KARACHI.

PLAN NO. 490-27

Client : GOVT. OF PAKISTAN
MINISTRY OF HEALTH

Consultants ENGINEERING CONSULTANTS

Project ISLAMABAD HOSPITAL COMPLEX
SECTOR G- 8/3 ISLAMABAD

BORING NO. 27
DATE OF EXECUTION 22-4-1978/10-5-1978
PROCESS OF EXECUTION Percussion/Rotary
GROUND ELEVATION 1808.74
GROUND WATER TABLE STRUCK AT 30-0

REDUCED ELEVATION IN FEET	DEPTH IN FEET	THICKNESS IN FEET	STRATA ENCOUNTERED
	2-8	2-8	Grey silty CLAY with organic materials.
	4-6	1-10	Yellowish-grey stiff to hard silty CLAY with gravel
	7-0	2-6	Greyish-yellow stiff to hard silty CLAY with gravel
	10-0	3-0	Yellow stiff silty CLAY.
	12-0	2-0	Yellowish-brown stiff silty CLAY.
	15-0	3-0	Light-yellowish-brown stiff silty CLAY.
	18-2	3-2	Light-brown stiff silty CLAY.
	20-8	2-6	Brown hard silty CLAY.
	22-0	1-4	GRAVEL, PEBBLES & pieces of BOULDERS
	25-0	3-0	Medium to coarse SAND with gravel & pieces of boulders.
	35-0	10-0	Silty SAND with gravel pebbles & pieces of boulders
1758.74	50-0	15-0	Silty CLAY.

LOG: 6" Ø upto 10 ft; 4.85 mm Ø upto 50 ft

SAMPLES: 2-0 DS; 2-6; 16-0 U1; 22-0 DS; 25 DS; 35-0

S.P.T. Blows/Ft.: 20; 23; 17; 14; 35

G.W.T 30-0

CORE RECOVERY — PERCENT — S.P.T. Blows/Ft. (10 30 50 70 90)

35 Blows for 6 only

SCALE: 5 10 15 20 25 30 35 40 45 50 55 60 65 70

KEY TO SAMPLES: DISTURBED. □ UNDISTURBED. ▩ WATER SAMPLES. ▤ S.P.T. BLOWS/FT. ● CORE RECOVERY (%) ▬ G.W.T. ▽

FOUNDATION ENGINEERING LTD.
CONTRACTORS FOR SPECIAL FOUNDATIONS AND HYDRAULIC WORKS.
KARACHI.

PLAN NO. 490-28

Client : GOVT. OF PAKISTAN
MINISTRY OF HEALTH

Consultants ENGINEERING CONSULTANTS

Project ISLAMABAD HOSPITAL COMPLEX
SECTOR G - 8/3 ISLAMABAD

BORING NO. 28
DATE OF EXECUTION 23-4-1979/2-5-1979
PROCESS OF EXECUTION Percussion/Rotary
GROUND ELEVATION 1808.52
GROUND WATER TABLE STRUCK AT Not Struck

REDUCED ELEVATION IN FEET	DEPTH IN FEET	THICKNESS IN FEET	STRATA ENCOUNTERED	LOG	DIAMETRE	SAMPLES	S.P.T. Blows/Ft.	CORE RECOVERY: Difference	Recovery in Feet	Recovery in %	PERCENT S.P.T. Blows/Ft. 10 30 50 70 90	SCALE
	4-0	4-0	Grey silty CLAY with organic materials		6" upto 10 ft	DS	24					5
	6-2	2-2	Light-greyish-yellow stiff to hard silty CLAY with gravel.									
	9-6	3-4	Yellow stiff silty CLAY with gravel.			U1	17					10
	13-0	3-6	Brownish-yellow stiff silty CLAY with gravel.			U2						15
	16-0	3-0	Greyish-brown stiff silty CLAY with gravel.				11					
	18-6	2-6	Light-brown stiff silty CLAY with gravel			DS						20
1793.52	25-0	6-6	GRAVEL PEBBLES and BOULDERS.		85mm Ø upto 25 ft							25

KEY TO SAMPLES

DISTURBED.	□	UNDISTURBED.	▨
WATER SAMPLES.	▤	S.P.T. BLOWS/FT.	●
CORE RECOVERY (%)	▬	G.W.T.	▽

FOUNDATION ENGINEERING LTD.
CONTRACTORS FOR SPECIAL FOUNDATIONS AND HYDRAULIC WORKS
KARACHI.

PLAN NO. 490-29

GOVERNMENT OF PAKISTAN
MINISTRY OF HEALTH
M/S ENGINEERING CONSULTANTS
SUB-SOIL INVESTIGATIONS FOR
ISLAMABAD HOSPITAL COMPLEX
SECTOR G-8/3 ISLAMABAD

ABSTRACT OF DATA ON LABORATORY SOIL TESTS

BORE HOLE No.		24		25		26		27	28		PIT-1	PIT-2	PIT-3	—	—	—
SAMPLE No.		U-1	U-2	U-1	U-2	U-1	U-2	U-1	U-1	U-2	—	—	—	—	—	—
DEPTH IN FEET		6'-0" 7-3	16'-0" 17-3	12'-2" 13-5	21'-0" 22-3	5'-6" 6-6	12'-0" 13-3	16'-0" 17-3	6'-0" 7-3	12'-0" 13-3	—	—	—	—	—	—
TOTAL UNIT WEIGHT Gm/cc.		—	—	2·03	—	—	—	—	—	—	—	—	—	—	—	—
MOISTURE CONTENT NATURAL (%)		—	20·2	17·1	—	—	—	—	—	—	—	—	—	—	—	—
SPECIFIC GRAVITY		—	—	2·69	—	—	—	—	—	—	—	—	—	—	—	—
PROCTOR COMPACTION TEST	MAXIMUM DRY DENSITY Gm/cc.	—	—	—	—	—	—	—	—	—	1·85	1·87	1·86	—	—	—
	OPTIMUM MOISTURE CONTENT (%)	—	—	—	—	—	—	—	—	—	9·2	10·8	9·2	—	—	—
ATTERBERG LIMIT	LIQUID LIMIT	27·5	30·1	27·7	36·5	32·3	29·9	34·5	31·5	32·6	—	—	—	—	—	—
	PLASTIC LIMIT	20·3	20·7	20·9	24·2	21·9	22·0	20·9	19·6	19·4	—	—	—	—	—	—
	PLASTIC INDEX	7·2	9·4	6·8	12·3	10·4	7·9	13·6	11·9	13·2	—	—	—	—	—	—
GRAIN SIZE ANALYSIS	CLAY %	—	—	17·00	—	—	—	—	—	—	—	—	—	—	—	—
	SILT %	—	—	79·90	—	—	—	—	—	—	—	—	—	—	—	—
	SAND %	—	—	2·70	—	—	—	—	—	—	—	—	—	—	—	—
	GRAVEL %	—	—	0·40	—	—	—	—	—	—	—	—	—	—	—	—
CONSOLIDATION TEST	INITIAL VOID RATIO e_o	—	—	0·555	—	—	—	—	—	—	—	—	—	—	—	—
	COMPRESSION INDEX C_c	—	—	0·06	—	—	—	—	—	—	—	—	—	—	—	—
	COEFFICENT OF CONSOLIDATION (%) cm^2/sec C_v	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	COEFFICENT COMPRESSION cm^2/kg a_v	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
UNCONFINED COMPRESSION TEST	(%) STRAIN AT FAILURE	7·3	4·5	4·0	5·6	3·0	3·6	4·8	3·6	4·4	—	—	—	—	—	—
	UNCONFINED STRENGTH Tons/sq.ft.	1·11	2·15	2·36	2·73	1·21	2·45	2·32	2·16	2·77	—	—	—	—	—	—
	STRESS REMOLDED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	SENCITIVITY	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TRIAXIAL COMPRESSION TEST	KIND OF DRAINAGE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	ANGLE OF INTERNAL FRICTION ϕ EFFECTIVE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	APPARENT COHESION C' kg/cm^2 EFFECTIVE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PH VALUE		—	—	—	—		—	—	—	—	—	—	—	—	—	—
SULPHATE AS SO_4 (%)		—	—	—	—	0·03	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

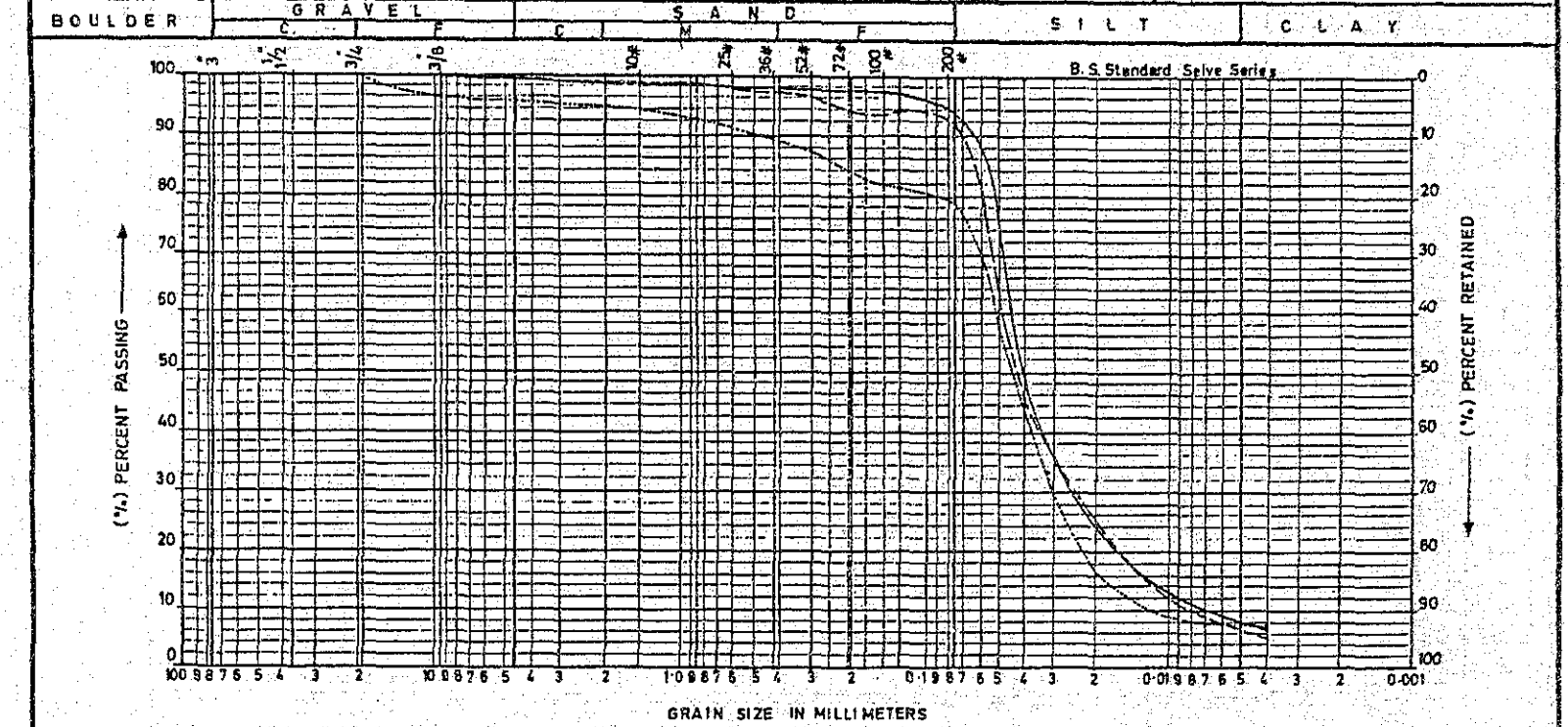
FOUNDATION ENGINEERING LTD.

PLAN NO 430-30(A)

FOUNDATION ENGINEERING LTD.
SOIL MECHANICS & MATERIAL TESTING LABORATORY
KARACHI.

GRAIN SIZE DISTRIBUTION

Client :- GOVT. OF PAKISTAN MINISTRY OF HEALTH
Site :- ISLAMABAD HOSPITAL COMPLEX



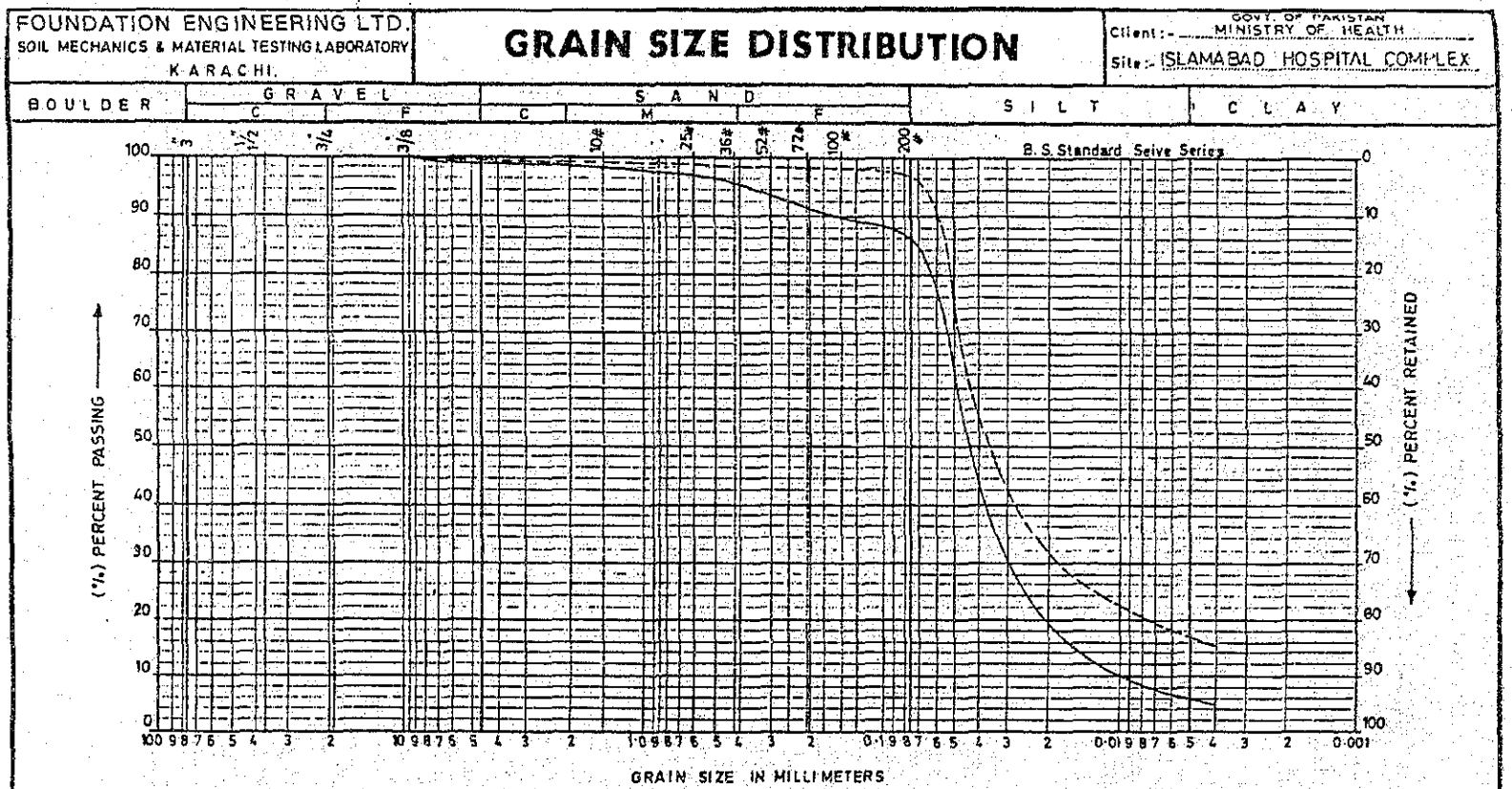
Lab. Nº	Symbol	Bore Nº	Sample Nº	Depth	Classification	Bould %	Gravel %	Sand %	Silt %	Clay %	Atterberg Limits	Ø 60 %	Ø 10 %	U	Remarks
	———	1	U-1	3'-0" to 4'-3"	Clayey SILT / Silty CLAY with little sand and gravel.	—	0·80	6·00	85·20	8·00		0·045	0·007	6·43	
	- - - - -	4	D-3	11'-0" to 12'-0"		—	0·80	7·40	85·30	6·50		0·049	0·008	6·133	
	.....	8	U-1	6'-0" to 7'-3"		—	4·80	16·50	71·20	7·50		0·052	0·0125	4·16	

PLAN Nº 490-32

FOUNDATION ENGINEERING LTD.
SOIL MECHANICS & MATERIAL TESTING LABORATORY
KARACHI.

GRAIN SIZE DISTRIBUTION

Client :- GOVT. OF PAKISTAN MINISTRY OF HEALTH
Site :- ISLAMABAD HOSPITAL COMPLEX



Lab. No	Symbol	Bore No	Sample No	Depth	Classification	Bould %	Gravel %	Sand %	Silt %	Clay %	Atterberg Limits	Ø 60 %	Ø 10 %	U	Remarks
	———	13	U-1	11'-0" to 12'-3"	Clayey SILT / Silty CLAY with little sand and gravel.	—	1·20	12·70	80·10	6·0		0·049	0·01	4·90	
	- - - -	25	U-1	12'-2" to 13'-5"		—	0·40	2·70	79·90	17·0		0·043	—	—	

PLAN No 490-31

SOILS AND MATERIALS TESTING LABORATORIES LTD.

CALIFORNIA BEARING RATIO TEST

Clinet:- M/S. FOUNDATION ENGINEERING LTD.
Project ISLAMABAD TEACHING HOSPITAL Job No. FEL/ITH/2

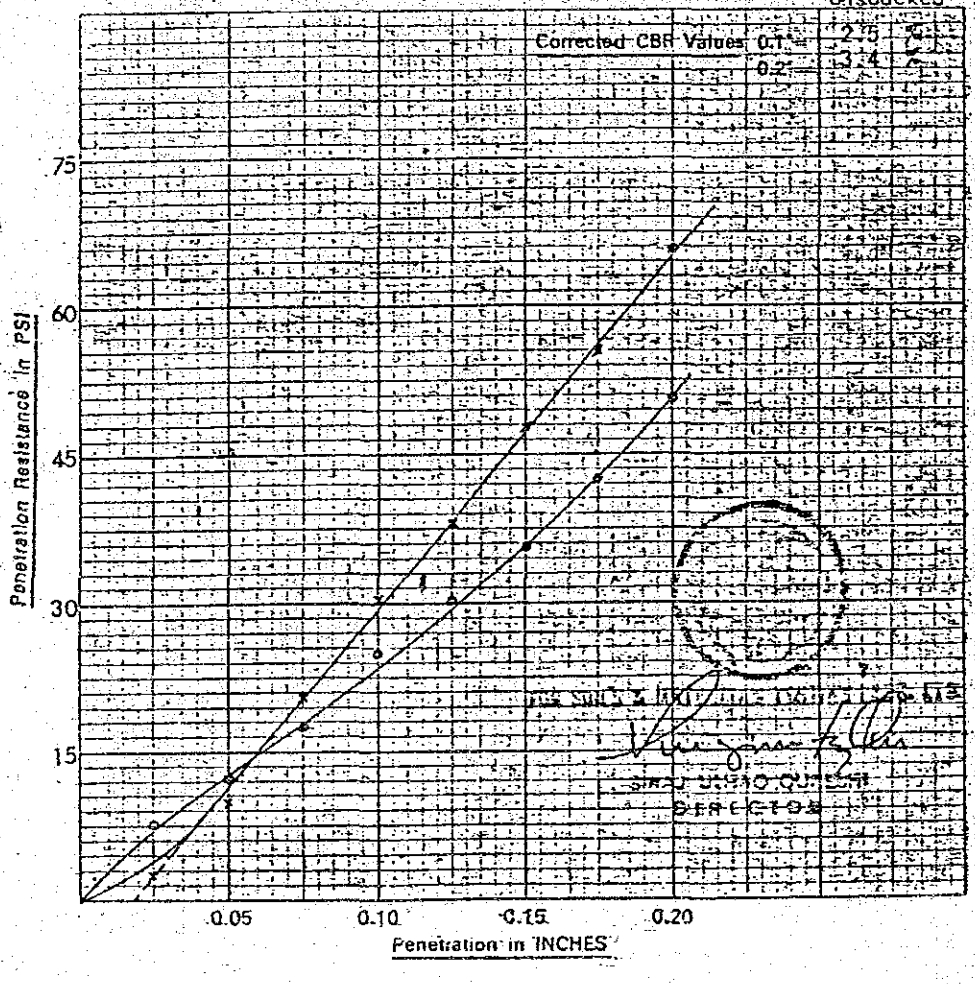
Location of Project _____ Boring No. -- Sample No. --

Description of Soil Test Specimen Compacted at opt.M.C.& at Max.Density.

Tested by S. M. T. L. Date of Testing 18 JULY '79

Penetration in INCHES	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200
Load dial Reading	3	5	7	10	12	14	17	20
	1	4	8	12	15	19	22	26
Penetration Resistance PSI	7.6	12.6	17.6	25.2	30.2	35.2	42.8	50.3
	2.5	10.1	20.1	30.2	37.8	47.8	55.4	65.4
% C.B.R. Value				2.5%				3.4%
				3.0%				4.4%

~~% Swelling~~/subsidence (-) 0.52 %



SOILS AND MATERIALS TESTING LABORATORIES LTD.

CALIFORNIA BEARING RATIO TEST

CLIENT:- M/S. FOUNDATION ENG-INEERING LTD.
Project :- ISLAMABAD TEACHING HOSPITAL Job No. FEL/ITH/2

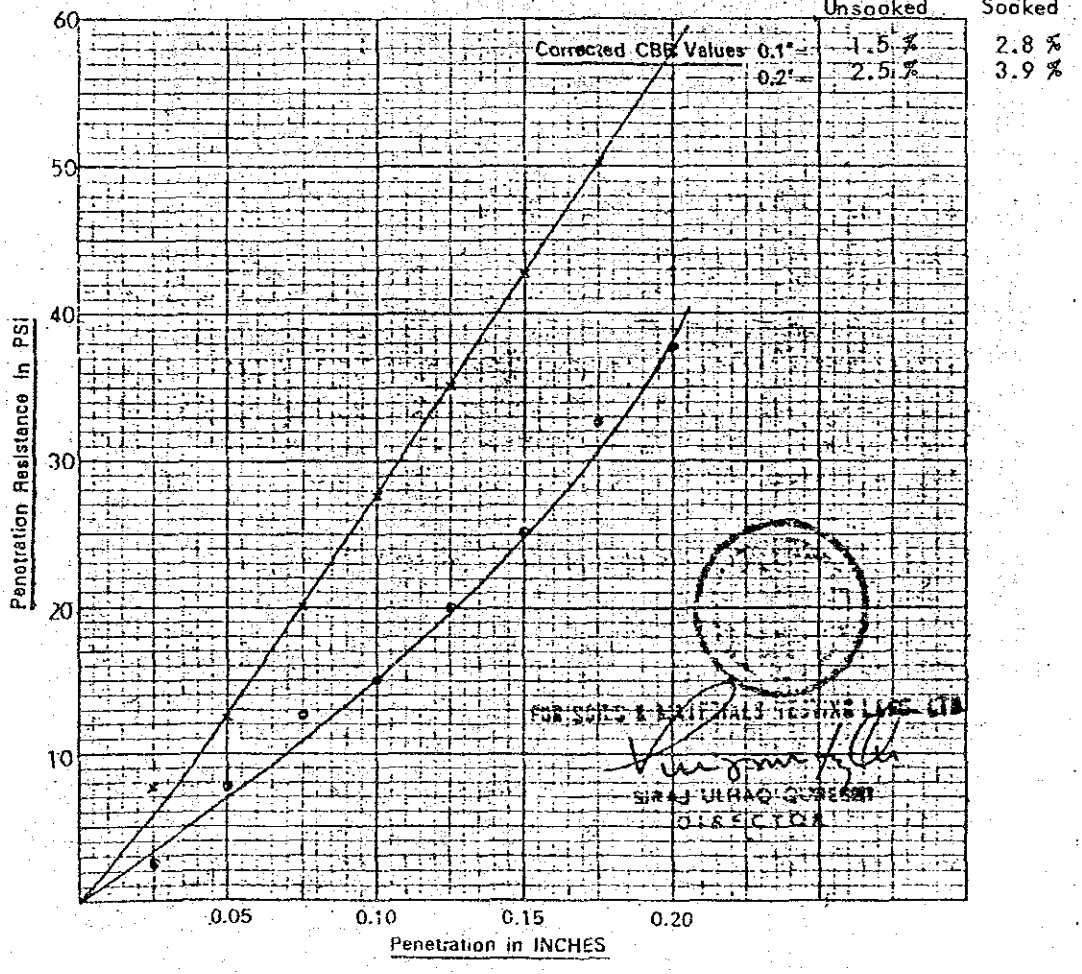
Location of Project _____ Boring No. _____ Sample no. _____

Description of Soil Test Specimen Compacted at opt.M.C.& at Max.Density.

Tested by : S. M. T. L. Date of Testing 18 JULY '79

Penetration in INCHES	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200
Load dial Reading	1	3	5	6	8	10	13	15
	3	5	8	11	14	17	20	23
Penetration Resistance PSI	2.5	7.6	12.6	15.1	20.1	25.2	32.7	37.8
	7.6	12.6	20.1	27.7	35.2	42.8	50.3	57.9
% C.B.R. Value				1.5%				2.5%
				2.8%				3.9%

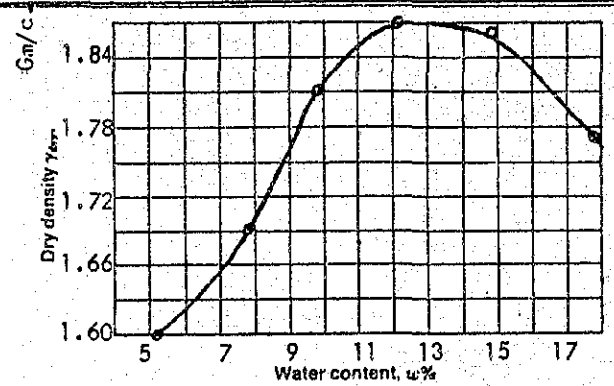
% ~~Swelling~~/subsidence (-) 0.50 %



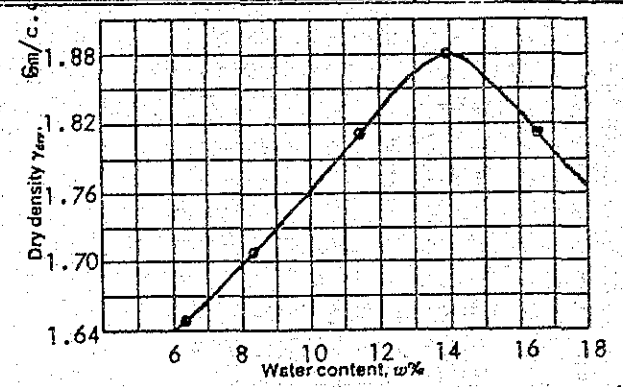
SOILS AND MATERIALS TESTING LABORATORIES LTD.

MOISTURE DENSITY RELATION SHIP CURVE OF SAMPLE RECEIVED FROM ISLAMABAD TEACHING HOSPITAL SITE

CLIENT:- M/S. FOUNDATION ENGINEERING LTD. REPORT NO: FEL/ITH/2 REPORTING DATE: 18 JULY '79



Optimum moisture = 12.6 % Maximum dry density = 1.87 Gm/c.c



Optimum moisture = 13.9 % Maximum dry density = 1.88 Gm/c

FOR SOILS & MATERIALS TESTING LABS. LTD.

SIRAJ ULHAQ QURESHI
DIRECTOR

附属資料Ⅲ－3　水質調査資料

CAPITAL DEVELOPMENT AUTHORITY
(SCIENSIFIC OFFICER)

NO.CDA/SC-W/An/82/8129　　Islamabad,April,1982

SOURCE OF SAMPLE　:　MARKAZ F/7,ISLAMABAD

COLLECTION:PERIOD　:　*18.4.82(Farvaz Khan)

EXAMINATION:PERIOD　:　18.4.82

1.	Temperature	24.0 ℃
2.	Appearance	Clear
3.	Odour	Unobjectionable
4.	Taste	〃
5.	pH Value	7.0
6.	Free Residual Chlorine	0.25 PPM
7.	Free Carbon Dioxide	5.0 PPM
8.	Free Ammonis	Nil
9.	Chlorides	28 PPM
10.	Alkalinity(M)	113 PPM
11.	Total Hardness	210 PPM
12.	Calcium Hardness	122 PPM
13.	Magnesium Hardness	88 PPM
14.	Oxygen Consumed ($\frac{1}{2}$hrs. at 100-0)	0.6 PPM
15.	Total Solids	280 PPM
16.	Nitrites-N	Nil
17.	Nitrates-N	0.2 PPM

Remarks:-　Satisfactory

Distribution.

1. Project Director (Simly Dam),CDA.
2. Director (W&S),CDA.
3. Dy. Director (W&S-VI),CDA.
4. Office copy

附属資料Ⅳ

Ⅳ－1　医療事情の現況

Ⅳ－2　第5次5ケ年計画1978～83
における医療計画

Ⅳ－3　死亡原因に関する資料

Ⅳ－4　外来患者に関する資料

附属資料Ⅳ－1　医療事情の現況

1. 医療施設

1981年末の調査データから1970年から1980年の推移をみると，病院数は495から602，病床数は34,001から49,384，保健所数は86から281，医科大学数は6から16へと年々確実に増加している。しかし，1980年の調査データから人口1万人対でみると病院数0.07（日本：0.8），病床数5.7（日本：112.9）であり，まだまだ医療施設が不足している現状にある。

(1) 医療施設及び人材の推移

Years	Hospitals	Dispensaries	M.C.H. Centres	Beds in Hospitals/ Dispensaries	Registered Doctors	Nurses Registered	*Registered Lady Health Visitor
1	2	3	4	5	6	7	8
1947	292	722	91	13,769	—	—	—
1948	300	741	96	14,117	1,360	88	4
1949	301	769	102	14,180	1,912	214	7
1950	304	807	107	14,524	2,298	418	76
1951	306	823	110	14,741	2,621	574	100
1952	311	860	153	15,324	2,860	674	123
1953	320	889	177	15,872	3,227	786	129
1954	329	928	183	17,092	3,598	862	138
1955	333	964	198	19,197	3,923	963	142
1956	335	980	224	19,398	4,270	1,054	159
1957	336	1,053	257	19,640	4,770	1,190	169
1958	338	1,112	284	21,169	5,387	1,269	181
1959	338	1,155	349	21,658	5,968	1,725	195
1960	343	1,195	358	22,100	6,485	1,929	230
1961	345	1,251	422	22,394	7,255	2,067	276
1962	365	1,374	449	22,775	7,894	2,238	314
1963	369	1,514	488	23,429	8,619	2,472	377
1964	371	1,626	524	23,664	9,418	2,641	501
1965	383	1,695	554	25,603	10,082	2,945	627
1966	393	1,754	585	26,200	10,845	3,183	712
1967	395	1,834	650	27,076	11,732	3,527	848
1968	402	1,951	650	27,112	12,369	3,813	970
1969	411	2,046	668	28,686	13,011	4,123	1,085
1970	495	2,136	668	34,001	14,109	4,543	1,169
1971	496	2,137	675	34,077	14,862	5,075	1,322
1972	521	2,566	677	35,337	15,789	5,504	1,458
1973	517	2,836	690	35,655	16,485	5,751	1,618
1974	518	2,908	696	35,866	17,194	6,010	1,627
1975	525	3,061	715	37,776	17,887	6,144	1,636
1976	525	3,063	715	39,129	18,757	6,685	1,688
1977	528	3,220	726	40,518	19,863	7,186	1,738
1978	536	3,306	748	42,469	20,931	7,768	1,823
1979	550	3,367(a)	772	44,367	21,938(b)	8,382	1,921
1980	602	3,466	812	47,412	23,594	9,098	2,009

Source: Health Division.

*Figures for registered L.H.V's while the figures for qualified L.H.V's is 4,355 (1980).

(a) Does not include rural health centres, sub-health centres and basic health units.

(b) Does not include 829 Dentists.

Note.—Figures in Col. 2—5 are as on 1st January and Col. 6—8 as on 31st December.

(2) 主な病院のベッド数

1) Poly Clinic	250 Beds
2) Central Goverment Hospital	430 〃
3) Combined Military Hospital	700 〃
4) Holy Family Hospital	250 〃
5) Fauji Center ※	350 〃
6) Capital Hospital ※	80 〃
7) District Head Quaters Hospital	120 〃

※は職域病院を示す。

(3) 医療従事者の現状

1980年現在登録されている歯科医を除く医師数は23,594名で前年度に比して7.5%強，また看護婦数は9,098名で8.5%の増加がみられた。

これらを人口10万人対でみると医師数28.6（日本：140）看護婦数11.0（日本：423）となり，年々増加してはいるが，医療施設の不足とともに医療従事者の不足，特に看護婦の不足が目立つ。

(医療従事者の推移は前出(1)の表を参照)

下表は1979年の医療従事者数の調査データである。

	OUT PUT		REGISTERED	
	During 1979	Progressive total at the end of 1979	During 1979	Progressive total at the end of 1979
Doctors	1,164	18,666@	1,007	21,938
Dentists	68	942	62	829
Nurses	659	9,014	614	8,382
LHVs	312	4,013	98	1,921
Midwives	313	4,705	442	2,985
Nurse-Midwives	359	4,338		
Sister Tutors	34	266		
Ward Administrators ..	39	487		
Medical Technologists ..	27	459		
Physiotherapists	22	191	Registration is not done.	
Dispensers	729	16,161		
Sanitary Inspectors	43	1,902		
Malaria Inspectors	38	736		
Pharmacy Graduates ..	104	1,498		

@Includes 1,018 Licentiates qualified upto 1966.

2. 医学教育施設

(1) 医療大学とその定員

The total seats available in Medical Colleges during academic session 1979-80 were as under :—

(1) K. E. Medical College, Lahore..	277
(2) F. J. Medical College, Lahore	184
(3) Allama Iqbal Medical College, Lahore	322
(4) Punjab Medical College, Faisalabad	240
(5) Rawalpindi Medical College	240
(6) Nishtar Medical College, Multan	269
(7) Quaid-e-Azam Medical College, Bahawalpur	250
(8) Dow Medical College, Karachi	441
(9) Sind Medical College, Karachi	355
(10) Chandka Medical College, Larkana	313
(11) Liaquat Medical College, Hyderabad	430
(12) Nawabshah Medical College	200
(13) Khyber Medical College, Peshawar	304
(14) Ayub Medical College, Abbottabad	106
(15) Bolan Medical College, Quetta	134
Total ..	4,065

(2) 医科大学の卒業者数（1979年）

Institution	Year of Establishment	Output during 1979	Progressive total at the end of 1979
1	2	3	4
Medical Colleges			
KEMC Lahore	1860	77	4,166+
DMC Karachi	1945	367	4,182
FJMC Lahore	1948	32	1,953
LMC Jamshoro	1951	219	2,663
NMC Multan	1951	65	2,508
KMC Peshawar	1955	179	1,727
QAMC Bahawalpur	1971	39	222
BMC Quetta	1972	42	72
CMC Larkana	1973	—	—
SMC Karachi	1973	155	155
RMC Rawalpindi	1974	—	—
PMC Faisalabad	1974	—	—
NMC Nawabshah	1974	—	—
AIMC Lahore	1975	—	—
AMC Abbottabad	1979	—	—
Total ..		1,164	17,648 plus 1,018 (Licentiates)

附属資料Ⅳ－2　第5次5ケ年計画1978～83における医療計画

1. 計画の目標

第5次5ケ年計画において，医療計画の最終目標を以下のように定めている。

(1) 50%の国民に対して2～4マイルの距離内に近代医療が施せるようにする。

(2) 死亡率を現状の1,000人に対し14人から10.2人までに減少させる。

(3) 幼児死亡率を現状の1,000人に対し105人から79人までに減少させる。

(4) 平均寿命を男子は54才から60才まで，女子は53才から59才まで引上げる。

(THE FIFTH PLAN 1978－83 HEALTHより)

2 医療施設の目標

第5次5ケ年計画において，医療施設としての目標を以下のように定めている。

Agency	BHUs/ Disps./ MCH Centres	RHCs	Hospital beds	Doctors/ Dental Surgeons	Nurses/ Auxi./ Para-Medicals	Community Health Workers
1. Federal :						
(a) Health Division	—	—	1,194*	—	580	—
(b) Federal Administered Tribal Areas	250	50	1,420	417	1,212	1,613
(c) Azad Kashmir ..	215	50	1,400	300	890	1,052
(d) Northern Areas	60	9	256	96	276	330
2. Baluchistan ..	300	40	1,400	430	1,262	1,360
3. North-West Frontier Province ..	539	129	4,000	1,100	2,966	10,506
4. Sind	1,232	147	6,150	4,988	5,190	19,680
5. Punjab	2,000	200	10,000	6,181	17,290	15,830
Total ..	4,596	625	25,820	13,512	29,666	50,371

*The province-wise distribution of the beds is :—

Islamabad	296
Clinical Wing, N.I.H., Islamabad	50
JPMC, Karachi..	200
Bolan]Medical College, Quetta ..	648

3. 計画の実施状況

パキスタン国政府は，保健問題に特別な注意を払っており，第5次5ケ年計画の政策目標の達成のために1980－81年の年間開発計画の予算により，約9億600万ルピーが保健部門に割当てられた。この額は1979－80年に比べて32.6%増であることからも，その関心の強さがうかがえる。

下表は予算の推移と国民総生産GDPとの関係を示している。

TOTAL EXPENDITURE ON HEALTH AND G.D.P. AT CURRENT FACTOR COST

(Million Rs.)

Years	Expenditure on health		Total	GDP	Total Expenditure as % of G.D.P.
	Development	Non-Development			
1960-61	8.70	57.00	65.70	18,349	0.36
1961-62	21.13	69.00	90.13	19,139	0.47
1962-63	34.10	78.00	112.10	20,489	0.55
1963-64	34.55	80.00	114.55	22,945	0.50
1964-65	75.22	78.00	153.22	26,202	0.58
1965-66	46.47	84.00	130.47	28,969	0.45
1966-67	35.31	86.00	121.31	32,622	0.37
1967-68	70.80	92.00	162.80	35,542	0.46
1968-69	59.79	99.00	159.79	37,985	0.42
1969-70	67.99	128.00	195.99	43,345	0.45
1970-71	61.70	151.70	213.40	45,702	0.47
1971-72	57.62	141.10	198.72	49,169	0.40
1972-73	95.55	171.90	267.45	60,795	0.44
1973-74	157.67	210.10	367.77	80,441	0.46
1974-75	309.00	278.00	587.00	104,640	0.56
1975-76	629.099	360.640	989.739	121,423	0.65
1976-77	590.809	439.200	979.009	135,686	0.72
1977-78	684.340	558.600	1242.940	157.171	0.79
1978-79 (R.E.) ..	647.500	641.599	1289.099	178,801	0.72
1979-80 (R.E.) ..	683.452	661.892	1345.344	212,471	0.63
1980-81 (R.E.) ..	906.026	794.820	1700.847	249,038	0.68

Source : Planning Division.

附属資料Ⅳ－3　死亡原因に関する資料

1. 死亡原因

Sl. No.	Name of Disease	Pakistan	Urban areas	Rural areas
All causes		100·00	100·00	100·00
1.	Infective and parasitic diseases	63·84	67·64	63·07
2.	Malaria	10·44	7·86	10·96
3.	Congenital anomalies, birth-injury and causes of pre-natal mortality.	7·36	5·64	7·71
4.	Tuberculosis of all forms	5·55	2·86	6·09
5.	Bacillary dysentery and amoebiasis	2·51	2·88	2·44
6.	Accidents, poisoning and violence	1·88	1·05	2·03
7.	Diseases of heart and circulatory system	1·79	3·92	1·35
8.	Peptic ulcer, appendicitis, intestinal obstruction and hernia.	1·20	1·09	1·22
9.	Diabetes mellitus	1·14	0·75	1·22
10.	Complications of pregnancy and childbirth ..	1·13	1·39	1·08
11.	Tumours	0·34	0·00	0·41
12.	Unknown causes	2·85	4·91	2·44

Source : Statistical Division, Population Growth Survey, 1971, Karachi, 1974.

2. 幼児死亡原因

Sl. No.	Name of Disease	Pakistan	Urban areas	Rural areas
All causes		100·00	100·00	100·00
1.	Infective and parasitic diseases	59·68	67·09	58·05
2.	Congenital anomalies, birth-injury, difficult labour and causes of pre-natal mortality.	20·13	15·53	21·35
3.	Malaria	8·69	7·41	8·99
4.	Tuberculosis of all forms	3·08	0·00	3·75
5.	Bacillary dysentery and amoebiasis	2·06	2·55	1·50
6.	Accidents, poisoning and violence	0·47	0·88	0·37
7.	Diseases of heart and circulatory system	0·31	0·00	0·37
8.	Peptic ulcer, appendicitis, intestinal obstruction and hernia.	0·31	0·00	0·37
9.	Unknown causes	5·30	6·53	5·24

Source : Statistical Division, Population Growth Survey, 1971, Karachi 1974.

附属資料IV－4　外来患者数に関する資料

1. 地域別（パンジャブ地区）による外来患者数

Number of out-door patients treated in Hospitals, Dispensaries etc. by Districts.—The number of new and old out-door patients treated in hospitals and dispensaries and their daily average for each district for the year 1979 (other than Sind Province) is given below :—

District	Sex	New patients	Old patients	Total	Daily Average
1	2	3	4	5	6
Attock	M	147,325	173,869	321,194	
	F	139,733	173,018	312,751	
	T	287,058	346,887	633,945	2,113
Rawalpindi	M	323,649	187,949	511,598	
	F	311,300	224,309	535,609	
	T	634,949	412,258	1,047,207	3,491
Jhelum ..	M	159,836	163,586	323,422	
	F	149,288	161,946	311,234	
	T	309,124	325,532	634,656	2,115
Gujrat	M	216,618	235,929	452,547	
	F	215,528	271,149	486,677	
	T	432,146	507,078	939,224	3,131
Sargodha	M	298,349	391,116	689,465	
	F	326,743	486,589	813,332	
	T	625,092	877,705	1,502,797	5,009
Faisalabad	M	511,590	627,904	1,139,494	
	F	557,347	729,518	1,286,865	
	T	1,068,937	1,357,422	2,426,359	8,088
Jhang	M	295,378	360,996	656,374	
	F	302,894	378,146	681,040	
	T	598,272	739,142	1,337,414	4,458
Mianwali	M	184,733	316,801	501,534	
	F	161,420	314,352	475,772	
	T	346,153	631,153	977,306	3,258
Sialkot	M	206,037	392,459	598,496	
	F	228,080	406,021	634,101	
	T	434,117	798,480	1,232,597	4,109
Gujranwala . ..	M	227,630	245,243	472,873	
	F	275,938	298,576	574,514	
	T	503,568	543,819	1,047,387	3,491
Sheikhupura	M	131,205	185,410	316,615	
	F	152,163	209,409	361,572	
	T	283,368	394,819	678,187	2,261

1	2	3	4	5	6
Lahore	M	907,075	993,816	1,900,891	
	F	934,638	1,042,203	1,976,841	
	T	1,841,713	2,036,019	3,877,732	12,926
Kasur	M	165,846	192,127	357,973	
	F	167,064	201,328	368,392	
	T	332,910	393,455	726,365	2,421
Sahiwal	M	321,932	443,723	765,655	
	F	391,079	454,104	845,183	
	T	713,011	897,827	1,610,838	5,369
Vehari	M	116,592	156,497	273,089	
	F	114,504	186,792	301,296	
	T	231,096	343,289	574,385	1,915
Multan	M	380,573	574,055	927,628	
	F	380,855	655,175	1,036,030	
	T	761,428	1,202,230	1,963,658	6,545
Muzaffargarh ..	M	229,564	328,430	557,994	
	F	223,745	385,246	608,991	
	T	453,309	713,676	1,166,895	3,890
D. G. Khan	M	177,463	189,083	366,546	
	F	137,483	232,736	370,219	
	T	314,946	421,819	736,765	2,456
Bahawalpur	M	230,057	227,212	457,269	
	F	216,884	244,488	461,372	
	T	446,941	471,700	918,641	3,062
Bahawalnagar ..	M	172,397	255,164	427,561	
	F	143,832	235,936	379,768	
	T	316,229	419,100	807,329	2,691
Rahim Yar Khan ..	M	416,188	271,538	687,726	
	F	325,988	258,790	584,778	
	T	742,176	530,328	1,272,504	4,242
Total—Punjab ..	M	5,820,037	6,885,907	12,705,944	
	F	5,856,506	7,549,831	13,406,377	
	T	11,676,543	14,435,738	26,112,281	87,041

2. ティーチングホスピタル（パンジャブ地区）における外来患者数

Such information is available from almost all the teaching institutions as detailed below :

Hospital	Sex	New	Old	Total	Daily Average
1	2	3	4	5	6
Mayo Hospital, Lahore.	M	179,408	251,514	430,922	
	F	131,989	242,167	374,156	
	T	311,397	493,681	805,078	2,683
Lady Willingdon Hospital, Lahore.	F	24,524	20,516	45,040	150
Services Hospital, Lahore.	M	49,701	48,675	98,376	
	F	46,879	65,816	112,695	
	T	96,580	114,491	211,071	703
Lahore General Hospital, Lahore.	M	44,823	44,732	89,555	
	F	42,677	37,083	79,760	
	T	87,500	81,815	169,315	564
Sir Ganga Ram Hospital, Lahore.	M	79,197	22,415	101,612	
	F	88,594	33,567	122,161	
	Children	15,430	1,000	16,430	
	T	183,221	56,982	240,203	801
D. Hqr. Hospital, Faisalabad.	M	59,507	55,036	114,543	
	F	53,846	56,812	110,658	
	T	113,353	111,848	225,201	751
D. Hqr. Hospital, Rawalpindi.	M	46,588	14,432	61,020	
	F	35,359	23,864	59,223	
	T	81,947	38,296	120,243	401
Holy Family Hospital, Rawalpindi.	M	20,123	10,408	30,531	
	F	41,913	17,318	59,231	
	T	62,036	27,726	89,762	299
Nishtar Hospital, Multan.	M	96,078	77,247	173,325	
	F	90,874	75,229	166,103	
	T	~~196,952~~	152,476	339,428	1,131
B. V. Hospital, Bahawalpur.	M	65,691	18,418	84,109	
	F	59,264	21,398	80,662	
	T	124,955	39,816	164,771	549
Total—Punjab ..	M	641,116	542,877	1,183,993	
	F	615,919	593,770	1,209,689	
	C	15,430	1,000	16,430	
	T	1,272,465	1,137,647	2,410,112	8,032

附属資料Ⅴ　医療資機材計画

医療資機材一覧

部　門	医療機器	部　門	医療機器
病棟部門			ストレッチャー
			便器洗滌消毒器
内科系病棟			便尿運搬車
	ベッド		製氷機
	付添用ベッド		
	冷凍冷蔵庫	隔離病棟	
	眼底鏡，耳鏡セット		ベッド
	診察セット		冷凍冷蔵庫
	血圧計		眼底鏡，耳鏡セット
	双眼顕微鏡		診察セット
	普通型遠心器		血圧計
	シャウカステン		双眼顕微鏡
	清拭車		普通型遠心器
	回診車		シャウカステン
	吸引器（ポータブル）		清拭車
	車椅子（子供用）		回診車
	ストレッチャー		吸引器
	酸素テント		車椅子（子供用）
	酸素濃度計		ストレッチャー
	酸素流量計		酸素テント
	超音波ネブライザー		酸素濃度計
	ポータブル心電計		酸素流量計
	自動輸液ポンプ		超音波ネブライザー
	じよく創予防マット		ポータブル心電計
	便器洗滌消毒器		自動輸液ポンプ
	便尿運搬車		じよく創予防マット
	製氷機		便器洗滌消毒器
			便尿運搬車
外科系病棟			高圧蒸気滅菌装置
	ベッド	外来診療部門	
	付添用ベッド		
	冷凍冷蔵庫	眼　科	
	外科用処置セット		検　眼　鏡
	診察セット		眼科診療ユニット
	双眼顕微鏡		スリットランプ
	普通型遠心器		眼　底　鏡
	シャウカステン		眼　圧　計
	吸引器		眼底カメラ
	清拭車		視　野　計
	回診車		手術台（処置）
	車椅子（子供用）		

部　門	医療機器
耳鼻咽喉科	
	耳鼻科診療ユニット
	ネブライザー
	平衡機能計
	吸引装置
	処置台
	オージオメーター
	気管支鏡
内　科	
	血圧計
	冷凍冷蔵庫
	眼底鏡，耳鏡セット
	シャウカステン
外　科	
	シャウカステン
	冷凍冷蔵庫
	外科用処置セット
特別診察	
	シャウカステン
	索引装置
	血　圧　計
	冷凍冷蔵庫
	歯科診療ユニット
	歯科用X線撮影装置
	小型自動現像機
腎臓尿路科	
	人工透析装置
	血　圧　計
	ベ　ッ　ド
フィルター	
外来診察	プロジェクター
	冷　蔵　車
	体　重　計
	身　長　計
	血　圧　計
	眼底鏡，耳鏡セット
	救急カート
	救急蘇生装置

部　門	医療機器
	自動輸液ポンプ
	吸　入　器
	吸　引　器
	冷　蔵　庫
救急外来	
	シャウカステン
	診察セット
	眼底鏡，耳鏡セット
	血　圧　計
	車椅子（子供用）
	ストレッチャー
	救急カート
	無　影　灯
	喉　頭　鏡
	外科用処置セット
	自動輸液ポンプ
	救急蘇生装置
	麻　酔　器
	手　術　台
	酸素テント
	酸素濃度計
	酸素流量計
	高圧蒸気滅菌装置
	便器洗滌消毒器
	ベ　ッ　ド
中央診療部門	
臨床検査	
	双眼顕微鏡
	三眼顕微鏡（撮影装置付）
	顕微鏡用照明装置
	顕微鏡用アクセサリー
	上皿直示天秤
	化学天秤
	比　重　計
	普通遠心器
	ヘマトクリット用遠心器
	細胞診用遠心器
	冷　蔵　庫
	冷凍冷蔵庫
	ふ　卵　器

部　門	医療機器	部　門	医療機器
	恒温水槽		心拍呼吸監視装置
	ピペット洗滌器		無影灯
	メランジュール洗滌装置		手術用顕微鏡
	超音波洗滌装置		器械戸棚
	攪拌装置		器械台
	分注器		保温庫
	電気工作工具セット		電子体温計
	血清蛋白屈折計		酸素テント
	浸透圧計		超音波ネブライザー
	白血球分類器		リカバリーベット
	白血球自動計算器		ストレッチャー
	PH計		滅菌水手洗装置
	ビリルビンメーター		小児外科手術器械セット
	Na／Kアナライザー		マイクロ手術器械セット
	血液ガス分析装置		持続吸引器
			デルマトーム
生理機能検査			電動骨手術器械
	心電計		レントドリル
	筋電計		空気止血帯
	心音計		人工股関節手術器械
	呼吸抵抗計		サージカルヘッドライト
	脳波計		麻酔台
			冷凍冷蔵庫
放射線診断			
	一般撮影装置	中央材料	
	X線テレビ撮影装置		超音波洗滌装置
	ポータブル撮影装置		高圧蒸気滅菌装置
	自動現像機		EOG滅菌装置
	シャウカステン		EOガス抜装置
			バッグシーラー
手　術　部			純水製造装置
	手術台		骨髄穿刺針
	シャウカステン		腰椎穿刺針
	電気メス		脳室穿刺針
	麻酔器		静脈切開セット
	麻酔用呼吸装置		交換輸血セット
	呼吸流量計		注射器
	人工蘇生器（レサシテーター）		
	自動呼吸装置（レスピレーター）	薬　剤	
	心臓監視装置		自動分包機
	（ディハイブレーター）		自動上皿天秤
	心臓監視蘇生装置		保冷庫
	自動輸液ポンプ		麻薬金庫

部　門	医療機器	部　門	医療機器
	薬品戸棚		シャウカステン
	冷凍薬品庫		酸素テント
			酸素濃度計
リハビリ			酸素流量計
テーション	膝関節硬直治療器		超音波ネブライザー
	自転車練習運動器		薬液槽（浴槽）
	平行棒		
	漕艇練習運動器	解　剖　室	
	訓練ベット		解剖台
	車椅子		
	歩行訓練用階段		
	オーバーヘッドフレーム		
	水治療浴槽		
ＮＩＣＵ			
	保育器		
	自動輸液ポンプ		
	カーディオテンプ		
	酸素分圧連続測定装置		
	新生児体重計		
	酸素流量計		
	酸素濃度計		
	新生児集中治療監視装置		
	光線治療装置		
	レスピレーター		
	未熟児持続陽圧呼吸装置（CPAP）		
	人工蘇生器（小児用）		
	オキシメーター		
	コット		
	インファントウォーマー		
	蓄乳冷凍庫		
	哺乳瓶保温庫		
	哺乳瓶消毒器		
	冷凍冷蔵庫		
	小児用処置台		
	診察セット		
ICU,			
熱傷病棟	メディカルパネル		
	集中監視装置		
	レスピレーター		
	冷凍冷蔵庫